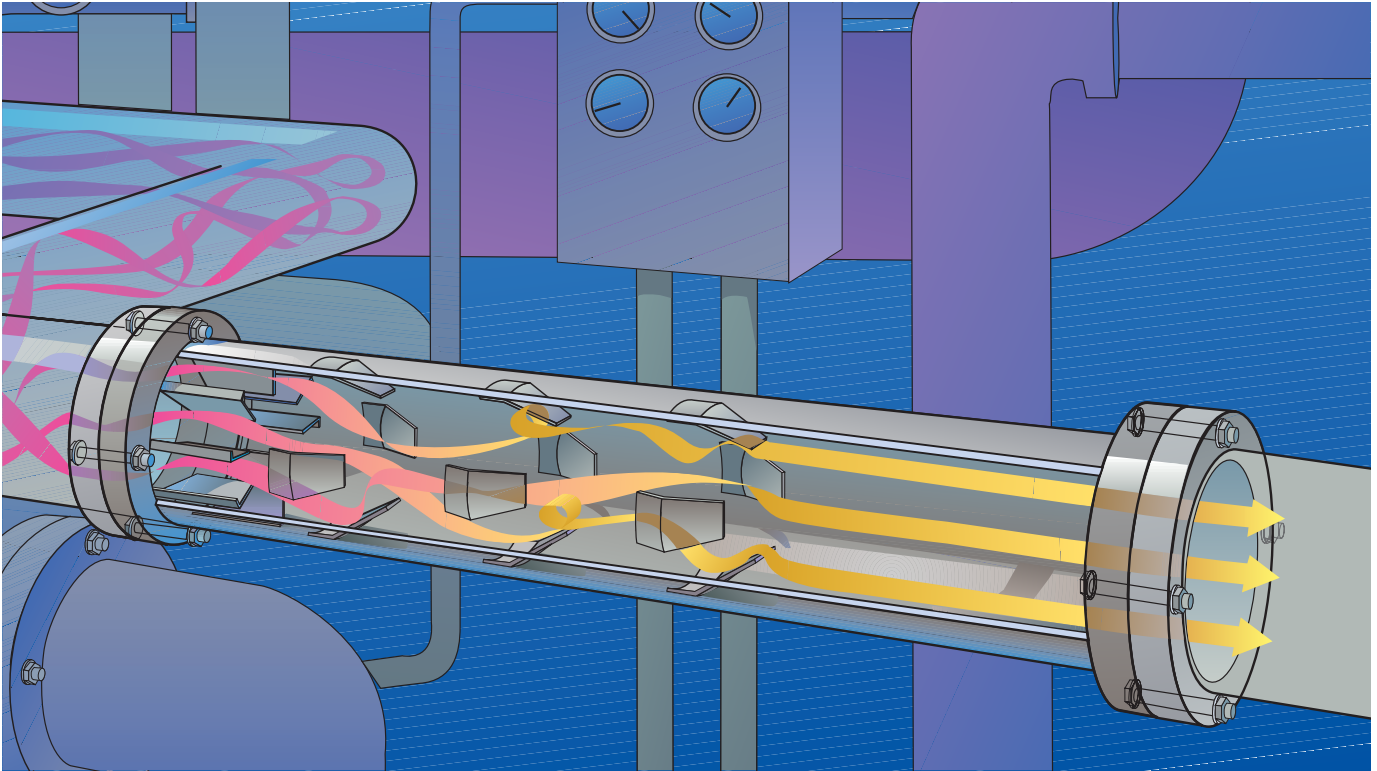


VORTAB™ FLOW CONDITIONERS

THE PROVEN SOLUTION IN FLOW CONDITIONING



- **Eliminates Swirl and Velocity Profile Distortions**
- **Insures Meter Accuracy and Repeatability**
- **Reduces Upstream Meter Run to Only 7 Diameters**
- **Low Pressure Loss**
- **Immune to Fouling**

