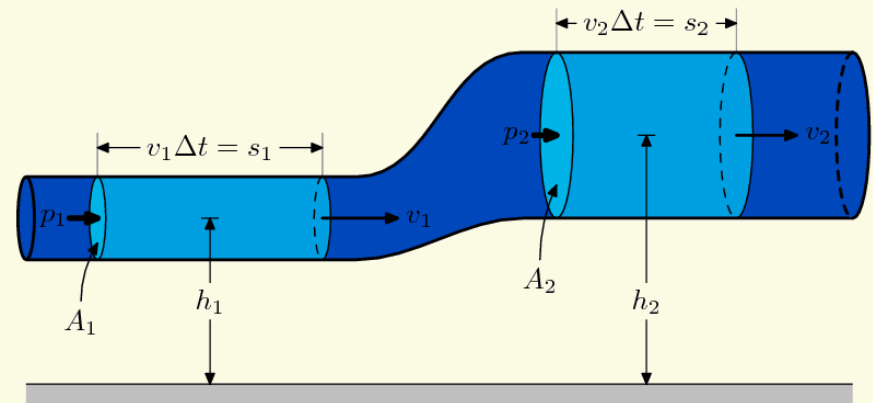
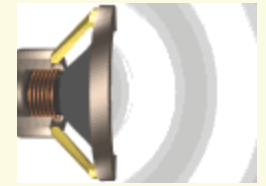


Aula 22: Mecânica dos fluidos

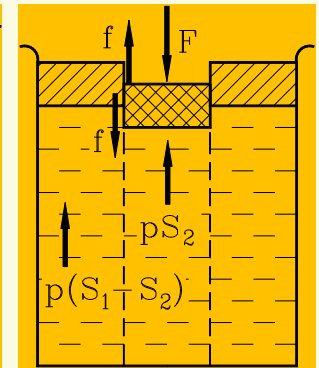
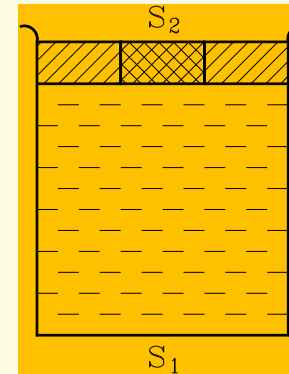
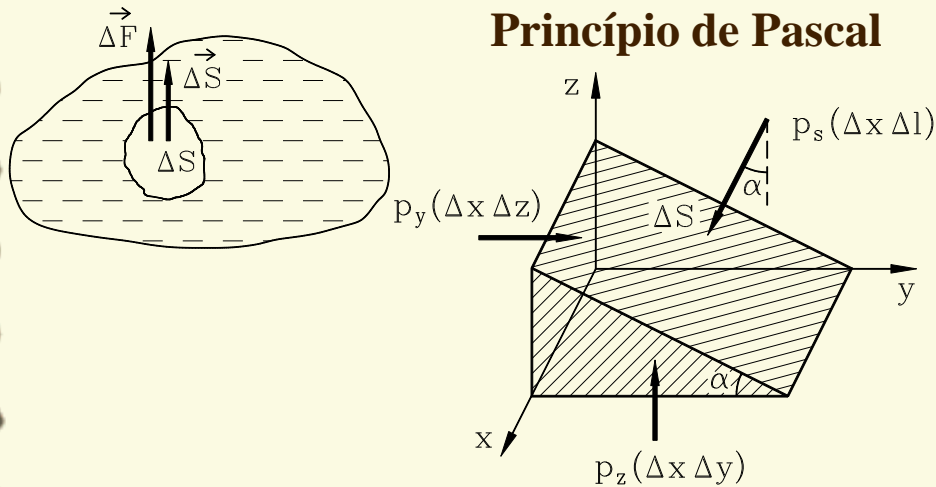
1. Pressão
2. Densidade
3. Princípio de Arquímedes
4. Gradiente de pressão
5. Escoamento estacionário
6. Jactos de fluido

