Performance Estimates for Venturis and ASME Flow Nozzles: Air
Performance Estimates for Venturis and ASME Flow Nozzles
Based on Dry Air at 14.696 psia and 70 deg. F.

$\frac{Dp}{P1} = 0.472 = \text{Choke Point}$

Where:
- $m$ = mass flow (lbm/sec)
- $P1$ = Inlet Static Pressure (psia)
- $P2$ = Throat Static Pressure (psia)
- $T1$ = Inlet Temperature (Rankine)
- $Dp = P1 - P2$
- $D$ = Inlet Diameter (inches)
- $d$ = Throat Diameter (inches)

- Beta Ratio = $\frac{d}{D} = 0$
- Beta Ratio = $\frac{d}{D} = 0.5$
- Beta Ratio = $\frac{d}{D} = 0.75$

Flow Function = \[
\frac{m \times (T1)^{1/2}}{P1} \left(\text{lbm}^*\text{(R}^{1/2})/(\text{sec}^*\text{psia})\right)
\]
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Where:
m = mass flow (lbm/sec)
P1 = Inlet Static Pressure (psia)
P2 = Throat Static Pressure (psia)
T1 = Inlet Temperature (Rankine)
Dp = P1-P2
D = Inlet Diameter (inches)
d = Throat Diameter (inches)

Beta Ratio = d/D = 0
Beta Ratio = d/D = 0.5
Beta Ratio = d/D = 0.75

Flow Function = \[ \frac{m \times (T1)^{1/2}}{P1} \text{lbfsec}^{0.5}/(\text{psia}) \]