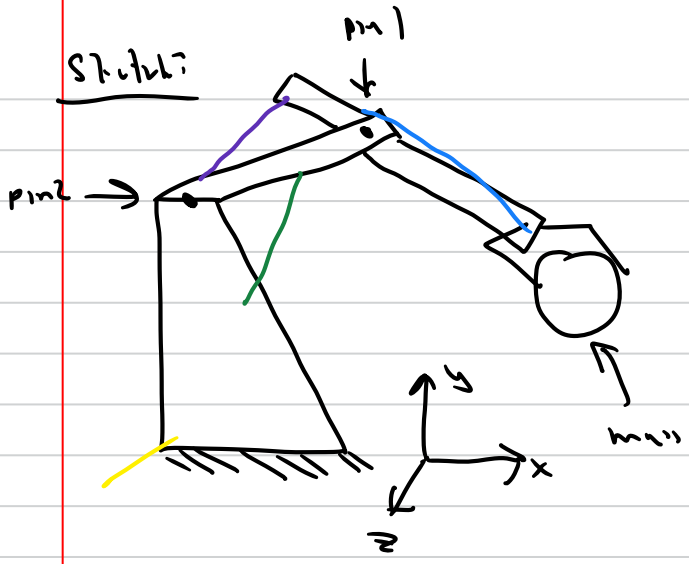
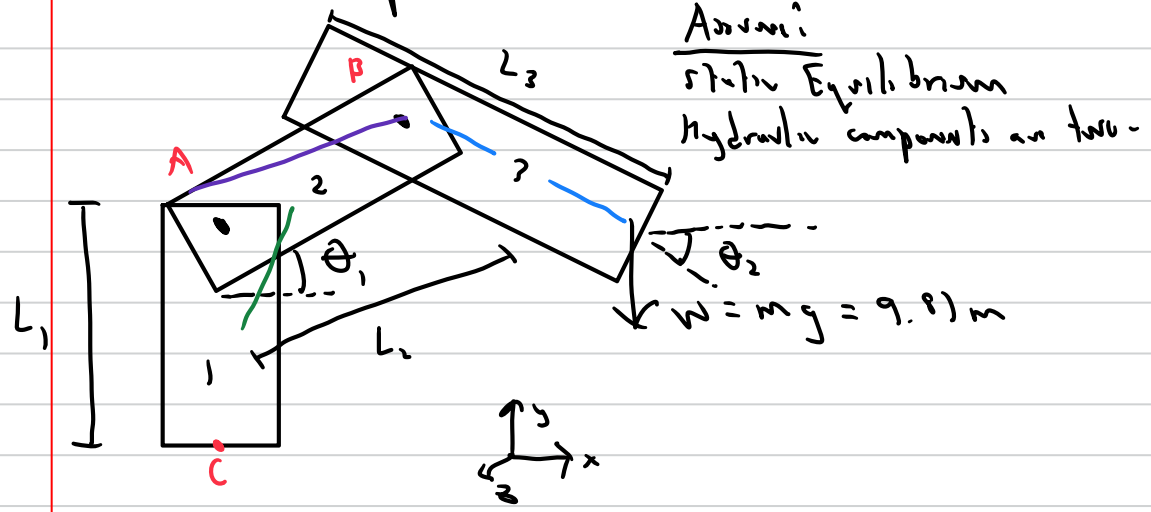
Static:

