12.18

Datos

$A = 12\ cm^2$

$h_m = 5\ cm$

$\Delta P_f = 2\Delta P_o$

$$\Delta P_o = \rho_m g h_m \quad (1)$$

$$\Delta P_f = \rho_m g h_m + \rho_H g h_H \quad (2)$$

Como $\Delta P_f = 2\Delta P_o$

$$2\Delta P_o = \rho_m g h_m + \rho_H g h'_H \quad (3)$$

$$\Delta P_o = \rho_m g h_m \quad (1)$$

Dividiendo la ecuaciones (3) y (1)

$$2 = \frac{\rho_m g h_m + \rho_H g h'_H}{\rho_m g h_m}$$

$$2 = 1 + \frac{\rho_H g h_H}{\rho_m g h_m}$$

$$\rho_m g h_m = \rho_H g h'_H$$

$$h'_H = \frac{\rho_M}{\rho_H} h_m = \frac{13.6 \cdot 10^3}{1 \cdot 10^3}(0.05) = 0.68\ m.$$