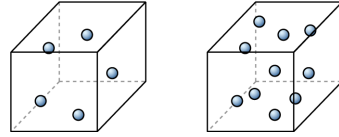


# Fluid mechanics

## Hydrostatics

$$\rho = \frac{m}{V}$$

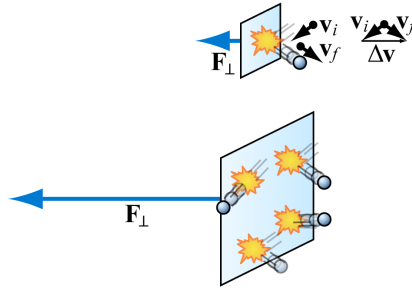


$$F_{\text{ON SIDE 1,}\perp} = P_1 A$$

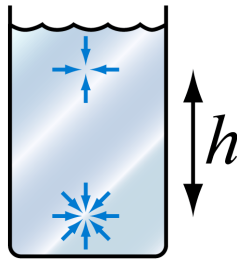
$$1 \text{ atm} = 1.0 \times 10^5 \frac{\text{N}}{\text{m}^2}$$

$$= 1.0 \times 10^5 \text{ Pa}$$

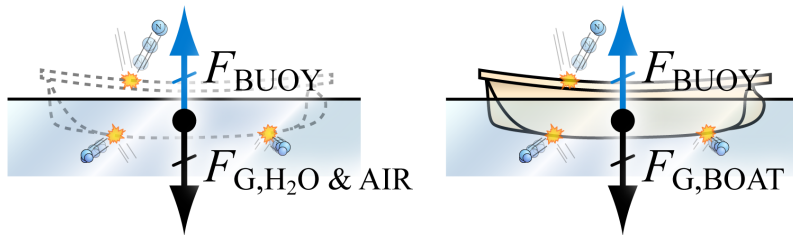
$$\Delta P_{\text{GAUGE}} = |P_1 - P_2|$$



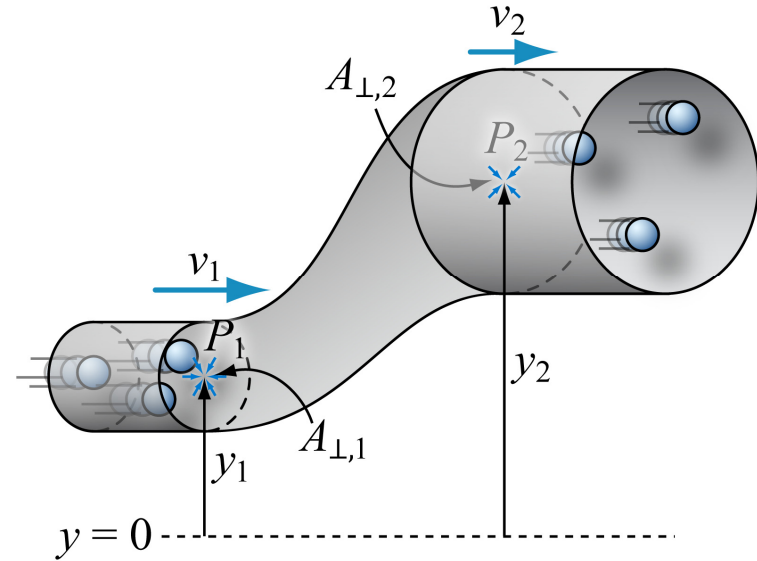
$$P_B = P_T + \rho g \underbrace{(h_T - h_B)}_{\Delta h}$$



$$F_{\text{BUOY}} = M_{\text{DISPL}} g$$



## Steady flow



### Continuity for incompressible fluids

$$A_{\perp,1} v_1 = A_{\perp,2} v_2$$

### Energy conservation (Bernoulli equation)

$$U_{G,1} + KE_1 + W_{\text{EXT}} = U_{G,2} + KE_2$$

$$\rho g y_1 + \frac{1}{2} \rho v_1^2 + (P_1 - P_2) = \rho g y_2 + \frac{1}{2} \rho v_2^2$$