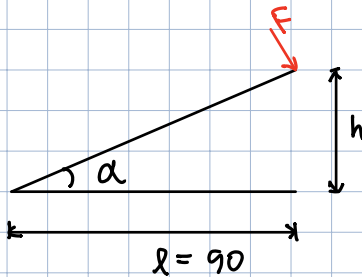


$$\sum M(A) = 0$$

$$F_{max} \cdot 1000 = F_{pmax} \cdot l$$

$$500 \cdot 1000 = 5500 \cdot l$$

$$l = 90 \text{ mm}$$

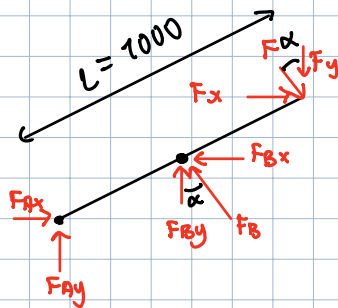


gewählt ist

$h = 45 \text{ mm}$  (Damit es genug Raum gibt, um Behälter sicher zu entfernen.)

$$\alpha = \tan^{-1}\left(\frac{45}{90}\right) = 26,57^\circ$$

### Schnitt 1

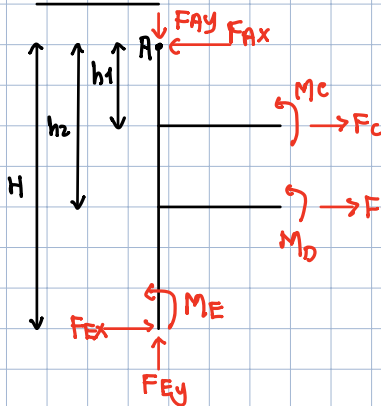


$$① \quad \sum F_x = 0 = F_{Ax} - F_{Bx} + F \sin \alpha$$

$$② \quad \sum F_y = 0 = F_{Ay} + F_{By} - F \cos \alpha$$

$$③ \quad \sum M_A = 0 = -F \cdot 1000 + F_{By} \cdot 90 + F_{Bx} \cdot 45$$

### Schnitt 2 - Gestell



$$④ \quad \sum F_x = 0 = F_c + F_d - F_{Ax} + F_{Ex}$$

$$⑤ \quad \sum F_y = 0 \Rightarrow F_{Ay} = F_{Ey}$$

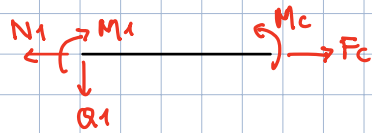
$$⑥ \quad \sum M(A) = 0 = M_c + M_d + M_E + F_c \cdot h_1 + F_d \cdot h_2 + F_{Ex} \cdot H$$

Idee:  $h_2 = 2 h_1$

$$h_1 = 95 \text{ mm}$$

$$h_2 = 190 \text{ mm}$$

### Schnitt 3 - Halter 1

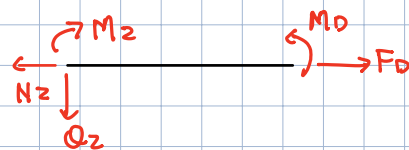


$$(7) \quad \sum F_x = 0 \Leftrightarrow F_c = N_1$$

$$(8) \quad \sum F_y = 0 \Leftrightarrow Q_1 = 0$$

$$(9) \quad \sum M = 0 \Leftrightarrow M_1 = M_c$$

### Schnitt 4 - Halter 2



$$(10) \quad \sum F_x = 0 \Leftrightarrow F_d = N_z$$

$$(11) \quad \sum F_y = 0 \Leftrightarrow Q_2 = 0$$

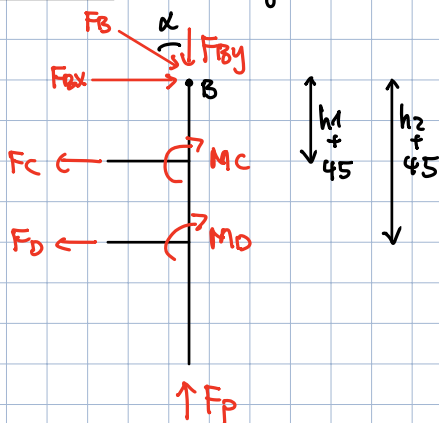
$$(12) \quad \sum M = 0 \Leftrightarrow M_2 = M_d$$

