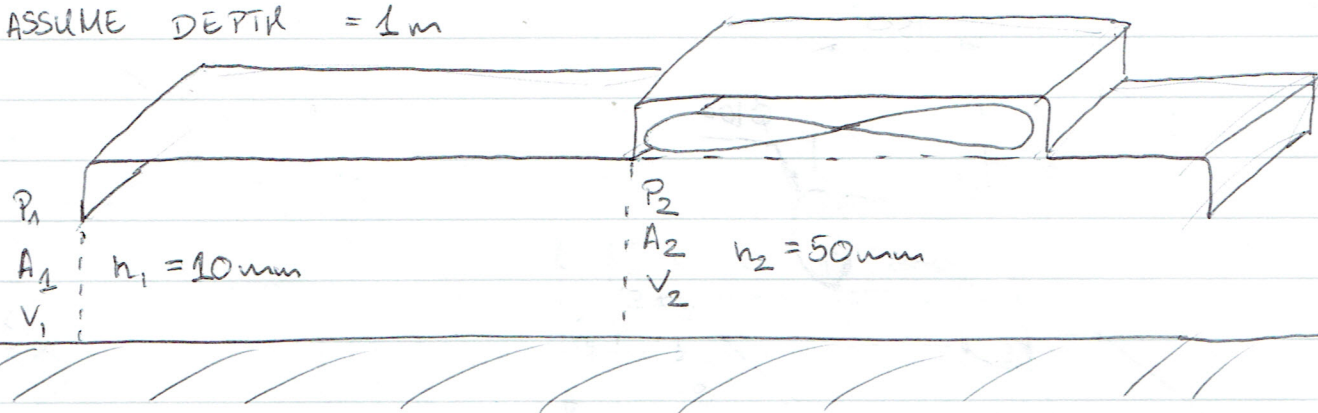


1111.5
27 788.5

ASSUME DEPTH = 1m



DATA FOR EBM PAPST A4DC30-AF03-03

@ $Q = 6000 \text{ m}^3/\text{h}$, $P_2 = 220 \text{ Pa}$
 $Q = 6000 \text{ m}^3/3600 \text{ s} = 1.667 \text{ m}^3/\text{s}$

$$A_1 = 0.01 \text{ m} \cdot 1 \text{ m} = 0.01 \text{ m}^2$$

$$A_2 = 0.05 \text{ m} \cdot 1 \text{ m} = 0.05 \text{ m}^2$$

• As $Q = 1.667 \text{ m}^3/\text{s}$, $V_1 = \frac{Q}{A_1} = \frac{1.667 \text{ m}^3/\text{s}}{0.01 \text{ m}^2} = 166.7 \text{ m/s}$

$$V_2 = \frac{Q}{A_2} = \frac{1.667 \text{ m}^3/\text{s}}{0.05 \text{ m}^2} = 33.34 \text{ m/s}$$

• Bernoulli eq. 1-2.

$$P_1 + \frac{1}{2} \rho V_1^2 = P_2 + \frac{1}{2} \rho V_2^2$$

$$P_1 = P_2 + \frac{1}{2} \rho (V_2^2 - V_1^2)$$

$$P_1 = 220 \text{ Pa} + \frac{1}{2} \cdot 1.2 \text{ kg/m}^3 (33.34^2 - 166.7^2)$$

$$P_1 = 220 \text{ Pa} - 16006 \text{ Pa} = -15786.44 \text{ Pa}$$