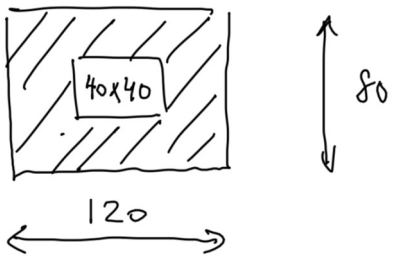
1.



area lim $A = 120 \cdot 80 - 40 \cdot 40$

$A = 8000$

$\tau = \frac{F}{A} \Rightarrow F = \tau \cdot A$

$F = 4 \cdot 8000 = 32\,000\,N$

SVAR: $F = 32\,kN$

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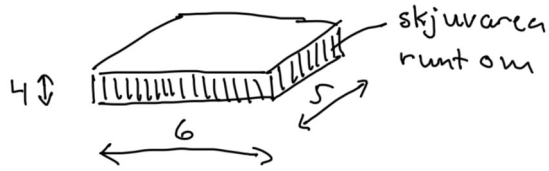
2. stansad bit



$A = O \cdot t = 2 \cdot (6+5) \cdot 4 = 88$

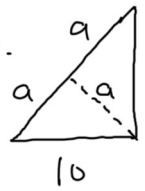
$\tau_B = \sigma_B \cdot 0{,}6 = 280 \cdot 0{,}6 = 168$

$\tau = \frac{F}{A} \Rightarrow F = \tau \cdot A$

$F = 168 \cdot 88 = 14\,784$

SVAR: 15 kN

3.



$a^2 + a^2 = 10^2$

$a = \sqrt{50} \approx 7{,}07$

skjuvarea svetsfog $A = (2x - 4a)\,a$

$A = (2x - 4 \cdot 7{,}07) \cdot 7{,}07$

$\tau = \frac{F}{A} \Rightarrow A = \frac{F}{\tau} = \frac{180\,000}{208} \approx 865{,}38$

$(2x - 4 \cdot 7{,}07)\,7{,}07 = 865{,}38$

$2x - 4 \cdot 7{,}07 = \frac{865{,}38}{7{,}07}$

$x = \frac{122{,}38 + 4 \cdot 7{,}07}{2}$

$x = 75{,}33$

SVAR: 75 mm

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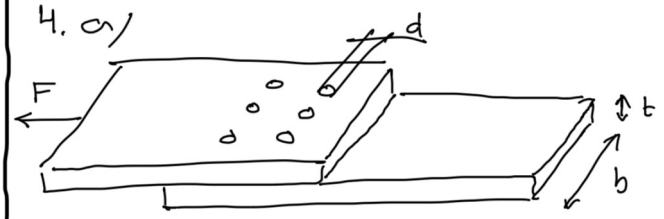
4. a)



$F = 200\,kN \quad \sigma_B = 480 \Rightarrow \tau_B = 480 \cdot 0{,}6 = 288$

b) skjuvarea nitar 6st O

$A = 6\pi r^2$

$\frac{\tau}{n} = \frac{F}{A} \Rightarrow A = \frac{F \cdot n}{\tau}$ $\Rightarrow 6\pi r^2 = \frac{F \cdot n}{\tau}$

$r = \sqrt{\frac{Fn}{6\pi\tau}} = \sqrt{\frac{200\,000 \cdot 3}{6\pi \cdot 288}} \approx 10{,}51$

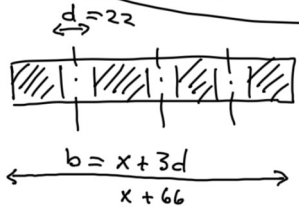
$d = 2r = 2 \cdot 10{,}51 \approx 21{,}02 < 22$

c) kraften fördelas på 6 hål

$\frac{\sigma_u}{n} = \frac{F}{A} \Rightarrow A = \frac{F \cdot n}{\sigma_u} = \frac{200\,000 \cdot 3/6}{320} = 312{,}5$

$A = d \cdot t \Rightarrow t = \frac{A}{d} = \frac{312{,}5}{22} = 14{,}2 < 15$

d)



$\frac{\sigma_B}{n} = \frac{F}{A} \Rightarrow A = \frac{F \cdot n}{\sigma_B} = \frac{200\,000 \cdot 3}{320} = 1875$

dragarea – svagaste punkt

$A = x \cdot t$

$x = \frac{A}{t}$

$x = \frac{1875}{15} = 125$

$b = x + 66$
$= 125 + 66$
$= 191$
< 200

SVAR:

$d = 22$ mm

$t = 15$ mm

$b = 200$ mm