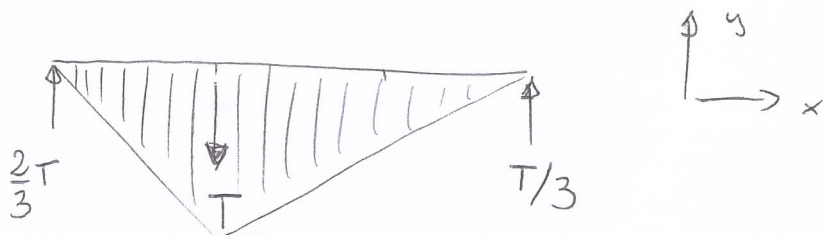
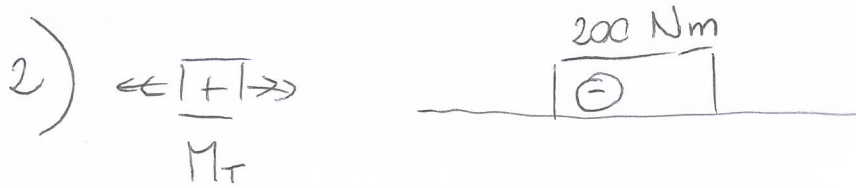
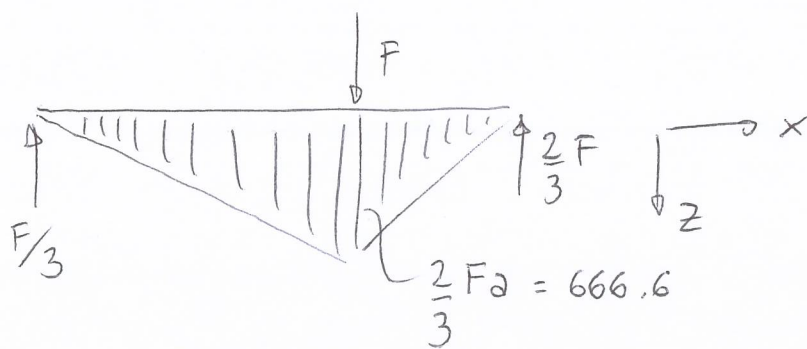


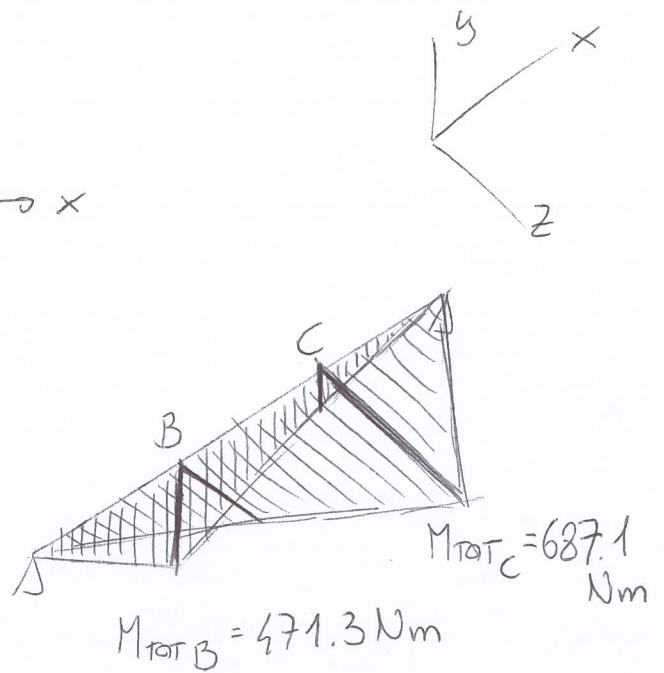
$$T \frac{D_{PB}}{2} = F \frac{D_{PC}}{2} \quad F = T \frac{D_{PB}}{D_{PC}} = 2000 \text{ N}$$



$$\frac{2}{3} T a = 333.3 \text{ Nm}$$



$$\frac{2}{3} F a = 666.6$$



3) Il punto piú critico è C

4)

$$\sigma = \frac{32 M_{TOTC}}{\pi d^3}$$

calcolati con  $F=2F_0$  e  $T=2T_0$ 

$$\sigma_{max} = \sigma K_t$$

$$\tau = \frac{16 M_{TORCENTE}}{\pi d^3}$$

$$\tau_{max} = \tau K_t$$

$$\sigma_{VM} = \sqrt{\sigma_{max}^2 + 3 \tau_{max}^2}$$

$$\sigma_{VM} \leq \frac{R_{sn}}{\eta}$$

$$\sqrt{\left(\frac{32 M_{TOTC} K_t}{\pi d^3}\right)^2 + 3 \left(\frac{16 M_{TORCENTE} K_t}{\pi d^3}\right)^2} = \frac{R_{sn}}{\eta}$$

$$\frac{1}{d^3} \sqrt{\left(\frac{32 M_{TOTC} K_t}{\pi}\right)^2 + 3 \left(\frac{16 M_{TORCENTE} K_t}{\pi}\right)^2} = \frac{R_{sn}}{\eta}$$

