

3,16

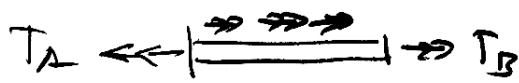


Kinematiskt villkor $\rho_B = 0$

$$\rho = \frac{M_V L}{GK} = \int_0^L f_0 \frac{x}{L} \cdot x \cdot \frac{1}{GK} dx + \frac{T_B \cdot L}{GK}$$

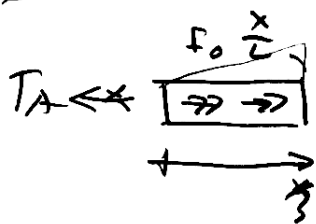
$$= \frac{f_0}{GKL} \left[\frac{x^3}{3} \right]_0^L + \frac{T_B L}{GK} = \frac{f_0 L^2}{3GK} + \frac{T_B L}{GK} = 0 \Rightarrow T_B = -\frac{f_0 L}{3}$$

Örtdmomentjämvikt.



$$T_A = \frac{f_0 L}{2} + T_B$$
$$= \frac{f_0 L}{2} - \frac{f_0 L}{3} = \frac{1}{6} f_0 L$$

Snitta:



$$M_V(z) = T_A - \int_0^z f_0 \frac{x}{L} dx$$
$$= \frac{1}{6} f_0 L - \frac{f_0}{L} \frac{z^2}{2}$$
$$= \frac{1}{2} f_0 L \left(\frac{1}{3} - \left(\frac{z}{L} \right)^2 \right)$$

$$\rho = \frac{M_V L}{GK} \Rightarrow \rho(z) = \frac{\frac{1}{2} f_0 L \int_0^z \left(\frac{1}{3} - \left(\frac{z}{L} \right)^2 \right) dz}{GK}$$

$$= \frac{\frac{1}{2} f_0 L \left(\frac{1}{3} z - \frac{1}{3} \left(\frac{z}{L} \right)^3 \right)}{GK} = \frac{f_0 L^2 \left(\frac{z}{L} - \left(\frac{z}{L} \right)^3 \right)}{2 \cdot 3 GK}$$

$$= \left[K = \frac{\pi d^4}{32} \right] = \frac{f_0 L^2 \left(\frac{z}{L} - \left(\frac{z}{L} \right)^3 \right) \cdot 32}{6 \cdot \pi \cdot d^4 G} = \frac{16 f_0 L^2 \left(\frac{z}{L} - \left(\frac{z}{L} \right)^3 \right)}{3 \pi d^4 G}$$

där $z = x$.