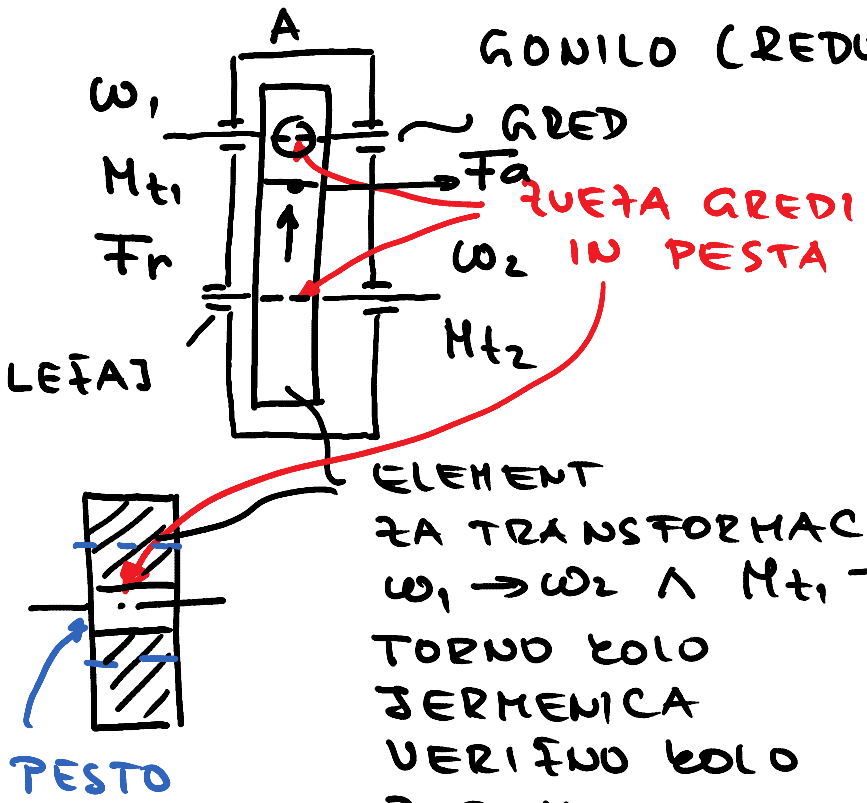
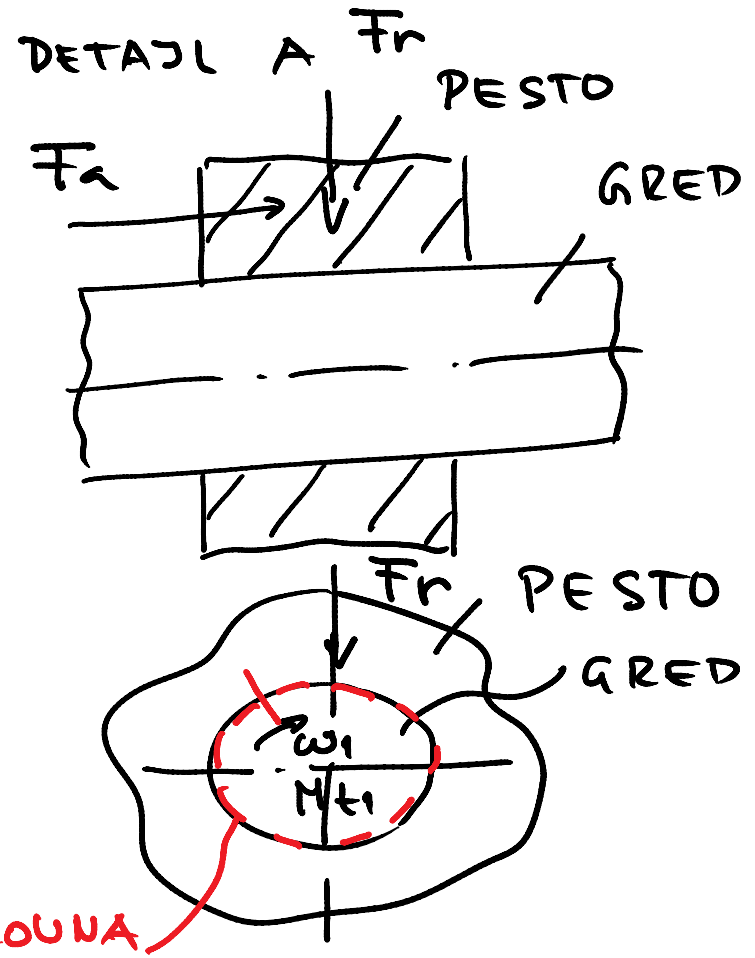
ZUEŽE GREDI IN PESTA

GONILO (REDUKTOR, MULTIPLIKATOR)





OMOGOČA : PRENOS M_{t1}
PRENOS F_a
PRENOS F_r

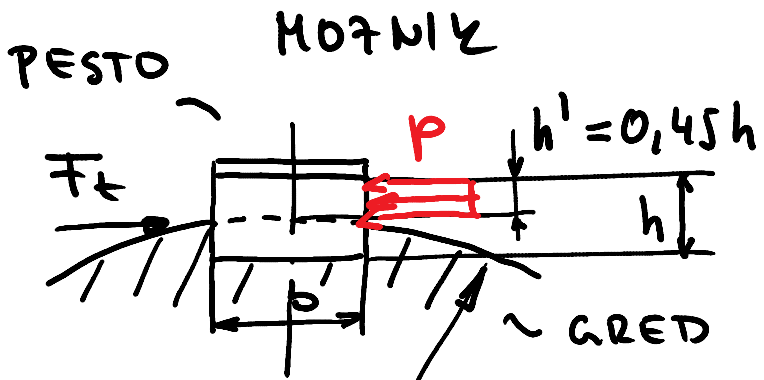
ŽUEŽE GREDI IN PESTA DELIMO :

