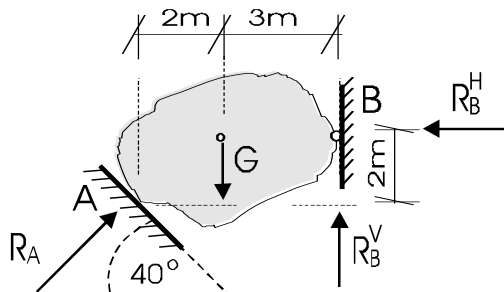


STATIKA KRUTIH TIJELA – veze i oslonci

PRIMJERI:

1). Jednoliki kruti disk dimenzija kao na crtežu i težine $G=60\text{N}$, oslonjen je s jedne strane na glatku plohu, a s druge je vezan zgloбно za okolinu, crtež 5.15. Odredite sile u osloncima A i B.



Crtež 5.15.

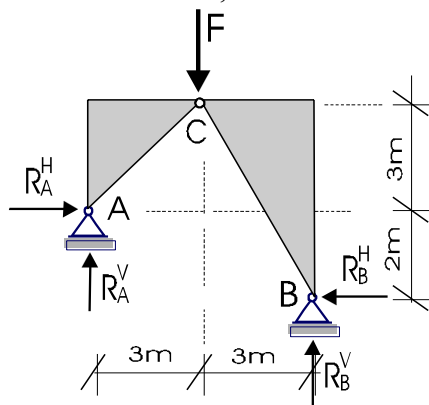
RJEŠENJE:

$$\sum M_B = 0, \Rightarrow 60 \cdot 3 + R_A \cdot \sin 40^\circ \cdot 2 - R_A \cdot \cos 40^\circ \cdot 5 = 0, \Rightarrow \underline{R_A = 70,74\text{N}},$$

$$\sum F_x = 0, \Rightarrow R_A \cdot \sin 40^\circ - R_B^H = 0, \Rightarrow \underline{R_B^H = 45,47\text{N}},$$

$$\sum F_y = 0, \Rightarrow R_A \cdot \cos 40^\circ - 60 + R_B^V = 0, \Rightarrow \underline{R_B^V = 5,81\text{N}}.$$

2). Dva jednolika kruta diska povezana zgloбно, dimenzija kao na crtežu 5.16. i zanemarive težine, opterećeni su silom $F=5,5\text{kN}$. Odredite sile u osloncima A i B.



Crtež 5.16.

RJEŠENJE:

$$\sum M_A = 0, \Rightarrow -5,5 \cdot 3 - R_B^H \cdot 2 + R_B^V \cdot 6 = 0, \Rightarrow \underline{R_B^H = -8,25 + 3R_B^V},$$

$$\sum M_C^D = 0, \Rightarrow -R_B^H \cdot 5 + R_B^V \cdot 3 = 0, \Rightarrow \underline{R_B^H = 0,6R_B^V},$$

$$\underline{R_B^V = 3,44\text{kN}}, \quad \underline{R_B^H = 2,06\text{kN}}.$$

$$\sum M_B = 0, \Rightarrow 5,5 \cdot 3 - R_A^H \cdot 2 - R_A^V \cdot 6 = 0, \Rightarrow \underline{R_A^H = 8,25 - 3R_A^V},$$

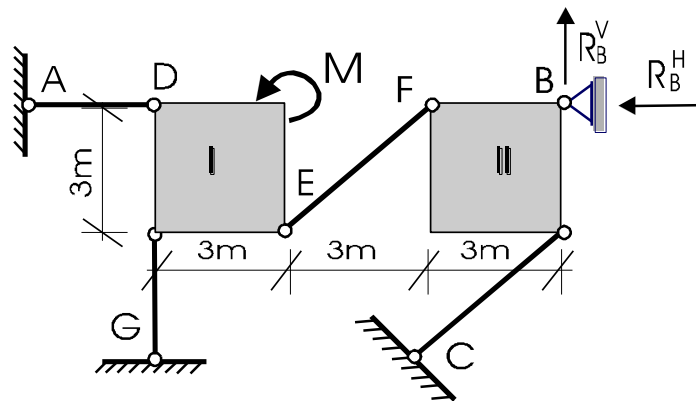
$$\sum M_C^L = 0, \Rightarrow R_A^H \cdot 3 - R_A^V \cdot 3 = 0, \Rightarrow \underline{R_A^H = R_A^V},$$

$$\underline{R_A^V = 2,06\text{kN}}, \quad \underline{R_A^H = 2,06\text{kN}},$$

KONTROLAREAKCIJA :

$$\sum F_x = 0, \Rightarrow R_A^H - R_B^H = 0, \quad \sum F_y = 0, \Rightarrow R_A^V + R_B^V - 5,5 = 0.$$

3). Dva jednolika kruta diska zanemarive težine, povezana su štapom EF i opterećeni momentom $M=7\text{Nm}$ kao na crtežu 5.17. Odredite sile u osloncima A i B te štapu EF.



Crtež 5.17.

RJEŠENJE:

DISK I

$$\sum M_D = 0, \Rightarrow 7 - S_{EF} \cdot \frac{3\sqrt{2}}{2} = 0, \Rightarrow \underline{S_{EF} = 3,3\text{N}}, \Rightarrow \text{TLAK},$$

$$\sum F_x = 0, \Rightarrow -3,3 \cdot \cos 45^\circ + S_{DA} = 0, \Rightarrow \underline{S_{DA} = 2,33\text{N}}, \Rightarrow \text{TLAK},$$

$$\sum F_y = 0, \Rightarrow -3,3 \cdot \sin 45^\circ + S_G = 0, \Rightarrow \underline{S_G = 2,33\text{N}}, \Rightarrow \text{TLAK},$$

DISK II

$$\sum M_B = 0, \Rightarrow -S_{EF} \cdot \frac{3\sqrt{2}}{2} + S_C \cdot \frac{3\sqrt{2}}{2} = 0, \Rightarrow \underline{S_C = 3,3\text{N}}, \Rightarrow \text{TLAK},$$

$$\sum F_x = 0, \Rightarrow 3,3 \cdot \cos 45^\circ + 3,3 \cdot \cos 45^\circ - R_B^H = 0, \Rightarrow \underline{R_B^H = 4,67\text{N}},$$

$$\sum F_y = 0, \Rightarrow 3,3 \cdot \sin 45^\circ + 3,3 \cdot \sin 45^\circ - R_B^V = 0, \Rightarrow \underline{R_B^V = 4,67\text{N}}.$$