$\ddot{x} = 3\ m/s^2$

$V_0 = 50\ km/h = 13{,}89\ m/s$

$M = 3600\ kg$

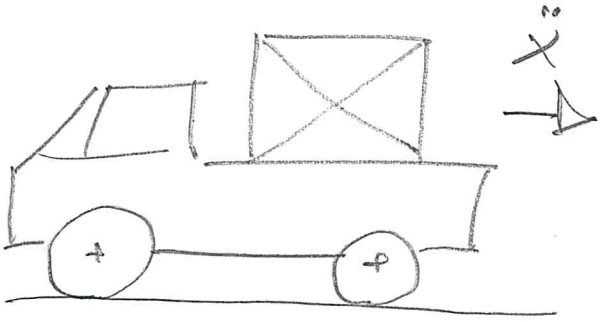
$m = 400\ kg$

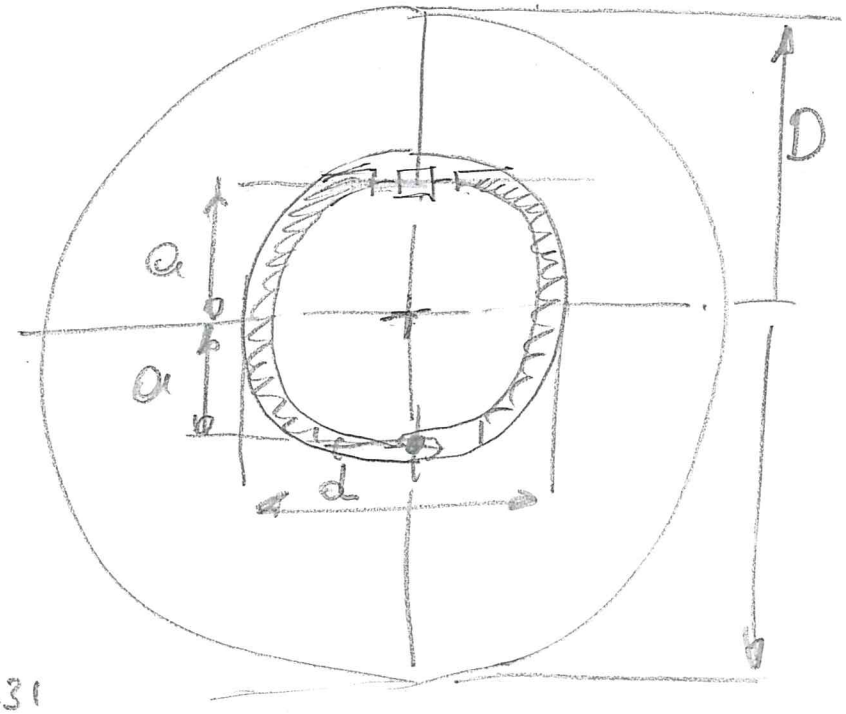
$D = 0{,}8\ m$

$d = 0{,}6\ m$

$a = 0{,}2\ m$

$f_f = 0{,}25$



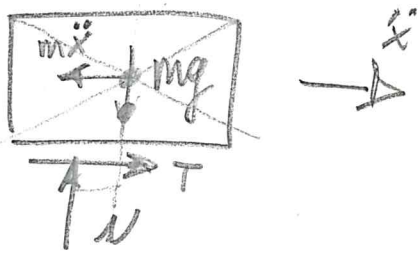


$$\begin{cases} T - m\ddot{x} = 0 & T = m\ddot{x} \\ N - mg = 0 & N = mg \end{cases}$$

$$f_a = \frac{T}{N} = \frac{\ddot{x}}{g} = 0{,}306 \approx 0{,}31$$

$$0 - V_0 = -\ddot{x}\,t$$

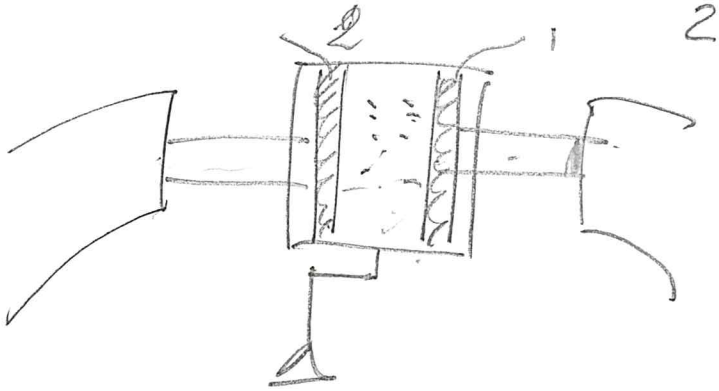
$$t = \frac{V_0}{\ddot{x}} = \frac{13{,}89}{3} = 4{,}63\ s$$