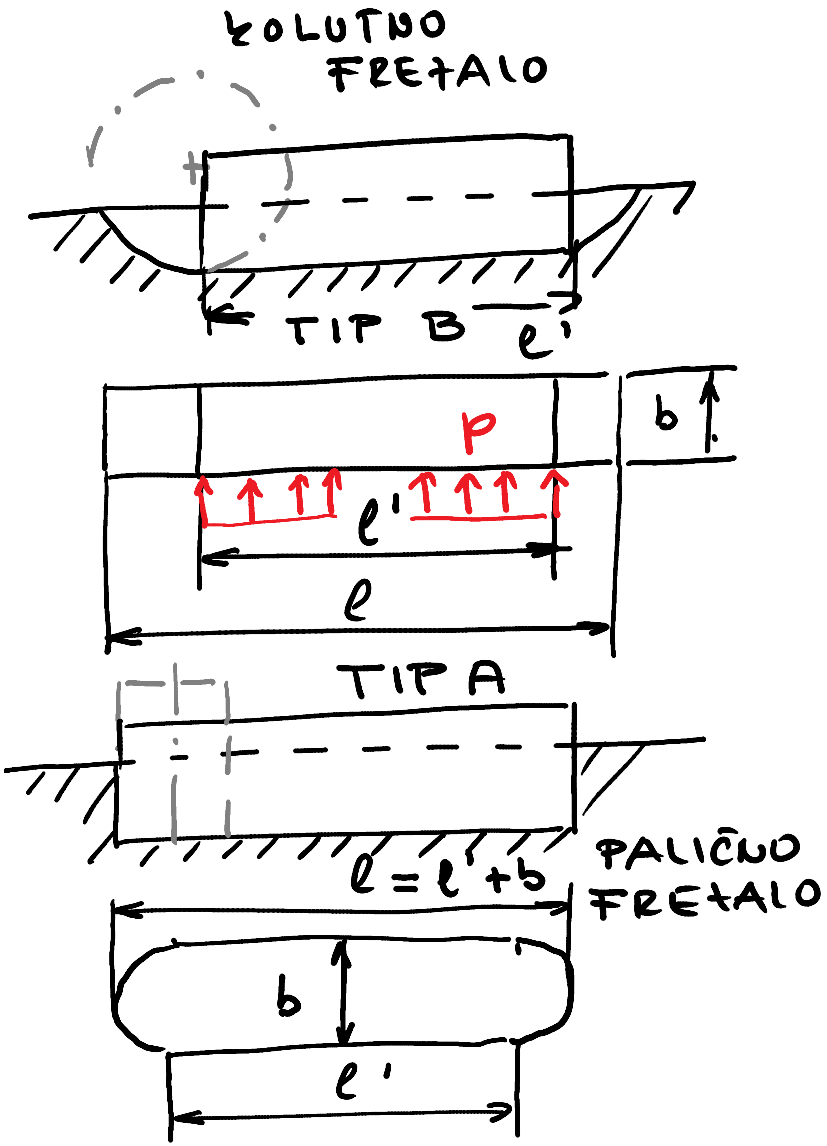
OBLI ŁOUNE : MOŽNIŁ ✓
UTORNA ŽUEŽA ✓
POLIGONSŁA GRED ✗
ŽOBATA GRED ✗

} REŠUŽETO PROBLEM PRENOSA HŁ ZA Fa POSŁEBIMO LOČENO

TORNE : STOŽČASTI NASED ✓
STOŽČASTI OBROČI ✓
SPENJALNA ŽUEŽA ✓
ŽAGOŽDE ✓
ŁRČNI NASED ✗

} REŠUŽETO PROBLEM PRENOSA HŁ IN Fa





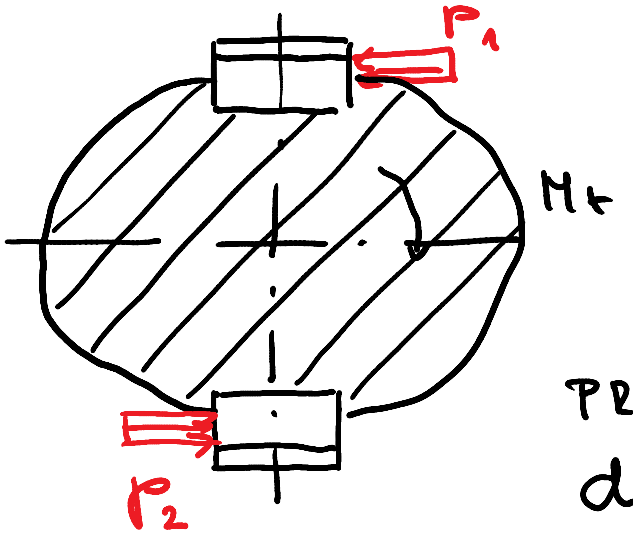
$$M_t = \frac{F_t \cdot d}{2}$$

$$p = \frac{F_t}{A} = \frac{2\,M_t}{d} \cdot \frac{1}{h'\,l'\,n\,\varphi} \leq p_{dop}$$