Idee: Es gibt kein Moment am Ende des Halters

$$M_c = M_d = 0$$

$$\text{d.h. } M_1 = M_2 = 0$$

### Schnitt 5 - Gestänge

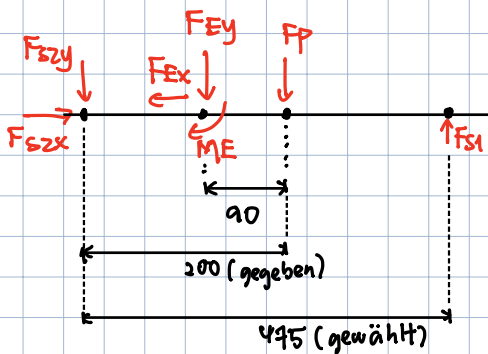


$$(13) \quad \sum F_x = 0 = F_c + F_d - F_{bx}$$

$$(14) \quad \sum F_y = 0 \Leftrightarrow F_{By} = F_p$$

$$(15) \quad \sum M_{(B)} = 0 = -M_c - M_d - F_c \cdot (h_1 + 45) - F_d \cdot (h_2 + 45)$$

## Schnitt 6 - Bodenplatte

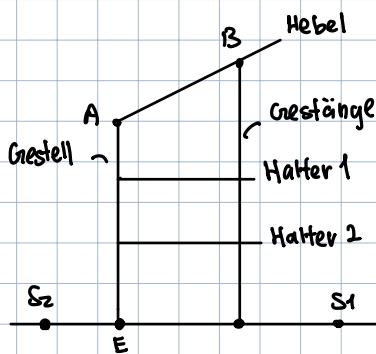


$$x_1 = 200 - 90 = 110 \text{ mm}$$

$$(16) \quad \sum F_x = 0 \Leftrightarrow F_{S2x} = F_{Ex}$$

$$(17) \quad \sum F_y = 0 = F_{S2y} + F_{Ey} + F_P - F_{S1}$$

$$(18) \quad \sum M = 0 = -M_E - F_{Ey} \cdot 110 - F_P \cdot 200 + F_{S1} \cdot 495$$



Wenn Hebel in waagrechte Stellung:

$$\alpha = 0^\circ$$

$$F_P = 5500 \text{ N}$$

$$(14) \quad F_{By} = F_P = 5500 \text{ N}$$

$$(1) \quad F_{Ax} - F_{Bx} + F \sin \alpha = 0$$

$(F_{Bx} = F_B \cdot \sin \alpha) \text{ mit } \alpha = 0, F_{Bx} = 0 \text{ N}$

$$F_{Ax} = 0 - 0 = 0$$

$$F_{Ax} = 0 \text{ N}$$

$$(2) \quad F_{Ay} + F_{By} - F \cos \alpha = 0$$

$(F_{By} = F_B \cdot \cos \alpha) \text{ mit } \alpha = 0$

$$F_{Ay} + 5500 - 5500 = 0$$

$$F_{Ay} = -5000 \text{ N}$$

$$(5) \quad F_{Ey} = F_{Ay} = -5000 \text{ N}$$

$$(13) \quad F_C + F_D - F_{Bx} = 0$$

$$F_C = -F_D$$

$$(13) \text{ in } (15) \quad -M_C - M_D - F_C \cdot (h_1 + 45) - F_D \cdot (h_2 + 45) = 0$$

$$0 - 0 - F_C \cdot (95 + 45) + F_C \cdot (190 + 45) = 0$$

$$F_c = 0 \text{ N}$$

$$F_c = -F_D$$

$$F_D = 0 \text{ N}$$

$$(4) \quad F_c + F_D - F_{Ax} + F_{Ex} = 0$$

$$F_{Ex} = 0 \text{ N}$$

$$(9) \quad F_c = N_1$$

$$N_1 = 0 \text{ N}$$

$$(10) \quad F_y = N_2$$

$$N_2 = 0 \text{ N}$$

$$(16) \quad F_{szx} = F_{Ex}$$

$$F_{szx} = 0 \text{ N}$$

$$(6) \quad M_c + M_D + M_E + F_c \cdot h_1 + F_D \cdot h_2 + F_{Ex} \cdot H = 0$$

$$0 + M_E + 0 = 0$$

$$M_E = 0 \text{ N}$$

$$(18) \quad -M_E - F_{Ey} \cdot 110 - F_P \cdot 200 + F_{s1} \cdot 475 = 0$$

$$0 + 5000 \cdot 110 - 5500 \cdot 200 + F_{s1} \cdot 475 = 0$$

$$F_{s1} = 1263 \text{ N}$$

$$(17) \quad F_{szy} + F_{Ey} + F_P - F_{s1} = 0$$

$$F_{szy} - 5000 + 5500 - 1263 = 0$$

$$F_{szy} = 763 \text{ N}$$