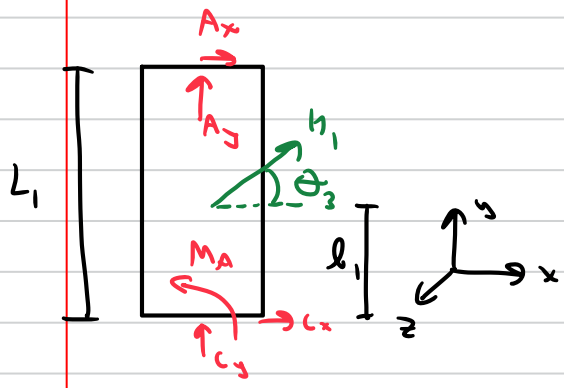


FBD: Units: Imperial

Assume:
Static Equilibrium
Hydraulic components are two-



FBD: 1



$\Sigma F_x = 0$

① $A_x + C_x + H_1 \cos(\theta_3) = 0$

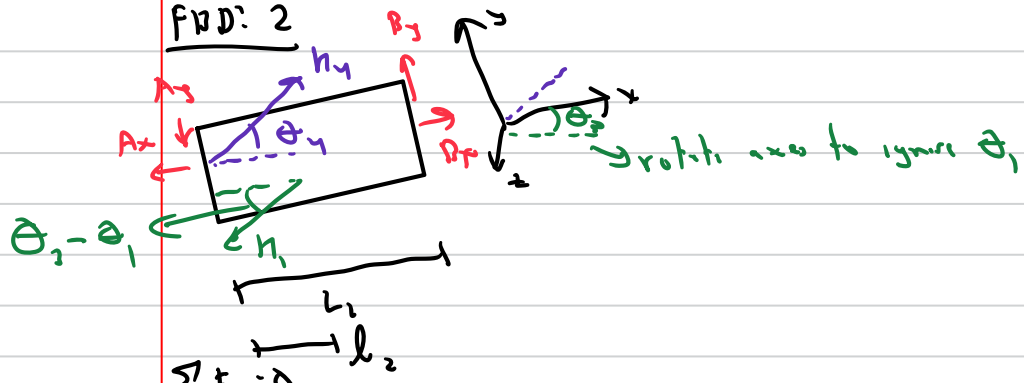
$\Sigma F_y = 0$

② $A_y + C_y + H_1 \sin(\theta_3) = 0$

$\Sigma M_A = 0$ CCW

③ $-A_x L_1 - H_1 \cos(\theta_3) l_1 = 0$

FBD: 2



$\Sigma F_x = 0$

(4) $B_x - A_x - H_1 \cos(\theta_3 - \theta_1) + H_4 \cos(\theta_4) = 0$

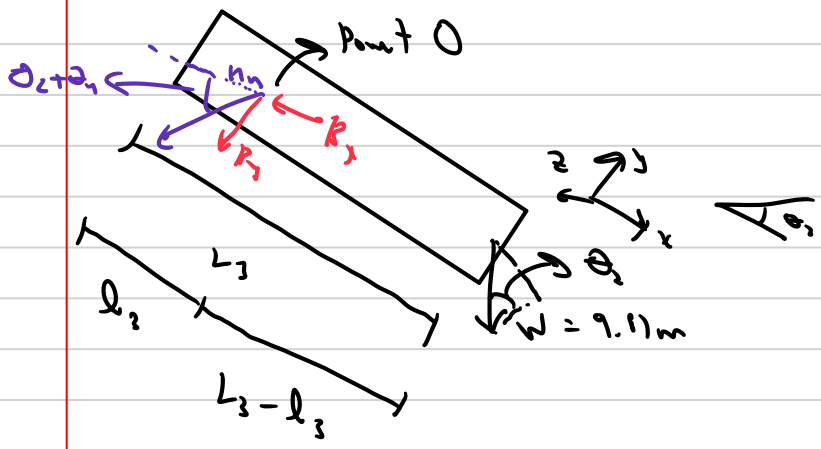
$\Sigma F_y = 0$

(5) $B_y - A_y - H_1 \sin(\theta_3 - \theta_1) + H_4 \sin(\theta_4) = 0$

$\Sigma M_A = 0$

(6) $-H_1 l_2 \sin(\theta_3 - \theta_1) + B_y L_2 = 0$

FBD #3:



$\Sigma F_x = 0$

(7) $-P_x - H_4 \cos(\theta_2 + \theta_4) + 9.81\,m \sin(\theta_2) = 0$

$\Sigma F_y = 0$

(8) $-P_y - H_4 \sin(\theta_2 + \theta_4) - 9.81\,m \cos(\theta_2) = 0$

$\Sigma M_W = 0$

(9) $B_y (L_3 - l_3) + H_4 \sin(\theta_2 + \theta_4)(L_3 - l_3) = 0$

Unknowns:

A_x	B_x
A_y	B_y
M_A	C_x
H_1	C_y
H_4	