$n = 1,2$ ŠTEVILO MOTNIKOV

$\varphi = 1$ ČE JE $n = 1$

$\varphi = 0{,}75$ ČE JE $n = 2$



$p_1 \neq p_2$ ZER IMAMO ODSTOPANJA HER

$m = 2$ $\quad m \cdot \varphi = 2 \cdot 0{,}75 = 1{,}5$

$\varphi = 0{,}75$

PREDPISANI SO OJEMI:

d - PESTO POMIČNO ALI FIKSNO NAGREDI

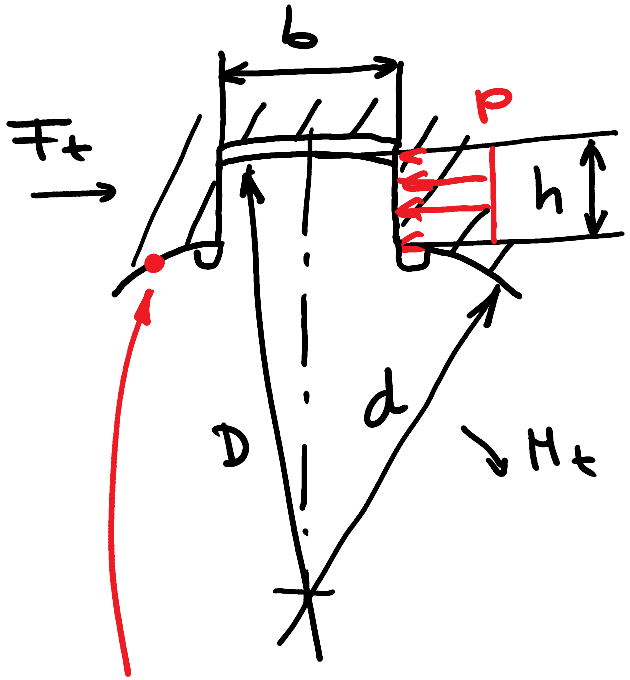
b - PESTO POMIČNO ALI FIKSNO NAGREDI

MOZNIK REŠUJE PROBLEM PRENOSA Mt.

POTREBNI SO DODATNI UKREPI ZA PRENOS Fa.

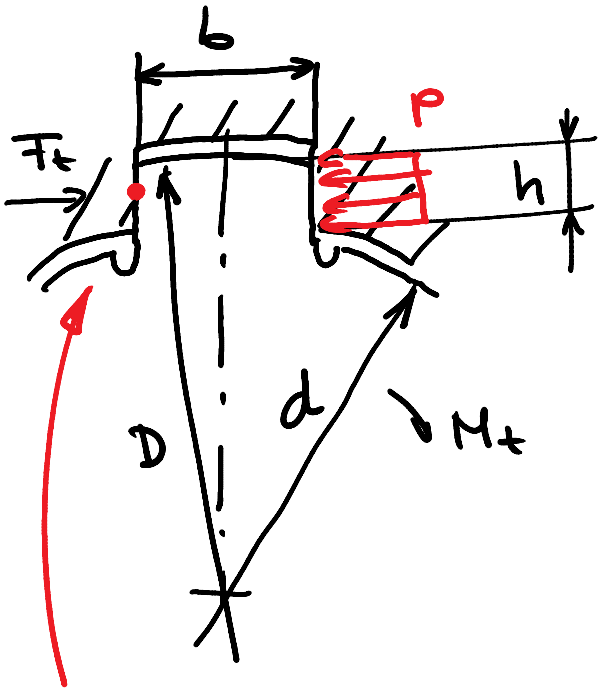
MOZNIK IZBEREMO GLEDE NA d.

UTORNA ZVEZA



NOTRANJE CENTRIRANJE

$m = 6, 8, 10$



BOČNO CENTRIRANJE

$m = 8, 10, 16, 20$

$$D_m = \frac{d+D}{2} \qquad M_t = F_t \cdot \frac{D_m}{2} \qquad h = \frac{D-d}{2}$$

$$p = \frac{F_t}{A} = \frac{2\,M_t}{D_m\, h \cdot l' \, n \, 0{,}75} \leq p_{dop}$$

PREDPISANI SO DVEMI:

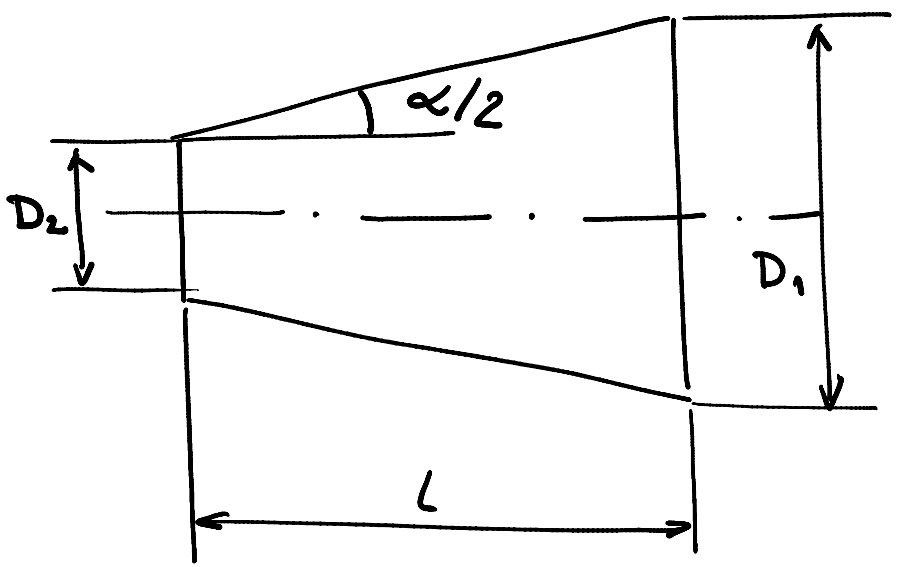
NOTRANJE CENTRIRANJE: d, b

BOČNO CENTRIRANJE: b

PESTO FIKSNO ALI POMIČNO NA GREDI

PRENOS M_t. ZA PRENOS F_a SO POTREBNI DODATNI VIJAKI.

