



# ACONE

Differential Pressure Flowmeter  
SmartMeasurement™ Acone Series

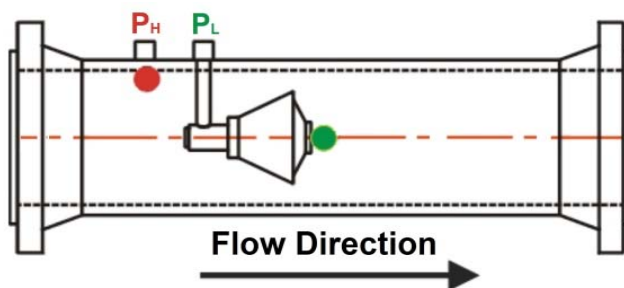
## ➤ Acone DP Flowmeters

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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E-mail : [sales@smartmeasurement.com](mailto:sales@smartmeasurement.com)

**Acone**

**The Smartmeasurement Advantage**

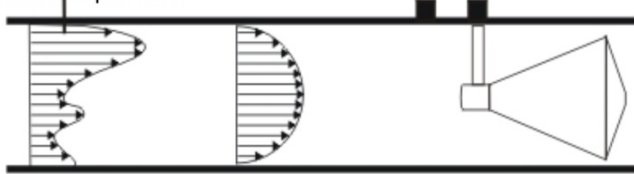
Below is the recommended straight runs for the Acone

Requirements on straight upstream and downstream

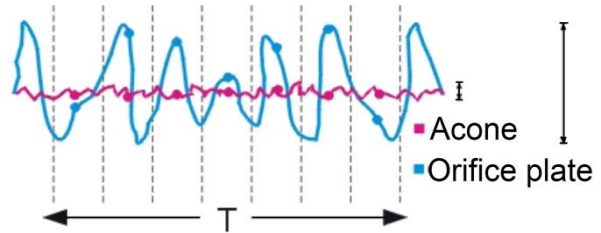
Measuring flow of liquids: range of the Reynolds number (Re)  $\leq 200,000$ . the  $\beta$  value is larger than or equal to 0.65.

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

Irregular profile caused by a disturbance upstream

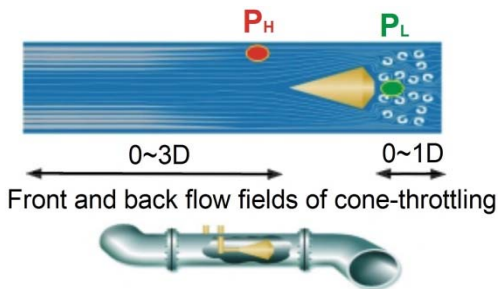


The Acone design shapes irregular flows into a smooth flow stream by its cone



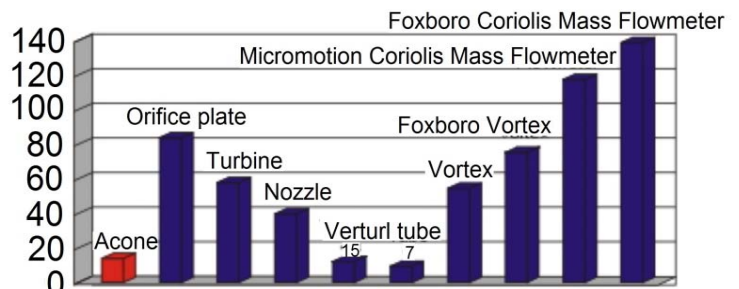
Excellent flow stability versus the orifice plate

- Notes:
- Irregular profile caused by a disturbance upstream
  - The Acone design shapes irregular flows into a smooth flow stream by its cone
  - Excellent flow stability versus the orifice 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



