We believe that the temperature remains constant. That's why

$$p_1V_1 = p_2V_2 \gg (p + \rho gh)V_1 = V_2p \gg V_2 = \frac{(p + \rho gh)V_1}{p} = \frac{(1.0 \times 10^5 + 1000 \times 10 \times 1)}{1.0 \times 10^5} 1.0 \text{ mm}^3$$

$$= 1.1 \text{ mm}^3$$