STOŽČASTI NASED



KONUS $C = 1 : X = \frac{D_1 - D_2}{L}$

$\operatorname{tg} \frac{\alpha}{2} = \frac{D_1 - D_2}{2\,L}$

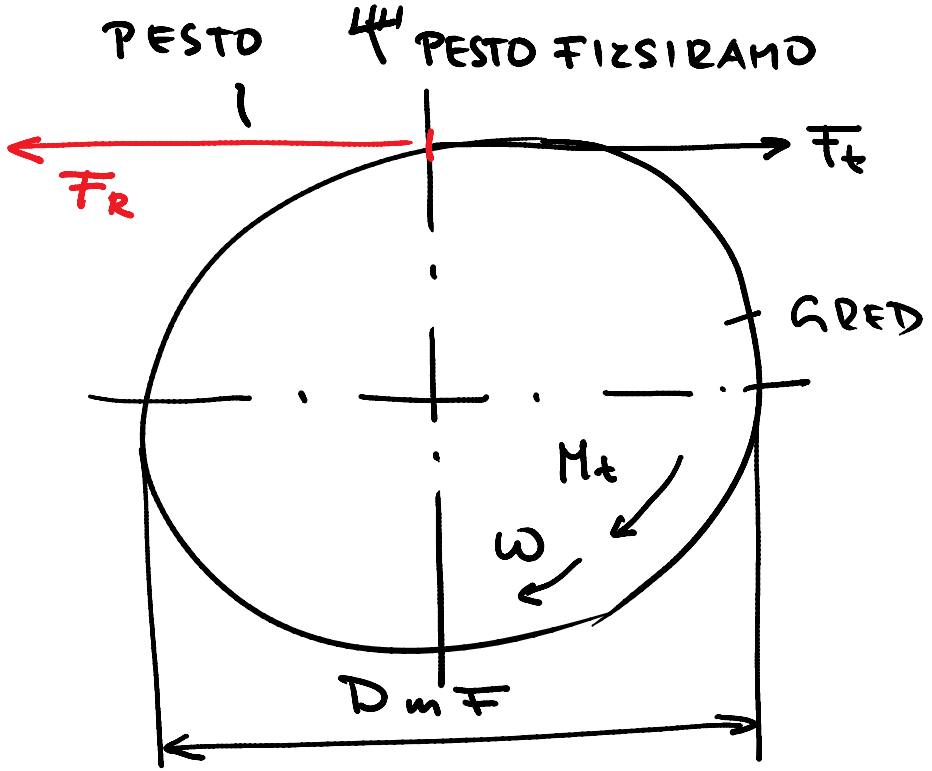
 1 : 10

$C \leq 1 : 5$ JE

KONUS SAMOZAPOREN

VREDNOTENJE STOŽČASTEGA NASEDA

RAZMERE MED OBRATOVANJEM



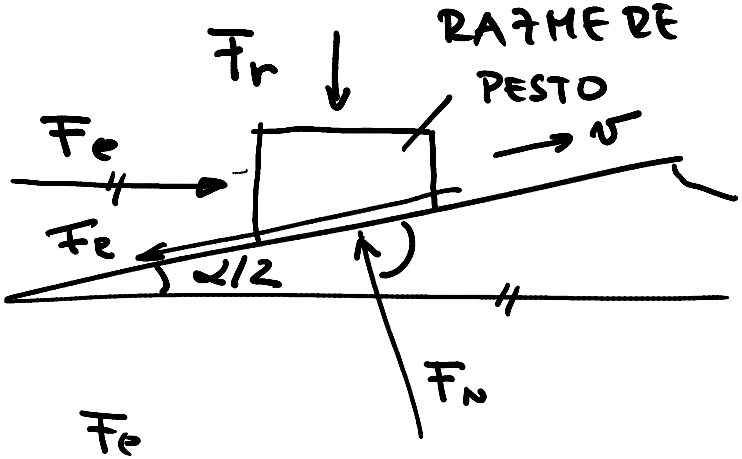
$$M_t = F_t \cdot D_{mF} \cdot \frac{1}{2}$$

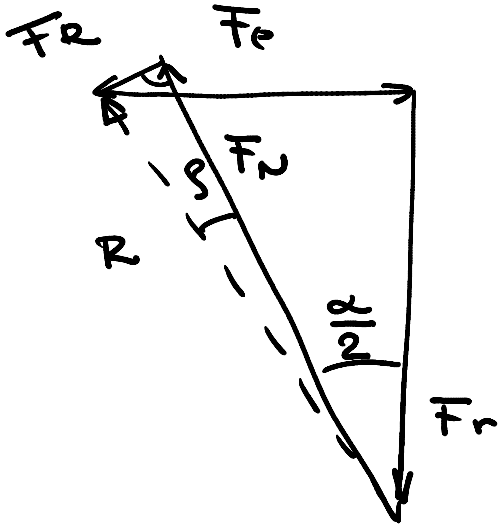
$$F_t = \frac{2M_t}{D_{mF}}$$

$F_R \geq F_t$ POGOJ, DA NI DRSENJA MED GREDJO IN PESTOM

$$D_{mF} = \frac{D_1 + D_2}{2}$$

RAZMERE MED MONTÁŽO





$$\mu = tg\,\rho = \frac{\sin\rho}{\cos\rho}$$

$$F_R = F_N \cdot \mu$$

$$\cos\rho = \frac{F_N}{R} \rightarrow F_N = R \cdot \cos\rho$$

$$F_R = R \cdot \cos\rho \cdot \mu$$

$$\sin\left(\frac{\alpha}{2}+\rho\right) = \frac{F_e}{R} \rightarrow R = \frac{F_e}{\sin\left(\frac{\alpha}{2}+\rho\right)}$$

