

$$F_m = F$$

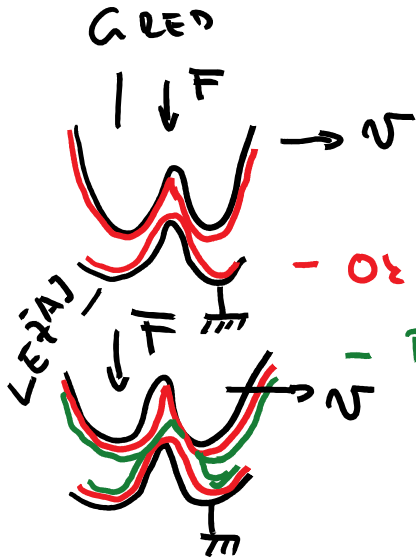
$$F_t = F_e = F_m \cdot \mu$$

$$F_t = \mu \cdot F$$

LEFAJ

SUHO TRENJE $\mu > 0.3 \times$ MINIMALNA DEBELINA OLJNEGA FILMA

TEKOČINSKO TRENJE $\mu = 0.003 \checkmark$
URSTE TREWA



SUHO TRENJE $\mu > 0.3$

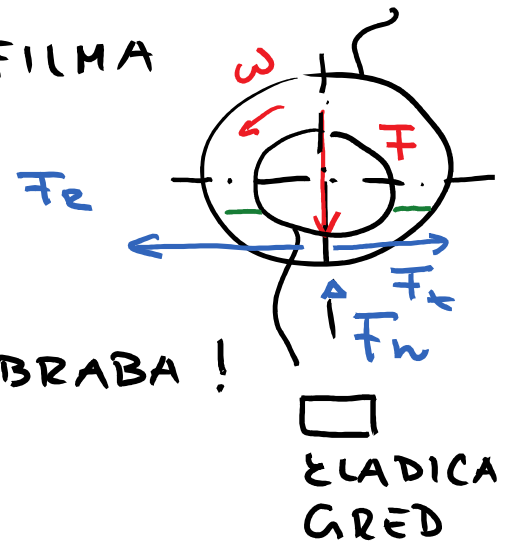
- OΞSIDNA PLAST

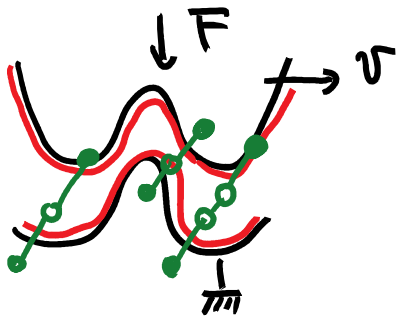
- PLAST OLJA

MEJNO TRENJE $\mu \approx 0.3$

OBRABA!

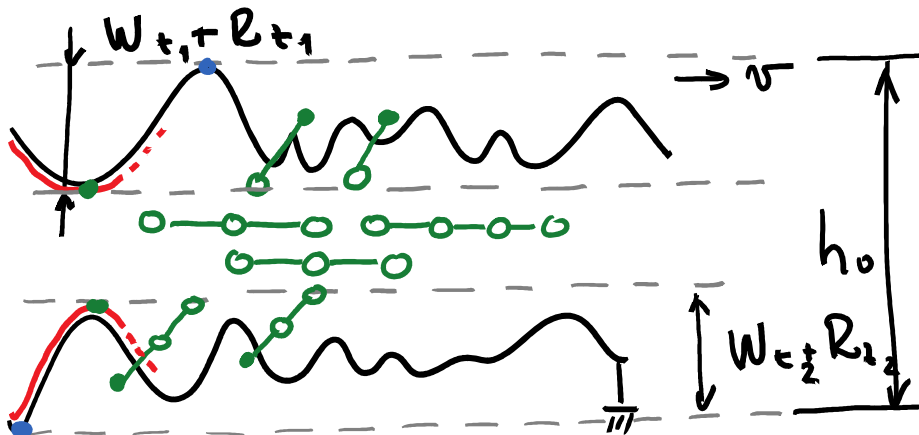
OBRABA!