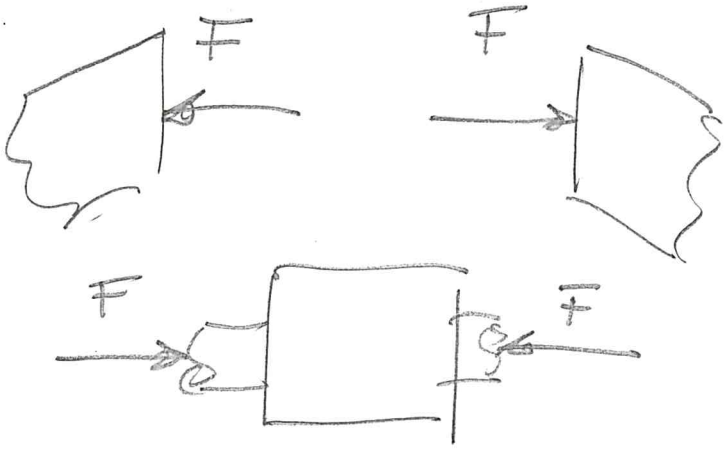


$$s = s_0 + V_0 t - \frac{1}{2}\ddot{x}t^2$$

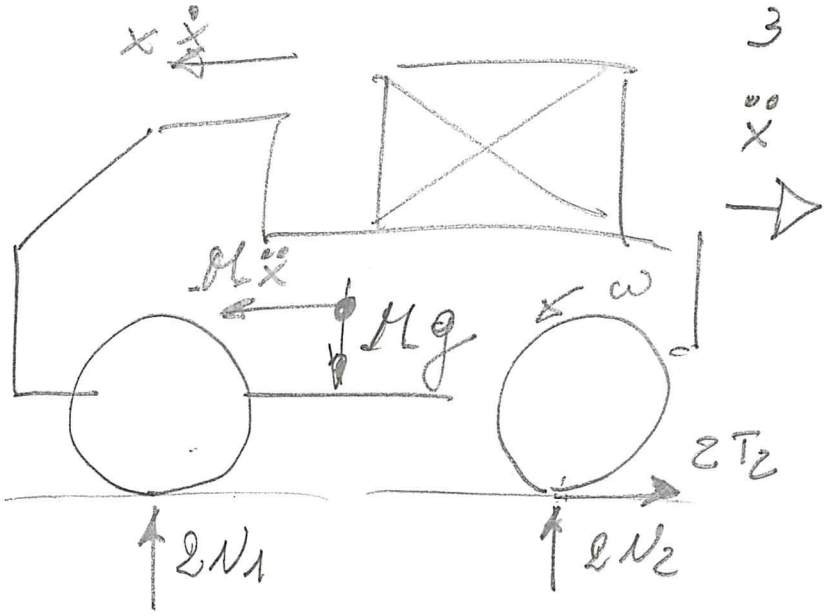
$$s = 13{,}89 \cdot 4{,}63 - \frac{1}{2} 3 \cdot (4{,}63)^2 = 32{,}16\ m$$

