Formulas

Use the π button for calculations.
Only round off the final answers.

Pythagorean theorem: $a^2 + b^2 = c^2$

$$\text{Apex height} = \frac{\text{large diameter} \times \text{vertical height}}{\text{large diameter} - \text{small diameter}}$$

Area of a circle $= \pi r^2$

Bend allowance $=$ degrees $(0.01743R + 0.0078t)$

$$\text{Belt length} = \frac{\pi \times \text{diameter} \times \text{degrees}}{360°}$$

$\text{BTU} / \text{h} = 1.08 \times \text{cfm} \times \text{temperature difference}$

$C = \pi \times \text{diameter}$

$\text{cfm} = \text{area sq. ft.} \times \text{fpm}$

$$\frac{\text{cfm}_2}{\text{cfm}_1} = \frac{\text{rpm}_2}{\text{rpm}_1}$$

$$\frac{D_2}{D_1} = \frac{\text{rpm}_1}{\text{rpm}_2}$$

Elbow cut size = tan (mitre angle) × centre line radius × (2 × # of gores − 2)

$$\text{Grille measurement area cfm} = \frac{(\text{length} \times \text{width})}{144} \times \frac{\%\ \text{free area}}{100} \times \text{velocity}$$

$$\text{Grille size area} = \frac{\text{cfm}}{\text{fpm}} \times \frac{100}{\%\ \text{free area}}$$

$$\text{Mitre angle} = \frac{\text{angle of elbow}}{2 \times \text{number of gores} - 2}$$

New rpm = rpm × percent increase

$$\text{Pattern angle} = \frac{\text{base} \times 180°}{\text{slant side}}$$

$$\text{Rain cap notch} = \frac{R}{C\angle} \times 2\pi - \pi D$$

$$S\angle = \frac{O}{H}$$

$$C\angle = \frac{A}{H}$$

$$T\angle = \frac{O}{A}$$

$$\frac{\text{Static pressure}_2}{\text{Static pressure}_1} = \left[\frac{\text{cu. ft./ rpm}_2}{\text{cu. ft./ rpm}_1}\right]^2$$

$$\text{Swing point radius} = \frac{\text{offset}^2 + \text{length}^2}{4 \times \text{offset}}$$

$$\text{Unknown duct side} = \frac{100\%\ \text{free area} \times \text{duct area}}{\text{known duct side}}$$

$$\text{Volume} = \pi r^2 h$$

$$\text{Wraper/ belt length} = \frac{4\sqrt{[\text{offset}^2 + \text{length}^2]} - \text{length}}{3}$$