MEŠANO TRENJE $\mu < 0.3$ OBRABA

- ADHEZIJSKA VEZ
- KOHEZIJSKA VEZ



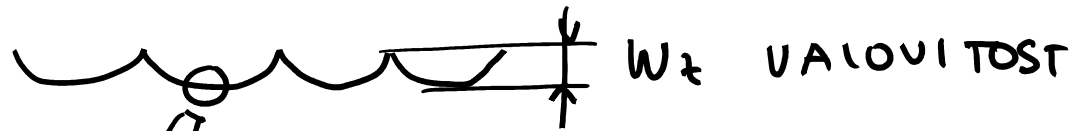
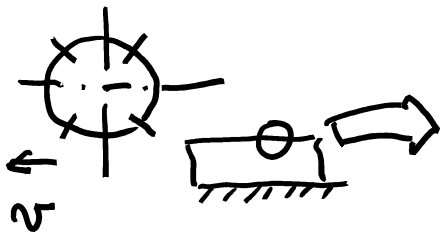
h_0 - DEBELINA OLJNEGA FILMA

TEKOČINSKO TRENJE

$$\mu = 0.003$$

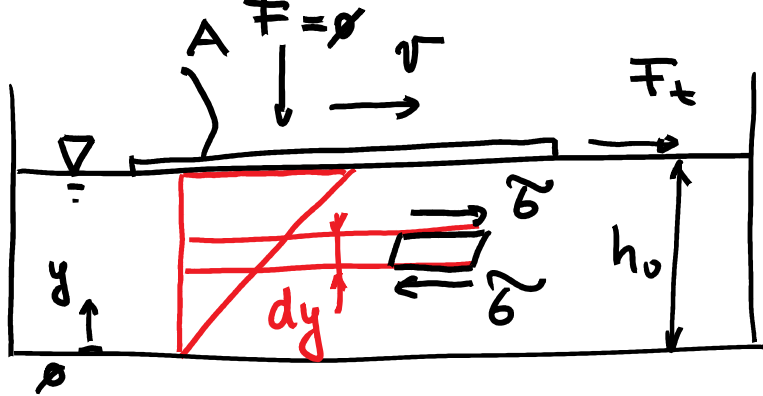
OBRABE NI!

