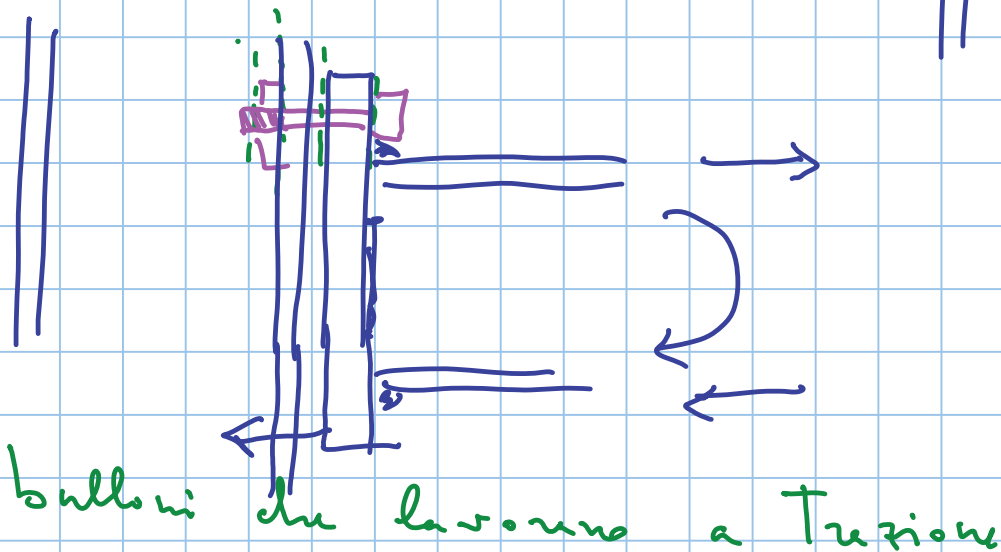


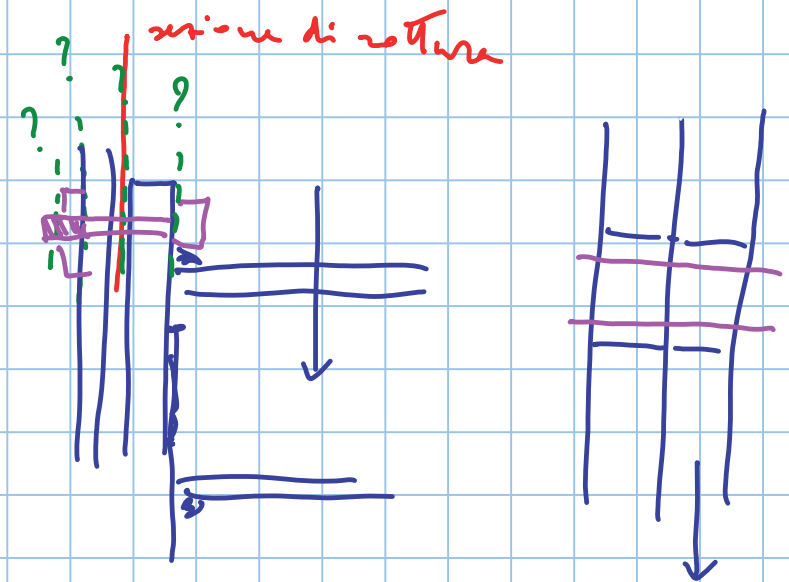
BULLONI

lavorano



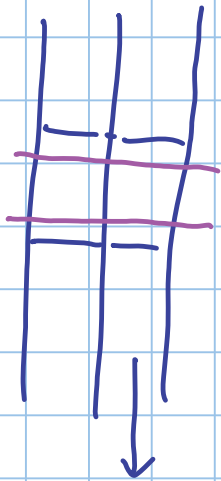
UNIONI

BULLONATE



bulloni che lavorano a Taglio.

• attrito tra i piatti



superficie la resistente ad attrito

bulloni : diametro [mm]

M 12 14 16 18 20 22 24 27
3.

