



CONSIDERATIONS :

$$\left[\begin{array}{l} \cdot P_{11} = P_1 - \Delta P_T \\ \cdot P_{22} = P_2 + \Delta P_T \\ \cdot P_1 = P_a \\ \cdot P_2 = P_a - \rho_e g H \end{array} \right.$$

BERNOULLI EQUATION :

$$P_{11} + \cancel{\frac{1}{2} \rho_i V_{11}^2} + \rho_i g z_{11} = P_{22} + \cancel{\frac{1}{2} \rho_i V_{22}^2} + \rho_i g z_{22} + \Delta P_f$$

friction
↑

$$\rightarrow P_1 - \Delta P_T + \rho_i g z_{11} = P_2 + \Delta P_T + \rho_i g z_{22} + \Delta P_f$$

$$\Delta P_T = \frac{P_1 - P_2 - \rho_i g \overbrace{(z_{22} - z_{11})}^H}{2} - \Delta P_f$$

$$\Delta P_T = \frac{\cancel{P_a} - \cancel{P_a} + \rho_e g H}{2} - \Delta P_f$$

$$\boxed{\Delta P_T = 0,5 \cdot g \cdot H \cdot (\rho_e - \rho_i) - \Delta P_f}$$