$$h_0 \geq h_{odop} = \sum_{i=1}^2 (W_{t_i} + R_{t_i})$$



R_t SREDNJA VIŠINA NERAUVIN

RAZMERE U OLIJNEM FILMU



$$\phi = \frac{F_t}{A} = \eta \frac{v}{h_0}$$

DINAMIČNA
VISKOZNOST

$$\tau(y) = \eta \frac{dv}{dy}$$

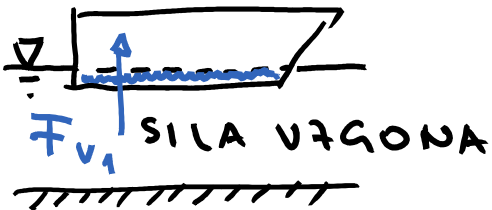
SPLOŠNA
ENAČBA

NEWTONOVA

TAČON O STRIŽNIM
NAPETOSTIM

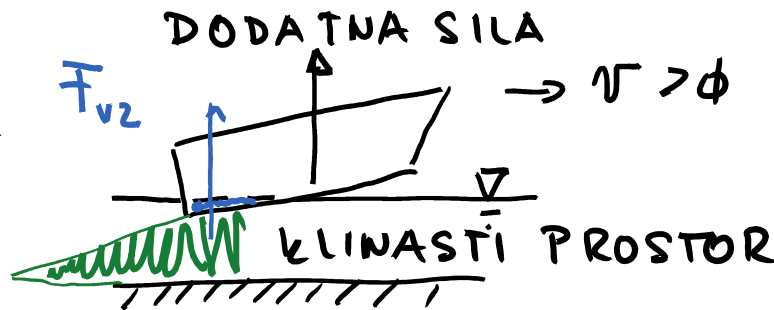
HIDRODINAMIČNO
MATAJTE

$$v = \phi$$



SILA VZGONA

$$F_{v2} < F_{v1}$$



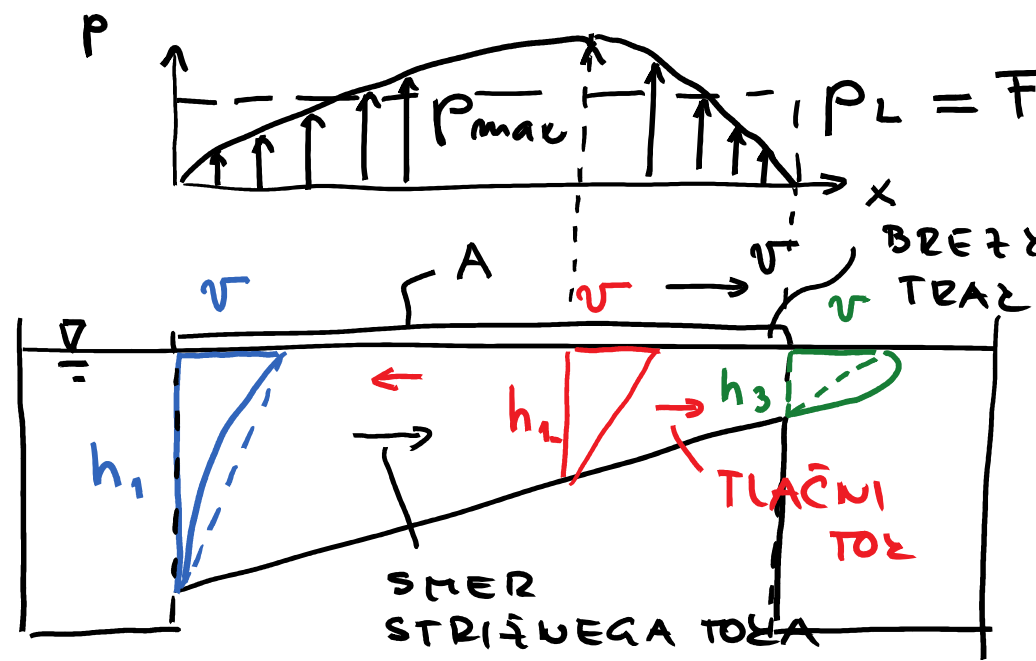
SILA VZGONA + DODATNA SILA

POGOTI ZA HIDRODINAMIČNO MAŽANJE

- PRISOTNOST OLJNEGA FILMA
- RELATIVNA VEČIJA HITROSTI
- PRISOTNOST ŽIVASTEGA PROSTORA

$$\int_A p dx = p_L = \frac{F}{A}$$

$$\bar{v}_1 < \bar{v}_2 < \bar{v}_3$$



ŠIRINA PLOŠČE

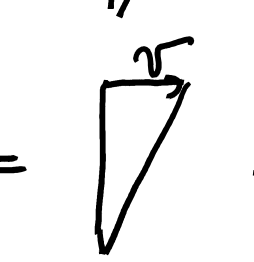
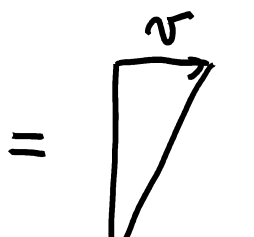
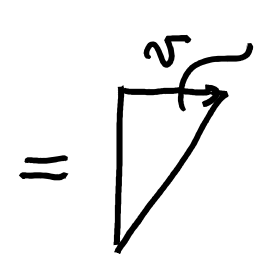
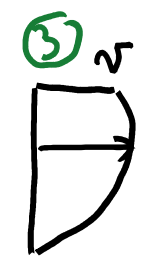
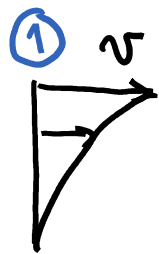
$$\dot{V}_1 = \bar{v}_1 h_1 b$$

$$\dot{V}_2 = \bar{v}_2 h_2 b$$

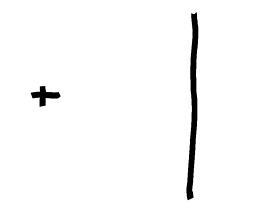
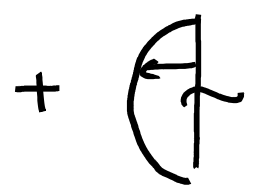
$$\dot{V}_3 = \bar{v}_3 h_3 b$$

$$\dot{V}_1 = \dot{V}_2 = \dot{V}_3 \rightarrow \bar{v}_1 h_1 = \bar{v}_2 h_2 = \bar{v}_3 h_3$$

