

Chapter 15 Problem 18 †

Given

$$m = 8.8 \text{ kg}$$

$$V = 0.050 \text{ m}^3$$

Solution

a) Find the density of the compressed air.

Density is given by the formula

$$\rho = \frac{m}{V}$$

Substitute in the given values and we have

$$\rho = \frac{(8.8 \text{ kg})}{(0.050 \text{ m}^3)} = 176 \text{ kg/m}^3$$

b) What is the volume if the density is 1.2 kg/m^3 ?

Use the equation given above and solve for volume

$$V = \frac{m}{\rho}$$

$$V = \frac{8.8 \text{ kg}}{(1.2 \text{ kg/m}^3)} = 7.33 \text{ m}^3$$

†Problem from Essential University Physics, Wolfson