

15.15

Pitot-static tube

$$T = 50^{\circ}\text{C}$$

$$0.24 \text{ in}$$

$$6.172 \text{ mm}$$

$$\rho_{\text{air at } 50^{\circ}\text{C}} = 1.246 \text{ kg/m}^3$$

$$V = \sqrt{\frac{2\Delta P}{\rho_{\text{air}}}}$$

$$\Delta P = \rho g h$$

$$\Delta P = 1000 \cdot 9.81 \cdot 0.006172$$

$$\Delta = 60.55 \text{ N/m}^2$$

$$V = \sqrt{\frac{2 \cdot 60.55}{1.246}} = 9.86 \text{ m/s}$$

$$\frac{\text{N/m}^2}{\text{kg/m}^3} \rightarrow \frac{\text{kg m/s}^2}{\text{m}^2} \cdot \frac{\text{m}^3}{\text{kg}} = \text{m/s}$$