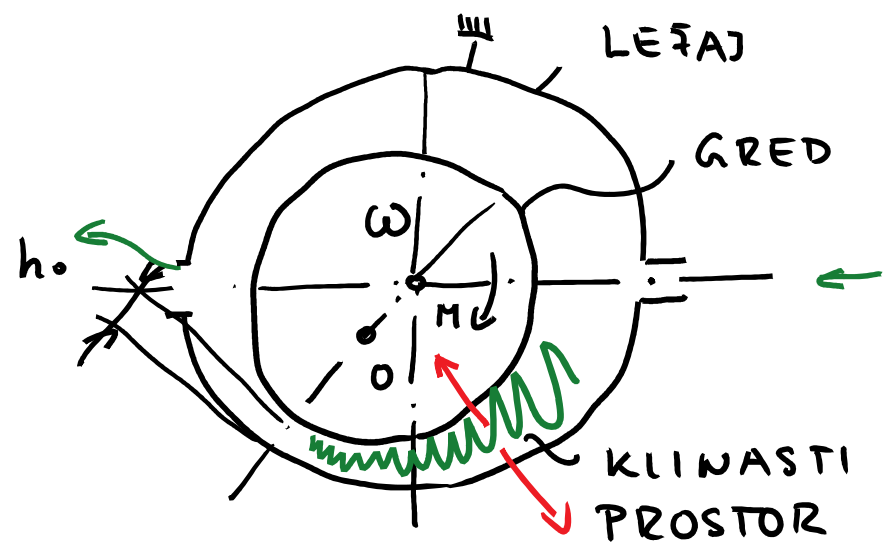
$$\bar{v}_2 = \frac{2}{3} \bar{v}_1$$



STRIŽNI TOČ - NIHA NOSILNOSTI



TLAČNI TOČ - IMA NOSILNOST

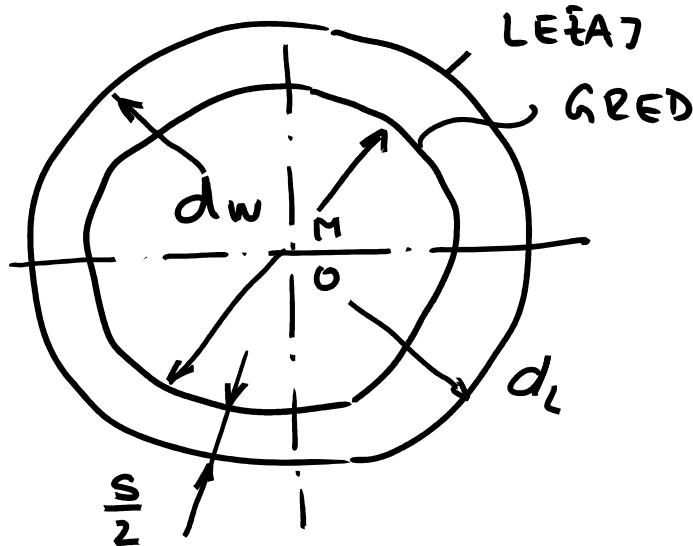


RADIALNI
DRSNI LEŃAJ

RADIALNI DRŠNI LEŽAJ

$$d_w = 50^{+0}_{-0,1}$$

ZRAČNOST



$$d_L > d_w \quad \text{UPOŠTEVAMO TOLERANCE}$$

$$S = d_L - d_w \quad d_L = 50^{+0,2}_{-0,1}$$

ZRAČNOST

$$\psi = \frac{S}{d_L} \leftarrow \text{IMENSKA VREDNOST } S_0$$

RELATIVNA ZRAČNOST

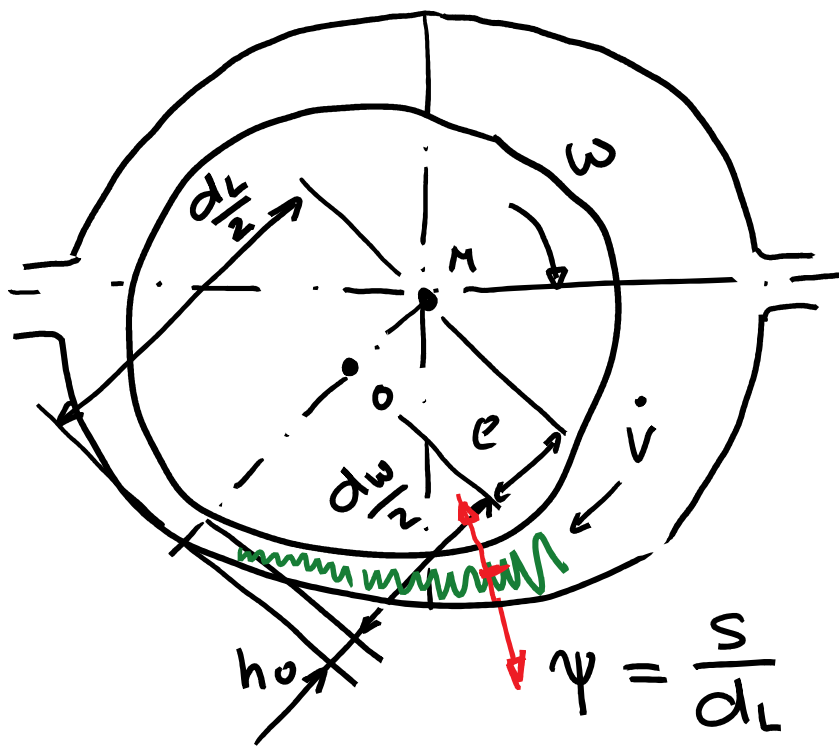
ψ_E - UGRADNA RELATIVNA ZRAČNOST UPOŠTEVA TOLERANCO LEŽAJA IN GREDI

