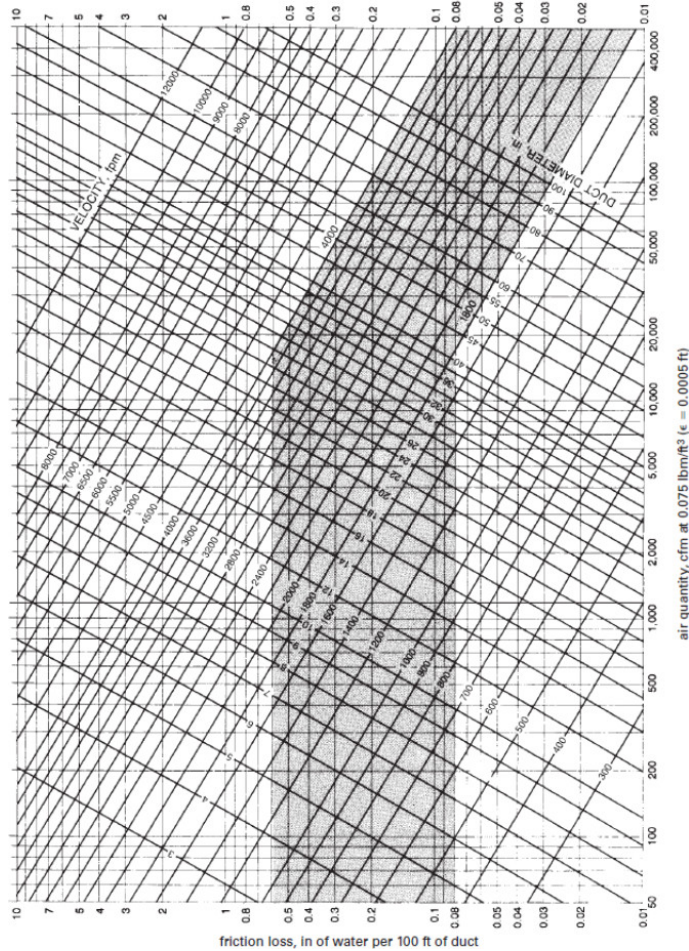


43.12 A 600ft long round duct with a diameter of 12in delivers 1000cfm. There are (12) 90-degree elbows with a bend radius of double the duct diameter, contributing an equivalent length of 10 times the duct diameter for each fitting. What is the friction loss?



- A. 0.8in wg
- B. 1.4in wg
- C. 2.0in wg
- D. 2.8in wg

Use the friction loss chart provided to determine the  $\Delta P$  based on the volume flow rate and duct diameter given:

$$Q = 1000cfm$$

$$D = 12in$$

$$\Delta P \approx 0.19in\ wg/100ft$$

The duct length is given. However, the elbows must also be accounted for. Each elbow contributes 10 times the duct diameter to the equivalent length. Calculate the equivalent length for the fittings:

$$L_{fittings} = (12)(10)(1ft) = 120ft$$

Calculate the total equivalent length inclusive of duct length and fittings:

$$L_{eq} = 600ft + 120ft = 720ft$$

Determine the pressure loss:

$$\Delta P = (0.19in\ wg/100ft)(720ft) = 1.37in\ wg$$

**Answer B**