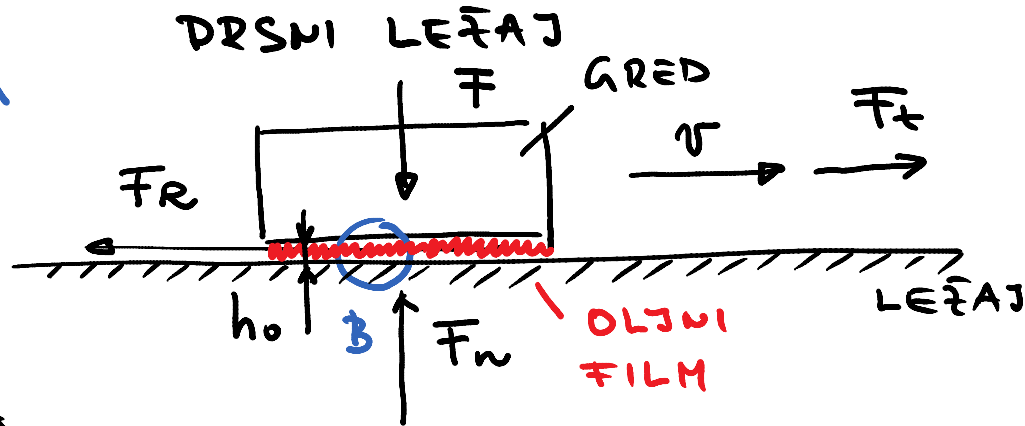


DETAIL A



$$F_R = F_t$$

$$F_n = F$$

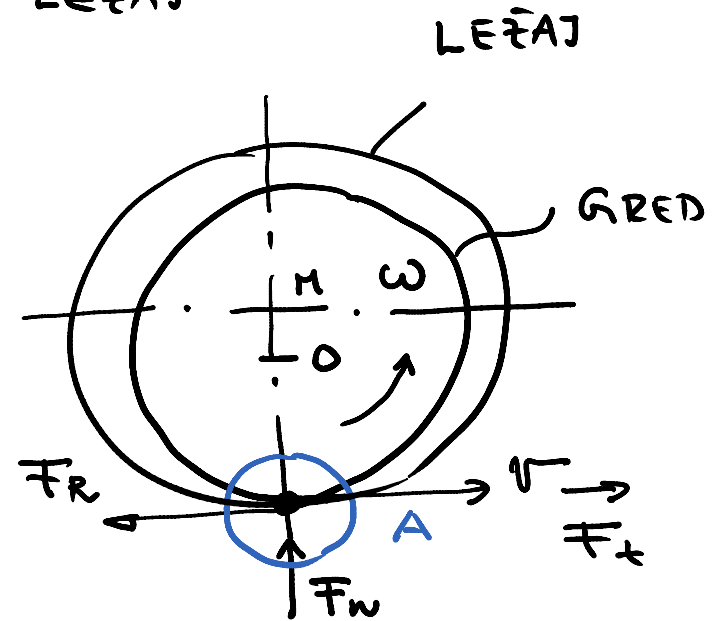
$$F_R = F_n \cdot \mu$$

$$F_t = F \cdot \mu$$

$\mu > 0,3$ SUHO TRENJE

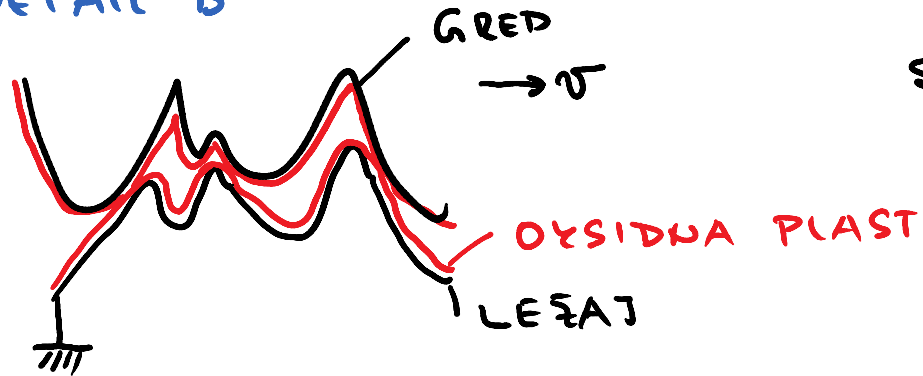
h_0 MINIMALNA DEBELINA OLJNEGA FILMA

$\mu = 0,003$ TEKOČINSKO TRENJE



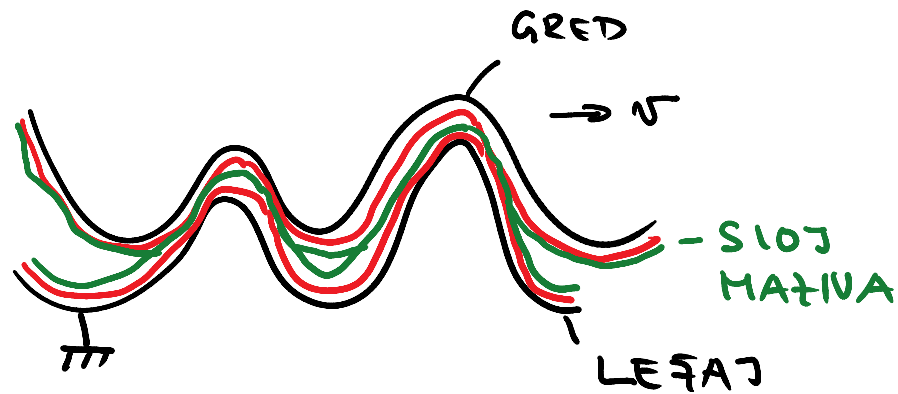
VRSTE TRENJA

DETAIL B



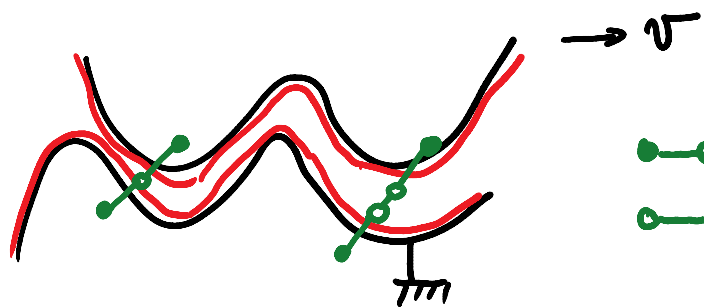
