52. (a) We denote a point at the top surface of the liquid A and a point at the opening B. Point A is a vertical distance $h = 0.50$ m above B. Bernoulli's equation yields $p_A = p_B + \frac{1}{2}\rho v_B^2 - \rho g h$. Noting that $p_A = p_B$ we obtain

$$\begin{aligned} v_B &= \sqrt{2gh + \frac{2}{\rho}(p_A - p_B)} \\ &= \sqrt{2(9.8\,\text{m/s}^2)(0.50\,\text{m})} = 3.1\ \text{m/s}\ . \end{aligned}$$

(b)

$$\begin{aligned} v_B &= \sqrt{2gh + \frac{2}{\rho}(p_A - p_B)} \\ &= \sqrt{2(9.8\,\text{m/s}^2)(0.50\,\text{m}) + \frac{2(1.40\,\text{atm} - 1.00\,\text{atm})}{1.0 \times 10^3\,\text{kg/m}^3}} = 9.5\ \text{m/s}\ . \end{aligned}$$