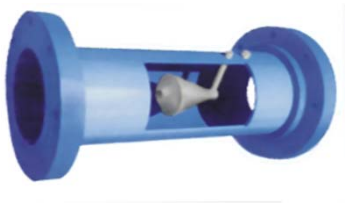
ACONE

Differential Pressure Flowmeter
SmartMeasurement™ Acone Series

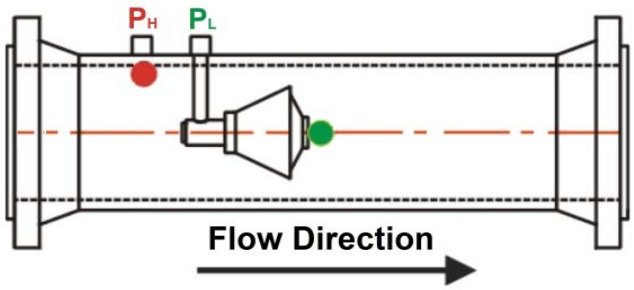
Acone DP Flowmeters



The SmartMeasurement™ Acone differential flowmeter is designed for the harshest operating environments and for the widest variety of fluids, which consistently out performs traditional DP devices and other major flow technologies. The Acone enhanced performance is due to the shape and position of a V shape cone inside the flow body in relations to the DP measurement ports. The cone interacts with the flow, reshaping the fluid's velocity profile and creating a region of lower pressure immediately downstream of itself. Two pressure taps are designed to measure the differential pressure between the static line pressure and the low pressure created downstream the cone. Flow is calculated by Bernoulli equation of conservation of energy. The cone shape also acts as its own flow conditioner, fully conditioning of any turbulence in flow due to limited upstream and downstream straight runs.

SPECIFICATION

- High accuracy and repeatability
- Conditions flow before measuring with minimum straight pipe requirements
- Very wide selection of sizes (15-3000mm)
- Lower pressure loss than most flow meters
- Can measure clean or dirty liquids, slurries, gases and steam
- Low signal noise
- Stain -resistant , No -clogging
- Multiphase flow
- Not sensitive to suspended contaminants



FEATURES

- Size : DN15~DN500, up to 3000mm
- Measuring Range : Liquids 5 mps
  Gas/Steam 45 mps
- Material : 304L/SS, 306L,CPVC,PTFE,Brass,A106B
  A335-P11,A335-P22, Dual - Phase Steel
  Inconel 625,Hasteloy C276
- Accuracy : Cone-(Chlorinated polyvinyl chloride,PTFE)
  Liquid : +/- 0.5% of reading
  Gas & Steam : +/- 1.0% of reading
- Repeatability : 0.1% of reading
- Turn-down ratio : Better than 10:1
- Process Connection : NPT, Flange, Wafer or Butt weld
- Flanges type : ANSI, DIN and JIS
- Pressure : DN250<4MPa, DN150<6MPa
  DN100<10MPa, DN25<20MPa
- Temperature : -196 to 850° C, high pressure<100C°
- Piping Requirements: 0-3 D upstream and 0-1 D downstream
- Standard Beta Ratios: 0.45 through 0.85, special betas available.

- **NOTE: Acone is a primary element and SmartMeasurement™ ALDP -MV multivariable transmitter**

SmartMeasurement™
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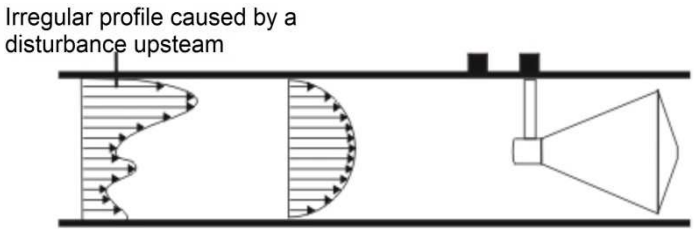
The Smartmeasurement Advantage

Below is the recommended straight runs for the Acone

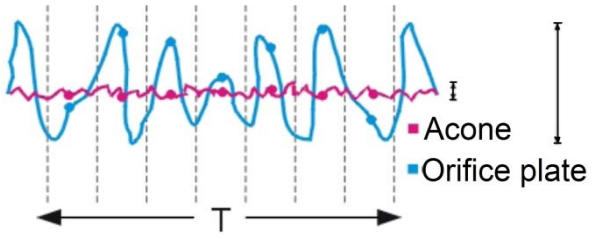
Requirements on straight upstream and downstream

Measuring flow of liquids: range of the Reynolds number (Re) ≤ 200,000. the β value is larger than or equal to 0.65.

