



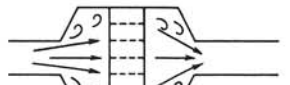
Technical Resource Center

10793 State Route 37 W
 Sunbury, OH 43074
 www.bry-air.com

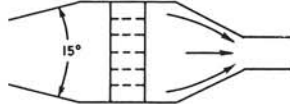
Toll-Free: (877) 427-9247
 Phone: (740) 965-2974
 Fax: (740) 965-5470

Methods for Ductwork Design

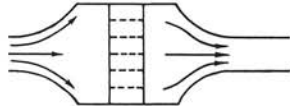
Air Flow Through Enlarged Duct Sections



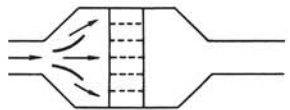
(a) With sudden enlargement air continues to flow mainly through center area.



(b) Gradual enlargement allows air to spread uniformly.

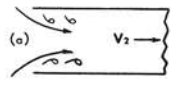


(c) Curved duct sides encourages the air to spread.

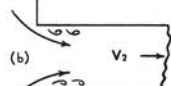


(d) Baffles are a practical solution for poor distribution in installed ductwork.

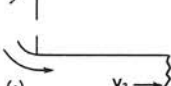
Entrance Losses at Duct Opening



$$\text{Loss} = 1.0 \left(\frac{V_2}{1096} \right)^2 \rho$$



$$\text{Loss} = 0.5 \left(\frac{V_2}{1096} \right)^2 \rho$$

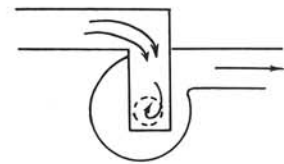


$$\text{Loss} = 0.1 \left(\frac{V_2}{1096} \right)^2 \rho$$

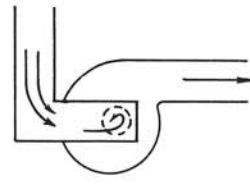


$$\text{Loss} = \text{approx. } 0.2 \left(\frac{V_2}{1096} \right)^2 \rho$$

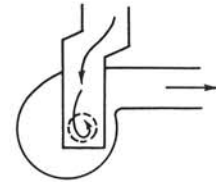
Conditions Likely to Cause Spin at Fan Inlet



(a) Forward spin

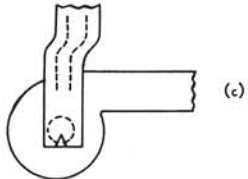
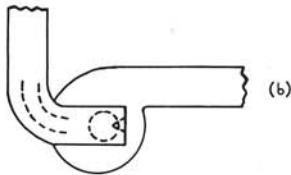
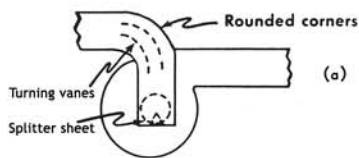


(b) Reverse spin



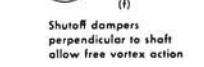
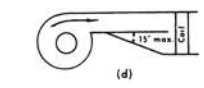
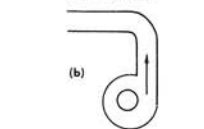
(c) Reverse spin

Improved Design to Discourage Inlet Spin

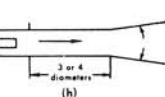
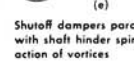
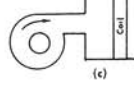
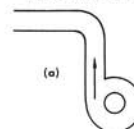


Fan Discharge Duct Designs

Recommended



Not recommended



EQUIPMENT RECOMMENDED VELOCITY RANGE FPM

Outside Air Intakes	300-1500
Filters	300-1000
Heating Coils	300-1000
Pre-Cooling Coils	300- 500
Fan Outlets	1300-2800
Main Ducts	1000-2400