$$\psi_B = f(\psi_E, T, \alpha_w, \alpha_L)$$

TEMPERATURNI
RAZTEŽNOSTNI
KOEFICIENT

ψ_B - OBRATOVALNA RELATIVNA ZRAČNOST UPOŠTEVA SE UPLIU TEMPERATURE

DEBELINA OLJNEGA FILMA IN EKSCENTRIČNOST



$$\frac{d_L}{2} = e + \frac{d_w}{2} + h_0$$

EKSCENTRIČNOST

$$h_0 = \frac{d_L - d_w}{2} - e$$

$$= \frac{s}{2} - e$$

$$= \frac{d_L \cdot \psi}{2} - e$$

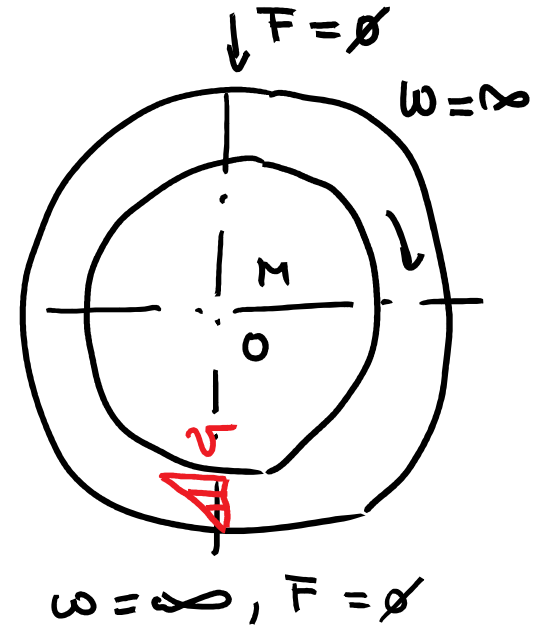
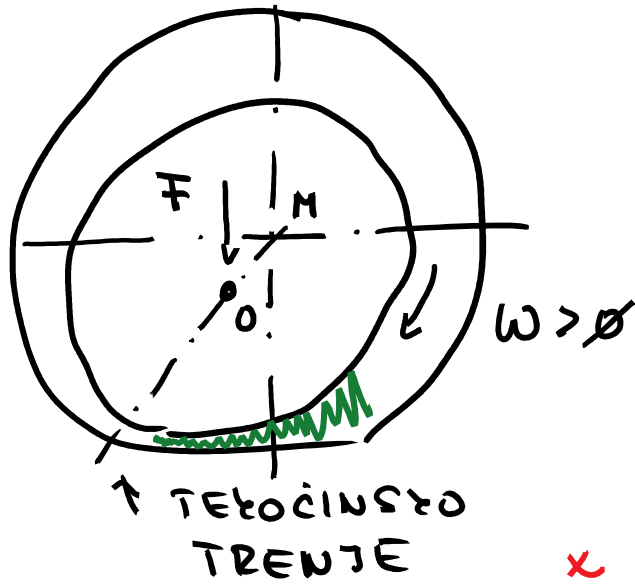
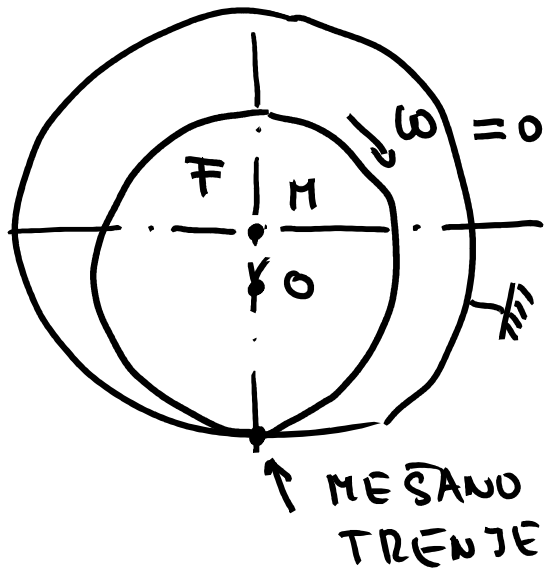
$$= \frac{d_L \cdot \psi}{2} - \epsilon \frac{s}{2}$$

