$S_{ut} = 500$ $S_y = 350$ $r = 2mm$

$S_e = 0.504(500) = \boxed{252\ mPa}$

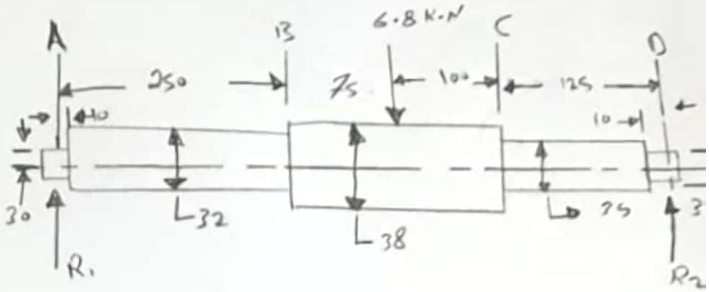
$K_a = aS_{ut}^{b} = 4.51 \times (500)^{-0.265} = \boxed{0.868}$

$K_b = 1.24d^{-0.107} = 1.24 \times 32^{-0.107} = \boxed{0.855}$

$K_c = 1$ (Eğilmeye maruz)

$K_d = 1$ Çalışma sıcaklığı ile ilgili bilgi yok. Oda şartları temel alındı.

$K_e = 0.753$ (Güvenilirlik %99.9)



$\frac{D}{d} = \frac{38}{32} = 1.1875$ ve $\frac{r}{d} = \frac{2}{32} = 0.0625$ $K_t = 1.65$

$K_f = 1 + q(K_t - 1) = 1 + 0.82(1.65 - 1) = \boxed{1.53}$

$K_f = \frac{1}{K_f} \Rightarrow S_e = \frac{0.868 \times 0.855 \times 1 \times 1 \times 0.753}{1.53} \times 252mPa = \boxed{92.04\ mPa}$

$M_B = 250\ mm \frac{225Nm \times 6.8\ KN}{550mm} \Rightarrow M_B = \boxed{695\ Nm}$

$\sigma_a = \frac{Mc}{I} = \frac{695\ Nm \times 0.016m}{\frac{\pi(0.032m)^4}{64}} = \boxed{216mPa}$

$a = \frac{(0.847 S_{ut})^2}{S_e} = \frac{(0.847 \times 500)^2}{92.04} = \boxed{1948.67}$

$b = -\frac{1}{3} \log \frac{0.847 \times 500}{92.04} = \boxed{-0,2204}$

$N = \left(\frac{216}{1948.63}\right)^{-\frac{1}{0.2326}} = \boxed{12792.22\ Devirim}$