Smart Measurement

ACONE

Differential Pressure Flowmeter

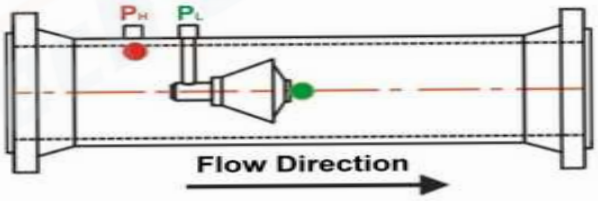
Model ACONE Series

GENERAL

The SmartMeasurement ACONE differential pressure flowmeter is designed to operate in the harshest operating conditions with the widest variety of fluids. The ACONE's innovative design enables it to consistently out-perform traditional DP flowmeters as well as other flow measurement technologies in these types of applications. The ACONE's advanced performance is derived from the geometry and the positioning of the cone element relative to the pressure measurement ports within it's flow body. The cone element conditions the flow, reshaping the velocity profile as it simultaneously creates a lower pressure region downstream of the cone which creates the differential pressure that provides the flow rate reading. The differential pressure between the static line pressure and the low-pressure zone is read across the meter's pressure ports and flow is calculated via the Bernoulli equation of conservation of energy. The conditioning done by the cone element provides the additional benefit of reducing turbulence, which in turn provides dramatically reduced straight run requirements versus other flow measurement technologies.

FEATURES

- Excellent accuracy and repeatability
- Conditions flow as it measures flow rate; with minimum straight pipe requirements
- ½"~120" (15-3000mm)
- Lower pressure loss than most flow meters
- Can measure clean or dirty liquids, slurries, gases and steam
- Low signal noise
- Multiphase flow
- Not sensitive to suspended contaminants



SPECIFICATIONS

Sizes:	DN15~DN500, up to 3000mm
Measuring Range:	Liquids 5≤ m/s, Gas/Steam 45≤ m/s
Material:	SS# 304, 310L, CPVC, PTFE, Brass, A106B, A335-P11, A335-P22 Dual - Phase Steel, Inconel 625, Hasteloy C276, Cone Chlorinated polyvinyl chloride)
Accuracy	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
Flange types:	ANSI, DIN and JIS
Pressure:	DN250<4MPa, DN150<6MPa, DN100<10MPa, DN25<20MPa
Temperature:	-196~850°C, high presure<100°C
Piping Requirements:	0-3 D upstream and 0-1 D downstream
Standard Beta Ratios:	0.45 through 0.85, special betas available

NOTE: SmartMeasurement™ Acone is a primary element

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The SmartMeasurement Advantage

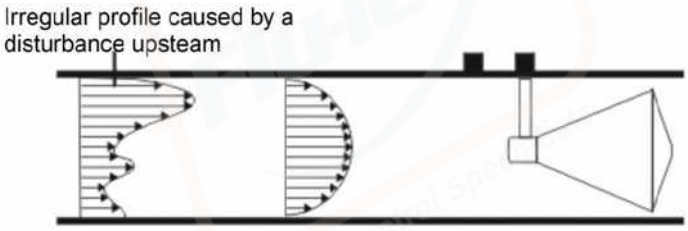
Straight Run Requirements

Reduced on straight and upstream, 2 downstream sides

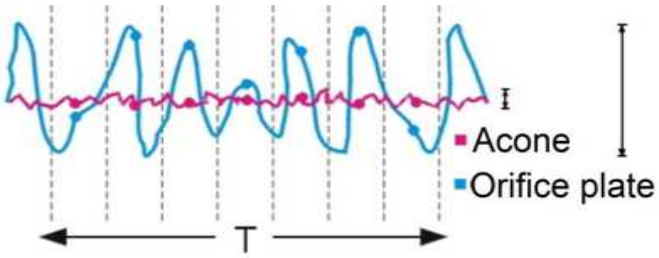
Measuring liquids:

For (Re) ≤ 200,000. the β value is larger than or equal to 0.65.

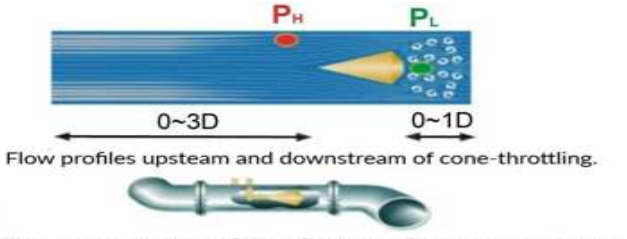
Diameter	Throttling Fitting	Upstream	Downstream
ALL	Elbow 1	1D	1D
	Elbow 2	1D	1D
	Tee	1D	1D
	Butterfly valve	10D at non ideal position	5D downstream the valve
	Butterfly valve	5D	3D
	Globe valve	1D	1D
	Heat exchanger	1D	0D
	Reducer bushing (0.67D-D), length 2.5D	2D	2D
	Concentric Reducer (3D-1D), length 3.5D	1D	1D



The cone design conditions irregular flows into a smooth flow profile by using it's cone element.