$$h_0 = \frac{d_L \cdot \psi}{2} (1 - \epsilon) \geq h_{0 \text{ dop}}$$

$$\epsilon = \frac{e}{\frac{s}{2}}$$

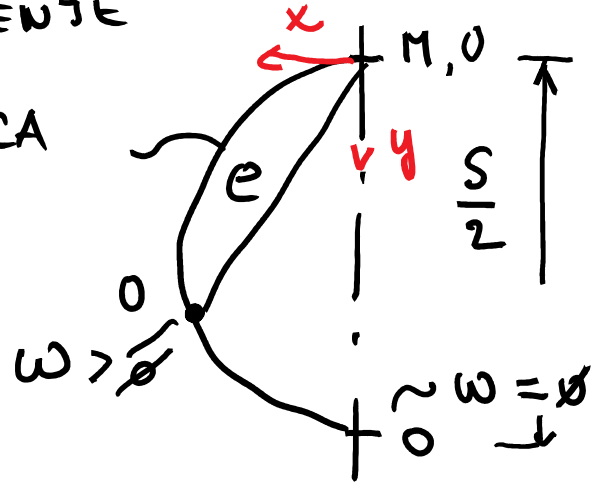
RELATIVNA EKSCENTRIČNOST

POTUVAJTE GREDI

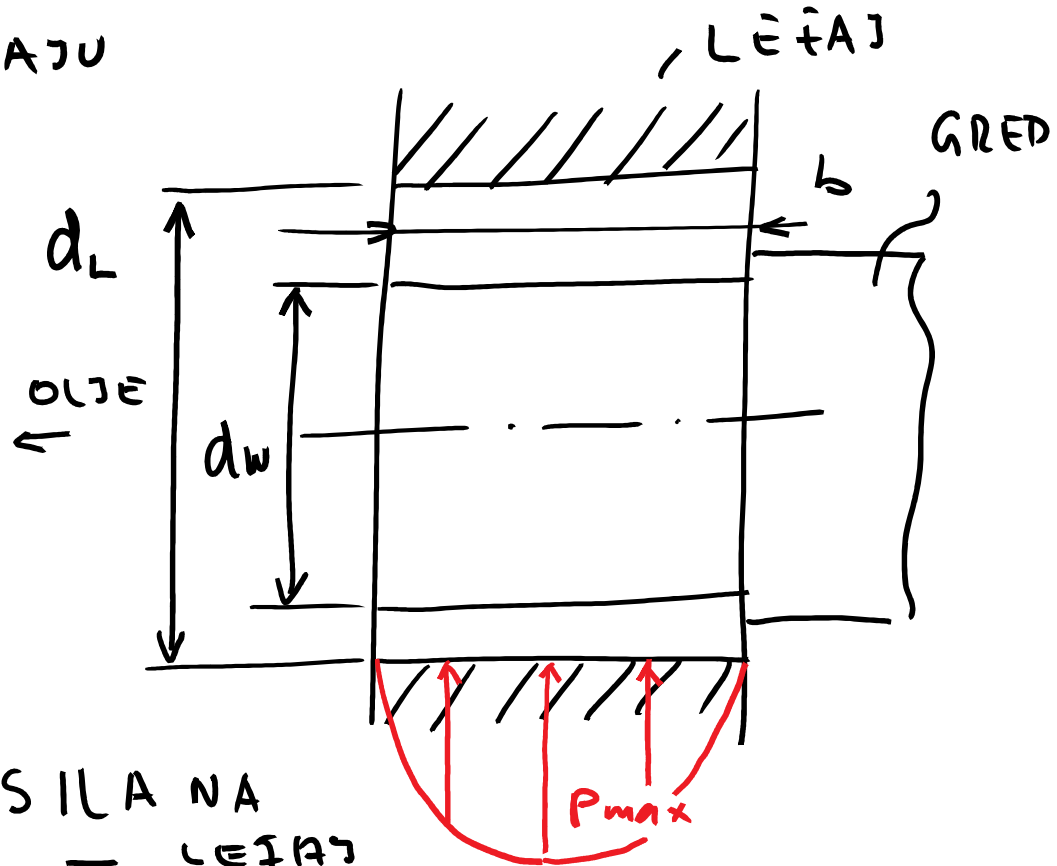
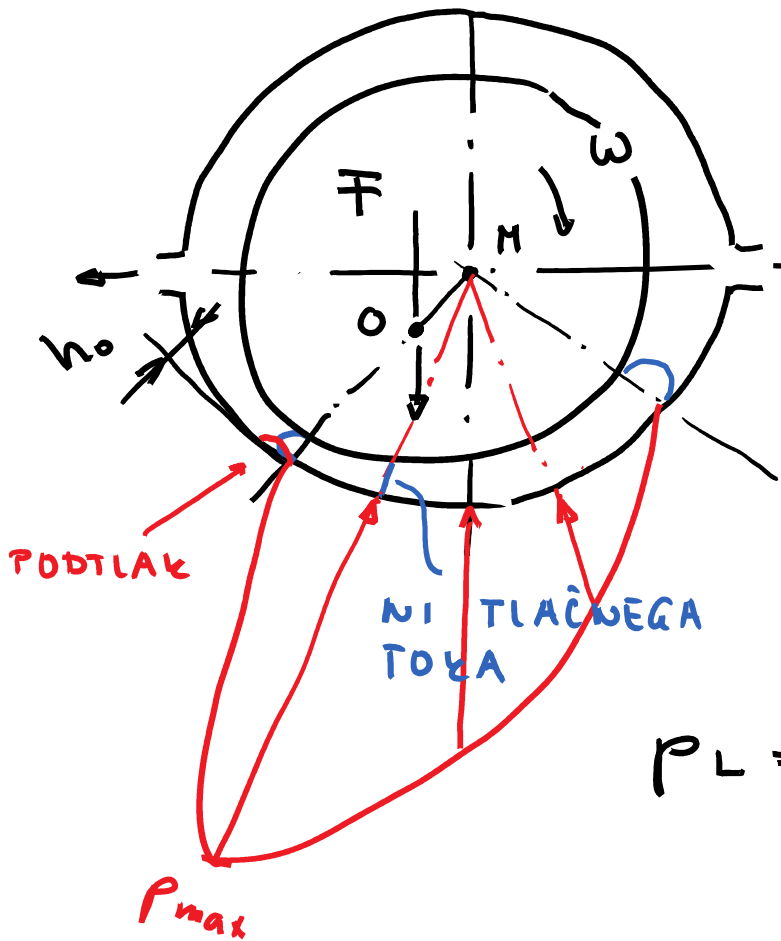


