

$$l_1 = \text{joint thickness} - \text{ext. thickness} - \text{Radius.}$$

$$l_2 = l_1 \tan \theta$$

$$A_1 = \frac{1}{2} l_1 \cdot l_2 = \frac{l_1^2}{2} \tan \theta.$$

$$A_2 = \frac{\pi (\text{Radius})^2}{4}$$

$$A_3 = \text{Radius} \times l_1$$

$$A_4 = \text{extension} \times (\text{joint thickness} - \text{extension thickness})$$

$$A_6 = (l_1 \tan \theta + \text{Radius} + \text{extension} + \text{Root gap}) \times \text{cap height}$$

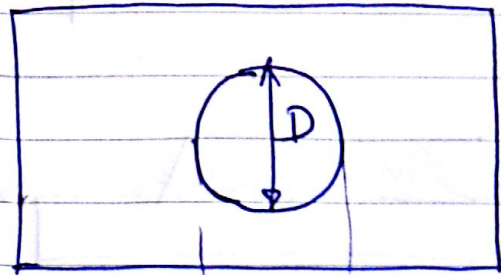
$$A_5 = \text{Root gap} \times \text{joint thickness.} \quad \times 0.72$$

$$\text{Total area} = A_1 + A_2 + A_3 + A_4 + A_5 + A_6$$

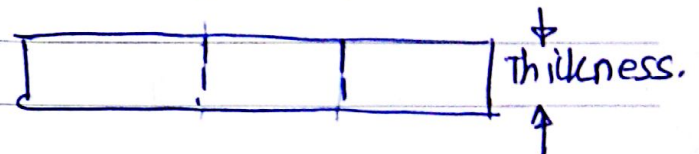
$$\text{Volume} = (A_1 + A_2 + A_3 + A_4 + A_5 + A_6) \times \text{length of joint}$$

$$[\text{wt. of metal.}] = \text{volume} \times \text{filler density} \times \text{no. of joint}$$

plug \Rightarrow



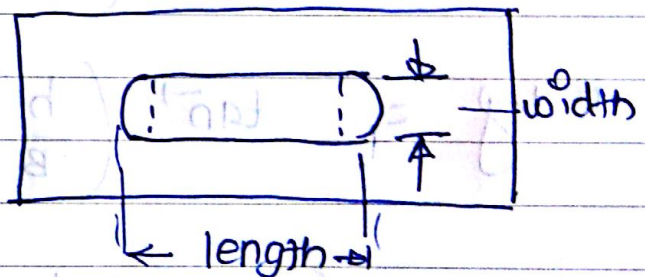
$$\text{plug area} = \frac{\pi \times D^2}{4}$$



$$\begin{aligned} \text{plug volume} &= \text{plug area} \times \text{joint thickness} \\ &= \frac{\pi \times D^2}{4} \times \text{Thickness} \end{aligned}$$

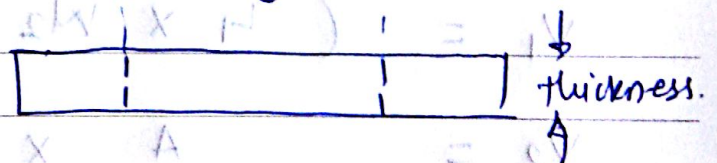
$$\text{Weight of weld} = \text{plug volume} \times \text{Number of joints} \times \text{filler density}$$

