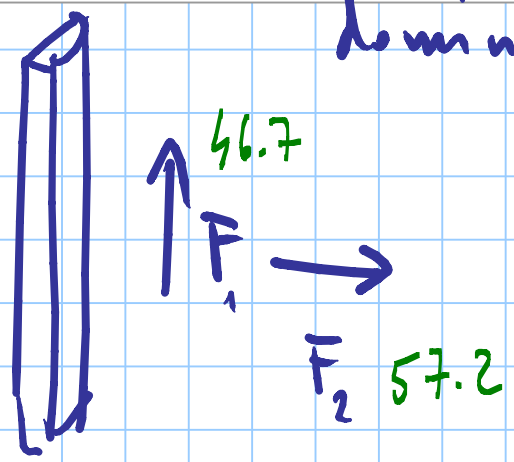
$a = 4$ mm  $l = 50$ mm  S275

Titolo nota  22/01/2013

dominio di resistenza - sfera
- ellissoide




$$F_1 = 4 \times 50 \times 233.7 \times 10^{-3} = 46.7 \text{ kN}$$

$$\sigma_\perp = \tau_\perp = \frac{F_2/\sqrt{2}}{a\,l}$$

$$f_{wd} = \frac{f_u}{\beta_w \gamma_{M2}} = 404.7 \text{ MPa}$$

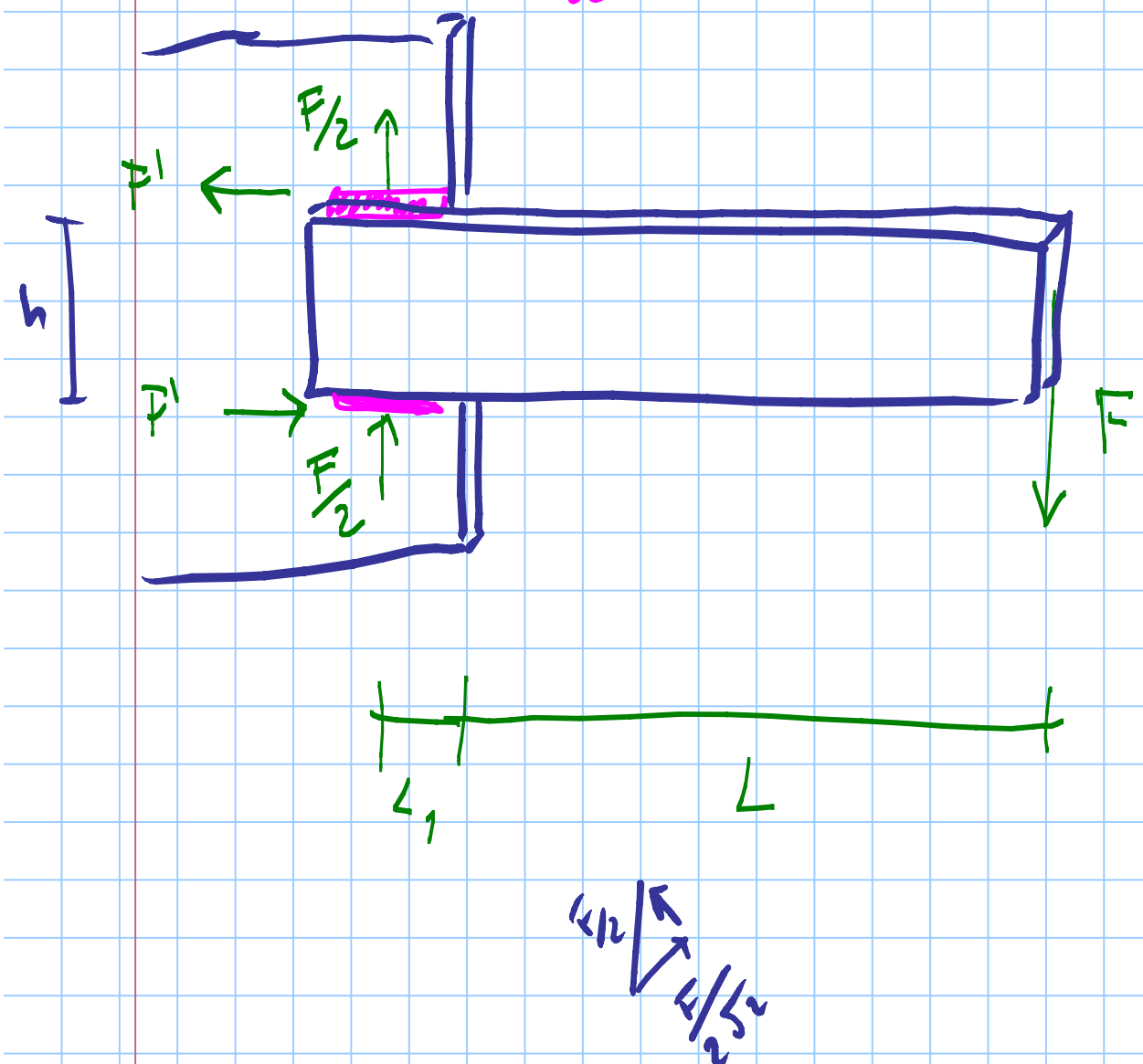
$$f_{v,wd} = \frac{f_u/\sqrt{3}}{\beta_w \gamma_{M2}} = 233.7 \text{ MPa}$$