$$F_R = \frac{F_e}{\sin\left(\frac{\alpha}{2}+\rho\right)} \cos\rho\ \mu$$

$$F_R = \frac{F_e \sin\rho}{\sin(\alpha/2+\rho)}$$

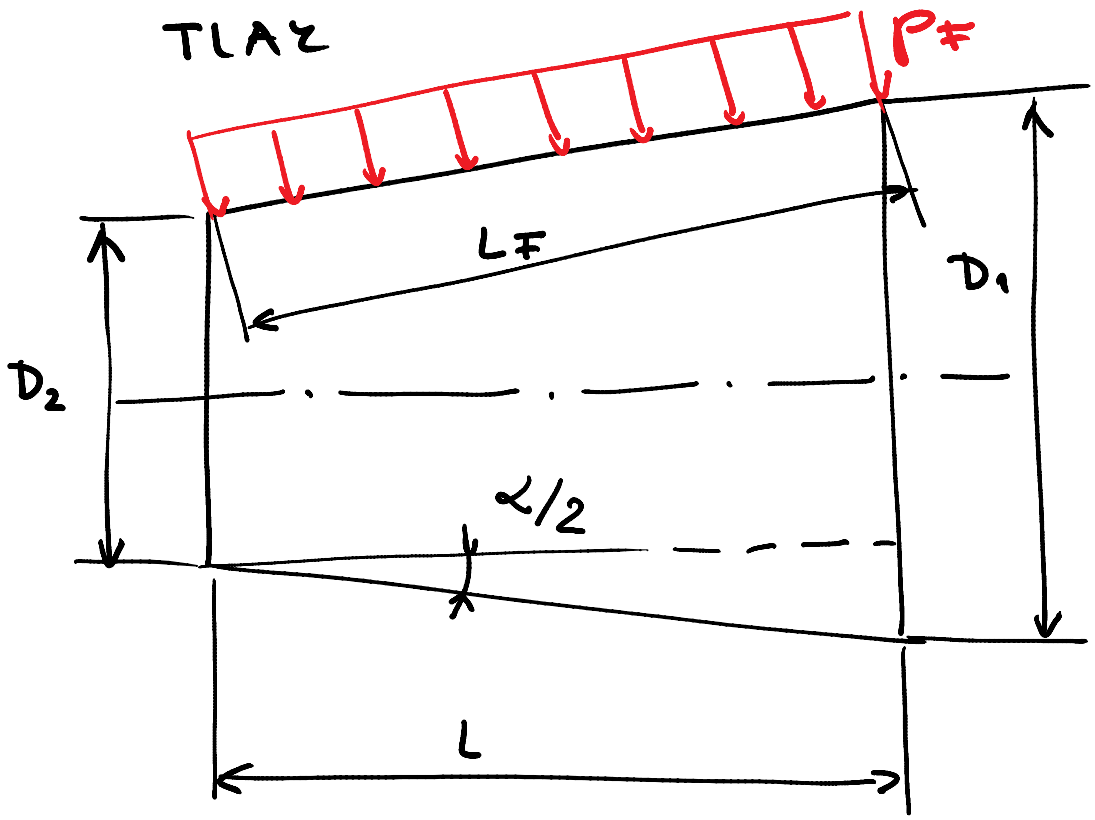
$$F_R \geq F_t$$

$$\frac{F_e \sin\varphi}{\sin\left(\frac{\alpha}{2}+\varphi\right)} \geq \frac{2M_t}{D_{mF}}$$

$$F_e \geq \frac{2M_t}{D_{mF}} \cdot \frac{\sin\left(\frac{\alpha}{2}+\varphi\right)}{\sin\varphi}$$

MINIMALNA POTREBNA SILA V STEBLU VIJAKA

MOMENT KLJUČA IZRAČUNAMO PO ENAČBAH OBRAVNAVANIH V POGLAVJU VIJAČNI SPOJI. PRI TEM VELJA $F_e = F_v$



$$\cos\frac{\alpha}{2} = \frac{L}{L_F}$$

$$L_F = \frac{L}{\cos\frac{\alpha}{2}}$$

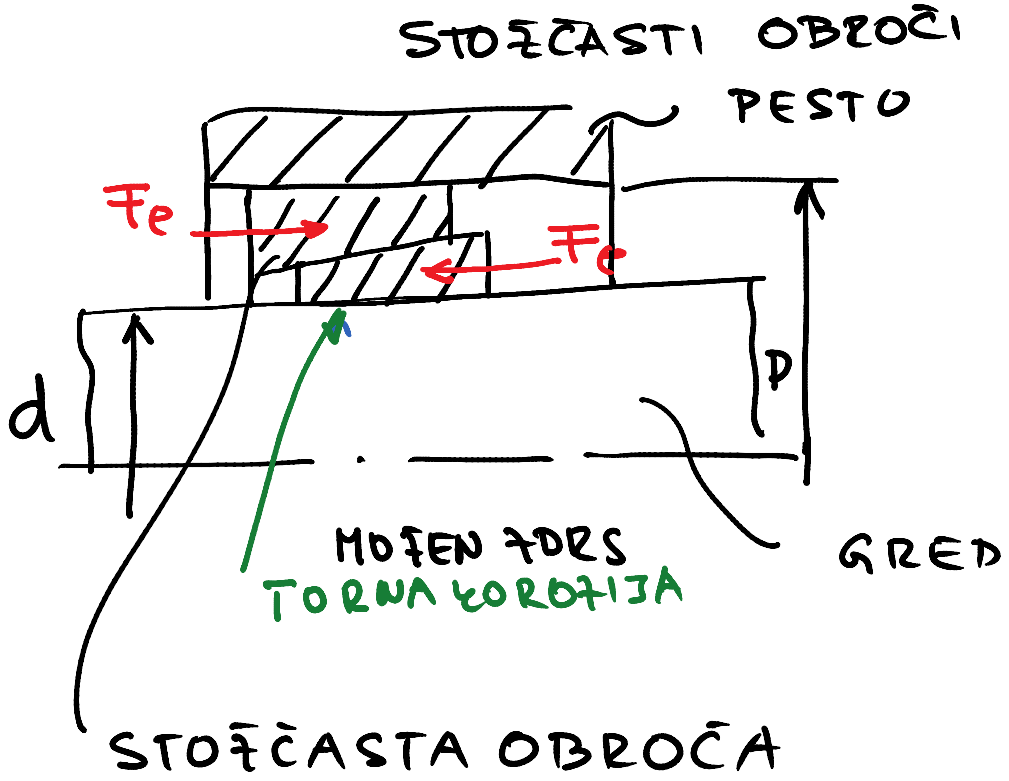
$$F_N = \frac{F_R}{\mu} = \frac{F_e \sin\beta}{\mu \sin\left(\frac{\alpha}{2}+\beta\right)}$$

