$$F = P_{CG} \cdot A$$

$$I_{bisagra} = 38\ in$$

$$h_{CG} = 38\ in + R \cdot \cos(30)$$

$$h_{CG} = 38\ in + 5\ in \cdot \cos(30)$$

$$F = (h_{CG}) \cdot \gamma_w \cdot \frac{\pi D^2}{4}$$

2) Posición del Centro de presión

Para un círculo: $I_{xy} = 0$

$x_{cp} = 0$

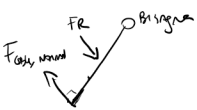
$$I_{xx} = \frac{\pi R^4}{4} = \frac{\pi D^4}{64}$$

$$y_{cp} = -\gamma \sin(60°) \frac{\left[\frac{\pi D^4}{64}\right]}{F}$$

$F = P_{CG} \cdot A$

$= h_{CG} \cdot \gamma \cdot A$

3) Balance momentum Arjulon

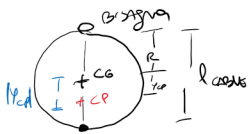


$$\sum M = 0$$

$$0 = \tau_{cable,\,Normal} - \tau_R$$

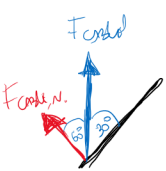
$$0 = F_{cable,\,Normal} \cdot l_{cable} - F_R \cdot l_R$$

$$F_{cable,\,normal} = \frac{F_R \cdot l_R}{l_{cable}}$$



$$l_{cable} = D_{compuerta}$$

$$l_R = \frac{D_{compuerta}}{2} + |Y_{cp}|$$



$$F_{cable} \cdot \cos(60°) = F_{cable,\,normal}$$

$$F_{cable} = \frac{F_{cable,\,Normal}}{\cos(60°)}$$