CILINDRETTO





$M = M + m = 4000\ kg$



$2T_2 - M\ddot{x} = 0$

$[2N_1 + 2N_2 - Mg = 0]$

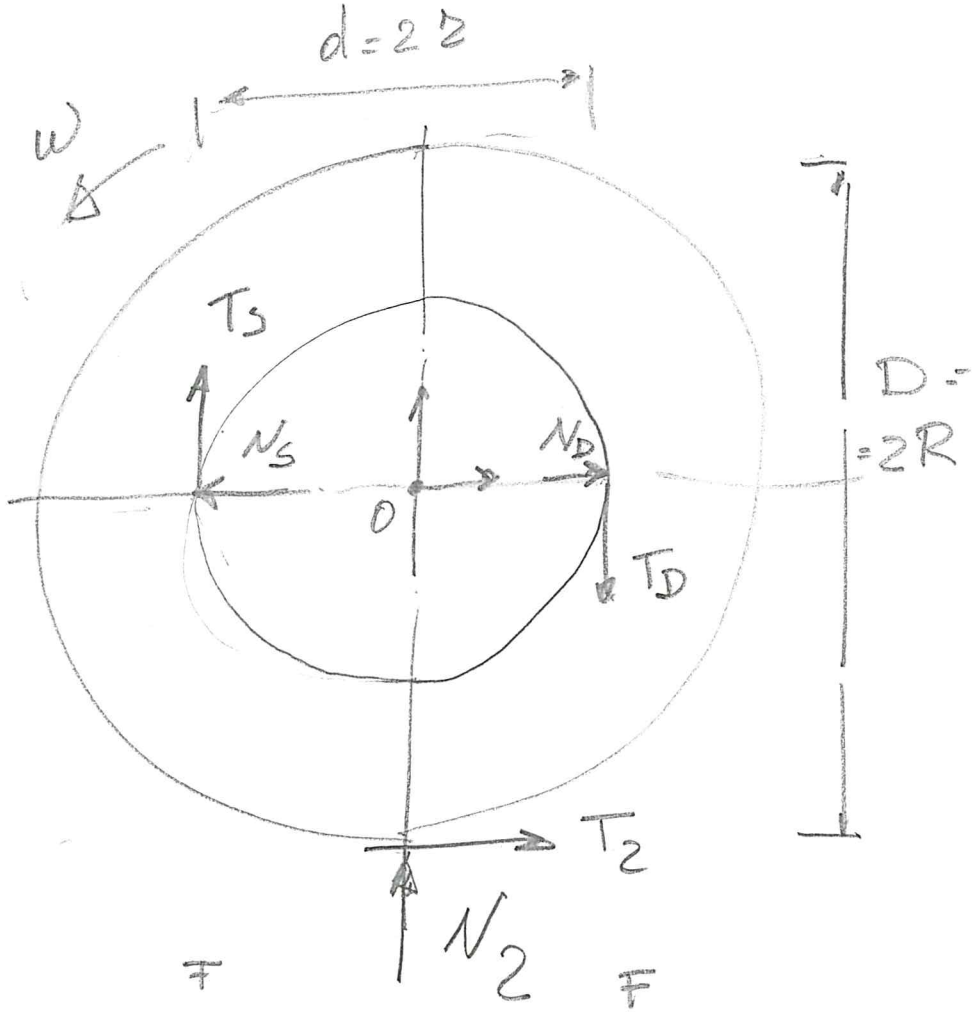
a) $T_2 R - T_S 2 - T_D 2$

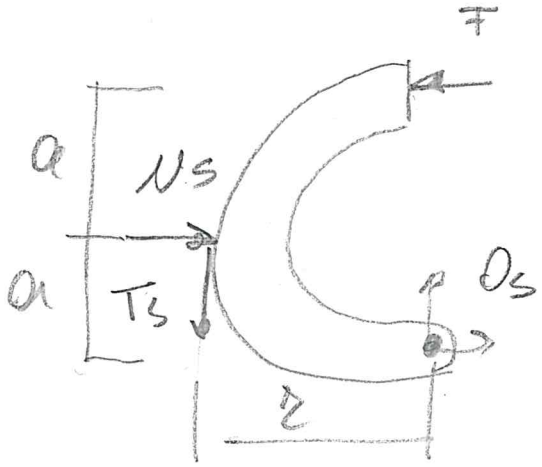
$T_S = f N_S$

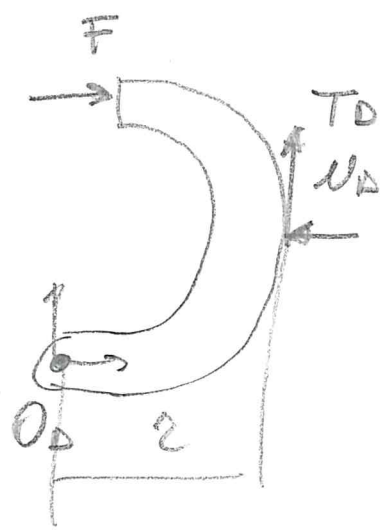
$T_D = f N_D$

O_S) $F 2a - N_S a + T_S 2 = 0$

O_D) $F 2a - N_D a - T_D 2 = 0$







$$\begin{cases} 2T_2 - M\ddot{x} = 0 \\ T_2 R - T_S r - T_D r = 0 \\ T_S = f N_S \\ T_D = f N_D \\ F 2a - N_S a + T_S r = 0 \\ F 2a - N_D a - T_D r = 0 \end{cases}$$

INC.

$T_2, N_S, N_D, T_S, T_D, F$

$$T_2 = M\ddot{x}/2 = 6000\,N$$

$$T_2 R - f N_S r - f N_D r = 0$$

$$F 2a = N_S a - f N_S r = N_S (a - f r)$$

$$F 2a = N_D a + T_D r = N_D (a + f r)$$

$$N_S (a - fr) = N_D (a + fr); \quad N_S = N_D \frac{a+fr}{a-fr}$$