$$\sqrt{\sigma_\perp^2 + 3\tau_\perp^2} \leq f_{wd}$$

$$\sqrt{\left(\frac{F_2/\sqrt{2}}{a\ell}\right)^2 + 3\left(\frac{F_2/\sqrt{2}}{a\ell}\right)^2} \leq f_{wd}$$

$$2\,\frac{F_2/\sqrt{2}}{a\ell} \leq f_{wd}$$

$$F_2 \leq \frac{a\ell}{\sqrt{2}}\, f_{wd} = \frac{4 \times 50 \times 404.7}{\sqrt{2}} \times 10^{-3} = 57.2\ \text{kN}$$




$$F' = \frac{F(L+L_1)}{h}$$

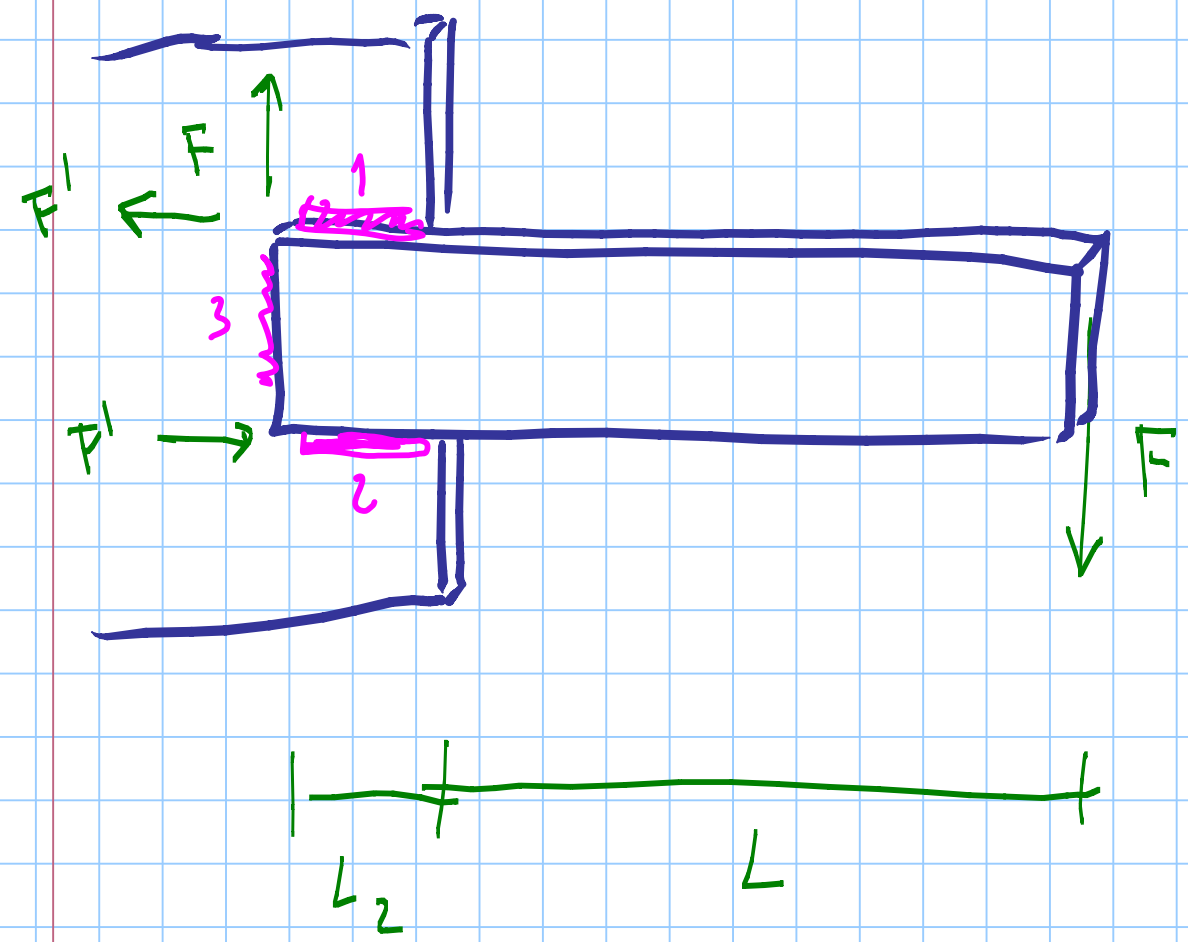
SFERA

$$\sqrt{(F/2)^2 + F'^2} \leq a\,l\,f_{v,wd}$$

ELLISSOIDE

$$\tau_{//} = \frac{F'}{a\,l}$$

$$\sigma_1 = \sigma_2 = \frac{\frac{F}{2}\cdot\frac{1}{\sqrt{2}}}{a\,l}$$

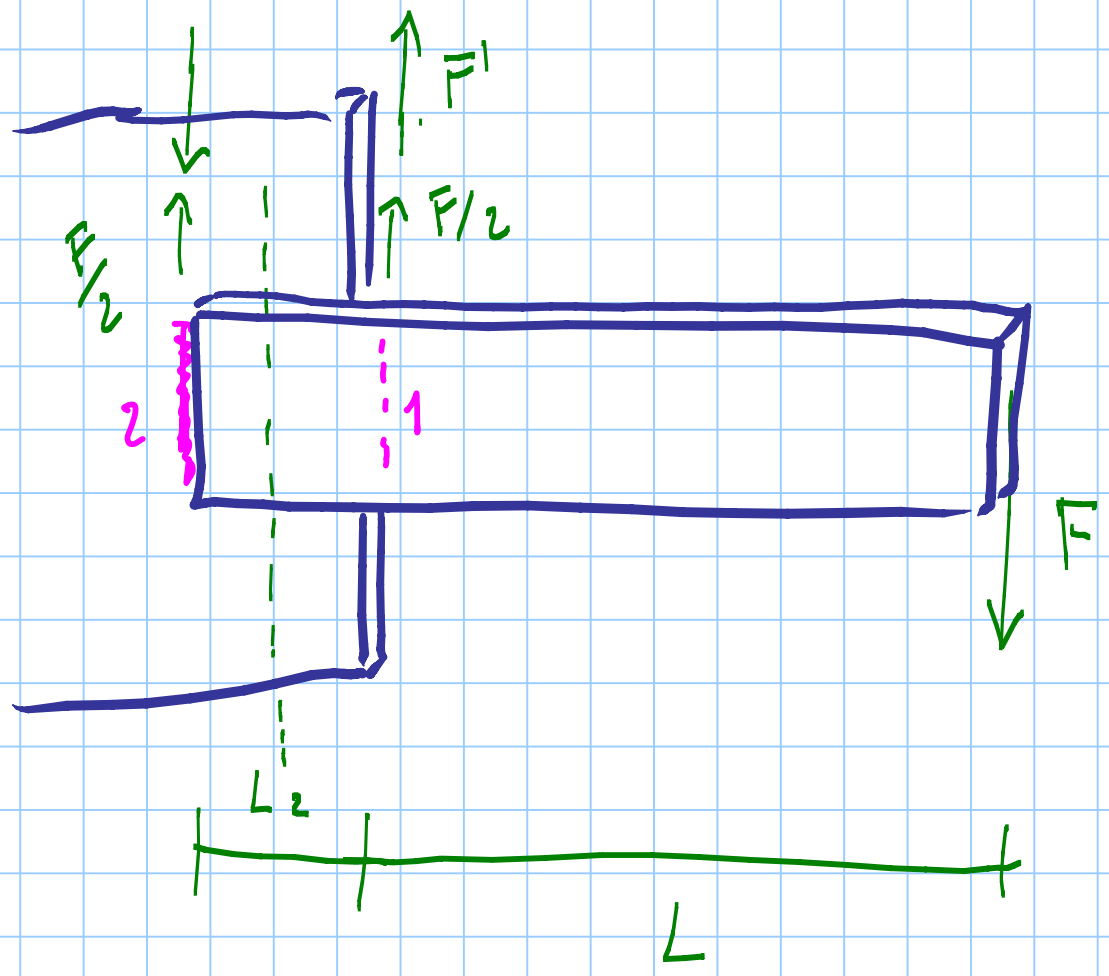