$$r = \sqrt{x^2 + y^2}$$

~ KROŽNICA



TLAZ V LEŽAJU

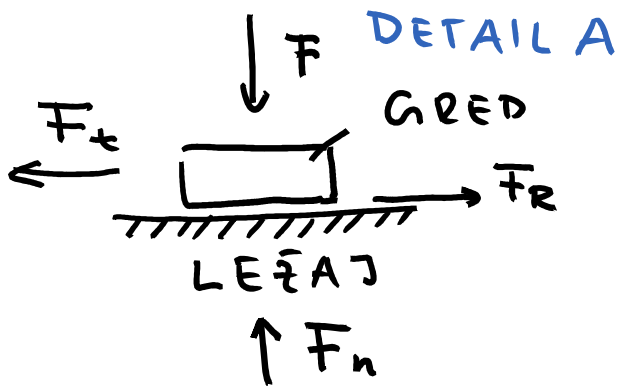
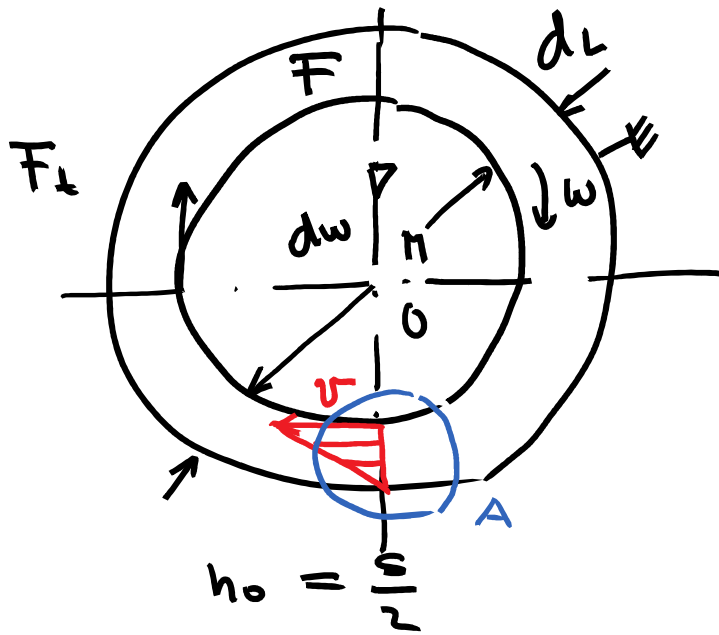


