

Teil: 1 $\sum F_{i,x} = 0:$

$$N_1 = \mu_{02} N_2 \cos \alpha + N_2 \sin \alpha$$

$$N_1 = (\mu_{02} \cos \alpha + \sin \alpha) N_2 \quad (1)$$

$\sum F_{i,y} = 0:$

$$G = N_2 \cos \alpha - \mu_{02} N_2 \sin \alpha - \mu_{01} N_1$$

mit (1) folgt:

$$G = (\cos \alpha - \mu_{02} \sin \alpha - \mu_{01} \mu_{02} \cos \alpha - \mu_{01} \sin \alpha) N_2 \quad (2)$$

Teil 2:

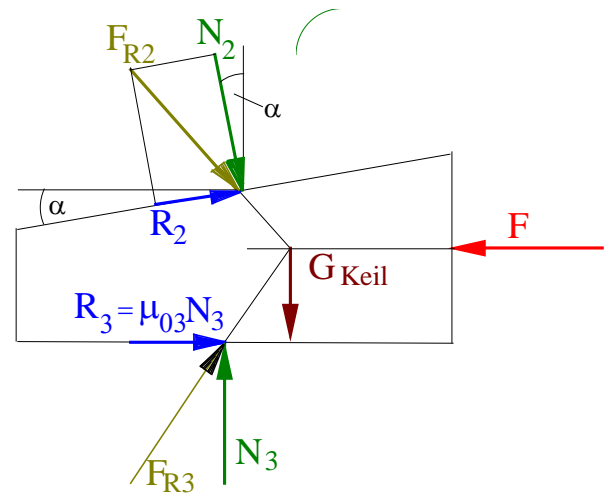
$\sum F_{i,y} = 0:$

$$N_3 = G_{\text{Keil}} + N_2 \cos \alpha - \mu_{02} N_2 \sin \alpha$$

$\sum F_{i,x} = 0:$

$$F = \mu_{03} N_3 + \mu_{02} N_2 \cos \alpha + N_2 \sin \alpha$$

$$F = \mu_{03} G_{\text{Keil}} + (\mu_{03} \cos \alpha - \mu_{03} \mu_{02} \sin \alpha) N_2 + (\mu_{02} \cos \alpha + \sin \alpha) N_2$$



mit (2) folgt:
$$F = \mu_{03} G_{\text{Keil}} + \frac{[\cos \alpha (\mu_{02} + \mu_{03}) + \sin \alpha (1 - \mu_{02} \mu_{03})] G}{\cos \alpha (1 - \mu_{01} \mu_{02}) - \sin \alpha (\mu_{01} + \mu_{02})}$$

$$F = 0,07 \cdot 100N + \frac{[\cos 10^\circ (0,1 + 0,07) + \sin 10^\circ (1 - 0,1 \cdot 0,07)] 2000N}{\cos 10^\circ (1 - 0,05 \cdot 0,1) - \sin 10^\circ (0,05 + 0,1)}$$

$$F > 719,6N$$