



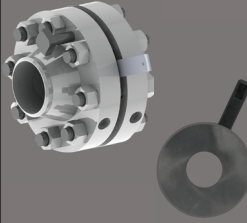
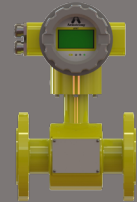




















































# Flow Measurement Matrix - Institutional

Meter Type							
	Accelabar®	Verabar®	Vortex Meter	Insertion Vortex	Orifice	Mag Meter	Ultrasonic Meter
Line Size Range (Inches)	1" to 12"	≥ 1.5"	0.5" to 12"	≥ 0.5"	≥ 0.5"	≥ 0.5"	≥ 0.75"
Required Straight Run of Piping	 No straight run required	 Upstream and Downstream required (Depending on Disturbance)	 Upstream and Downstream required (Depending on Disturbance)	 Upstream and Downstream required (Depending on Disturbance)	 Upstream and Downstream required (3D to 75D Upstream Depending upon Beta Ratio and Disturbance, 2D to 9D Downstream)	 Upstream and Downstream required (5D up and 2D down)	 Upstream and Downstream required. (10D up and 5D down)
Permanent Pressure Loss	 33 - 35% of Generated Differential	 3 - 4% of Generated Differential	 AVI = Negligible AVF = $\Delta P = .00024 pV^2 *$ $\Delta P = .000011 pV^2 **$	 AVI = Negligible AVF = $\Delta P = .00024 pV^2 *$ $\Delta P = .000011 pV^2 **$	 50 to 70% of Generated Differential	 Zero	 Zero
Accuracy of Flow Coefficient (% of Measured Rate )	 ± 0.5%	 ± 1.0%	 ± 0.7 to 1.5%	 ± 0.7 to 2.0%	 ± 1.0 to 2.0%	 ± 0.3 to 1%	 ± 1%
Rangeability (Turndown in Flow)	 65 : 1 (Dependent on application and flowing conditions)	 10 : 1	 20 : 1	 20 : 1	 3 : 1	 (-39 to 39 ft/s)	 (-32 to 32 ft/s)
Gas							
Liquid							
Steam							

\* English ( $\Delta P$  in psi,  $p$  in lb/ft<sup>3</sup>,  $V$  in ft/sec)

\*\* Metric ( $\Delta P$  in bar,  $p$  in kg/m<sup>3</sup>,  $V$  in m/sec)

 Ideal

 Acceptable

 Not Recommended or Least Favorable