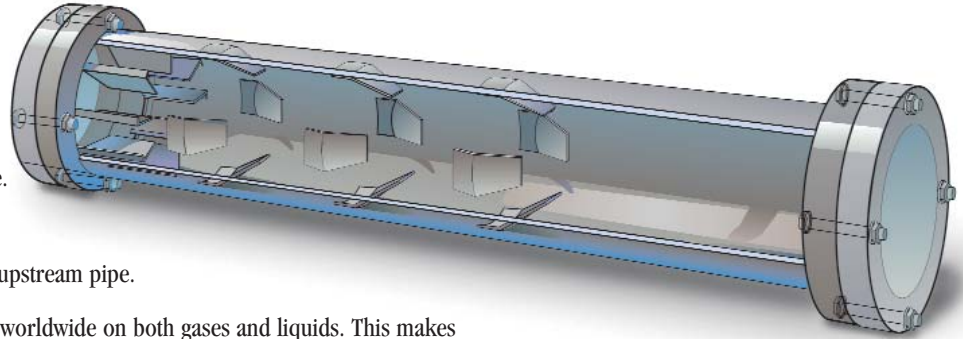


VORTAB®
COMPANY



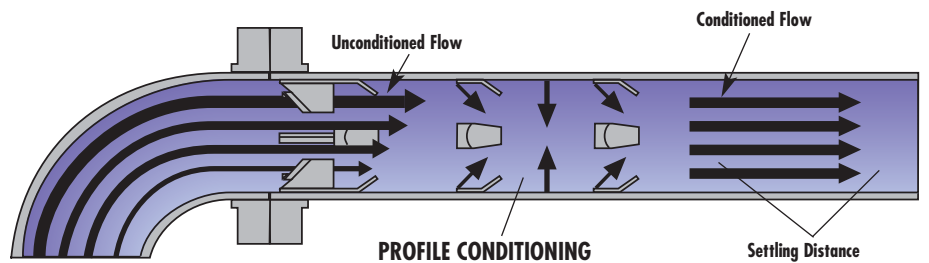
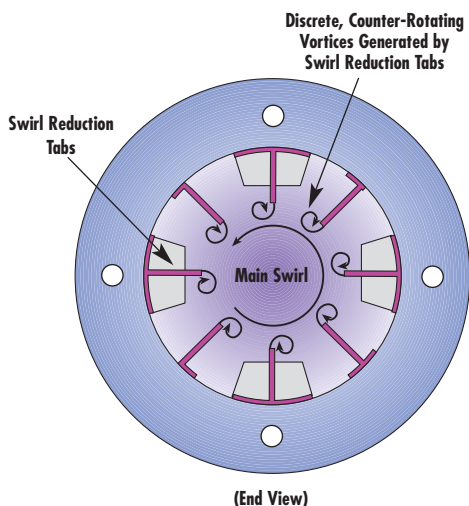
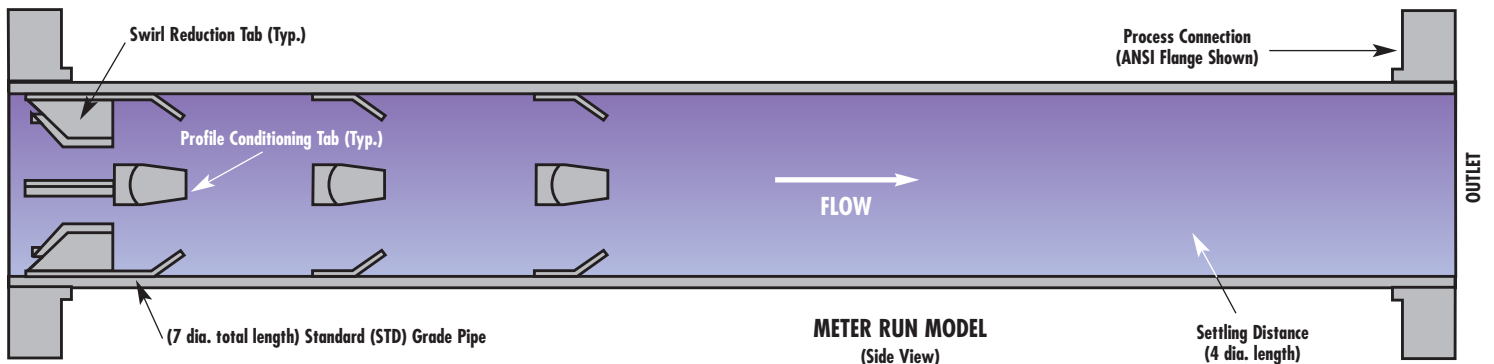
VORTAB: OPTIMIZE FLOWMETER PERFORMANCE

In today's flow metering environment, accuracy and repeatability are critical. The VORTAB™ FLOW CONDITIONER ensures accurate and repeatable measurement by eliminating flow distortions that degrade flowmeter performance. The VORTAB FLOW CONDITIONER eliminates both swirl and profile distortions, has minimal pressure loss and requires only 7 diameters of upstream pipe.



The VORTAB FLOW CONDITIONER is in service worldwide on both gases and liquids. This makes VORTAB the Proven Solution in Flow Conditioning.