$$d^3 = \frac{\sqrt{\dots} M}{R_{sn}} = \frac{28.86 \cdot 10^6}{78738} \text{ mm}^3$$

$$d \sim 43 \text{ mm}$$

$$5) \quad \tau = \frac{16 M_t}{\pi d^3} = \frac{13}{10} \text{ MPa} \Rightarrow \tau_{\text{constante}}$$

$$\sigma = \frac{32 M_{\text{rot}}}{\pi d^3} = \frac{88}{10} \text{ MPa} \Rightarrow \sigma_{\text{alternanz}}$$

$$k_f = 1 + q(k_t - 1) = 1.825$$

$$q = \frac{1}{1 + \sqrt{\frac{P}{\tau}}} = 0.825$$

$$\sigma_{\text{lim}} = \frac{0.5 \text{ UTS } b_2 b_3}{k_f} = 151.9 \text{ MPa}$$

$$\tau_{\text{lim}} = \frac{0.5 \text{ UTS } b_2 b_3}{k_f} = 88.1 \text{ MPa} \quad 0.8 R_m = 560 \text{ MPa}$$

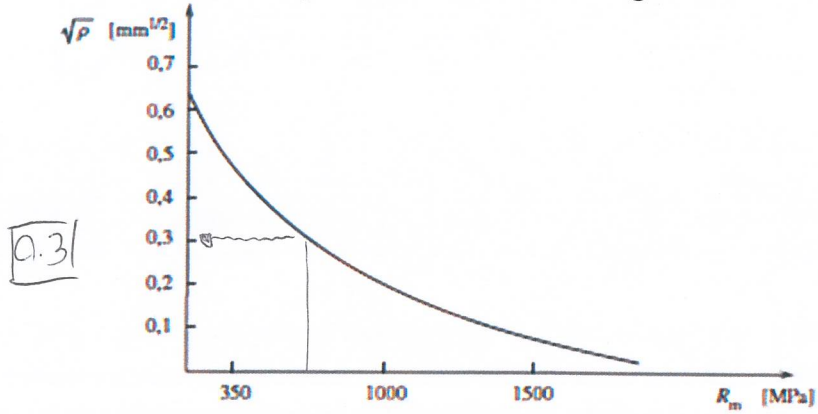
$$\sigma_{\text{GP}}^* = \sqrt{\sigma_a^2 + \left(\frac{\sigma_{\text{lim}}}{\tau_{\text{lim}}}\right)^2 \tau_m^2} \leq \frac{\sigma_{\text{lim}}}{\eta}$$

$$= 88.1 \text{ MPa}$$

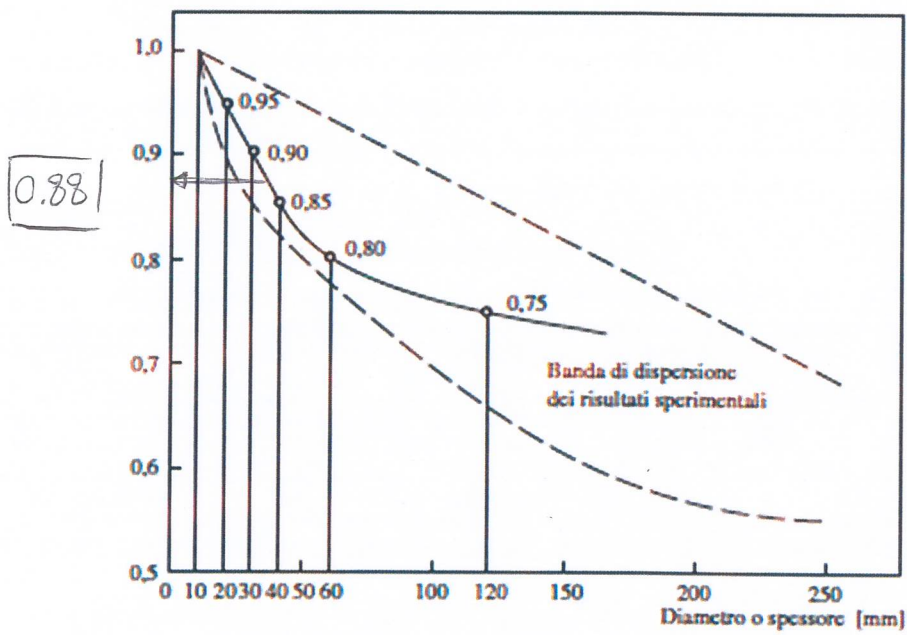
$$\left[ \text{Se } \tau_{\text{lim}} = \frac{R_{sn}}{\sqrt{3}} = 318 \text{ MPa} \quad \sigma_{\text{GP}}^* = 88.2 \text{ MPa} \right] \quad \eta = \frac{\sigma_{\text{lim}}}{\sigma_{\text{GP}}^*} = 1.72$$



Coefficiente per calcolo sensibilità all'intaglio a fatica



Coefficiente dimensionale  $b_2$



Coefficiente finitura superficiale  $b_3$