SUHO TRENJE $\mu > 0,3$

OBRABA ŽARADI
STRIŽENJA VRHOV
POVRŠIN



MEJNO TRENJE $\mu \approx 0,3$

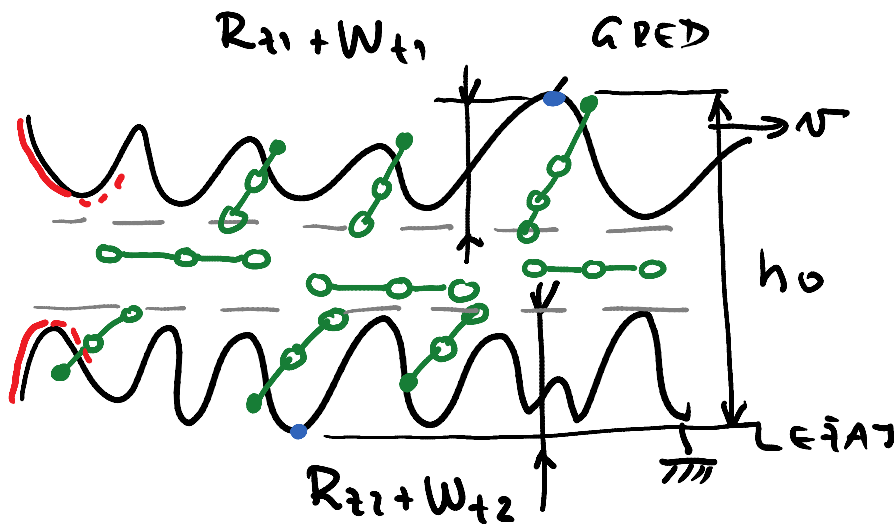
OBRABA JE ŠE
VEDNO PRISOTNA



MEŠANO TRENJE $\mu < 0,3$

ADHEZIJSKA VEZ
KOHEZIJSKA VEZ

OBRABA ŠE UEDNO
PRISOTNA



TELOČINSKO TRENJE
 $\mu \approx 0,003$

$h_0 \geq h_{odop}$

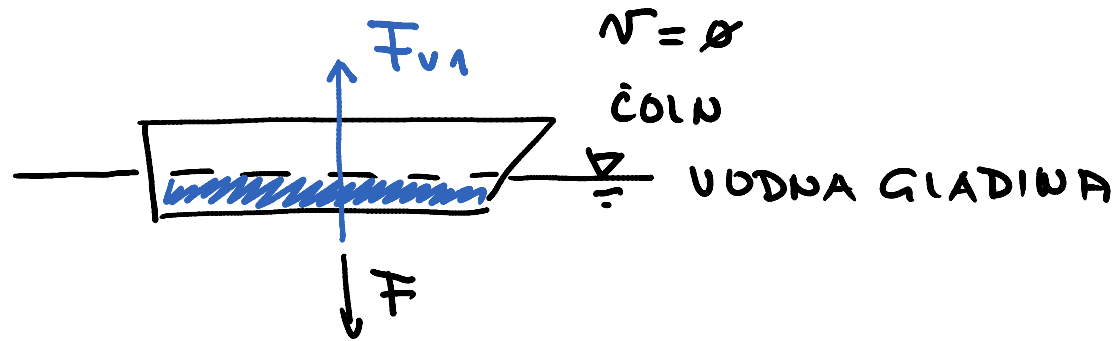
OBRABE NI

$$h_{odop} = R_{z1} + W_{t1} + R_{z2} + W_{t2}$$