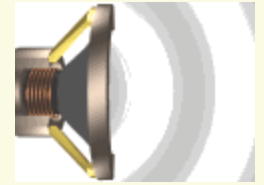


Simulação: prensa hidráulica



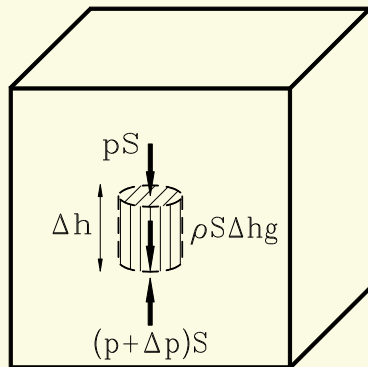
1. Pressão



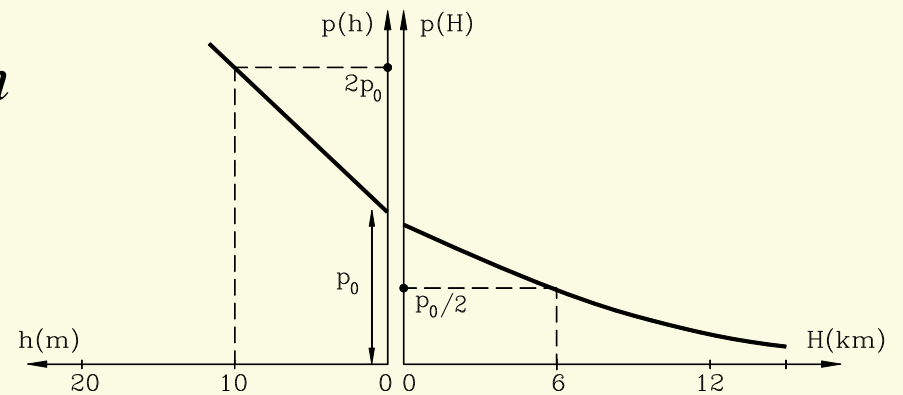


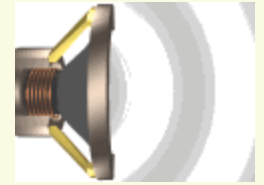
Simulação: pressão atmosférica

2. Densidade



$$dp = \rho g dh$$

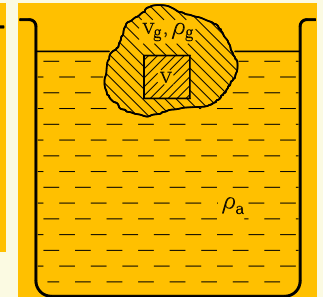
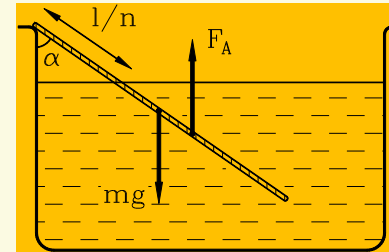
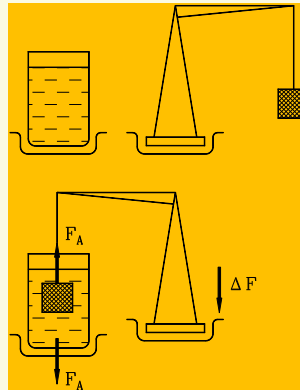
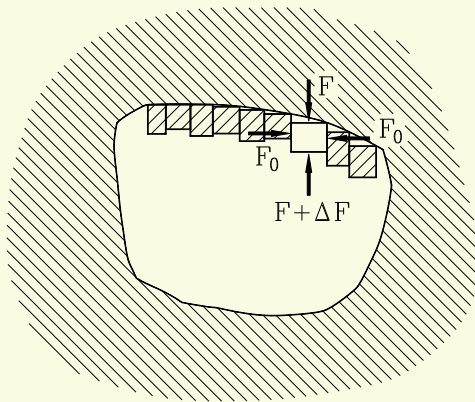