slot \Rightarrow



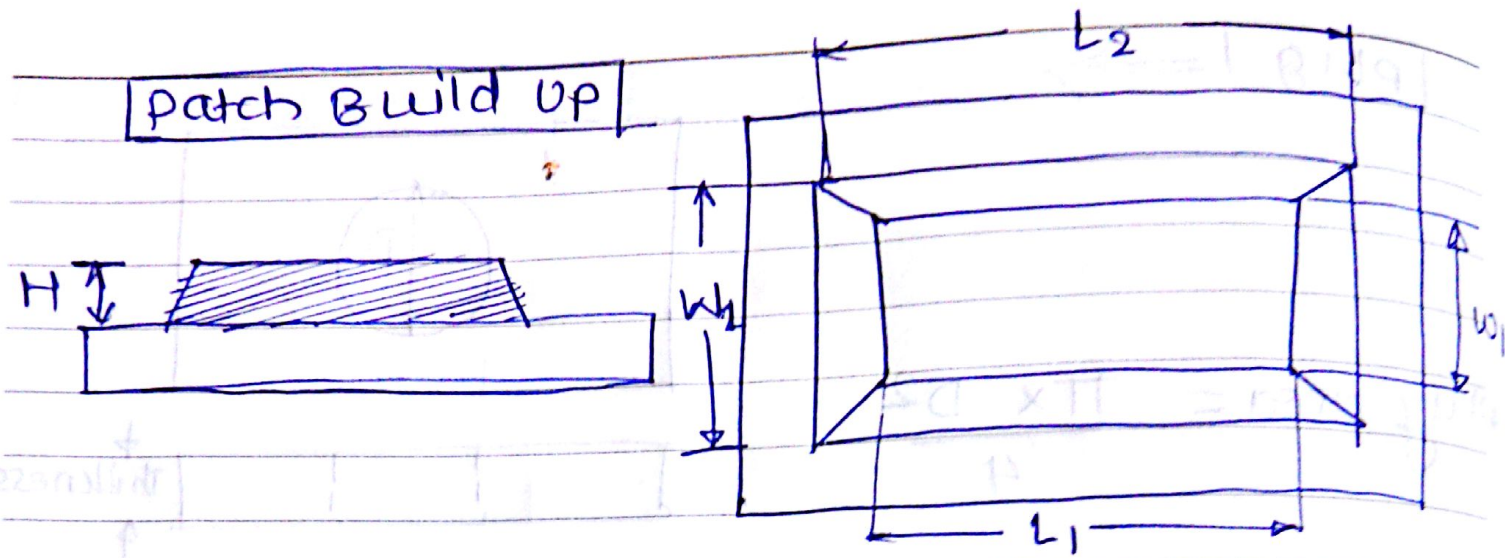
Total Volume =

$$\left(\frac{\pi D^2}{4} \times \text{thi} + \right.$$



$$\text{Total Volume} = \left(\frac{\pi (\text{width})^2}{4} + \text{slot length} \times \text{width} \right) \times \text{thickness}$$

$$\begin{aligned} \text{Weight of weld} &= \left(\frac{\pi (w)^2}{4} + \text{slot length} \times \text{width} \right) \times \text{thickness} \\ &\quad \times \text{filler density} \end{aligned}$$



$$A = \frac{L_2 - L_1}{2}$$

$$B = \frac{W_2 - W_1}{2}$$

$$A \text{ deg} = \tan^{-1} \left(\frac{h}{A} \right)$$

$$B \text{ deg} = \tan^{-1} \left(\frac{h}{B} \right)$$

$$V_1 = (L_1 \times W_2 \times H)$$

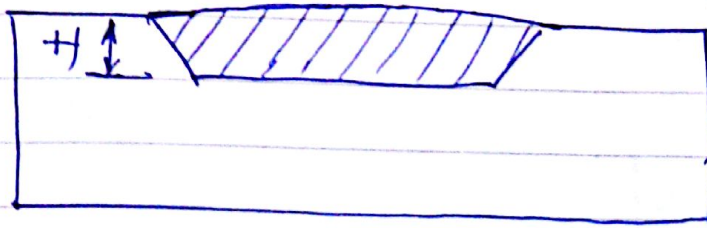
$$V_2 = A \times H \times L_2$$

$$V_3 = B \times H \times W_2$$

$$\text{Total } V = V_1 + V_2 + V_3$$

$$\text{Weight of weld} = V \times \text{filler density}$$

Cavity



From 11/11/19 09:19

} Same as
Patel

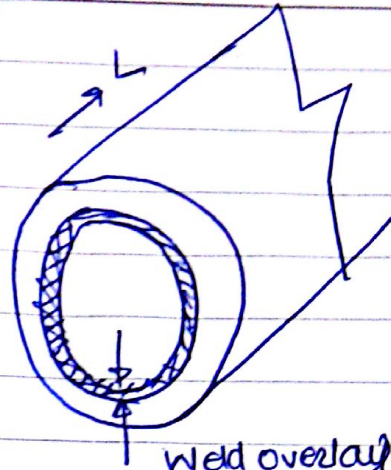
Output to display:-

- length angle = A deg
- Width angle = B deg
-

Overlay or Inlay Weld cost

$$\text{Area} = L \times \text{Diameter}$$

$$\text{Volume} = L \times D \times \text{thickness.}$$



$$\text{Wt of filler material} = L \times D \times t \times \text{density}$$