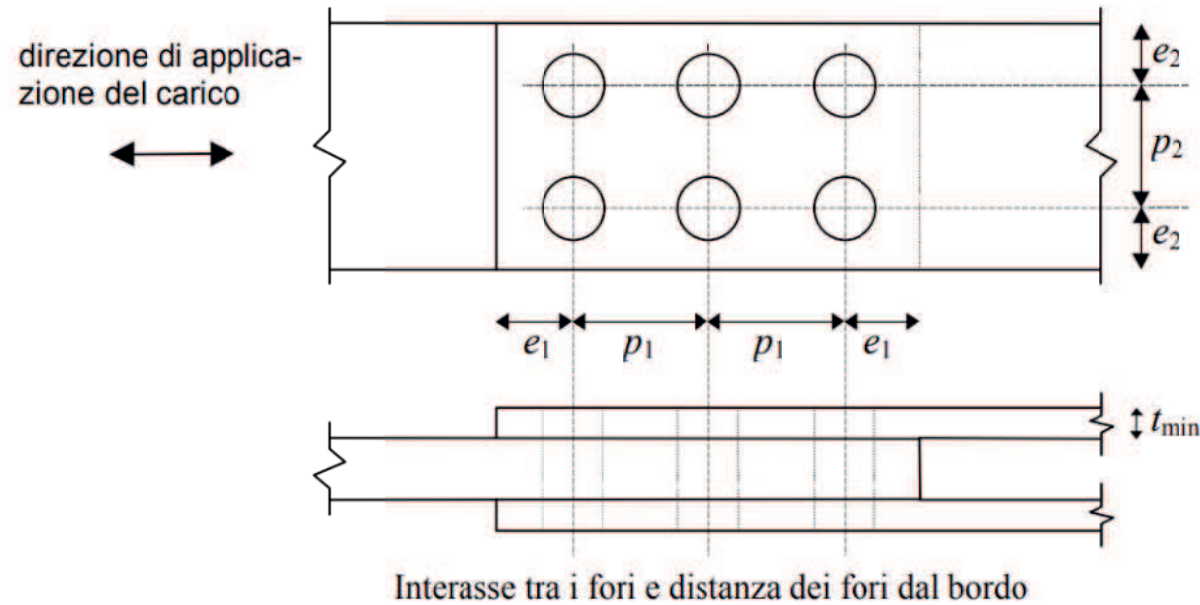
$$Area\ nominale\ (gamb.\overset{nom}{f.lett.}) = \pi \frac{d^2}{4}$$

$$Area\ resistente\ (gamb.\ f.lett.) \simeq 0.75\ A_{nomin.}$$

Tabella 3 - Passo della filettatura p (mm) e area nominale A e resistente A_{res} (mm²)

diametro d	12	14	16	18	20	22	24	27	30
passo p	1.75	2.00	2.00	2.50	2.50	2.50	3.00	3.00	3.50
A	113	154	201	254	314	380	452	573	707
A_{res}	84.3	115	157	192	245	303	353	459	581
A_{res} / A	0.75	0.75	0.78	0.75	0.78	0.80	0.78	0.80	0.82

classe	indice	la resistenza	alta resistenza	
4.6	5.6	6.8	8.8	10.9
		$f_{yb} = 600 \text{ MPa}$	$f_{yb} = 0.8 f_{ub} = 480 \text{ MPa}$	



d = diametro bullone

d_0 = diametro foro

Tabella 6 - Valori minimi dell'interasse tra i fori e della distanza dei fori dal bordo

	p_1	p_2	e_1	e_2
Precedente norma italiana	$3 d$	$3 d$	$1.5 d$	$1.5 d$
NTC08 e Eurocodice 3	$2.2 d_0$	$2.4 d_0^{(1)}$	$1.2 d_0$	$1.2 d_0^{(1)}$
⁽¹⁾ adottando il valore minimo $2.4 d_0$ e $1.2 d_0$ si riduce la resistenza a rifollamento				

