



### Diaphragm Formulas and Definition of Terms

Rolling (Top-Hat) Diaphragm Formula for Height:

$$\text{Height} = H_s + 1.57 W_c + R_p + R_f + F_t + T_f$$



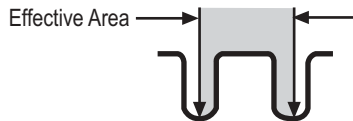
Pre-Convolution Diaphragm Formula for Height:

$$\text{Height} = 0.5 (H_s + W_c + R_p + R_f + 2F_t)$$



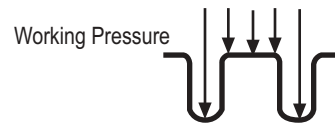
Formula for Diaphragm Effective Area:

$$\text{Effective Area} = 0.785 \left[ \frac{(B_c + D_p)}{2} \right]^2$$



Formula for Diaphragm Working Pressure Capability:

$$\text{Working Pressure} = \frac{S_f}{W_c}$$



Formula for Hardware Piston Skirt Length:

$$\text{Piston Skirt} = \frac{(H_d + H_s^*)}{2}$$

\*When Hs is in the direction with the diaphragm rolling onto the piston



### Glossary of Terms

- **Hs—Maximum Half Stroke:** The maximum distance the diaphragm travels in either direction from the clamping flange. The total stroke capability is twice the half-stroke capability.
- **Bc—Cylinder Bore:** The inside diameter of the housing with which the diaphragm will be in contact.
- **Dp—Piston Diameter:** The outside diameter of the moving component with which the diaphragm is in contact.
- **Hd—Diaphragm Height:** The overall height of the diaphragm in the as-molded shape.
- **Wc—Convolution Width:** The width of the gap created by the difference in the piston diameter and cylinder bore diameter.
- **Rp—Piston Radius:** The radius on the diaphragm where it contacts the piston radius.
- **Rf—Flange Radius:** The radius on the diaphragm where it contacts the hardware flange.
- **Tf—Tolerance Factor:** Diaphragm calculated height +2%.
- **Sf—Strength Factor:** The average tensile strength of the fabric divided by two.
- **Ft—Flange Thickness:** Cross section of a diaphragms outer diameter that is clamped or retained by the hardware.