$$F' = \frac{F(L+L_2)}{h}$$

$$\tau_{//1} = \frac{F'}{a\ell_1} = \tau_{//2}$$

$$\tau_{//3} = \frac{F}{a\ell_3}$$

SFERA



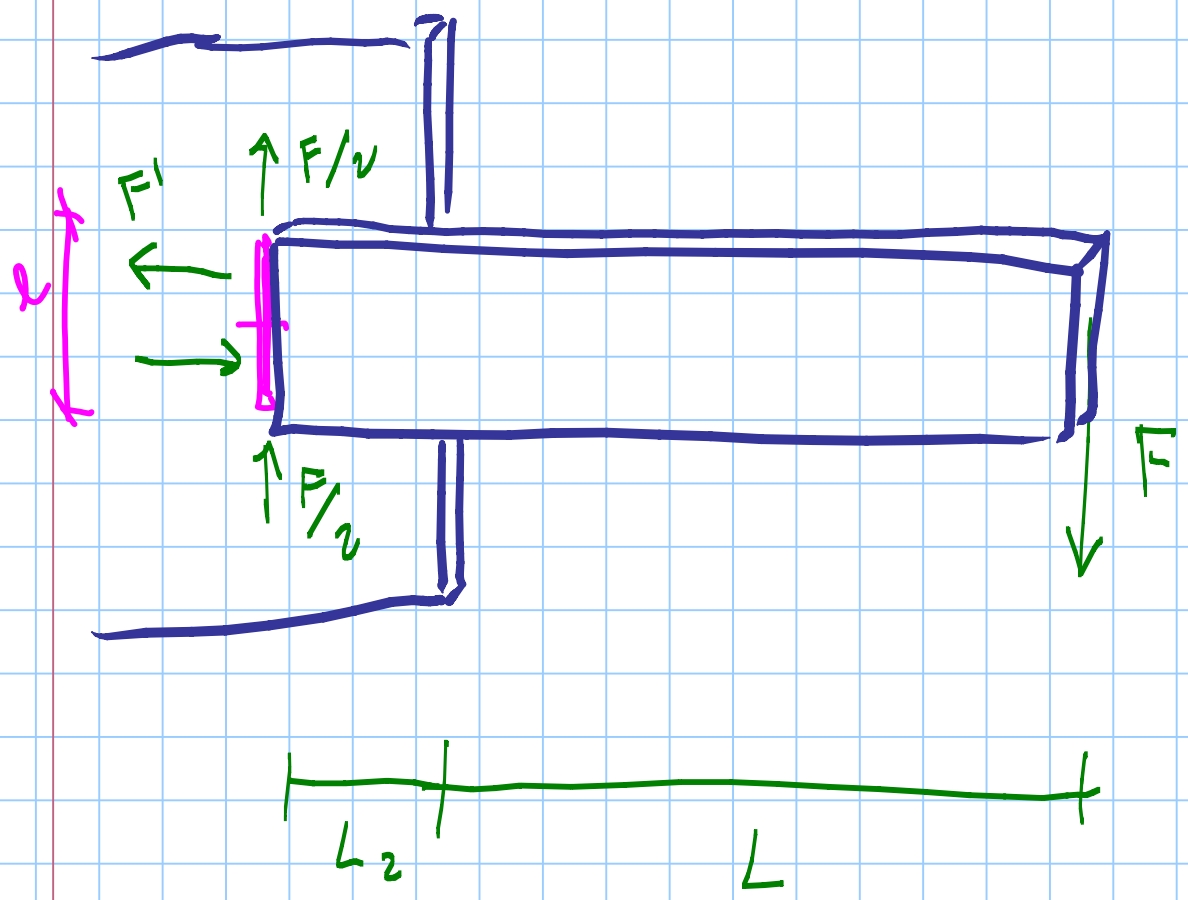

$$F' = \frac{F\left(L + L_2/2\right)}{L_2}$$

ze $\tau_{II}$

$$a\, l_1\, f_{vwd} \geq F' + F/2$$

$$a\, l_2\, f_{vwd} \geq F' - \frac{F}{2}$$