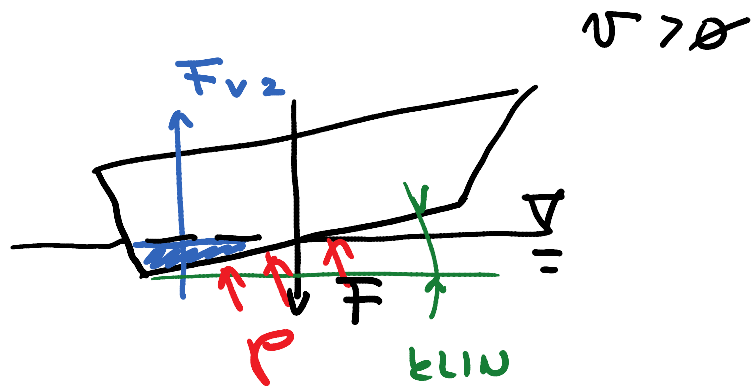
R_{z1}, R_{z2} SREDNJA VIŠINA NEBAUNIN

W_{t1}, W_{t2} VALOVITOST

POGOTOI ZA HIDRODINAMIČNO MAŽANJE



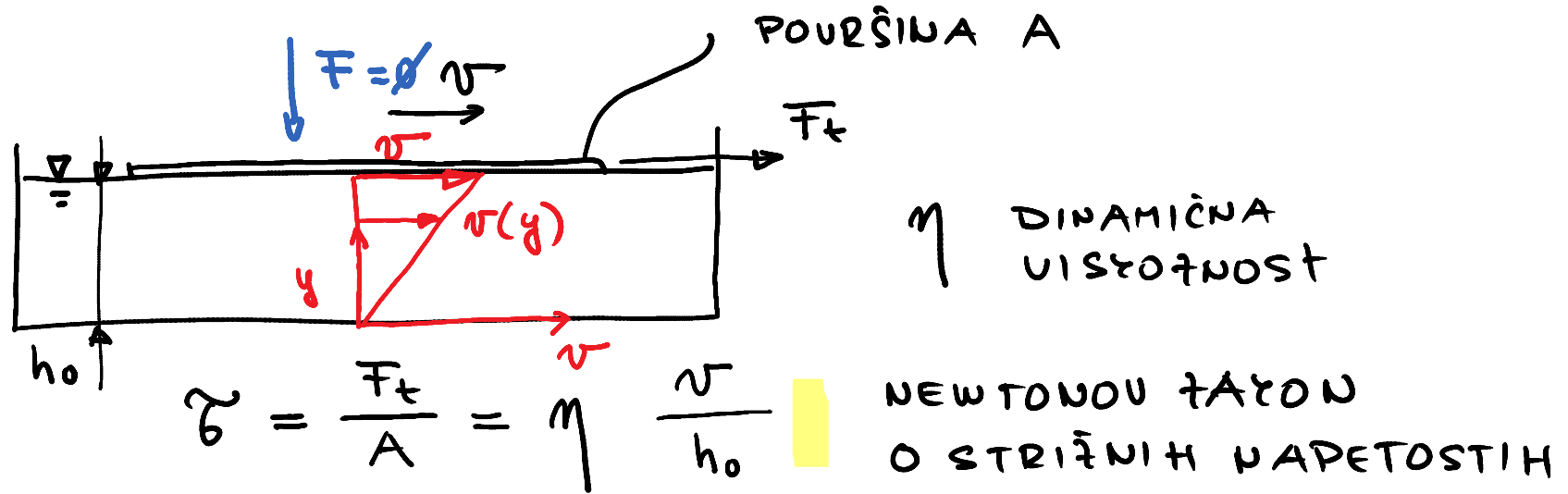
$$F_{v1} > F_{v2}$$



POGOTOI ZA HIDRODINAMIČNO
MAŽANJE SO:

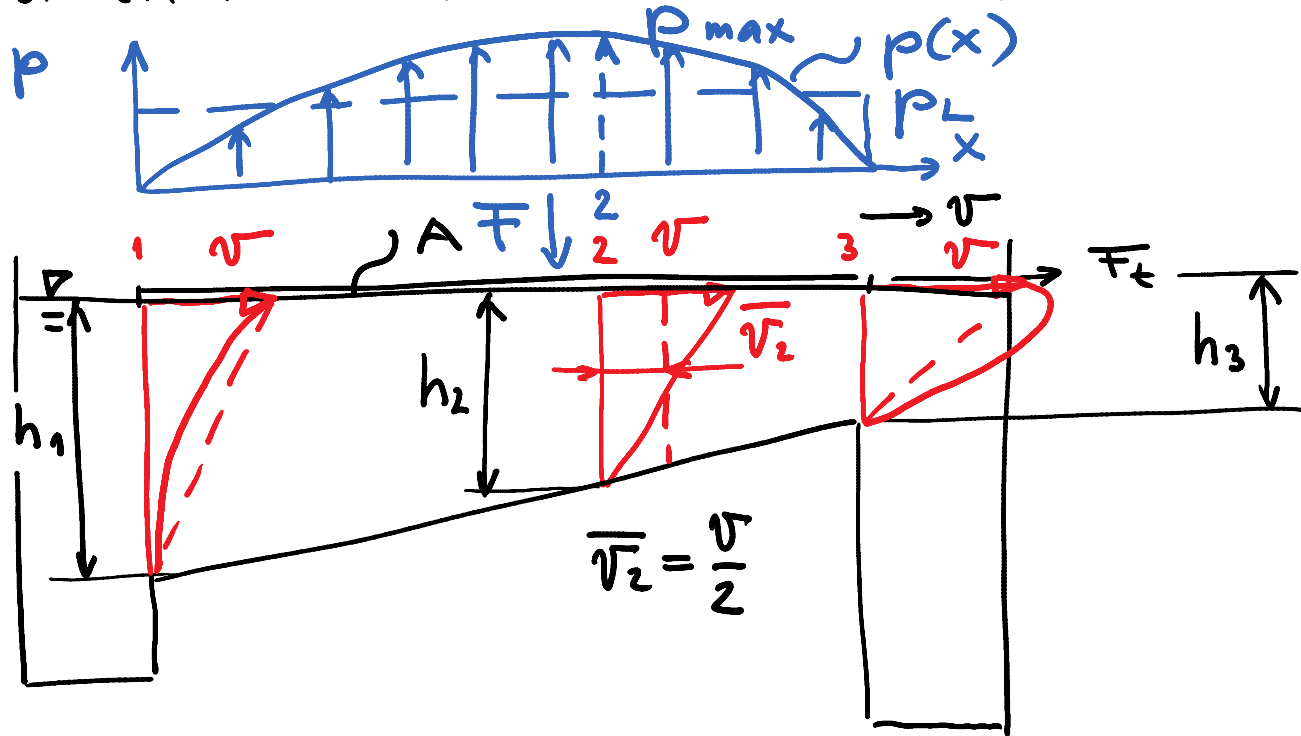
- PRISOTNOST MAŽIVA
- RELATIVNA RATLIKA HITROSTI
- PRISOTNOST ZLINASTEGA PROSTORA

RAZMERE U OJNEM FILMU



NI NOSILNOSTI OJNEGA FILMA!

