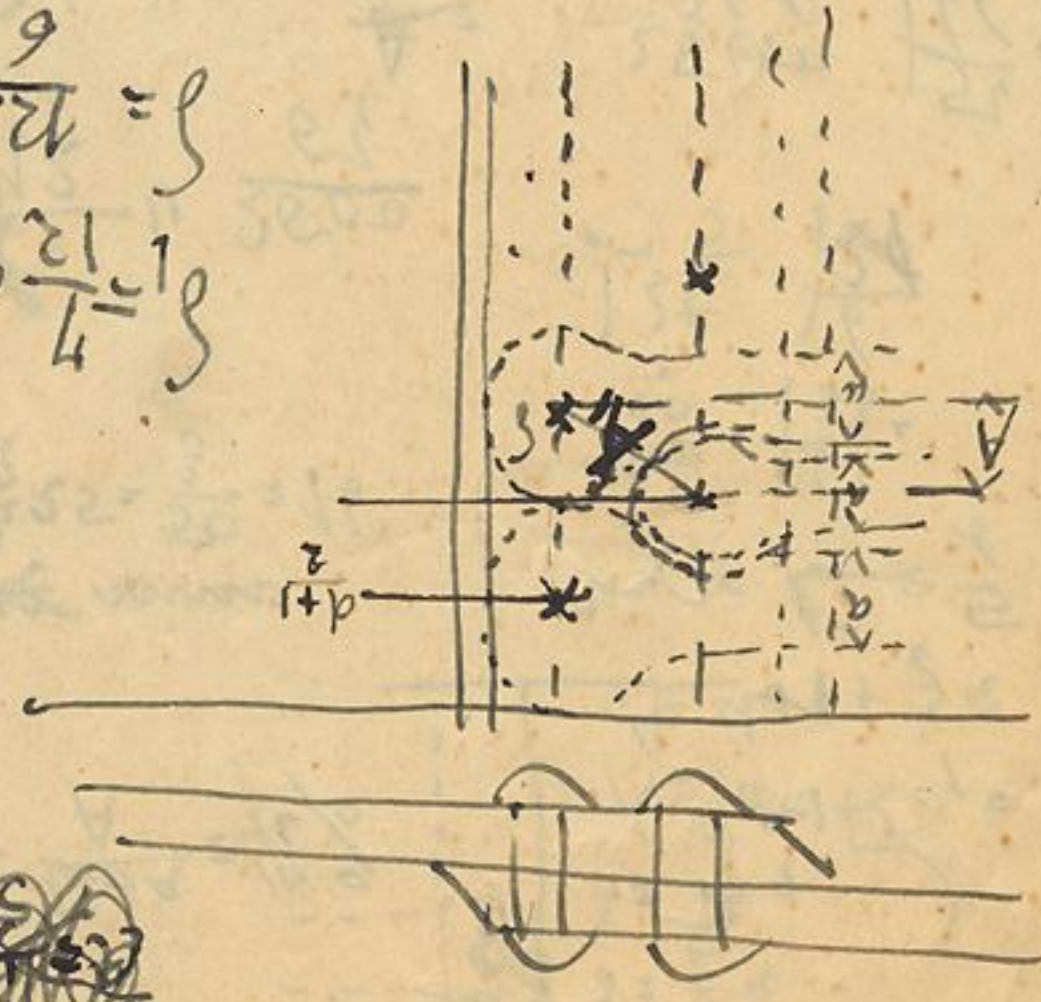


refuge hole file:



$$A = \frac{d+1}{2} + \frac{2}{2} \quad \delta_1 = \frac{1}{12} a$$

$$A = \frac{d+1}{2} + \frac{13}{13} a \quad s = \frac{6}{2} a$$

$\epsilon = 10 \text{ mm}$ $d = 20 \text{ mm}$

$$a = \frac{H \cdot h_0}{3.14 \cdot h_0 \cdot 1.266} = \frac{2.5 \text{ mm}}{5}$$

$$\delta_1 = \frac{1}{4} a = \frac{17.5}{12} = 14.15$$

$$\delta_2 = \frac{1}{12} a = \frac{14.15}{12} = 1.18$$

$$f = \frac{6}{12.5} = 20.8 \text{ mm} = 2 \text{ mm}$$

$$A = \frac{21}{2} + \frac{13 \cdot 2.5}{12}$$

$$A = 10.5 +$$

$$21 \frac{10.5}{2} = 21 \cdot 5.25 = 110.25$$

$$\frac{2.912}{18.15} = 0.1604$$

$$P = \frac{R' \cdot \pi \cdot d^2}{4 \cdot P} \quad n = \frac{R' \cdot \pi \cdot d^2}{4 \cdot P}$$

$$A = d + 1 + 2.5 = 21 + 34 = 55 \text{ mm}$$

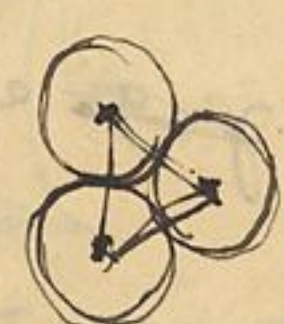
Perimeter = $2\pi r$

$$\frac{2.5}{12} = 0.208$$

$$\frac{13}{12} = 1.083$$

$$\frac{2.5}{12} = 0.208$$

$$\frac{13}{12} = 1.083$$



For shape: 

$t = 10 \text{ mm}$

$d = 20 \text{ mm}$

$\delta = \frac{5}{6} \cdot 25 = \frac{125}{6} = 21 \text{ mm}$

$a = \frac{11d^2}{5t} = \frac{3114 \cdot 400}{5 \cdot 10} = 25152 \text{ mm}$

$A = 21 + \frac{100}{3} = 21 + 33 = 54 \text{ mm}$

$w = \frac{5P}{11d^2} = \frac{2 \cdot 58}{3114 \cdot 400} = \frac{116}{1245600} = \frac{1}{10737}$



$P = n R^2 \pi d^2$

$n = \frac{4Q}{5d^2}$

$P = 60 \text{ N}$

$5000 \frac{116}{3114 \cdot 400}$

21

$l = 3 \cdot 21 + 21 + 3 \cdot 54 = 63 + 162 = 225 \text{ mm}$

$\frac{A}{d} = \frac{54}{20} = 2.7$

$d = A$

also ok

$Rac = \frac{1}{5} \pi d^2$

$a = \frac{11d^2}{5t}$

$1.25 \frac{11 \cdot 20^2}{5 \cdot 10}$

$50 \frac{11 \cdot 400}{5 \cdot 10}$

$10 \frac{11 \cdot 400}{5 \cdot 10}$

$\delta = \frac{5}{6} a$
 $A = \frac{1}{3} (d+2\delta)$
 $A = d + 1 + \frac{1}{3} a$

$100 \frac{11}{33}$

$125 \frac{11}{33}$

$2500 \frac{116}{3114 \cdot 400}$

$\frac{240000}{3114 \cdot 400} = \frac{190}{100}$

$2 \frac{11 \cdot 400}{5 \cdot 10}$

54