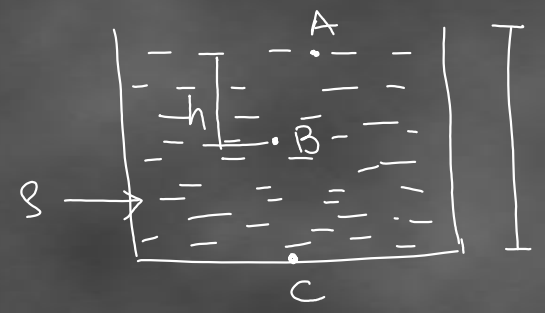
* Pressure Diagram



A $H=0$ $P = \rho g h = 0$

B $H=h$ $P = \rho g h$

C $H=H$ $P = \rho g H$

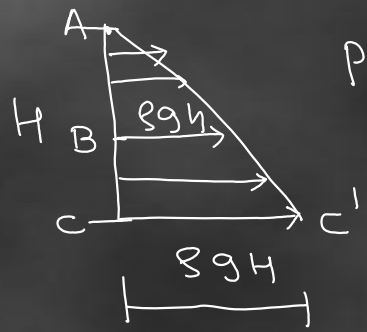
Total Pressure = area of Pressure Diagram

= area of Δ Acc'

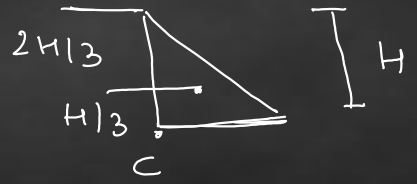
$= \frac{1}{2} B \times H$

$= \frac{1}{2} \times \rho g H \times H$

$= \frac{1}{2} \times \rho g H^2$ Per unit width

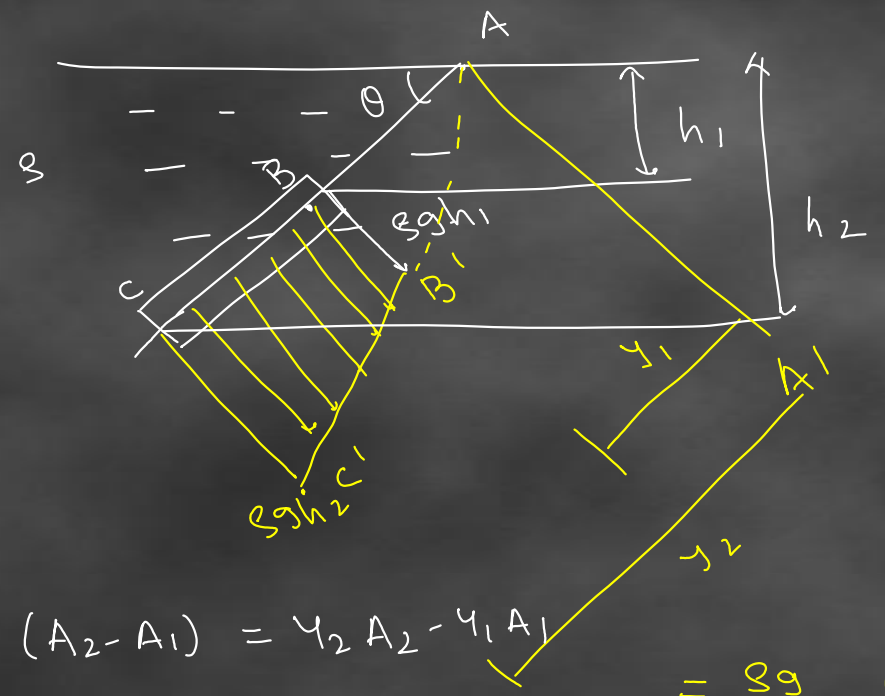


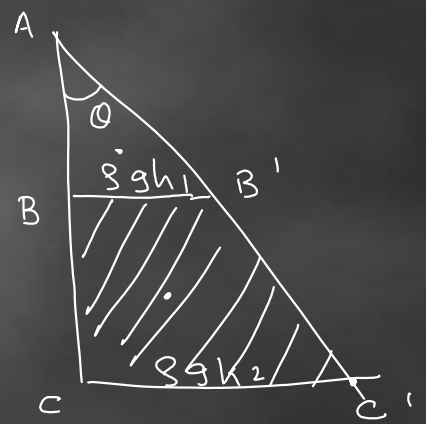
Pressure Diagram



Centre of Pressure = C.G of P.D

= H/3 From Point C = 2H/3 from Point A





P.D.

$$y^* \times (A_2 - A_1) = y_2 A_2 - y_1 A_1$$

$$y^* = \frac{y_2 A_2 - y_1 A_1}{A_2 - A_1}$$

$$h^* = y^* \sin\theta$$

Total pressure force = area of $BB'c'c$

= area of $\Delta Acc'$ − area of $\Delta ABB'$

$$= \frac{1}{2} cc' \times AC - \frac{1}{2} AB \times BB'$$

$$= \frac{1}{2} y_2 \times \rho g h_2 - \frac{1}{2} y_1 \rho g h_1$$

$$= \frac{1}{2} \frac{h_2}{\sin\theta} \rho g h_2 - \frac{1}{2} \frac{h_1}{\sin\theta} \rho g h_1$$

$$= \frac{\rho g}{2 \sin\theta} (h_2^2 - h_1^2) \text{ /width}$$