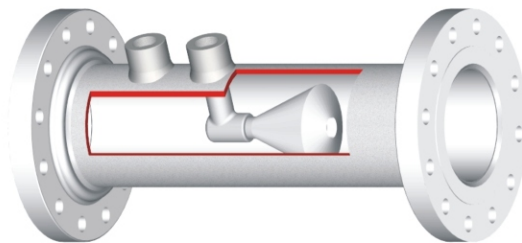
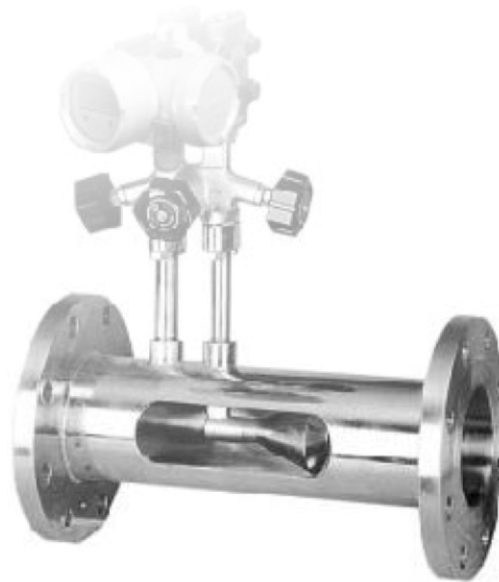




CONE TYPE FLOWMETER - 5

IN THIS CHAPTER - 5

Here is introduce the measuring primary devices of fluid flow by means of the differential pressure that is Cone Type Flowmeter to use new delta-P[ΔP] theory manufactured by SAMIL.

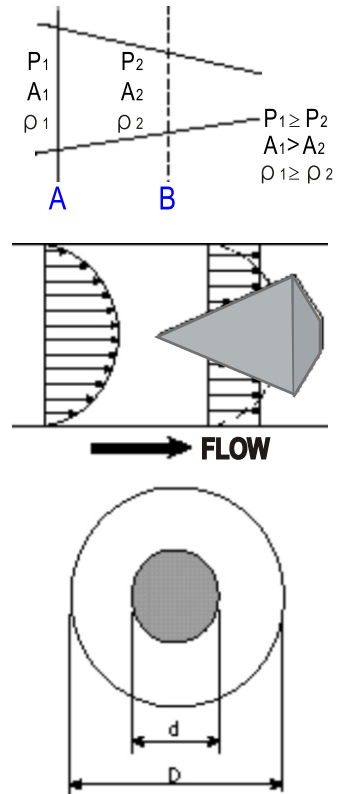


SAMIL INDUSTRY CO.,LTD.



GENERAL DESCRIPTION

The Cone type flow meter is a differential pressure type flow meter primary device. The Cone type produces a differential across a centered cone in a precision meter tube. The differential pressure is the difference in pressure between the static line pressure P_1 measured at the upstream tap and the pressure from a tap located at the forward section of the cone P_2 .



SAMIL's Cone Type Flowmeter is flow detecting sensor based on differential pressure developed by completely new concept. Uniquely designed Taper shaped cone generates a very stable and linear differential pressure corresponding to flow rate.

In combination with normal differential pressure transmitters, remote transmission of flow rate is easily possible.

FEATURES

=>Wide application :

Cone Type Flowmeter(SCM) can measure almost all process fluids, i.e., Liquids, slurries, gases and steam.

=>Short Straight Runs :

By the unique flow restriction theory, the required straight runs both for upstream and downstream are much shorter than those for traditional orifice plates.

Effective for space and cost saving for plant construction.

=>Wide Range ability :

Cone Type flowmeter offers 15 : 1 range ability which is much wider than orifice, flow nozzle and venturi tube.

=>Low Permanent Pressure Loss :

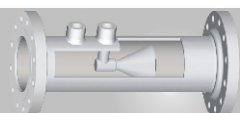
The signal stability of Taper Seg is more stable than that of orifice plates. Thus, the required ΔP and permanent pressure loss are also much lower than orifice system. This saves total energy consumption in plants.

=>Durable against wear and sticking :

Cone Type has "Self-Cleaning" capability because the fluid runs away from the beta edge of the Taper Cone.

=>Easy Handling :

The system of instrumentation is the same as the orifice system. Replacement of the sensing part only is also possible.



