The Need For Every
Process Industry

SPINK CONTROLS®

An ISO 9001:2015 Certified Company

FLUID FLUTE - AVERAGING PITOT TUBE

MODEL: SC / R - 1200

FLOW

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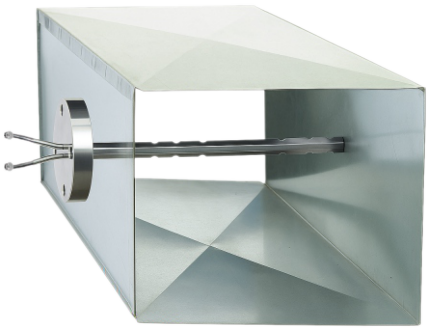
A Fluid flute tube is a multi port velocity averaging device. It accurately measures any fluid flowing in pipe, ducts & stacks. Spink Controls provides a highly efficient Averaging Pitot Tube designed for precise and reliable measurement of fluid flow across various industrial applications.

The device works by measuring the differential pressure between the static pressure and the dynamic pressure (the pressure caused by the moving fluid).

When the fluid impacts the sensor, it creates a high-pressure zone, greater than pipe static pressure, in front of the sensor. As the fluid moves past the sensor, it accelerates and a low pressure zone is created to the sides and rear of the sensor. Multiple sensing ports are positioned in the high and low pressure zones and an averaged differential pressure is produced. The dp increases proportionally to the square of the velocity of the fluid.



Fluid Flute for Air Duct

EQUATION TO CALCULATE DIFFERENTIAL PRESSURE (ΔP)in mm of H_2O :

1) Liquid (Volume rate of flow):

$$\Delta P = (SG_1)\left(\frac{m^3/hr}{0.000396\,K\,D^2}\right)^2$$

2) Liquid & gas (Mass rate of flow):

$$\Delta P = \left(\frac{1}{\delta}\right)\left(\frac{kg/hr}{0.0125\,K\,D^2}\right)^2$$

3) Gas (Standard volume rate of flow):

$$\Delta P = \left(\frac{T\,SG_2}{P}\right)\left(\frac{Nm^3/hr}{0.0191\,K\,D^2}\right)^2$$

4) Gas (Actual volume rate of flow):

$$\Delta P = (SG_2)\left(\frac{Am^3/hr}{0.0125\,K\,D^2}\right)^2$$

Where,

K = Flow Coefficient of Averaging Pitot tube
D = Pipe ID in mm
A = Cross sectional area in m²
V – Flow velocity in m/s
δ = Flow Density in kg / m³
SG_1 = Specific Gravity of Liquid
SG_2 = Specific Gravity of Gas

- **For Gas,**

$$\delta = \frac{P \times 289 \times 1.225}{101.35 \times T}$$ ---------- T in Kelvin , P in Kpa (ab)

- Thermal expansion factor of CS pipe = 1, between 0 to 40°C
- Gas expansion factor assumed to be 1.0 to calculate ΔP

ENGINEERING SPECIFICATION

LINE SIZE	:	50 NB to 750 NB, HIGHER SIZES ON REQUEST
MOUNTING	:	SENSOR FITTING WITH FLANGE & FIXED TO MOUNTING FLANGE ON PIPELINE
OPTIONAL INSERTION	:	ISOLATION VALVE/ RETRACT MECHANISM
ACCURACY	:	+/- 1% FSR
REPEATABILITY	:	+/- 0.1% of FSR
PRESSURE RATING	:	TEMPERATURE RATING: 450°C
MOC	:	ANSI 304, 316, OTHER ON REQUEST.

MEASURING RANGE

NB	PIPE ID	WATER	△P	AIR	K	Code
Inch	mm	m^3/hr	mmc WC	SCFM		
6	154	260	1168	4295	0.624	1A
8	202.7	350	1109	5846	0.646	1B
10	254.5	470	752	7836	0.668	1C
12	303.2	580	563	9791	0.671	1D
14	333.3	700	550	11815	0.678	1E
16	381	820	437	13838	0.682	1F
18	428.6	950	362	16037	0.686	1G
20	477.8	1080	299	18216	0.69	1H
24	574.6	1290	202	21779	0.694	1I
30	742.95	1700	119	28686	0.712	1J

MODEL CODING

Suffix Code	1	2	3	4	5	6	Parameters
Model No.	SC/R-1200						
Line size		XX					Refer Flow Chart
Material of Construction			S4 S6				SS 304 SS 316
End connection				F S			Flange Screwed
Optional					IV RM		Isolating Valve Retract Mechanism

SPINK CONTROLS ®

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Plant

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