RESISTENZA A TAGLIO DEL BULLONE

$$F_{V,Rd} = A \frac{f_{ub}}{\gamma_{M2}} \boxed{\frac{1}{\sqrt{3}}} 0.6$$

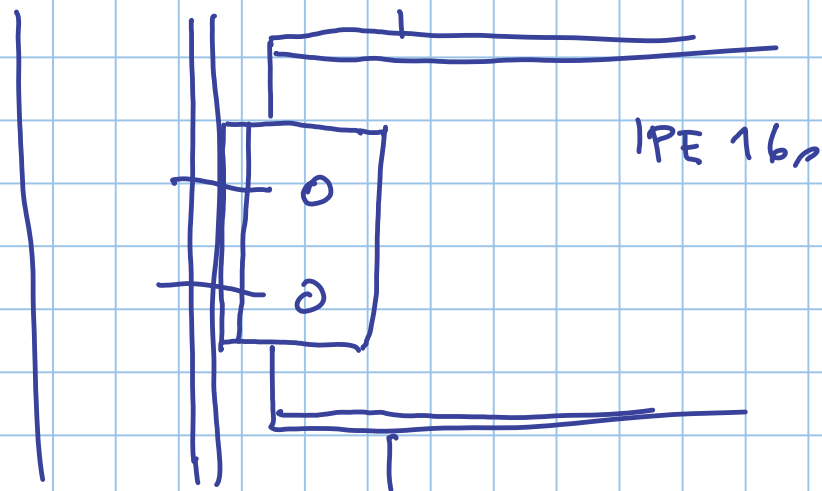
0.5

bulloni: interam.
filati:
di classe

6.8 e 10.9

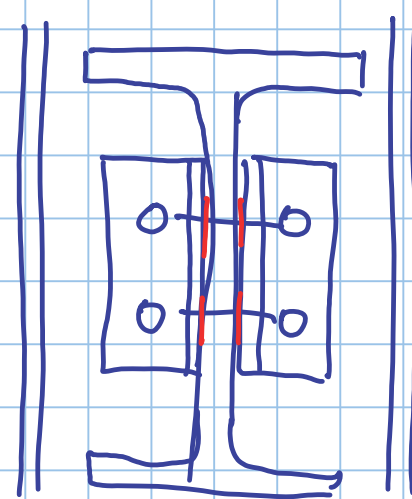
A_{res} ? gambo tutto filato

A ? gambo filato solo all'estremo



HEA 160

bulloni: M12
chassi 8.8

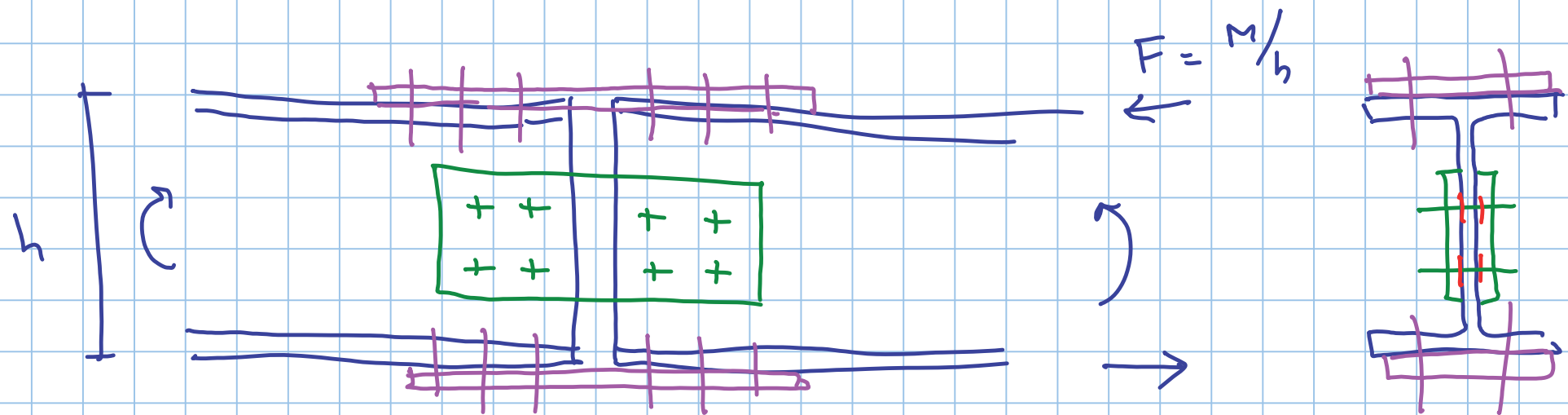


1 bullone per te

$$F_{v,rd} = 0.6 \times 84.3 \times \frac{800}{1.2} =$$

$$= 33.7 \text{ kN}$$

$\times 2 \times 2$
bulloni azioni



2 p. d'annee

8 bulles d'annee

$$V_{Ed} \leq F_{V,Rd,Tot} = 4 \text{ bulles} \times 2 \text{ annees} \times F_{V,Rd} \text{ di un bul.}$$

$$M_{Ed} \leq 6 \times 1 \times F_{V,Rd} \text{ bul} \times h$$