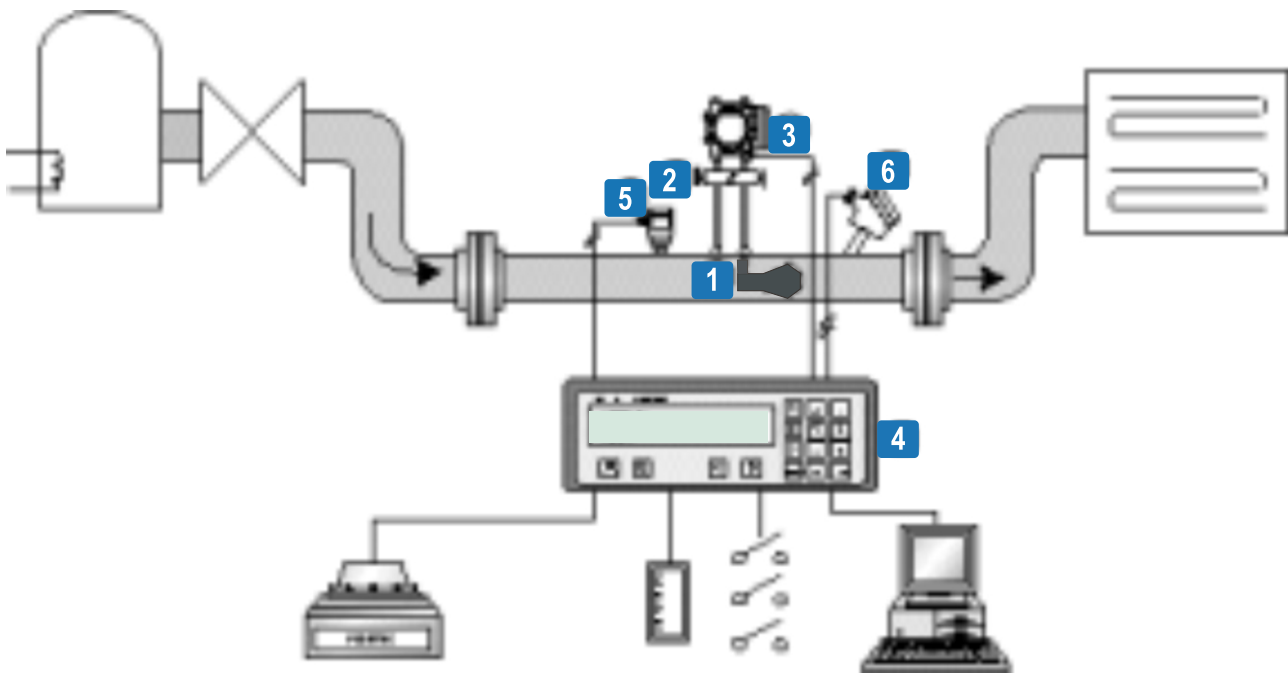
CONE TYPE FLOWMETER



RECOMMENDED APPLICATIONS

- =>Steam Lines
- =>Various Gas Lines
- =>Burning Gas Lines
- =>Water and Other Liquids
- =>Slurries
- =>Others

SYSTEM CONFIGURATION



Measurement of Non-Compressible Fluids

- 1 SCM Differential Pressure Sensor
- 2 3-Way or 5-Way Valve
- 3 Differential Pressure Transmitter
- 4 Flow Indicator or Flow Calculator

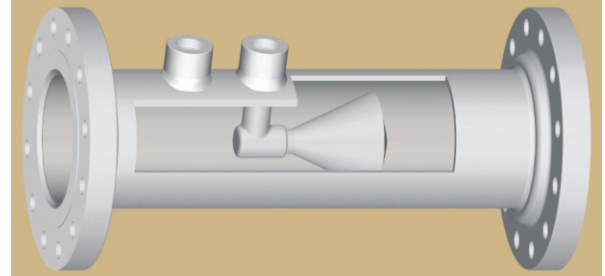
Measurement of Compressible Fluids

- 1 SCM Differential Pressure Sensor
- 2 3-Way or 5-Way Valve
- 3 Differential Pressure Transmitter
- 4 Flow Indicator or Flow Calculator
- 5 Pressure Sensor
- 6 Temperature Sensor



MEASURING PRINCIPLE

The SCM is a differential pressure type flowmeter. Theories behind differential pressure type flowmeters have existed for over a century. The principal theory among these is Bernoulli's theorem for the conservation of energy in a closed pipe. This says that for a constant flow, the pressure in a pipe is inversely proportional to the square of the velocity in the pipe. Simply, the pressure decreases as the velocity increases. For instance, as the fluid approaches the SCM, it will have a pressure of P_1 . As the fluid velocity increases at the constricted area of the SCM, the pressure drops to P_2 .



