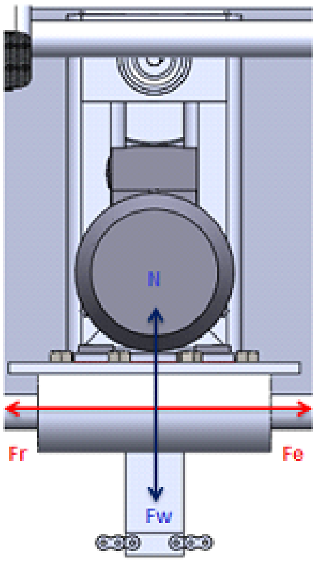
ANÁLISIS DE FUERZAS PARA DESPLAZAMIENTO LINEAL DE SISTEMA DE CORTE



$Masa := 18.1374 \ kg$

$W_{corte} := 177.9288 \ N$

$\sum_i F_y := 0$

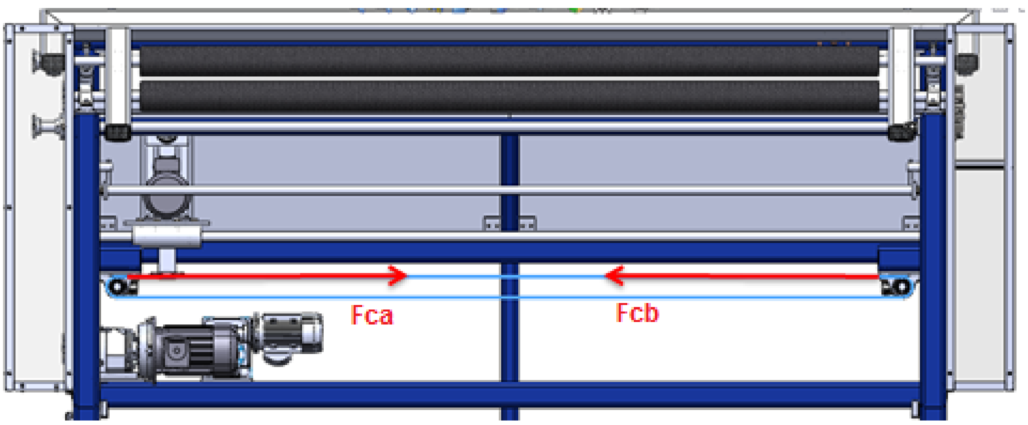
$F_N - W_{corte} := 0$

$F_N := W_{corte}$

$\mu := 0.2$

$F_r := \mu \cdot F_N \to 35.58576$ $\qquad F_{rfinal} := 7.9999 \ lbf$ $\qquad D_A := 2.49 \ pulg$

$F_{empuje} > F_r$ $\qquad F_{empuje} := 10 \ lbf$

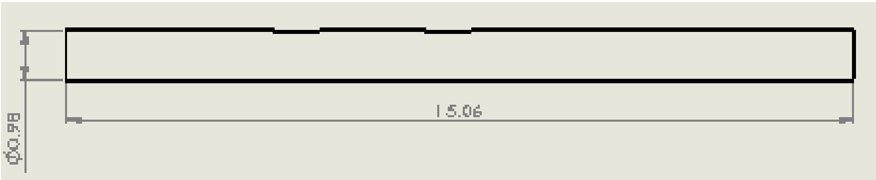


$F_c := F_{empuje}$

$F_c := \dfrac{T_A}{\dfrac{D_A}{2}}$

$$T_A := F_c \cdot \left(\frac{D_A}{2}\right) \rightarrow 12.45 \quad lb \cdot pulg$$

CÁLCULO DE CARGAS DE INERCIA PARA COMPONENTES DE SISTEMA DE TRANMISION DE CORTE

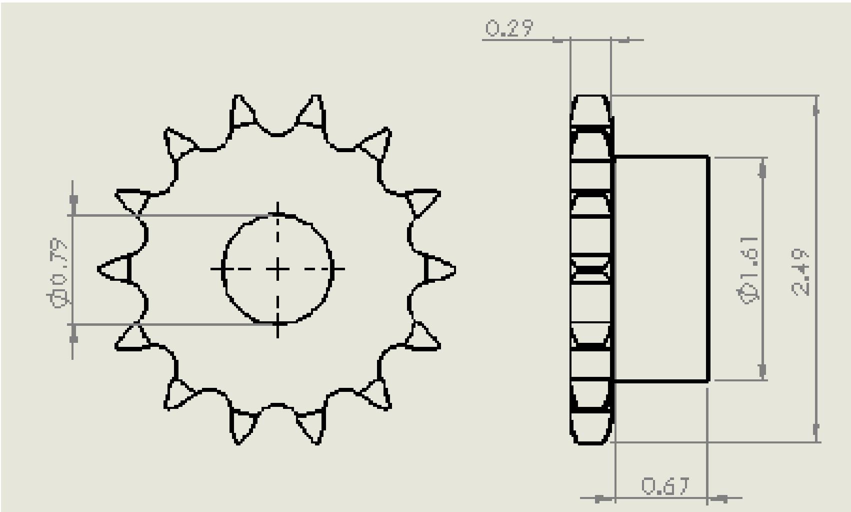


$R_1 := 0.49$

$R_2 := 0$

$Lo := 15.06$

$$Inercia1 := \frac{Lo \cdot \left(R_1{}^4 - R_2{}^4\right)}{323.9} \rightarrow 0.0026803921907996295153$$



$R_1 := 1.245$

$R_2 := 0.395$

$Lo := 0.29$

$$Inercia2 := \frac{Lo \cdot \left(R_1{}^4 - R_2{}^4\right)}{323.9} \rightarrow 0.0021293231645569620253$$

$R_1 := 0.805$

$R_2 := 0.395$

$Lo := 0.67$

$$Inercia3 := \frac{Lo \cdot \left(R_1{}^4 - R_2{}^4\right)}{323.9} \rightarrow 0.00081829898734177215 19$$

$$Inercia_{total} := Inercia1 \cdot 2 + (Inercia2 + Inercia3) \cdot 4 \rightarrow 0.017151272989194195739 4$$

$$n_{rpm} := 150$$

$$T_B := \frac{Inercia_{total} \cdot n_{rpm}}{308 \cdot 0.2} \rightarrow 0.041764463447713138975812$$

$$T_{Bfinal} := 42.8334 \quad lb \cdot pulg$$

$$T_{total} := T_A + T_{Bfinal} \rightarrow 55.2834$$

$$P := \frac{n_{rpm} \cdot T_{total}}{63000} \rightarrow 0.1316271428571428571 4 \quad HP$$

Análisis para platina de motor de corte

$$F_1 - Fr := m \cdot a \qquad X := 2.159 \quad m$$

$$F_1 := 38 \quad N \qquad m_{platina} := 18.1374$$

$$F_r \rightarrow 35.58576 \quad N$$

$$a := \frac{F_1 - F_r}{m_{platina}} \rightarrow 0.13310838378157839602 \quad \frac{m}{s^2}$$

$$V_o := 0$$

$$V_{platina} := \sqrt{V_o + 2 \cdot a \cdot X} \rightarrow 0.75813059638089763222 6 \quad \frac{m}{s}$$

$$t := \frac{X}{V_{platina}} \rightarrow 2.8477943118328941436 84 \quad s$$

$$E_{cinetica} := \frac{1}{2} \cdot m_{platina} \cdot V_{platina}^{\ 2} \rightarrow 5.2123441599999999999 39$$