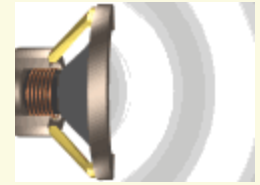
3. Princípio de Arquímedes

$$\sum_k \Delta F_k = \rho g \sum_k \Delta V_k$$

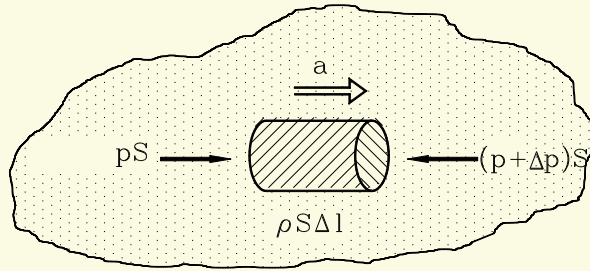
$$\Rightarrow F_A = \rho g V$$



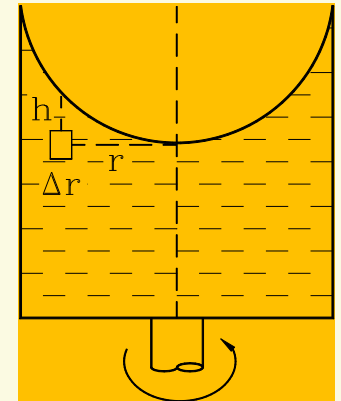
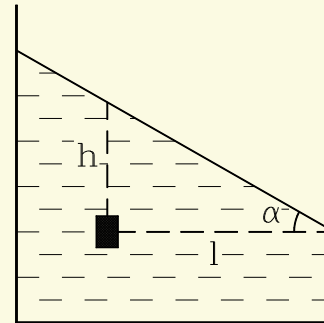
Simulação: gradiente de pressão



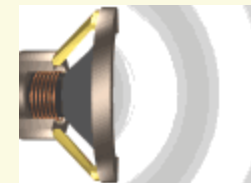
4. Gradiente de pressão



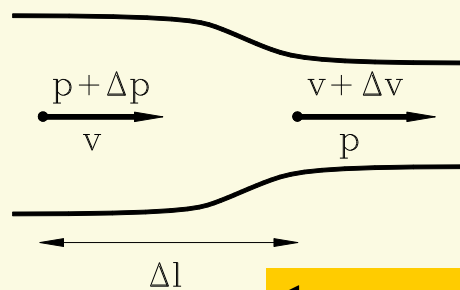
$$\Delta p = -\rho a x \quad \Rightarrow \quad \frac{\Delta p}{\Delta x} = -\rho a$$



Equação de continuidade: animação



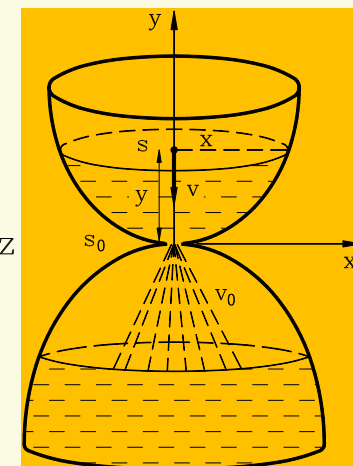
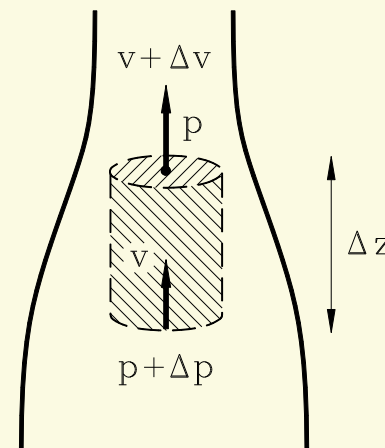
Lei de Bernoulli



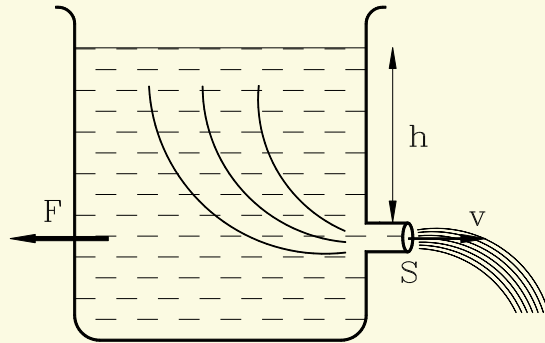
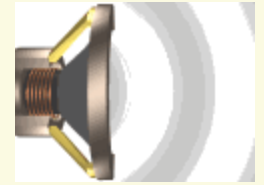
$$S_1 v_1 = S_2 v_2$$

$$\frac{1}{2} \rho v^2 + p + \rho g z = \text{const.}$$

5. Escoamento estacionário



Simulação: fórmula de Torricelli



$$v = \sqrt{2gh}$$

6. Jactos de fluido