$$F_N = \frac{F_e \cancel{\sin\beta} \cos\beta}{\sin\left(\frac{\alpha}{2}+\beta\right) \cancel{\sin\beta}}$$

$$p_F = \frac{F_N}{\pi D_{mF} L_F} = \frac{F_N \cos\frac{\alpha}{2}}{\pi D_{mF} \cdot L} = \frac{F_e \cos\beta \cos\frac{\alpha}{2}}{\sin\left(\frac{\alpha}{2}+\beta\right) \pi D_{mF} \cdot L}$$

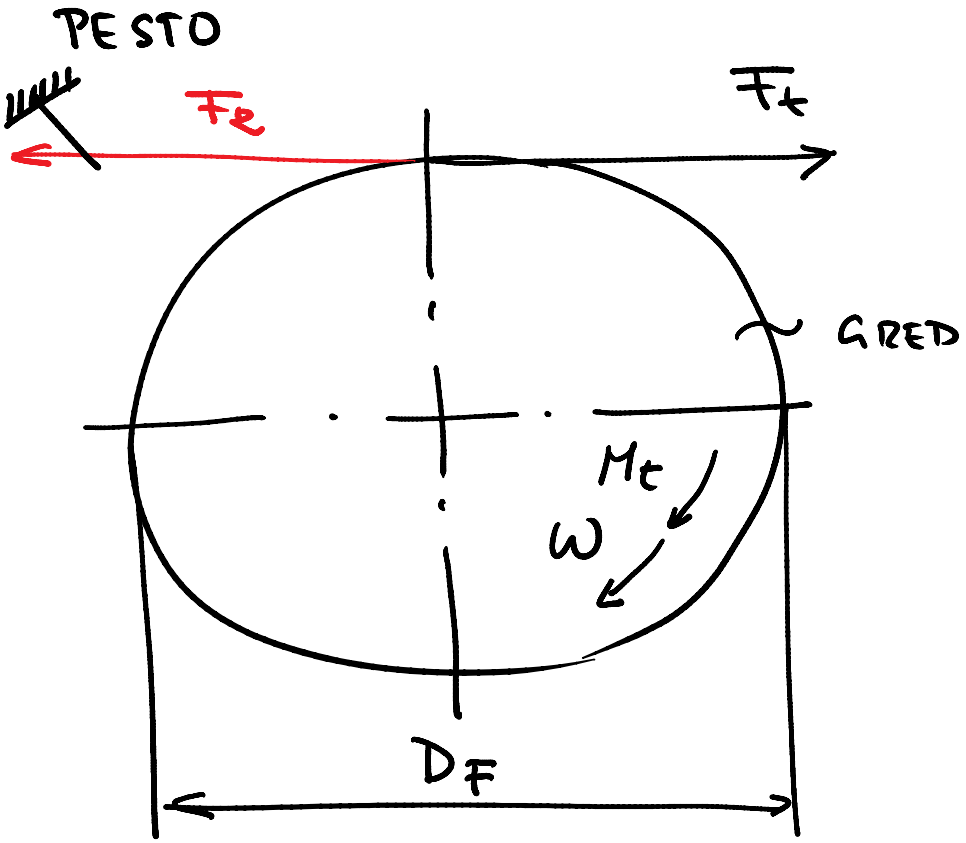
$$p_F \leq p_{F dop}$$

REŠUJE PROBLEM PRENOSA M_t IN F_a.