SFERA




$$F' = \frac{F(L+l_2)}{l/2}$$

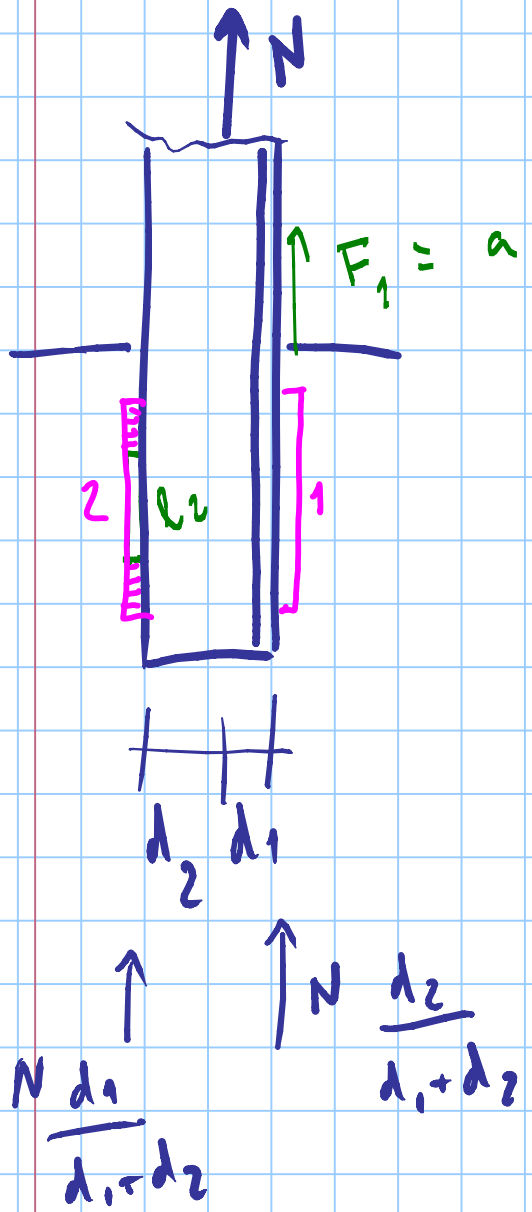
SFERA

$$\sqrt{F'^2 + (F/2)^2} \le a\frac{l}{2} f_{vwd}$$

ELLISSOIDE

$$\tau_{//} = \frac{F/2}{a\,l/2}$$

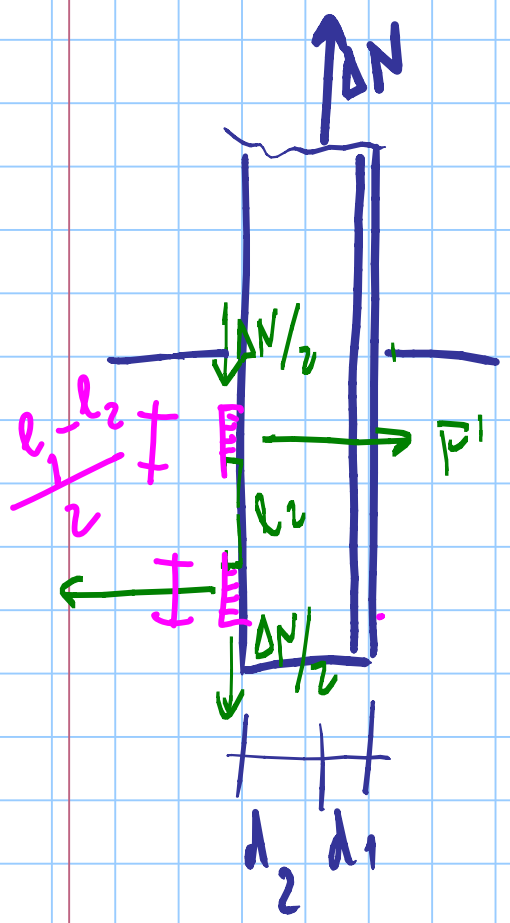
$$\sigma_\perp = \tau_\perp = \frac{F'/\sqrt{2}}{a\,l/2}$$




