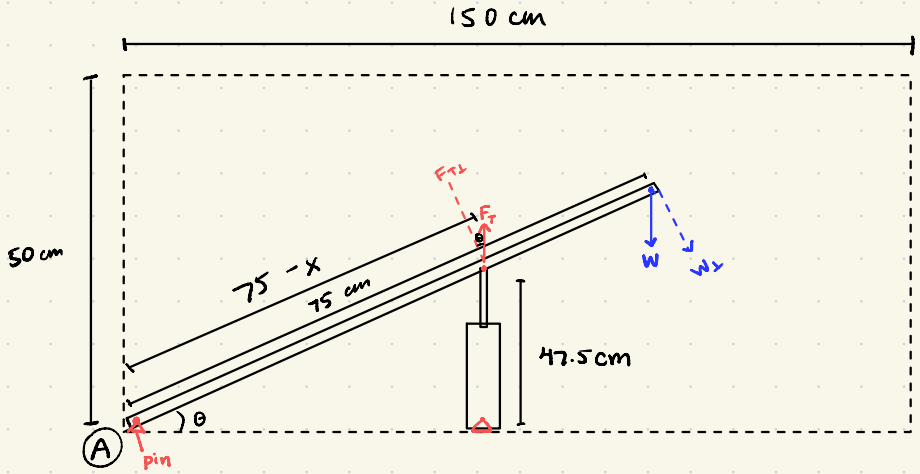
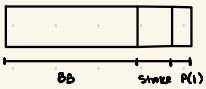
Portfolio



ℓ = length of rod = 75 cm

Actuator: IMA22 (MV23/43)

Thrust ≤ 1446 N



total = 128.6 + 304.8 + 41.2 (P(i)) = 474.6 mm

75 − x = position of actuator

$\vec{M}_A = 0 = (75-x)\left(\frac{F_T}{\cos\theta}\right) + (75)\left(-\frac{W}{\cos\theta}\right)$

$0 = 75\left(\frac{1446}{\cos\theta}\right) - \frac{1446}{\cos\theta}x - \frac{75W}{\cos\theta}$

$0 = 108450 - 1446x - 75W$

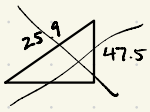
$75W = 108450 - 1446x$

hypothetical max values:

if w = 500 :

$75(500) = 108450 - 1446x$

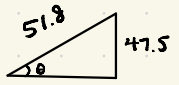
$x = 49.1$



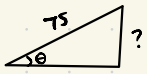
Not possible

if w = 1000:

$x = 23.1$



θ = 66.5°



~~h = 68.8 cm~~ not possible w/in constraints

max h: 50 cm

max θ: 41.8°