SPENJALNA ČELJUST

RAZMERE MED OBRATOVANJEM



$$F_t = \frac{M_t \cdot 2}{D_F}$$

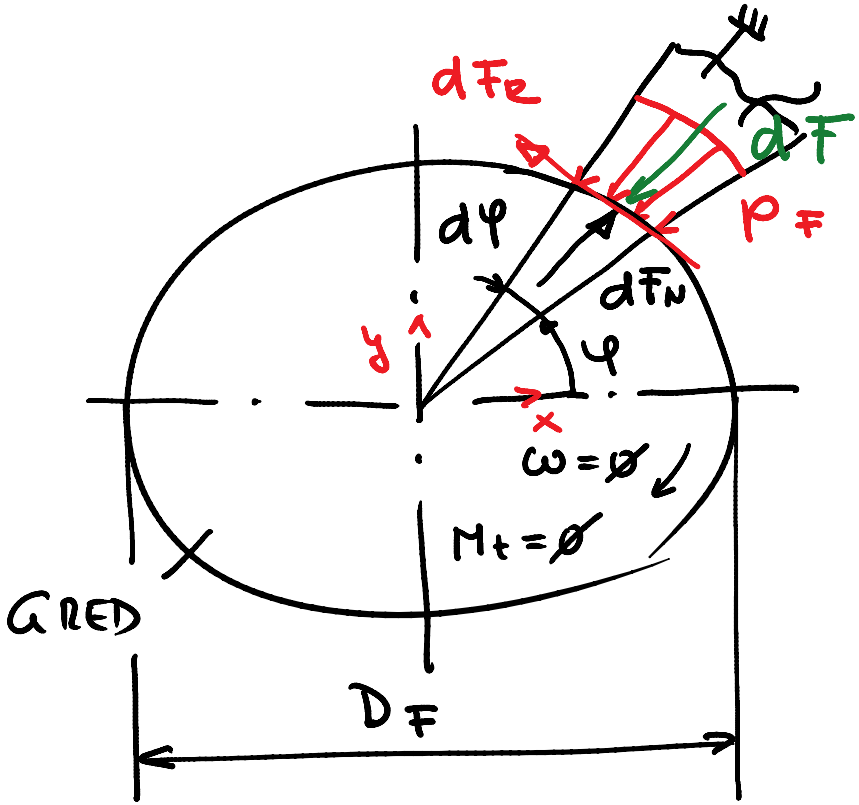
$$F_t \leq F_R$$

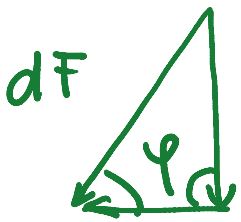
| SILA TRENJA

SILO TRENJA USTVARIMO S TLAČOM. STISNEMO PESTO OB GRED.

SPENJALNA ČELJUST SE UPORABLJA ZOT TOGA SKLOPKA.

RAZMERE MED MONTAŽO DELPESTA





$dF_y = dF \cdot \sin\varphi$

$dF_N = p_F \frac{D_F}{2} d\varphi \cdot L = dF$

L DOLŽINA SPENJALNE ŽUEŽE

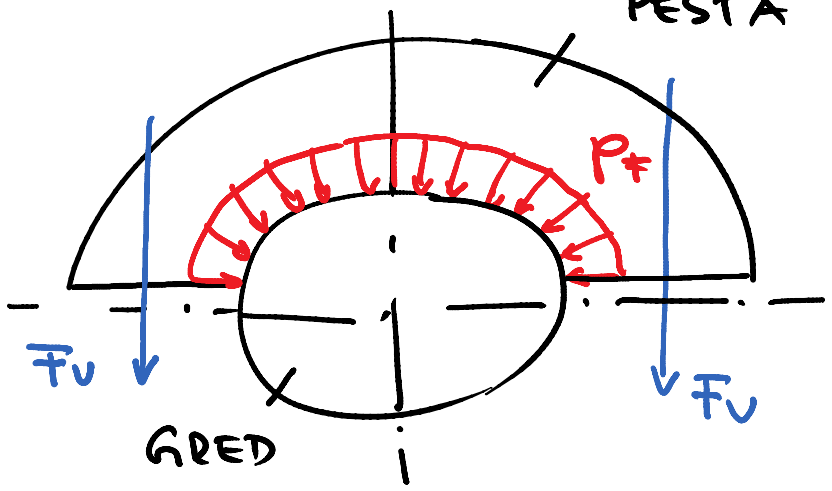
$$\int_0^{F_N} dF_N = p_F \frac{D_F}{2} L \int_0^{2\pi} d\varphi$$

$$F_N = p_F \cdot \frac{D_F}{2} L \, 2\pi$$

$$F_N = p_F D_F L \pi$$

$$F_R = F_N \cdot \mu$$

ZGORNJA POLOVICA PESTA



$$dF_N = dF = \frac{dF_y}{\sin\varphi}$$

$$p_F \cdot \frac{D_F}{2} d\varphi \cdot L = \frac{dF_y}{\sin\varphi}$$

$$\int_0^{F_y} dF_y = p_F \frac{D_F}{2} L \int_0^{\pi} \sin\varphi \, d\varphi$$

$$F_y = p_F \frac{D_F}{2} L \left(-\cos\varphi\right)\Big|_0^{\pi}$$

$1 + 1 = 2$

$$F_y = p_F \cdot D_F \cdot L$$

SILA V VIJAČU

$$F_V = \frac{F_y}{n} = \frac{p_F D_F L}{n}$$

n ŠTEVILO VIJAČOV

$$F_R \geq F_t = \frac{M_t \, 2}{D_F}$$

$$F_R = \frac{p_F \cdot D_F \cdot L \, \pi \cdot \mu}{F_N} \geq \frac{2 M_t}{D_F}$$

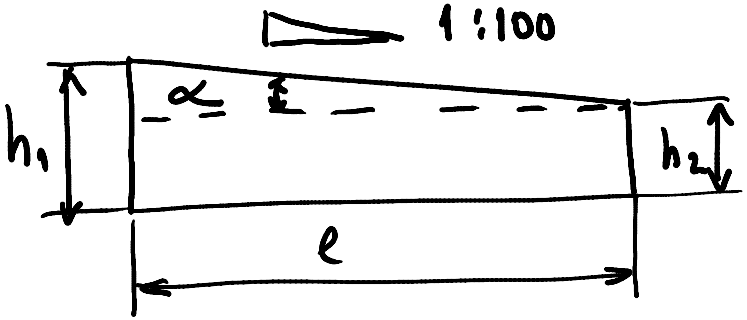
$$p_F \geq \frac{2 M_t}{D_F^2 \, L \, \pi \, \mu}$$

$$\frac{n \, F_V}{\cancel{D_F \cdot L}} \geq \frac{2 M_t}{D_F^2 \, \cancel{L} \, \pi \, \mu}$$

