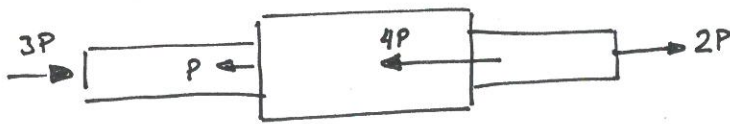


2.1.3

Givet



* Stång ä 3 cyl-delar

* $A_1 = 75 \text{ mm}^2$

$A_2 = 100 \text{ mm}^2$

$A_3 = 50 \text{ mm}^2$

* $P = 2000 \text{ N}$

Sökt

Normalspänning i del 1, 2, 3

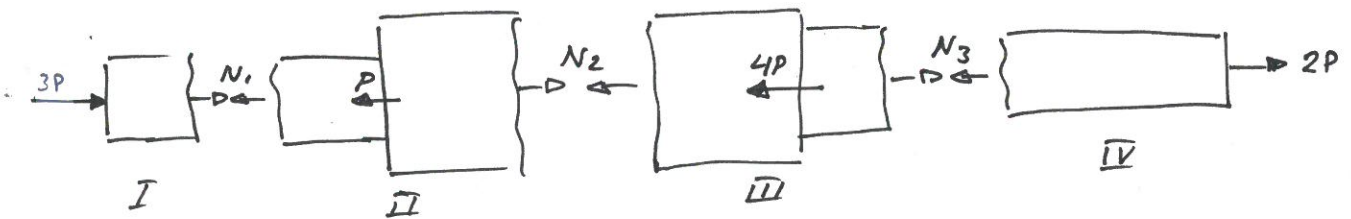
dvs $\sigma_1, \sigma_2, \sigma_3$

Lösning

(1. Frilägg)

(2. Jämvikt)

3. Snitta



4. Jämvikt

$\rightarrow \text{I} : 3P + N_1 = 0 \Leftrightarrow N_1 = -3P$

$\rightarrow \text{II} : -N_1 - P + N_2 = 0 \Leftrightarrow N_2 = N_1 + P = -2P$

$\therefore N_1 = -3P$
 $N_2 = -2P$
 $N_3 = 2P$

$\rightarrow \text{III} : -N_2 - 4P + N_3 = 0 \Leftrightarrow N_3 = 4P + N_2 = 2P$

5. Lös ut normalspänning

Det. $\left[\sigma = \frac{N}{A} \right]$

$\Rightarrow \sigma_1 = \frac{-3P}{A_1} = \frac{-3 \cdot 2000 \text{ N}}{75 \text{ mm}^2} = -80 \text{ MPa}$ Tryck

$\sigma_2 = \frac{-2P}{A_2} = \frac{-2 \cdot 2000}{100} = -40 \text{ MPa}$ Tryck

$\sigma_3 = \frac{2P}{A_3} = \frac{2 \cdot 2000}{50} = +80 \text{ MPa}$ Drag