PROVEN TECHNOLOGY - SUPERIOR PERFORMANCE



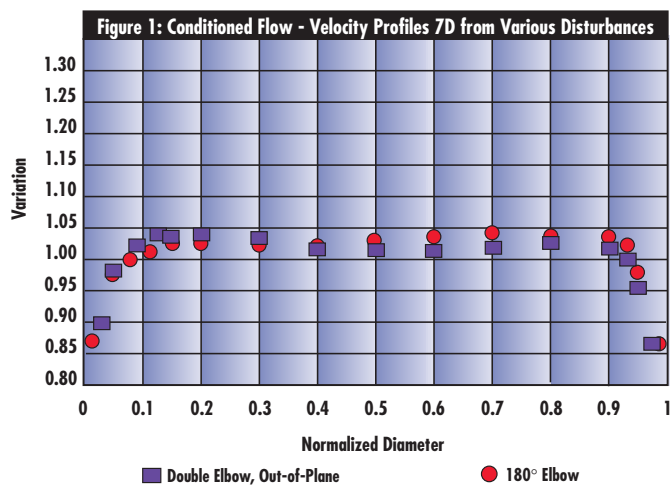
Swirl Reduction Tabs – The swirl reduction tabs remove swirl by generating small vortices (swirls) opposite to the main swirl. These cumulatively cancel the larger main swirl.

Profile Condition Tabs – Three sets of profile conditioning in tabs produce vigorous cross-stream mixing which rapidly mixes faster velocity regions with slower regions. This mixing quickly produces a homogeneous (i.e., conditioned) velocity profile. In addition, uneven particulate distributions or temperature profiles are made more uniform through this process.

Settling Distance – This distance, a 4 diameter length of pipe from the last profile condition tabs, is necessary to let the flow conditioning fully occur. The flowmeter is installed, at the outlet of the settling distance.

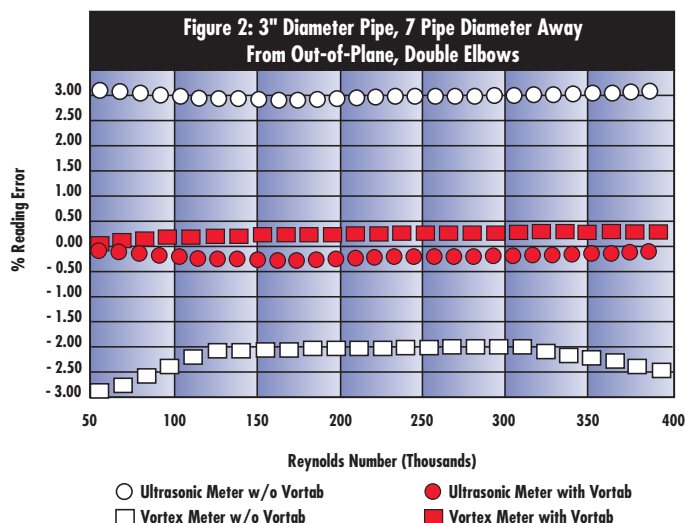


CONDITIONED FLOW



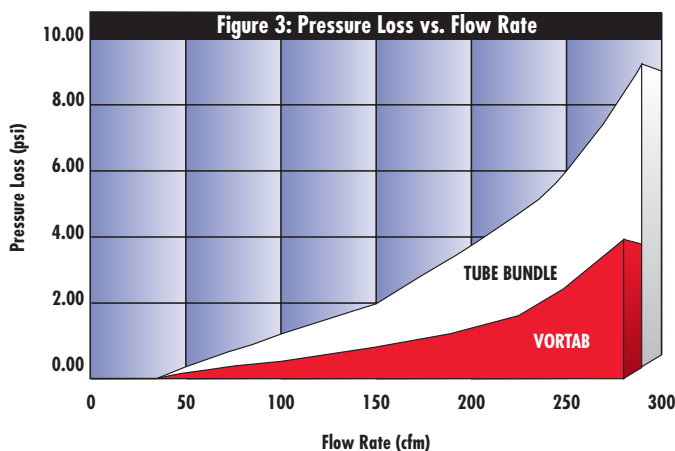
Conditioned Flow – The above graph illustrates the VORTAB FLOW CONDITIONER's ability to produce a consistent flow condition with different inlet disturbances. The uniform velocity profile allows a flowmeter to operate with accuracy and repeatability regardless of the upstream piping.

METER ACCURACY



Meter Accuracy – The above graph clearly illustrates the VORTAB FLOW CONDITIONER's positive impact on flowmeter performance. In order to attain similar accuracy without the VORTAB, as much as 40 to 50 diameters of straight pipe would be necessary. VORTAB gets the job done in only 7 diameters.