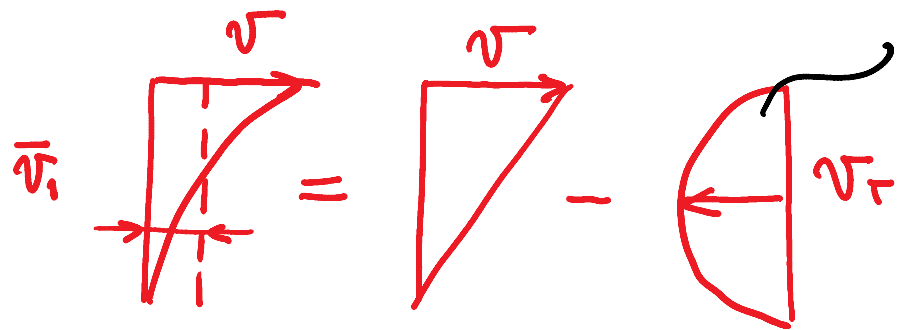
POGOJI ZA HIDRODINAMIČNU MAŽANJE - IZPELJAVA



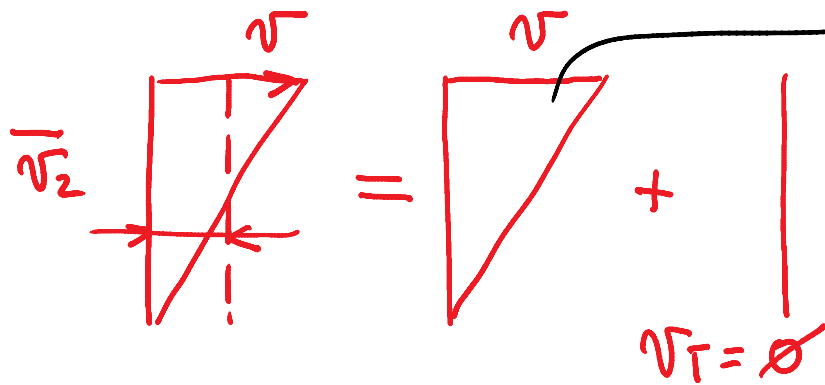
$$\dot{V}_2 = \frac{v_2}{2} \cdot h_2 \cdot b = \bar{v}_2 h_2 \cdot b = \dot{V}_1 = \bar{v}_1 h_1 \cdot b = \dot{V}_3 = \bar{v}_3 h_3 \cdot b$$

b ŠIRINA LISTA

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



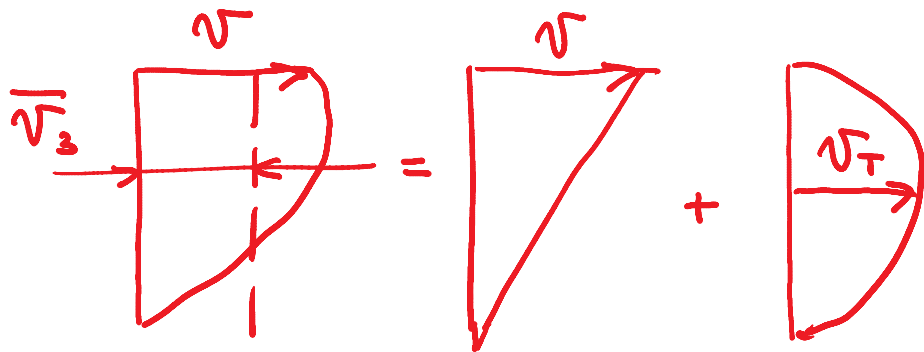
ΤΛΑČΝΙ ΤΟΨ - ΖΑΓΟΤΑΥΛΙΑ
ΝΟΣΙΛΝΟΣΤ ΟΛΙΝΕΓΑ ΦΙΛΗΑ