bar Tedh $l_2 = l_1 \frac{d_1}{d_2}$

$\Downarrow$

$N_{max} = F_1 + F_1 \frac{d_1}{d_2} = F_1 \left(1 + \frac{d_1}{d_2}\right)$




$$P' = \frac{\Delta N \, d_2 \cdot 2}{l_1 + l_2}$$

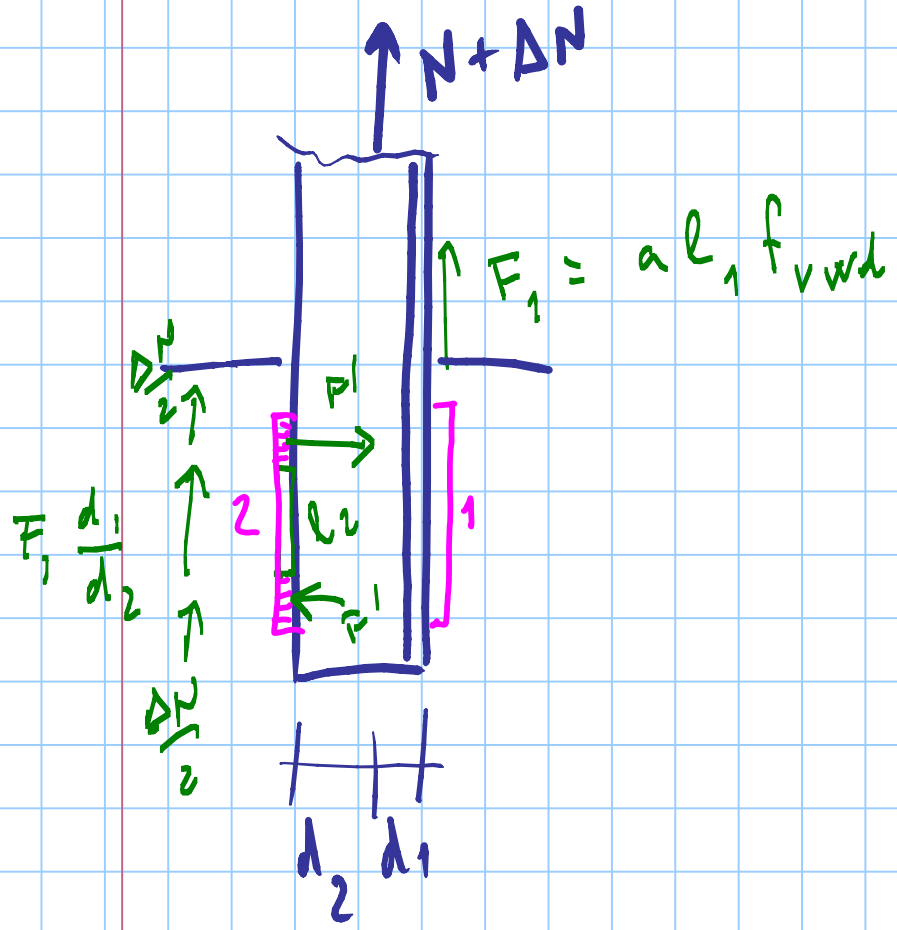
$$\frac{l_1 - l_2}{2} \qquad l_2 + \frac{l_1 - l_2}{2} = \frac{l_1 + l_2}{2}$$

SFERA

$$\sqrt{\left(\frac{\Delta N}{2}\right)^2 + \left(\frac{2\Delta N \, d_2}{l_1 + l_2}\right)^2} \leq a \, \frac{l_1 - l_2}{2} \, f_{vwd}$$

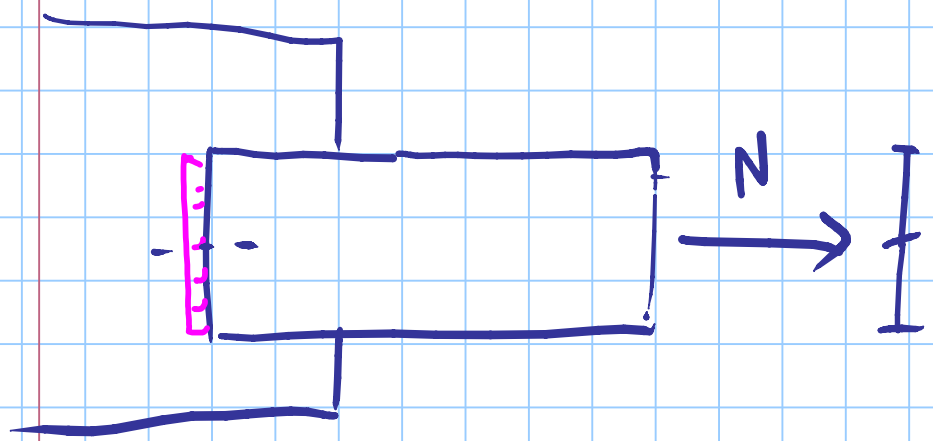
$$\Delta N \sqrt{\frac{1}{4} + \frac{4\, d_2^2}{(l_1 + l_2)^2}} \leq a \frac{l_1 - l_2}{2} f_{vwd}$$