SILA NA
F LEŽAJ

$$P_L = \frac{F}{b d_L} \leq P_{L dop}$$

IMENSKA MERA

TORNE RAČMERE U RADIALNEM DRSNEM LEŽAJU



$$\gamma = \eta \frac{v}{h_o}$$

$$\gamma = \frac{F_t}{A} = \frac{F_t}{b \pi d_L} \text{ - IMENSKA MERA}$$

$$v = \omega \frac{d_L}{2} \text{ - IMENSKA MERA}$$

$$F_e = F_t = F_n \cdot \mu = F \cdot \mu$$

$$F_t = F \cdot \mu$$

$$p_L = \frac{F}{b d_L}$$

$$F_t = p_L b d_L \mu$$

$$\zeta = \eta \frac{\nu}{h_0}$$

$$\frac{p_L d_L \nu \mu}{\pi d_L \nu} = \eta \frac{\omega d_L \nu}{\nu s}$$

$$\frac{p_L \cdot \mu}{\pi} = \eta \frac{\omega}{\nu}$$

$$\mu = \frac{\pi}{\nu} \frac{\eta \omega}{p_L \nu} \cdot \frac{\nu}{\nu}$$

$$\mu = \frac{\pi}{S_0} \nu \quad \text{zA } S_0 < 1$$

$$\mu = \frac{\pi}{\sqrt{S_0}} \nu \quad \text{zA } S_0 \geq 1$$

SOMMERFELDOWO
STEUER

$$S_0 = \frac{p_L \nu^2}{\eta \omega}$$

MOĆ TRENJA

$$\begin{aligned} P_R &= F_t \cdot v = F \mu \cdot \omega \cdot \frac{d_L}{2} = p_L \cdot b d_L \mu \omega \frac{d_L}{2} \\ &= p_L b \mu \omega \cdot \frac{d_L^2}{2} \end{aligned}$$

$$P_R \rightarrow Q \rightarrow T \quad T \ll T_{dop}$$

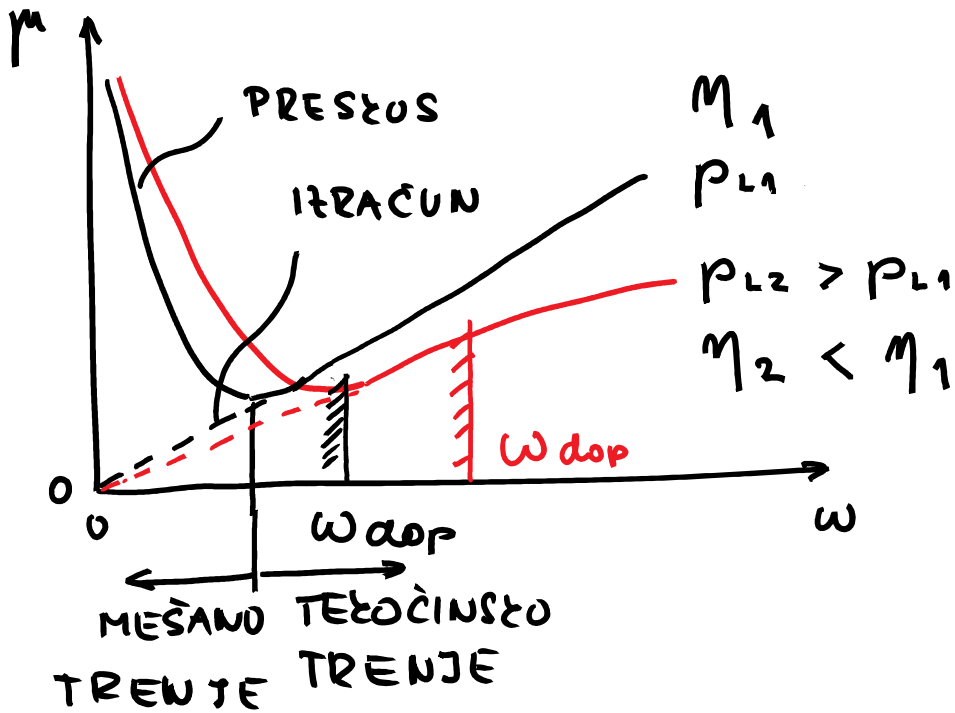
$$\begin{aligned} F_t &= F_R \\ F &= F_m \end{aligned}$$

$$\mu = \frac{\pi \psi}{S_0 \sqrt{1 - \epsilon^2}} \approx \frac{\epsilon \psi}{2} \sin \beta \quad \begin{array}{l} \text{TOČNA} \\ \text{ENAČBA} \end{array}$$

$$\epsilon = 0 \rightarrow \mu = \frac{\pi \psi}{S_0}$$

NI TA ITPIT

STRIEBECKOVA ZRIVULJA



$$\omega \geq \omega_{dop}$$

HIDROSTATIČNO MAZANJE

ρ_{L1} NIŽE TIAZ