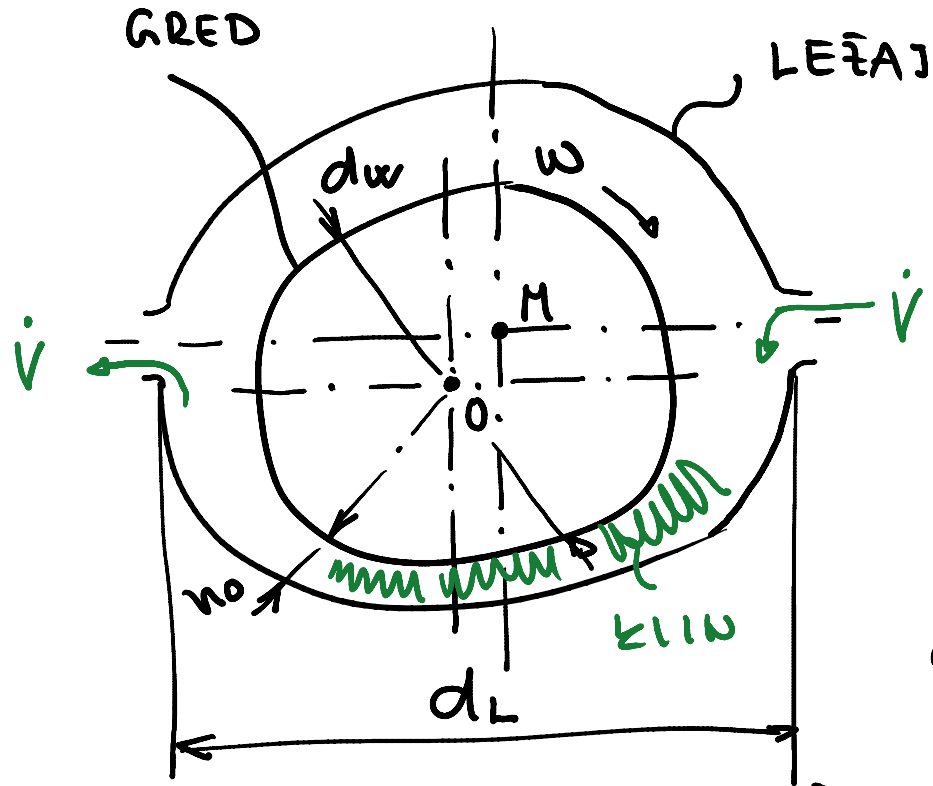
ΣΤΡΙΪΝΙ ΤΟΨ - ΖΑΓΟΤΑΥΛΙΑ
ΥΟΛΟΜΣΕΙ ΠΡΕΤΟΨ

$$p_L = \frac{F}{A} - \text{ΠΟΥΡΪΝΑ}$$

$$F = p_L \cdot A$$



RADIALNI DESNI LEŽAJ



$$d_L > d_w$$

$$d_L = 50^{+0,2}_{+0,1}$$

$$d_w = 50^{-0,1}_{-0,2}$$

IMENSKA MERA = 50 mm

ODSTOPKI $\begin{matrix} +0,2 & -0,1 \\ +0,1 & -0,2 \end{matrix}$ IN

$$S = d_L - d_w \quad \text{ZRAČNOST}$$

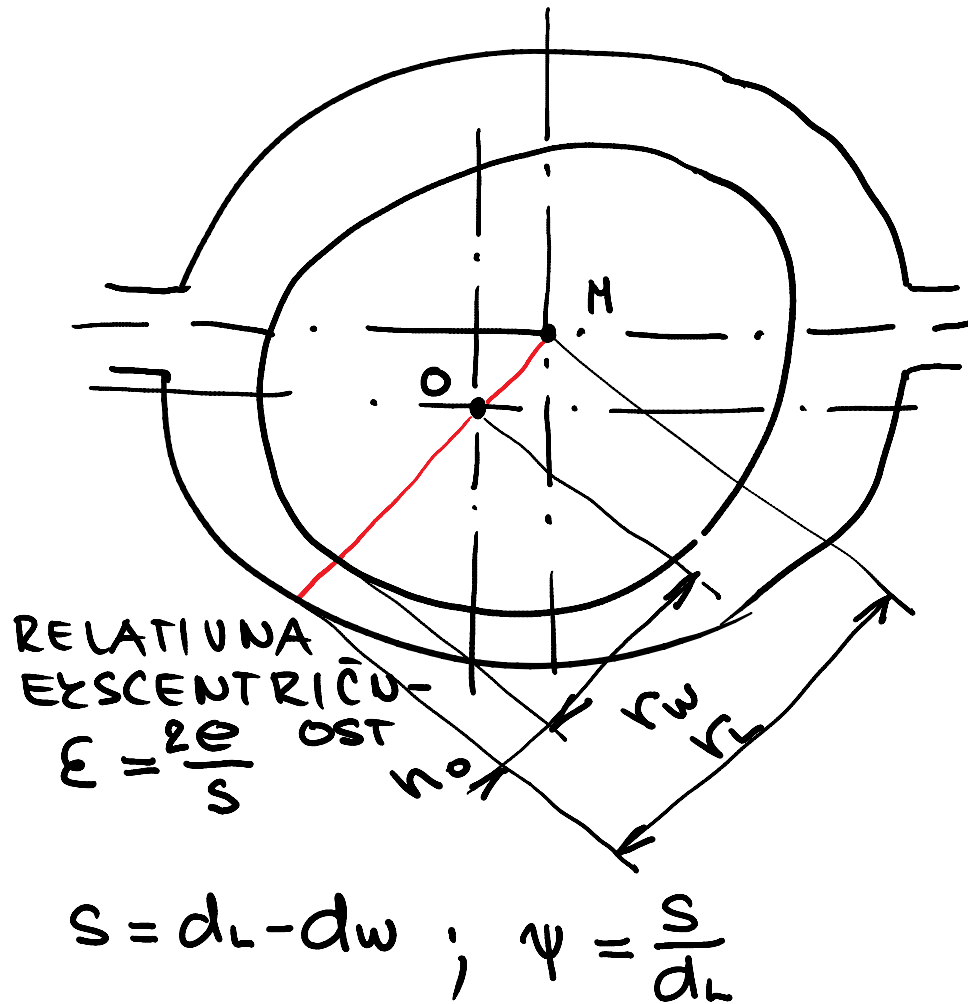
$$\psi = \frac{S}{d_L} \quad \begin{matrix} \text{RELATIVNA} \\ \text{ZRAČNOST} \end{matrix}$$

↑
50 IMENSKA MERA

ψ_E VGRADNA RELATIVNA ZRAČNOST

$$\psi_B = f(\psi_E, T, \alpha_w, \alpha_L) \quad \begin{matrix} \text{OBRATOVALNA RELATIVNA ZRAČNOST} \\ \text{TEMPERATURNI RAŽTEŽNOSTNI KOEFICIENT} \end{matrix}$$