MAJOR FEATURES : entirely new and innovative differential pressure type of flow measurement by ΔP theory.

- An accuracy of $\pm 0.5\%$ in the majority of applications and Head loss approximately 20% of the generated Diff.
- A repeatability of $\pm 0.1\%$.
- A typical range of 15 : 1.
- Minimum Reynolds No. of 8000.
- Used for static mixing by vortex mixing downstream of the cone.
- Used for measuring fluid of water, steam, gas, etc., as well as many other fluids.
- Differential is generally lower than other differential producers and lower permanent loss [approximately 20% of the generated differential pressure], a constant coefficient over a wide Reynolds No. Range.

SPECIFICATIONS :

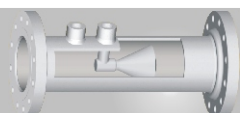
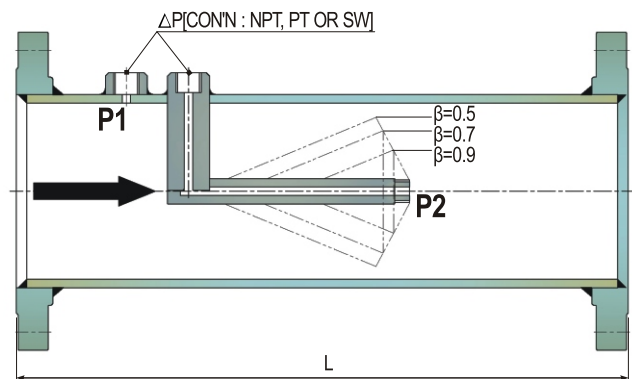
- Applicable Temperature : 370°C [700°F].
- Applicable Pressure : $10\text{kg}/\text{cm}^2$ [142psi] as a standard and available up to $40\text{kg}/\text{cm}^2$ [600psi] on request.
- Material : 304SS, 316SS and others also are available on request.
- Recommended Straight Run : Upstream = $3D \sim 5D$ and Downstream = $5D$.
- Minimum Straight Run : Upstream = $1D \sim 2D$ and Downstream = $3 \sim 5D$.

$$\beta = \sqrt{\frac{D^2 - d^2}{D^2}}$$

$$m = \frac{D^2 - d^2}{D^2}$$

$$d = \beta_{\text{taper-cone}} \cdot D$$

β = Beta Ratio
 m = Area Ratio
 D = Pipe Inside Diameter
 d = Outside Diameter of Cone.

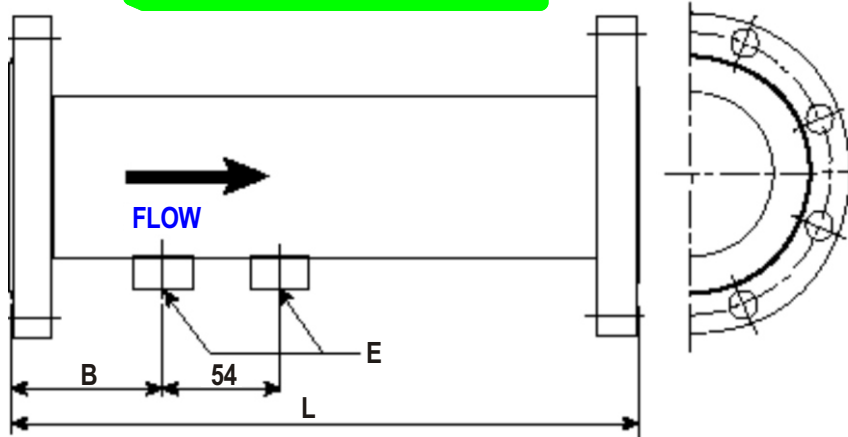


CONE TYPE FLOWMETER



OUTLINE DRAWING

FLANGE CODES
ASME/ANSI, KS, JIS, API & OTHERS
ARE AVAILABLE



MODEL	SIZE		L(mm)	B(mm)	E(NPT or PT)	REMARK
	A(mm)	B(inch)				
SCM-15	15A	1/2"	200	65	1/4	
SCM-20	20A	3/4"	200	65	1/4	
SCM-25	25A	1"	200	65	1/4	
SCM-40	40A	1 1/2"	255	75	1/4	
SCM-50	50A	2"	300	90	1/2	
SCM-65	65A	2 1/2"	300	90	1/2	
SCM-80	80A	3"	350	90	1/2	
SCM-100	100A	4"	400	100	1/2	
SCM-150	150A	6"	560	110	1/2	
SCM-200	200A	8"	660	127	1/2	
SCM-250	250A	10"	710	127	1/2	
SCM-300	300A	12"	760	134	1/2	
SCM-350	350A	14"	760	150	1/2	
SCM-400	400A	16"	760	150	1/2	
SCM-450	450A	18"	760	150	1/2	
SCM-500	500A	20"	915	150	1/2	
SCM-600	600A	24"	1220	150	1/2	
SCM-700	700A	28"	1220	150	1/2	