$$T_2 R = f r (N_S + N_D) = f r N_D \left(\frac{a+fr}{a-fr} + 1\right)$$

$$T_2 R = f r N_D \frac{a+fr+a-fr}{a-fr}$$

$$T_2 R = f r N_D \frac{2a}{a-fr}$$

$$N_D = (a - fr) T_2 R \frac{1}{2a f r}$$

$$N_D = (0{,}2 - 0{,}25 \cdot 0{,}3) \cdot 6000 \cdot 0{,}4 / (2 \cdot 0{,}2 \cdot 0{,}25 \cdot 0{,}3)$$

$$N_D = 300 / 0{,}03 = 10000\,N$$

$N_D = 10000\ N \qquad T_D = 2500\ N$

$$N_S = N_D \frac{a + f_2}{a - f_2}; \quad N_S = 10000 \frac{0,2 + 0,25 \cdot 0,3}{0,2 - 0,25 \cdot 0,3}$$

$$N_S = 10000 \frac{0,275}{0,125} = 22000\ N$$

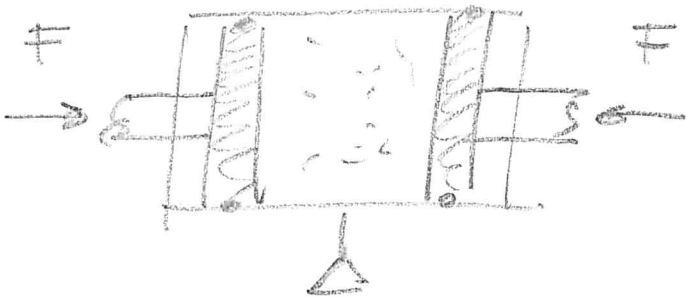
$T_S = 5500\ N$

$$F\,2a = N_D (a + f_2); \quad F = N_D \frac{(a + f_2)}{2a}$$

$$F = 10000 \frac{0,2 + 0,25 \cdot 0,3}{2 \cdot 0,2} = 6875\ N$$

$\phi_{cil} = 35\ mm$

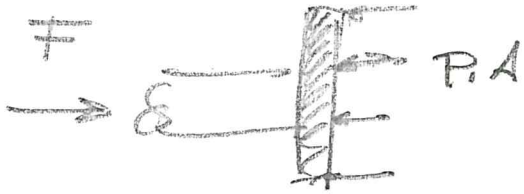
$$A = \pi \frac{\phi^2}{4} = 9,6 \cdot 10^{-4}\ m^2$$