DEBELINA OLJNEGA FILMA IN EKSCENTRIČNOST



$$r_L = r_w + h_0 + e$$

$$\overline{OM} = e \text{ EKSCENTRIČNOST}$$

$$h_0 = r_L - r_w - e$$

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

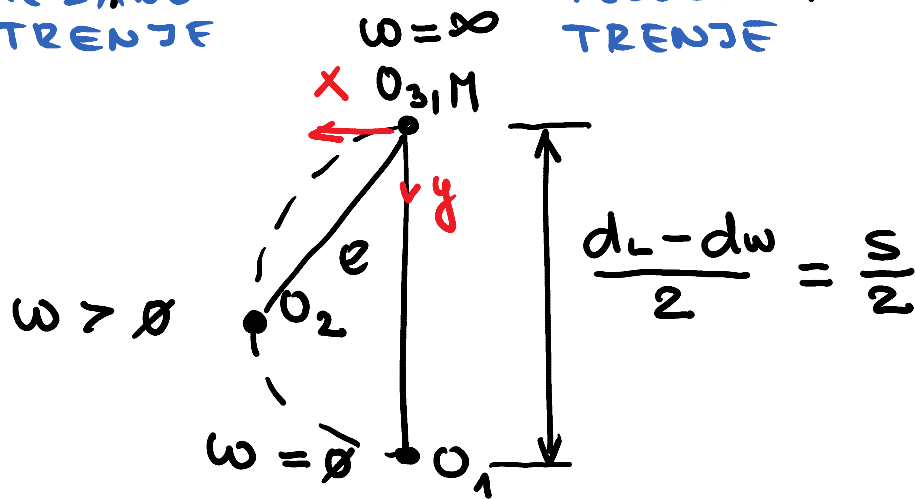
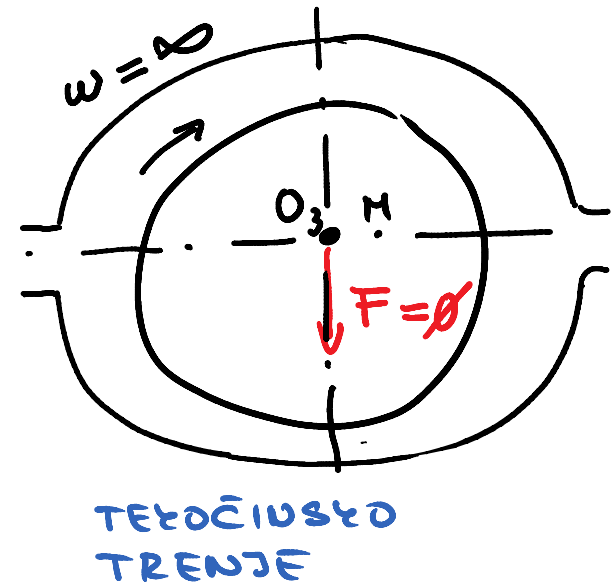
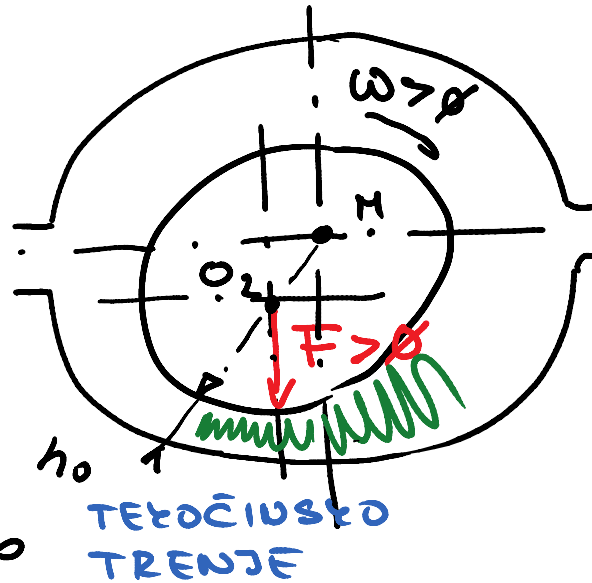
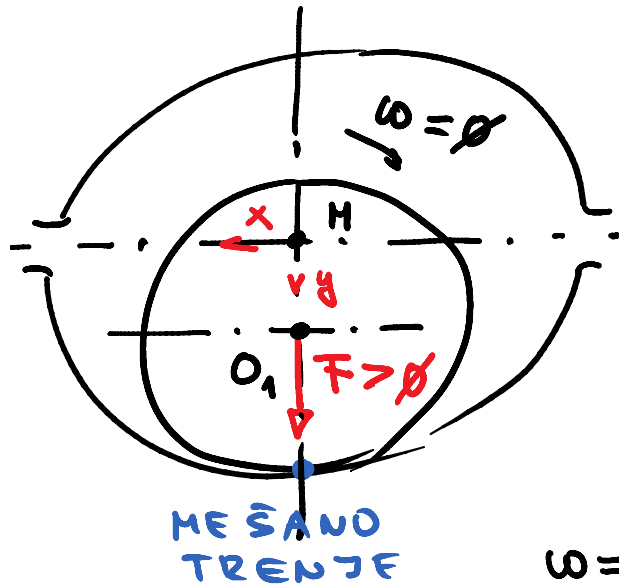
$$= \frac{\psi d_L}{2} - \frac{\epsilon \cdot s}{2}$$