Diameter	Throttling fitting	Upstream	Downstream
All	Elbow 1	1D	1D
	Elbow 2	1D	1D
	T-junctor	1D	1D
	Butterfly valve (control valve)	10D at non ideal position	5D downstream the valve
	Butterfly valve (stop valve)	5D	3D
	Globe valve (stop valve)	1D	1D
	Heat exchanger (according to types)	1D	0D
	Divergent pipe (0.67D-D), length 2.5D	2D	2D
	Taper pipe (3D-1D), length 3.5D	1D	1D



The Acone design shapes irragular flows into a smooth flow stream by its cone



Excellent flow stability verus the orifice plate

Notes:

Irregular profile caused by a disturbance upsteam

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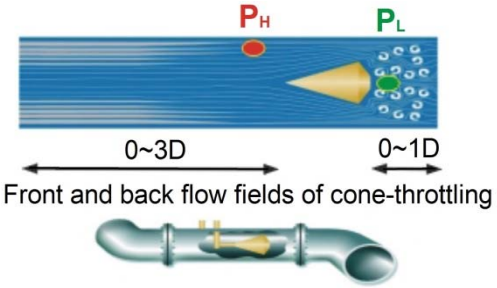
Excellent flow stability verus the orfice plate

The smoothing of the flow profile means less than three diameter are need upstream of the measuring point

Front and back flow fields of cone-throttling



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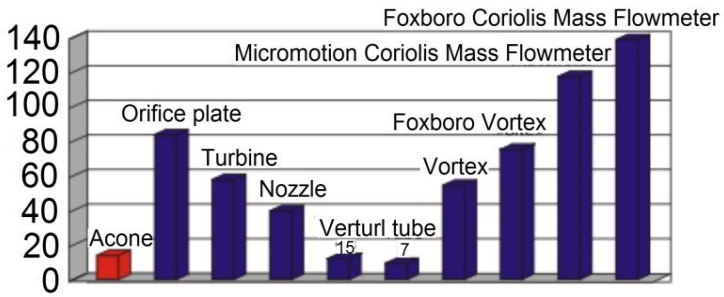
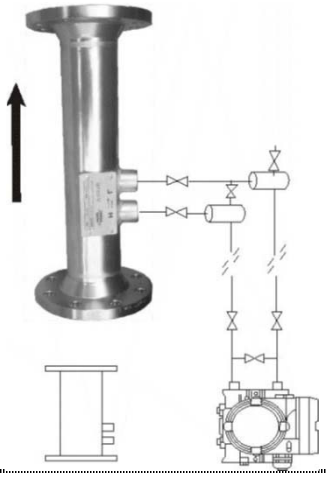
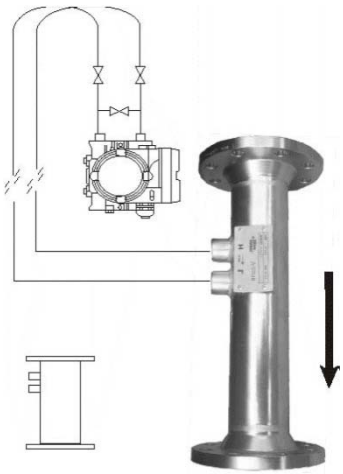
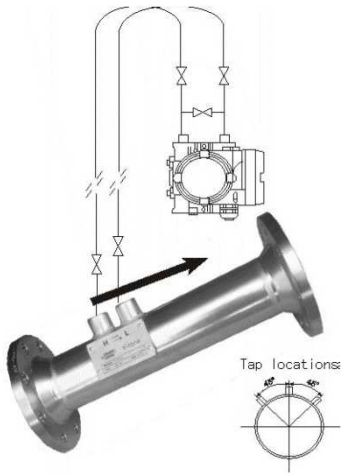