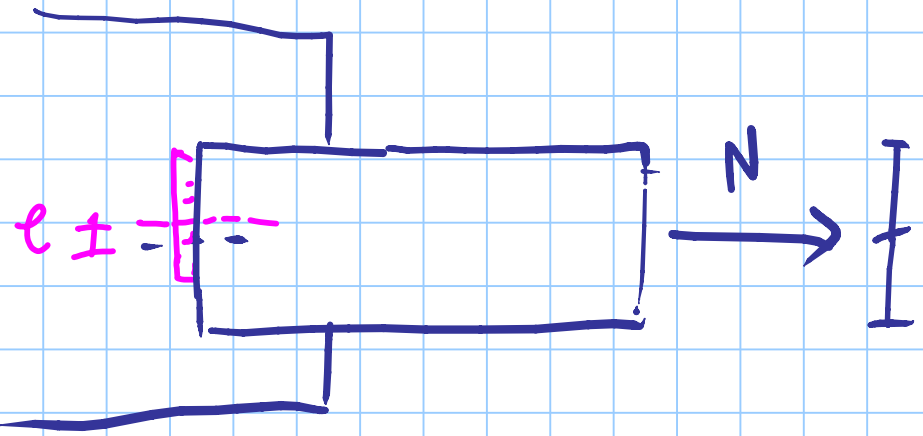
$$\Delta N \leq \frac{a \frac{l_1 - l_2}{2}}{\sqrt{\frac{1}{4} + \frac{4\, d_2^2}{(l_1 + l_2)^2}}} f_{vwd}$$



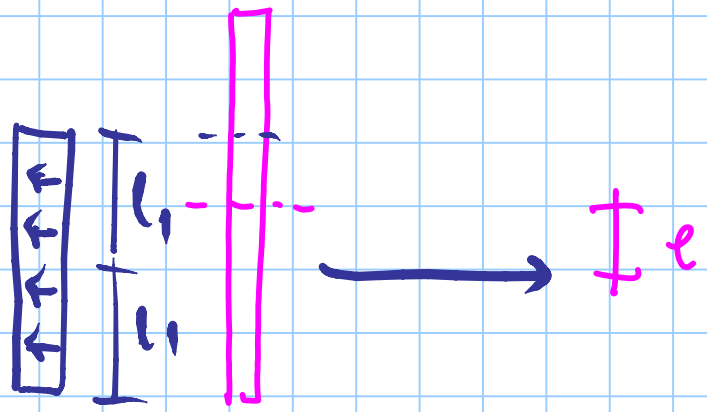

esercizio a.l Teorico,

non vale la pena
in pratica



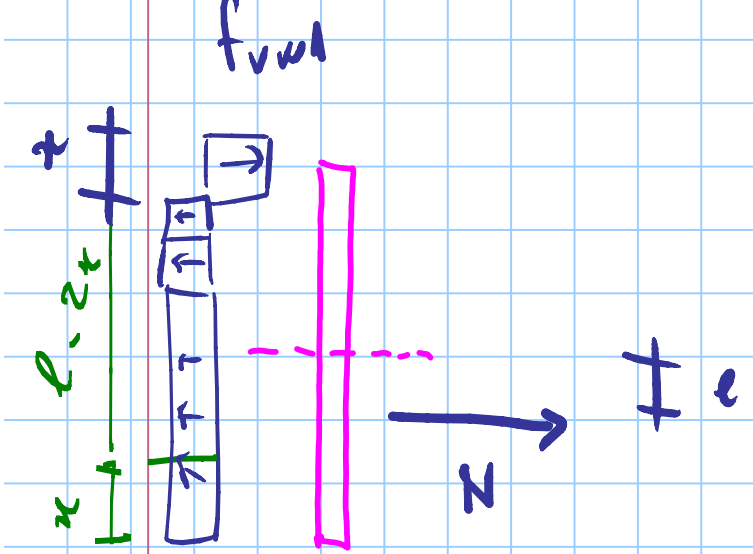




SFERA




$2 a l_1 f_{vol}$

SFERA




$$N = a\,(l-2x)\,f_{vwd}$$

$$M = a\,x\,(l-x)\,f_{vwd}$$

$$e = \frac{M}{N} = \frac{a\,x\,(l-x)\,f_{vwd}}{a\,(l-2x)\,f_{vwd}}$$

$$e\,(l-2x) = x\,(l-x) \quad \Rightarrow \quad x$$