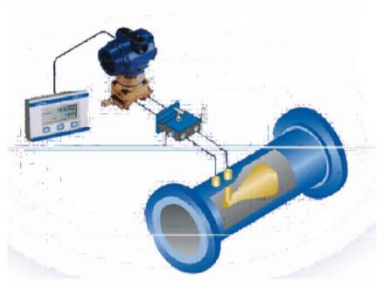
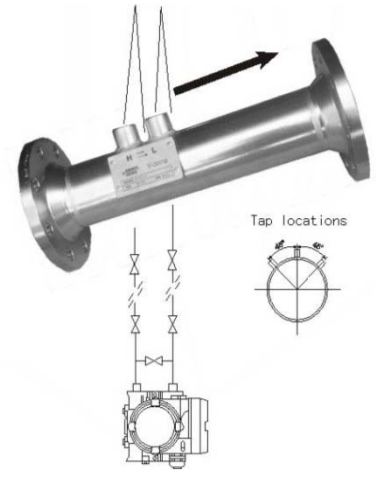
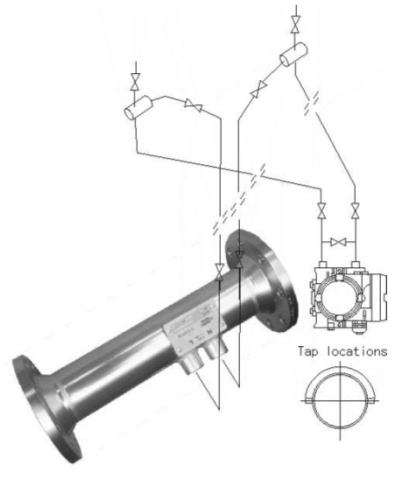
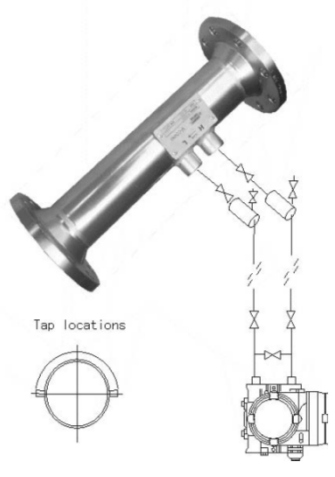
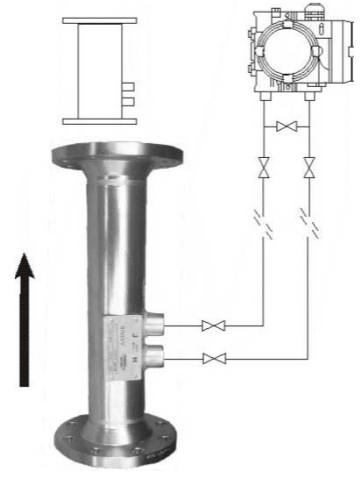
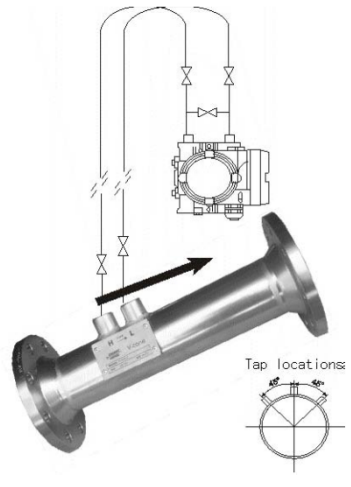
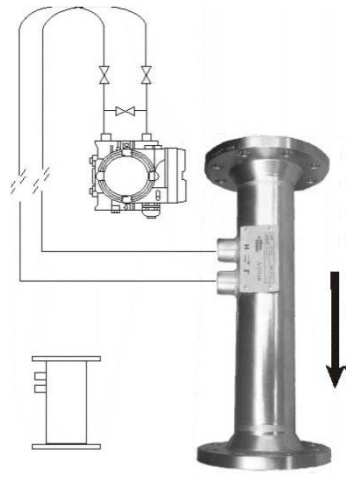
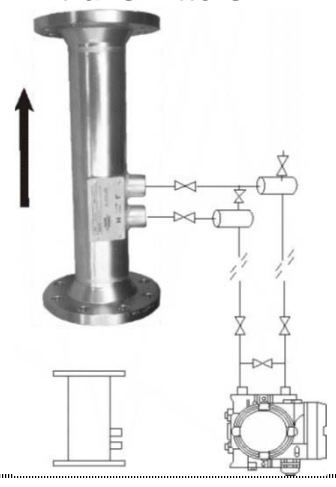
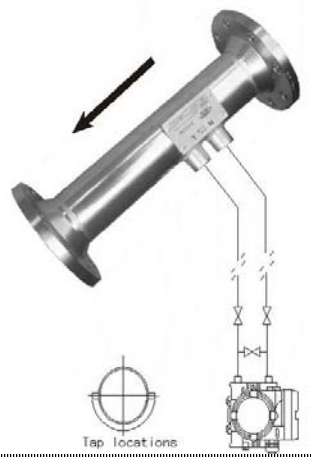
Front and back flow fields of cone-throttling

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



Lower Pressure drop versus other flowmeters

Installation Configuration using third party DP transmitters



**\*\* Please contact your local application engineer**

**You also need to provide the following information:**

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

**➤ Model Selection Guide**

<b>Acone Series</b>							
Example:ACONE-F250-316-A-TP-MV							
<b>ACONE-</b>	<b>**</b>	<b>**</b>	<b>**</b>	<b>**</b>	<b>**</b>		<b>Description</b>
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						