

PERFECT ENGINEERING SERVICES

FLOW ELEMENTS

Perfect Engineering Services manufactures differential pressure type flow elements. These are widely recognized & used as primary elements/devices. In conjunction with 'smart' transmitters they continue to be suitable for wide variety of applications. They can provide many advantages including versatility, cost, simplicity, absence of moving parts & low maintenance cost.

AVERAGING PILOT TUBE (FLUID-BAR)

An averaging pilot tube (Fluid-Bar) is a multi-port velocity averaging device. It accurately measures liquid, gas & steam (vapour) flows in pipes, ducts & stacks. Its installation is simple & inexpensive. Whatever the flow application, an averaging pilot tube (Fluid-Bar) offers high & long-term accuracy, low permanent pressure loss & low operating cost.



Model: FTM



Model: FBF



Model: FBR

DIAMOND SHAPED SENSOR:

(Fig-1) controls the separation point at which the boundary layer separates as the flow passes around the sensor. The characteristics at the low-pressure port remain the same regardless of the velocity, temperature, pressure & Reynold's number. The diamond shape results in a stable flow coefficient, enabling to achieve $\pm 1\%$ accuracy over a wide range of flow.

Line size	: 25 mm- 5000 mm (1" - 200")
Models	: Flow tap (FTI, FTM, FTI-I), Regular (FBR), Flanged (FBF), Steam (SR, FSF)
Sensors	: 61, 73, 75, 76, 85, 86
Accuracy	: $\pm 1\%$
Materials	: AISI 316, other on request.

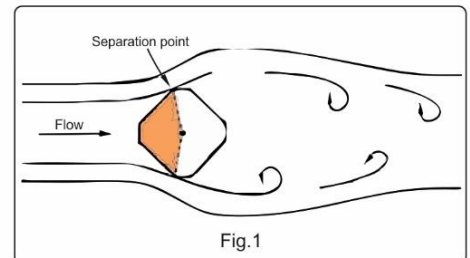


Fig.1

ORIFICE PLATE :

An orifice plate is a most popular flow element. Star-Mech orifice plates are precisely manufactured from the finest materials with close tolerance to match ISO 5167, BS 1042 and API 2530 & AGA report 3. Mountings between flanges or carrier ring(s) are available.

Line size	: 15 mm - 1500 mm (1/2" - 60")
Types	: Concentric square edge, Quarter of circle, Conical entrance, Segmental, Eccentric
Accuracy	: $\pm 1\%$
Materials	: AISI 316, AISI 304, Hastelloy C, Monel, other on request.



ORIFICE PLATE ASSEMBLY

An orifice plate assembly provides maximum economy with minimum maintenance. It consists of orifice plate, flanges, studs, nuts, jack bolts & gaskets. Flanges are according to ANSI, DIN, JIS standards. Type of orifice flanges includes Weld neck, Slip on, WNRTJ and T&G.

Line size : 15 mm-1500mm (1/2" -60")
Pressure tap : Flange tap, Corner tap, Radius tap (D & D/2 TAP)
Accuracy : $\pm 1\%$
Material of flange : A 105, A 182-816, A 182-F304, A 182+5,
A 182-F11, A 182+22, other on request.
Material of gasket : CAF, SWG, P.T.F.E., other on request.



INTEGRAL ORIFICE PLATE ASSEMBLY

An integral orifice plate assembly is integrally mounted with the measuring instrument. It is a compact & complete flow meter device without need of impulse piping. The assembly includes integral orifice plate, bodies, studs, nuts & gaskets. Bodies with socket-weld or threaded end connections are available. IOPA with upstream & downstream piping with flanged ends are also available.

Line size : 15 mm - 40 mm (1/2" - 1 1/2")
Accuracy : $\pm 2\%$
Material of plate : AISI 316, AISI 304, Hastelloy C, Monel, Other on request.
Material of body : A351-CF8M, A216-WCB, A 105, A 182 - F316
Material of gasket : P.T.F.E



VENTURI TUBE

A venturi tube has a conical convergent entry followed by a cylindrical throat & a conical divergent outlet. Manufactured to ISO 5167, BS 1042 standards, it substantially reduces permanent pressure loss. The types are made according to the manufacturing methods of the internal surface of the entrance cone & profile at the intersection of the entrance cone & throat.

Line size : Type A- 100 mm -800 mm (4"-32"),
Type B- 50 mm-250mm (2"-10")
Type C- 200 mm -1200 mm (8"-48")
Types : Type A - Cast convergent section,
Type B - Machined convergent section,
Type C - Rough welded sheet-iron convergent section.
Accuracy : Type A - $\pm 0.7\%$, Type B - $\pm 1.0\%$, Type C - $\pm 1.5\%$



FLOW NOZZLE

A flow nozzle is a curved convergent entry leading to a short cylindrical throat without a discharge cone. It is generally selected for steam (vapour) flows at high velocities of flowing fluid. It is more stable at higher temperatures & velocities than an orifice, as it is rigid. The types are made according to the entrance. Flow nozzles are used when venturi tubes are too long & where erosion or cavitation prohibits the use of orifice plate.

Line size : Long radius nozzle - 50 mm -630 mm (2"-24"),
ISA 1932 - 50 mm - 500 mm (2" - 20")
Types : Long radius nozzle, ISA 1932
Pressure tap : Long radius nozzle- Radius tap (D & D/ 2 tap) only,
ISA 1932 - Corner tap only
Accuracy : $\pm 1\%$
Material : AISI 316, AISI 321



*Owing to continuous improvements, product specifications and dimensions are subject to change

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