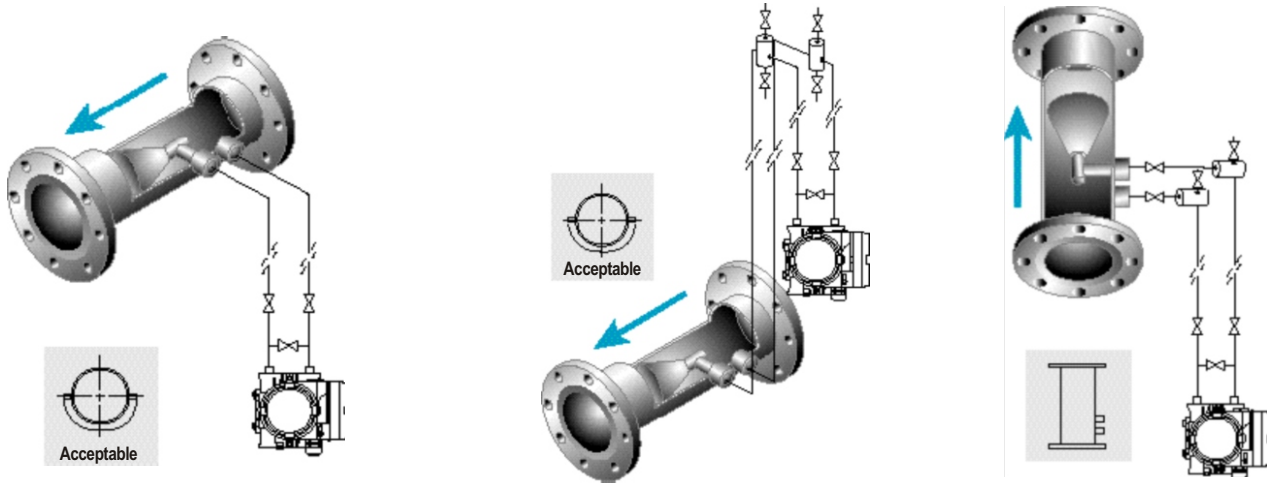
*Larger size than the above table are available

CONE TYPE FLOW METER SCM

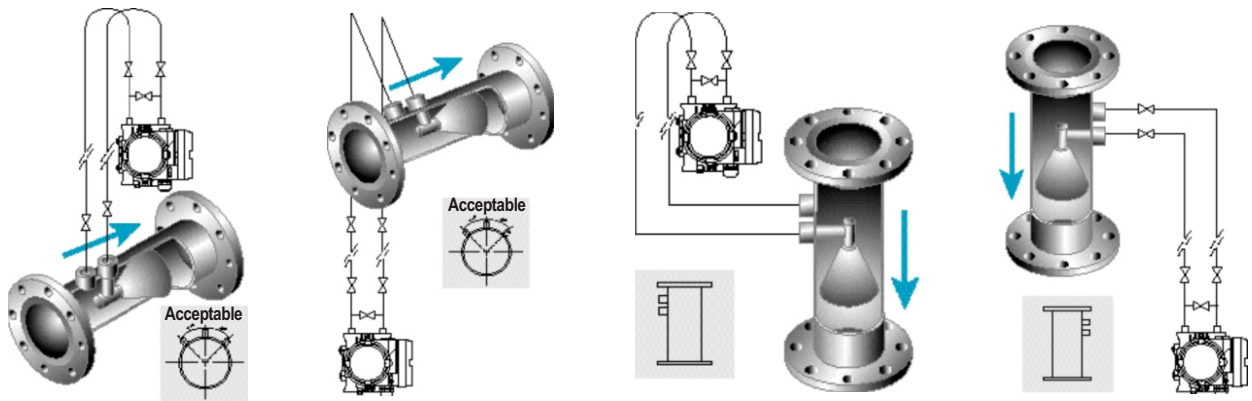


INSTALLATION EXAMPLE

■ LIQUID MEASUREMENT(CLEAN LIQUIDS)



■ GAS MEASUREMENT(CLEAN AND DRY GAS)



■ VAPOUR MEASUREMENT(SATURATED, SUPERSATURATED)