$$F_V \geq \frac{2 M_t}{D_F \cdot \pi \, \mu \, n}$$

$$p_F = \frac{n \, F_V}{D_F \cdot L} \leq p_{adm}$$

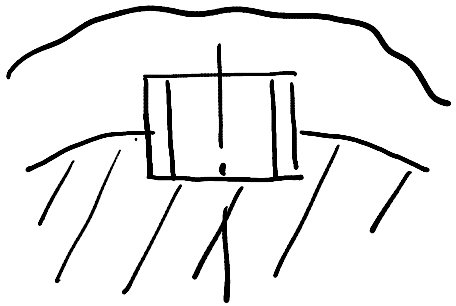
ZAGOZDE



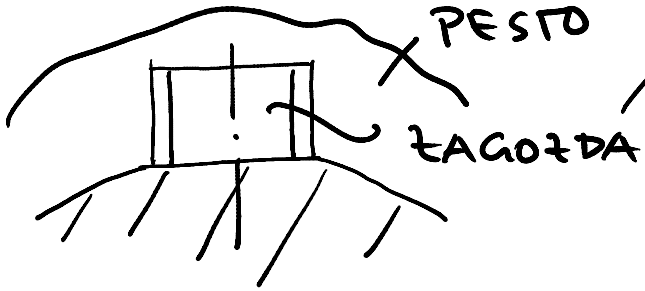
NAGIB $C = 1:x = \frac{h_1 - h_2}{\ell}$

ZAGOZDE $C = 1:100$

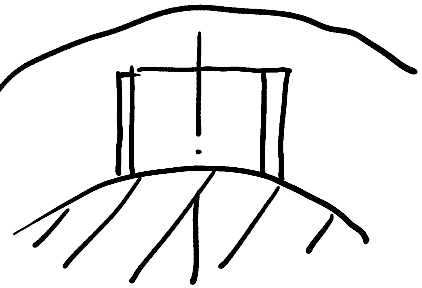
$C = tg\alpha$



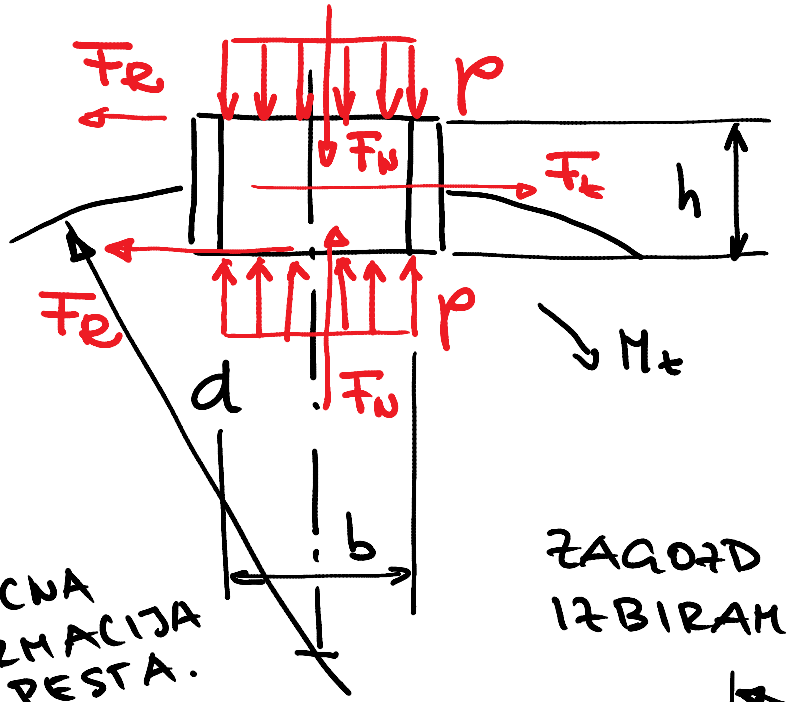
UTOR



PLANO OBDELANA GRED



BREZ OBDELAVE



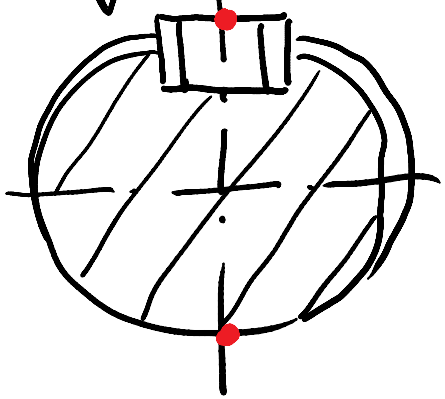
$F_R \geq F_t$

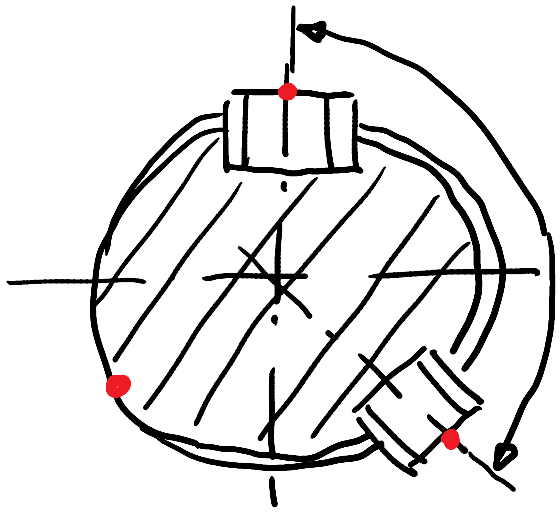
ZAGOZDA PRENAŠA OBREMENITEV S TRENJEM.

$F_N = ?$

ZAGOZD NE UREDNOTIMO, JIH IZBIRAMO GLEDE NA d.

ELASTIČNA DEFORMACIJA PESTA.





ZAGOZDO IZBEREMO GLEDE NA d.