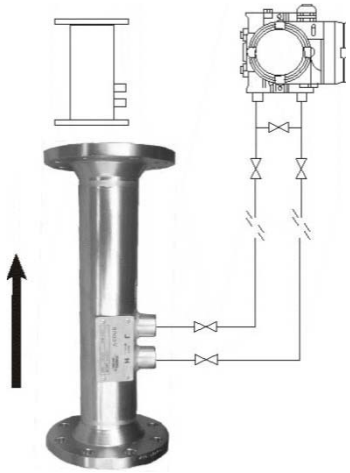
Lower Pressure drop verus other flowmeters

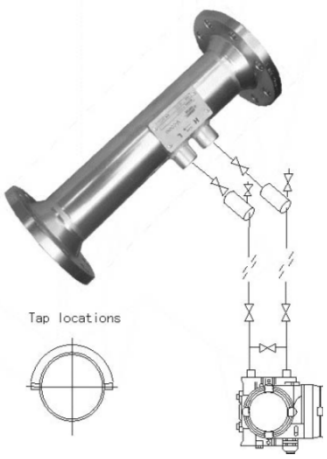
Installation Configuration using third party DP transmitters

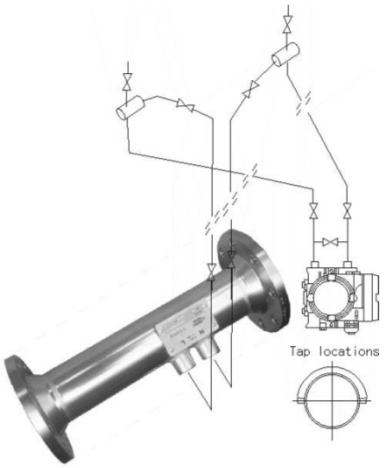


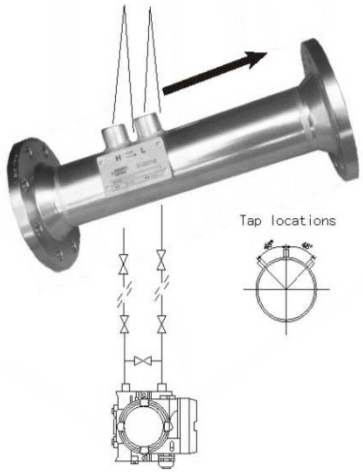


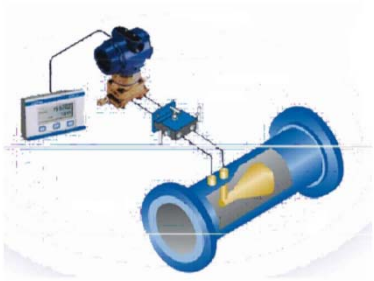












** Please contact your local application engineer

You also need to provide the following information:

Name of liquid	We need the name of your liquid.
Density	Operating density
Viscosity	Operating viscosity
Pressure	Operating Pressure
Temperature	Operating Temperature
Full Scale Flow (Max/Min flow)	Indicate maximum and minimum flow rates, units must be Kg/hr, Lb/hr, LPM or gpm, etc..
Line Size	we need to know your pipe size as well connection type (flange, threaded, etc..)
Allowable pressure drop	Allowable pressure drop (see graph below) that your process can withstand
Type of Electronics	Indicate if you want integral, remote panel or remote wall mounted
Power Requirements	Specify your power requirements such as 24 VDC or 220 VAC

Model Selection Guide

Acone Series							
Eaxmple:ACONE-F250-316-A-TP-MV							
ACONE-	**	**	**	**	**		**Description**
Flange type - ANSI 150#	F						Connection Type
Wafer Type	W						
15mm~2000mm		**					Size
Pipe and flanges:20# CS, V-cone and connecting fittings:304ss			C				Material
Pipe, flanges, V-cone and connecting fittings: 304ss			304				
Pipe, flanges, V-cone and connecting fittings: 316ss			316				
0.6MPa - less than 2000mm				A			Pressure
1.0MPa - less than 1000mm				B			
DN250<4MPa				C			
DN150<6MPa				D			
DN100<10MPa,				E			
DN25<20MPa				F			
None					NN		Option
Temperature port					TP		
High Temperature port					HTP		
Pressure transmitter					PT		
PT100					PT100		
Multivariable DP flow transmitter					MV		