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

$$h_0 = \frac{\psi d_L}{2} (1 - \epsilon)$$

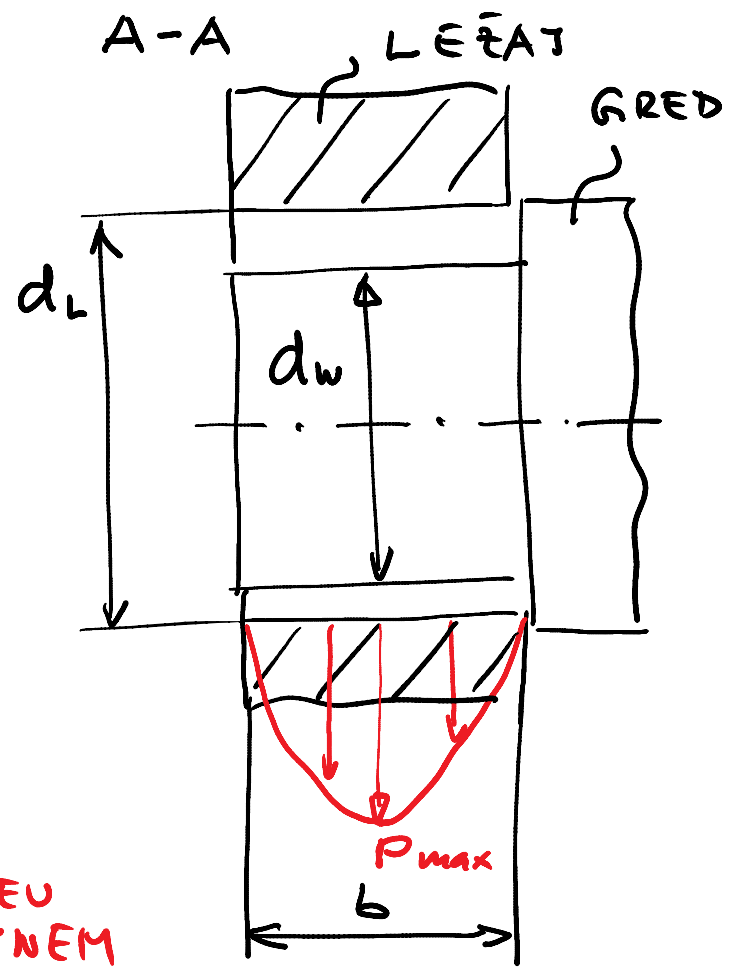
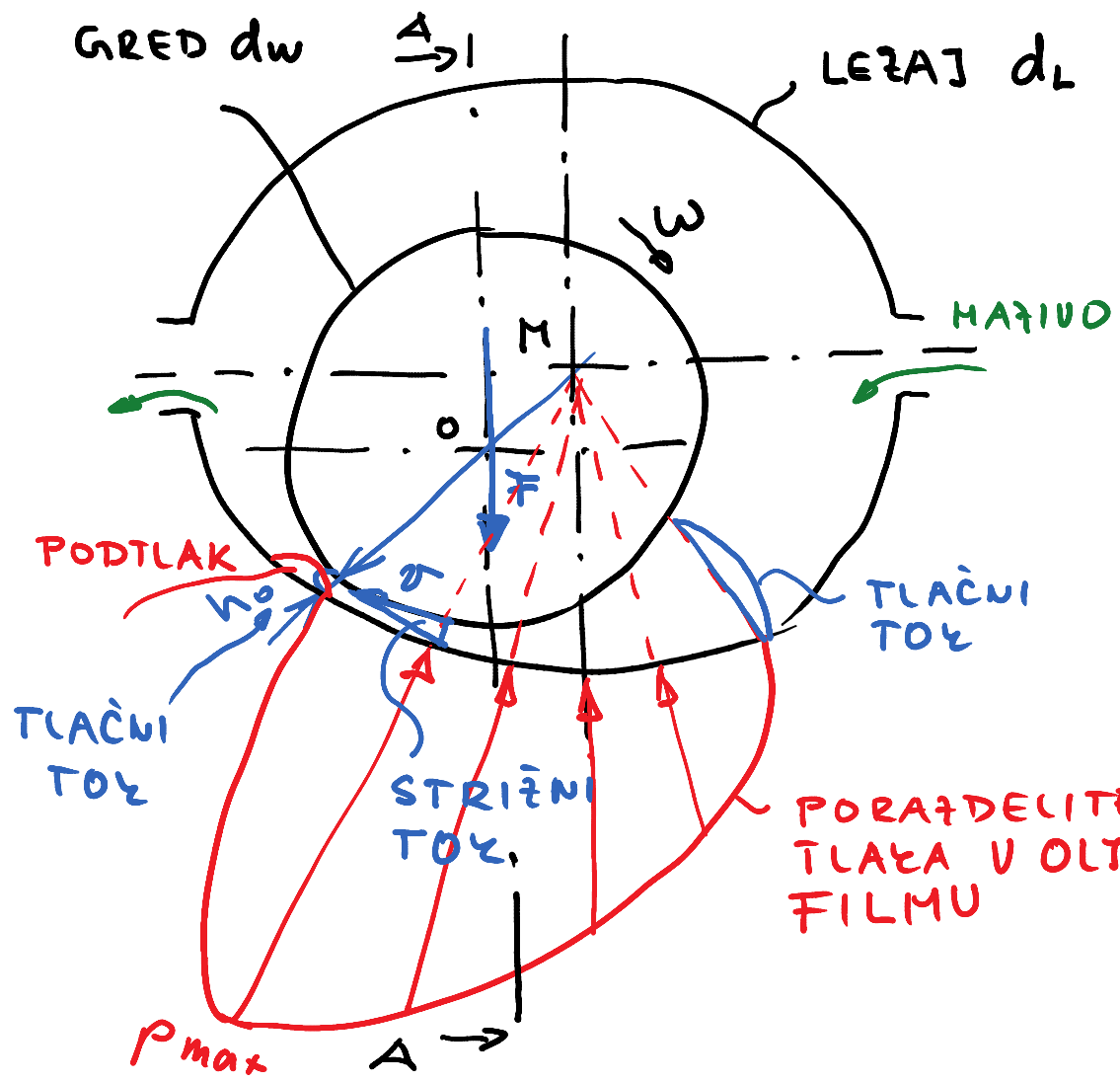
$$h_0 \geq h_{\text{dop}}$$