$F - PA = 0$

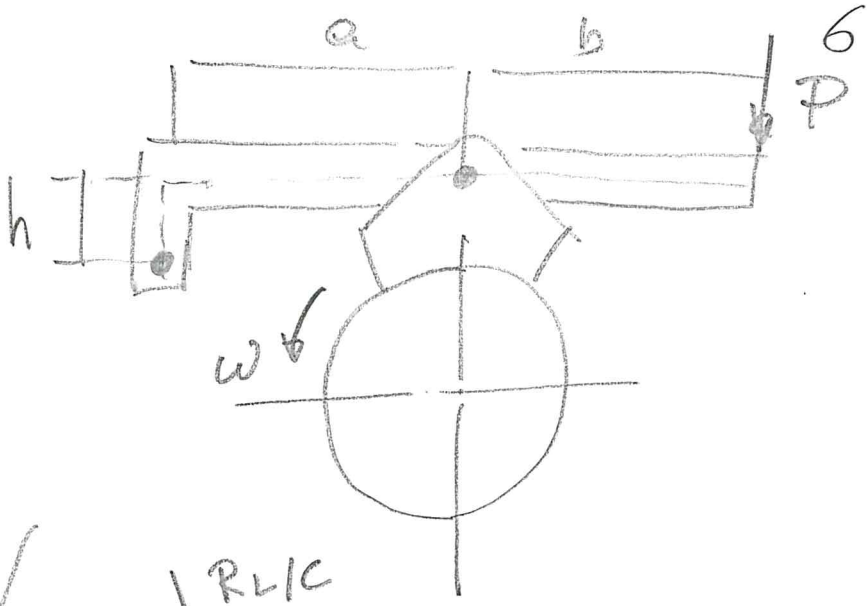
$$P = \frac{F}{A} = \frac{6875}{9,6} \cdot 10^4$$

$$P = 7,16 \cdot 10^6 \frac{N}{m^2}$$

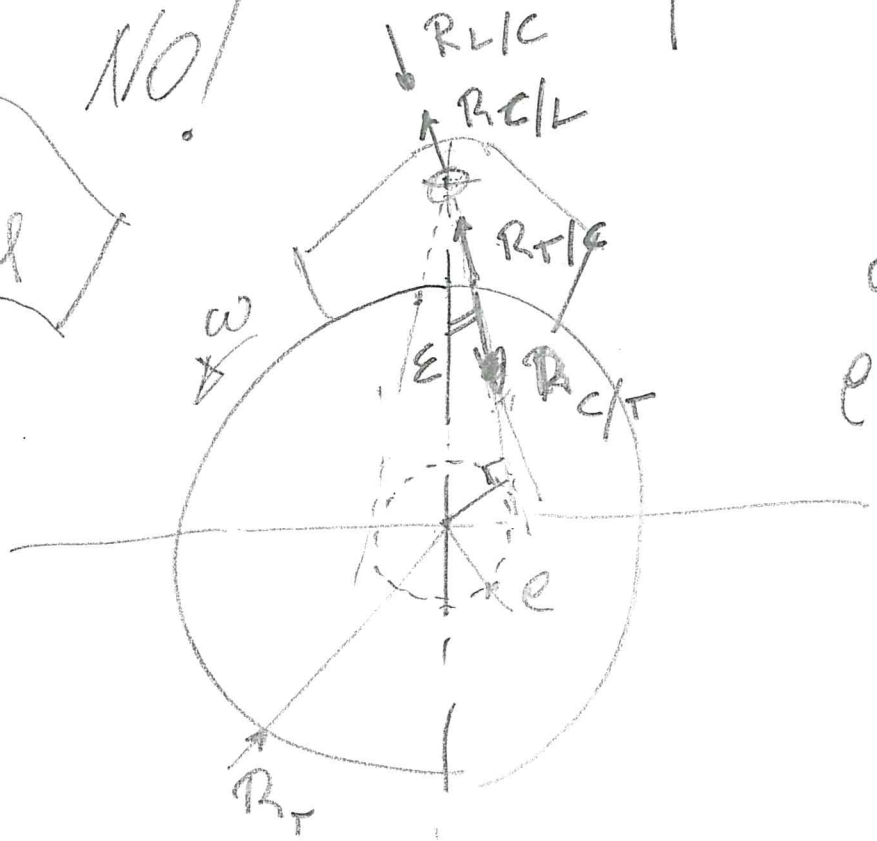


$P = 71,6\ bar$

$a = 15\,cm$
$b = 30\,cm$
$h = 5\,cm$
$d = 22\,cm$
$P = 100\,N$
$f = 0,4$



NO!



$\varphi = \arctan f$
$\rho = R_T \sin\varphi$