EFFICIENT FLOW CONDITIONING



ΔP EQUATIONS

For Air at Standard Conditions (60°F, 0 psig):

$$\Delta P = 6.8 \times 10^{-5} \times \frac{Q^2}{D^4} \text{ or } 3.36 \times 10^{-6} \times \frac{m^2}{D^4}$$

For Water:

$$\Delta P = 5.66 \times 10^{-2} \times \frac{Q^2}{D^4} \text{ or } 4.04 \times 10^{-9} \times \frac{m^2}{D^4} \text{ or } 1.01 \times 10^{-3} \times \frac{G^2}{D^4}$$

Where ΔP is in pounds per square inch (psi)

Q is the volumetric flow rate in cubic feet per minute (cfm)

M is the mass flow rate in pounds per hour (lb_m/hr)

G is the flow rate in gallons per minute (gpm)

D is the inside pipe diameter in inches

REDUCES PIPING COSTS

The VORTAB FLOW CONDITIONER can significantly reduce installed cost by eliminating the need for large straight runs upstream of a flowmeter. The VORTAB FLOW CONDITIONER requires only 7 diameters for any application. This reduction in pipe run can yield significant cost savings.

Piping Cost Savings Equation

$$\$Savings = ((rD - 7) \times \frac{D}{12}) \times P\$$$

rD = Recommended Straight Upstream Pipe (number of diameters)

D = Line Size (in inches)

$P\$$ = Pipe Cost Per Foot

Example:

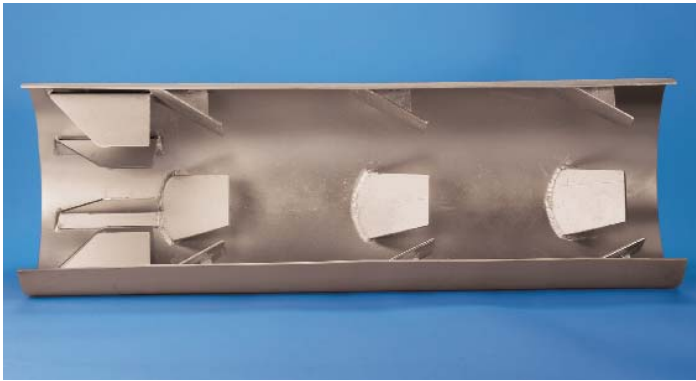
rD = 35 (Double Elbow, Out-of-Plane)

D = 10 in.

$P\$$ = \$142/ft (316 SS, SCH. 40)

$$\$Savings = ((35-7) \frac{10}{12}) \times 142$$

$\$Savings = \$3,313^*$ In most applications, the cost savings exceed the cost of the VORTAB.



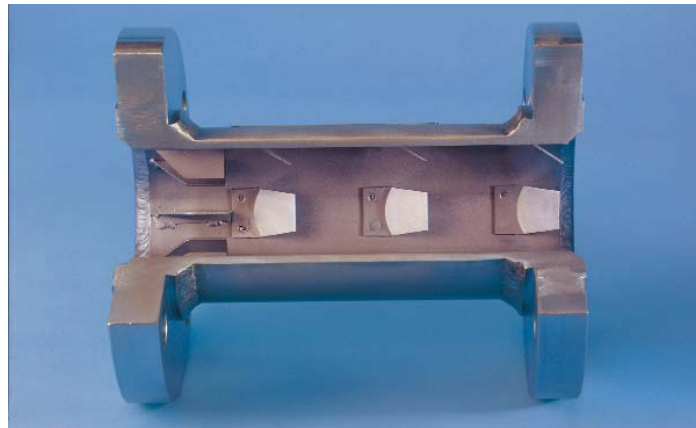
VERSATILE AND ECONOMICAL

VIS • Insertion Sleeve – Ideal for small and large pipe sizes, due to its versatility and low cost. The VIS model is a 3 pipe diameter long slip-in sleeve which contains the conditioning tabs. The sleeve is installed into existing piping and tack welded or bolted in place. A 4 pipe diameter long settling distance must be installed downstream of the conditioner prior to the flow element. The flow conditioner should be installed at the outlet of the disturbance (e.g.; elbow, valve, reducer, etc.).



ALL-IN-ONE CONVENIENCE

VMR • Meter Run – Our most popular configuration: The VMR model is a 7 pipe diameter long spool piece which contains the conditioning tabs and recommended settling distance. The VMR is the complete upstream meter run and a flowmeter can be mounted directly to the exit of the conditioner. The flow conditioner should be installed at the outlet of the disturbance (eg.; elbow, valve, reducer, etc.).



SIMPLE INSTALLATION

VSR • Short Run – Ideal for retrofits and upgrades. The VSR model is a 3 pipe diameter long spool piece which contains only the conditioning tabs. A 4 pipe diameter long settling distance must be installed downstream of the conditioner prior to the flow element. The flow conditioner should be installed at the outlet of the disturbance (eg.; elbow, valve, reducer, etc.).

SPECIFICATIONS FOR ORDERING

Complete Document Number 01SA011428 and Submit for Quotation.

LOCAL REPRESENTATIVE



Visit VORTAB on the Worldwide Web: www.vortab.com

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