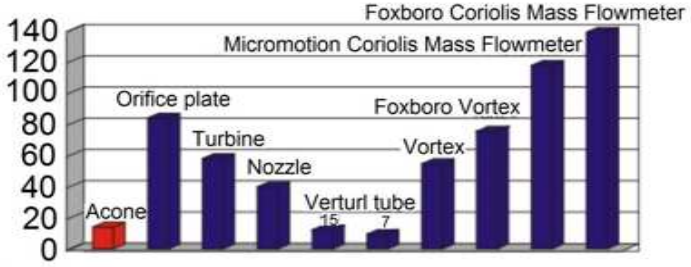


Excellent flow stability vs. orifice meters



Flow profiles upsteam and downstream of cone-throttling.

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



Lower Pressure drop verus other flowmeters

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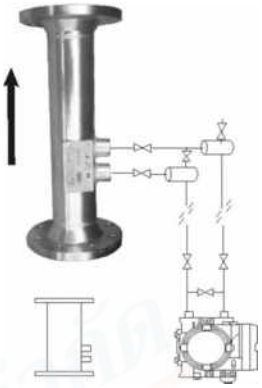
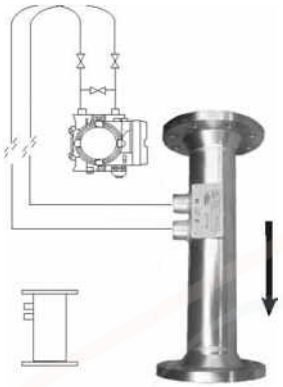
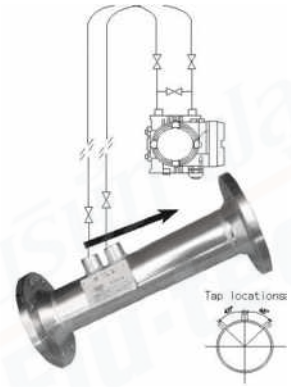
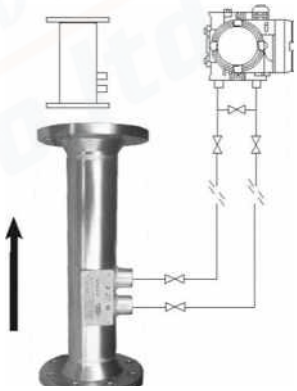
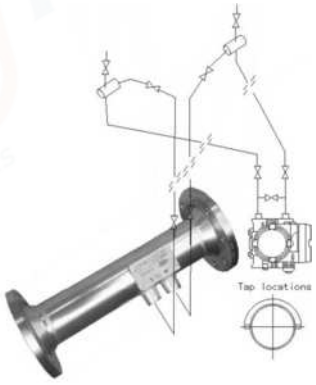
Installation configuration using third party DP transmitters

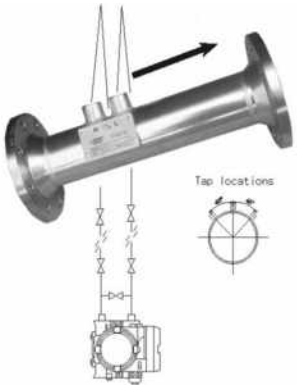


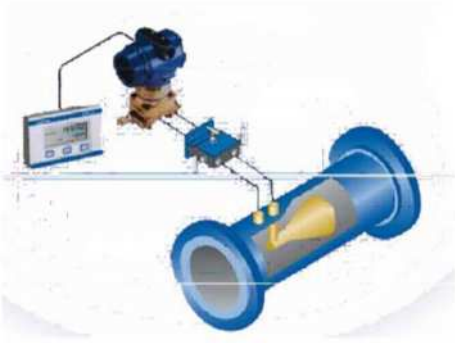












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TYPE OF FLUID	Please provide the name of your fluid, including operating density, temperature and viscosity
LINE SIZE	Please provide the pipe size and sensor connection type (insertion, clamp, etc..)
PROCESS PRESSURE & TEMPERATURE	We will calibrate your flow meter as close to your operating conditions as possible
TYPE OF ELECTRONICS	Please specify output and installation type (compact, wall mount, panel mount, etc.)
PIPE MATERIAL	Please provide the name of your pipe material
ALLOWABLE PRESSURE DROP	Maximum allowable pressure drop (see graph below) that your process can withstand
POWER REQUIREMENTS	Specify your power requirements such as 24 V_{DC} or 220 V_{AC}

ALSONIC-HL

EXAMPLE: ACONE-F250-316-A-TP-MV

ACONE	**	**	**			DESCRIPTION
Flange type - ANSI 150#	F					Connection Type
Wafer type	W					
½"~80" (15mm~2000mm)		**				Size
Pipe and flanges:20# CS, V-cone and connecting fittings: SS# 304			C			Material
Pipe, flanges, V-cone and connecting fittings: SS# 304			304			
Pipe, flanges, V-cone and connecting fittings: SS# 316			316			
87 psi (0.6MPa) - less than 2000mm"				A		Pressure
145 psi (1.0MPa) - less than 1000m				B		
DN250<580 psi (4MPa)				C		
DN150<870 psi (6MPa)				D		
DN100<1450 psi (10MPa)				E		
DN25<2900 psi (20MPa)				F		
None					NN	Options
Temperature port					TP	
High Temperature port					HTP	
Pressure transmitter					PT	
PT100 RTD					PT100	
Multivariable DP flow transmitter					MV	