POTOVANJE GREDI



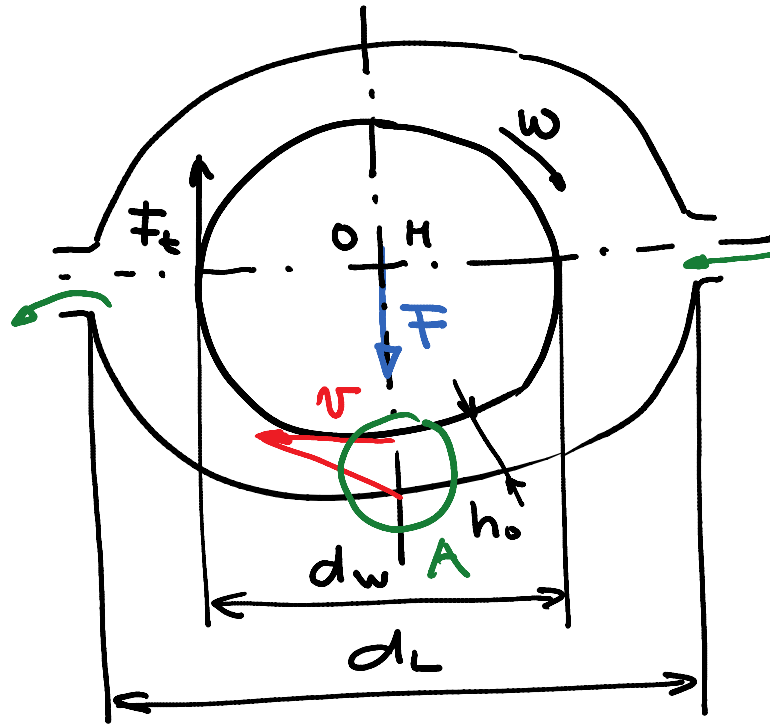
$$e = \sqrt{x^2 + y^2}$$

TLAK V LEŽAJU



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

TORNE RAŽMERE U RADIALNEM DRSNEM LEŽAJU



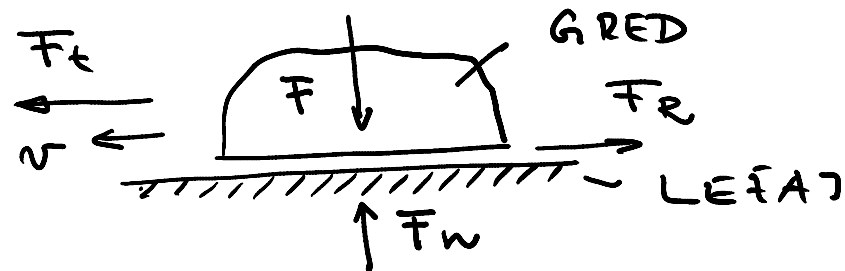
$$h_0 = \frac{d_L - d_w}{2} = \frac{s}{2}$$

$$v = \omega \frac{d_L}{2} \leftarrow \text{IMENSKA UREDNOST}$$

$$\tau = \eta \frac{v}{h_0}$$

$$\tau = \frac{F_t}{A} = \frac{F_t}{\pi d_L b}$$

DETAIL A



$$F_r = F_n \cdot \mu$$

$$F_t = F \cdot \mu = p_L b d_L \mu$$

$$\tau = \frac{p_L b d_L \mu}{\pi d_L b} = \frac{p_L \mu}{\pi}$$

$$\frac{\sigma}{h_0} = \frac{\omega d_L z}{z s} = \frac{\omega}{\psi}$$

$$\tau = \eta \frac{\sigma}{h_0}$$

$$\frac{p_L \mu}{\pi} = \eta \frac{\omega}{\psi}$$

$$\mu = \frac{\pi \eta \omega \psi}{p_L \cdot \psi \psi} = \text{const } \omega$$

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

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

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

SOMMERFELDOVO
ŠTEVÍLO

MOĆ TRENNA

$$P_R = F_R \cdot v = F_t \cdot v = \rho_L d_L b \mu \cdot \omega \frac{d_L}{2}$$

$$P_R = \frac{1}{2} \rho_L d_L^2 b \omega \mu$$

$P_R \rightarrow Q \rightarrow T$ TEMPERATURA NATIWA
TOPIOTA

$T \uparrow \rightarrow \eta \downarrow$

$T \ll T_{dop}$

$$P_R = \frac{1}{2} \cancel{\rho_L} d_L^2 b \omega \frac{\bar{\eta} \omega}{\cancel{\rho_L} \psi} = \frac{\bar{\eta} \omega d_L^2 b}{2 \psi} \omega^2$$

VELJA ZA

$S_0 < 1$

STRIEBECYOVA KRIVULJA

