

Primary flow element product selection guide from Solartron ISA

Device	Line size range mm	Field of application	Specific advantages	Specific disadvantages
Orifice plate Flange taps	50 to 1000	general purpose	Economic, simple, flexible, widely accepted	Pressure loss, upstream pipe requirements
Corner taps	25 to 1200	Lines below 50mm		
D & D/2 taps	100 to 1000	Line sizes above 600mm		
Orifice plate quarter circle	25 to 500	Viscous fluids, low Reynolds number	Viscous fluids, low flow rate	Critical manufacturing dimensions - Less accurate
Orifice plate conical entrance	25 to 500	Viscous fluids, low Reynolds number	Viscous fluids, low flow rate	Critical manufacturing dimensions - Less accurate
Orifice plate eccentric	100 to 1000	Dirty fluids and two phase flow	Dirty fluids	Less accurate
Integral orifice	15 to 40	Small flowrates, small line size	Small flowrates	Less accurate
Calibrated bore meter run	15 to 400	Accurate measurement	Accuracy	Manufacturing costs. Handling length
Classical venturi tube	25 to 1800	Accurate measurement, low pressure drop	Accuracy with low pressure loss	Handling length
Venturi nozzle	65 to 500	High velocity fluids, low pressure loss	Erosive fluids with low pressure loss	Less accurate, handling length
Dall tube	100 to 1200	Clean fluids, low pressure loss	Very low pressure loss	Clean fluids only
ISA 1932 nozzle	50 to 1000	High velocity measurement e.g. Steam	Erosive liquids	Manufacturing costs
Wedge meter	15 to 600	Viscous fluids, very low Reynolds number	Viscous fluids & abrasive slurries. Bi-directional	Manufacturing costs. Less accurate
Averaging pitot tube	15 to 2500	Large flowrates at low pressure of clean fluids	Economic, low pressure loss. Bi-directional	Clean fluids only, no international standard
Pipe bend	>25	Rough measurement at very low low, large pipe diameters	Economic, simple low pressure loss	Less accurate

The following applies to all devices:

1. May be used on liquid, gas or steam
2. Life expectancy typically 10-20 years
3. Rangeability dependent on DP cell used, typically 10:1 flow turndown
4. Materials of construction in all metals and some plastics
5. Easy to install
6. Straight unobstructed upstream pipe length is required
7. Simple, well proven technology

This selection is intended for guidance only and is of a general nature. Specific process applications should be discussed with Solartron ISA flow engineers.