

Averaging pitot tube

Model : F760

Spec. sheet no. FD07-03

Description

Averaging pitot tube is an energy saving device used to measuring the flow of liquids, gases and steam in pipes, stacks and rectangular ducts.

It provides high, long term stability with low permanent pressure loss.

Examples of their applications are precise volumetric flow measurement in batch processes, continuous measurement of liquid ingredients in the process industry, fuel, air, steam and gases as primary energy source as well as in control functions requiring a high degree of stability and repeatability.

EAC

Advantages

- Unique profile shape enables high flow rate turn down
- Dual averaging for better accuracy
- Short upstream and downstream straight pipe lengths
- Long term accuracy unaffected by wear



Specification

Measuring fluid

Liquid, Gas, Steam and etc.

Accuracy

±1 % of actual flow rate

Material

304SS, 316SS, 316L SS and Monel
Special materials are available

Repeatability

±0.1 % of actual flow rate or better

Pipe size

50 ~ 1,800 mm
2" ~ 72"

Max. working pressure

15 MPa

Max. working temperature

600 °C

Rangeability

10:1

WISE[®]

1. Base model

F760 Averaging pitot tube

2. Type of support

- 1 Single support
- 2 Double support

3. Line size

01	½"	12	10"
02	¾"	13	12"
03	1"	14	14"
04	1½"	15	16"
05	2"	16	18"
06	2½"	17	20"
07	3"	18	24"
08	4"	19	28"
09	5"	20	32"
10	6"	21	40"
11	8"	22	Other

4. Vessel connection size

01	25A 10K RF	11	1" 300 Lb RF
02	25A 20K RF	12	1" 600 Lb RF
03	25A 30K RF	13	1½" 150 Lb RF
04	40A 10K RF	14	1½" 300 Lb RF
05	40A 20K RF	15	1½" 600 Lb RF
06	40A 30K RF	16	2" 150 Lb RF
07	50A 10K RF	17	2" 300 Lb RF
08	50A 20K RF	18	2" 600 Lb RF
09	50A 30K RF	19	Other
10	1" 150 Lb RF	20	Welding

5. Probe material

- A 304SS
- B 316SS
- C 316L SS
- D Monel
- H Hastelloy-C
- E Other

6. Valve type

- B Ball
- G Gate
- L Glove
- N Needle
- O None

7. Option

- O Other
- N None

1	2	3	4	5	6	7	Sample ordering code
F760	1	05	05	B	G	O	

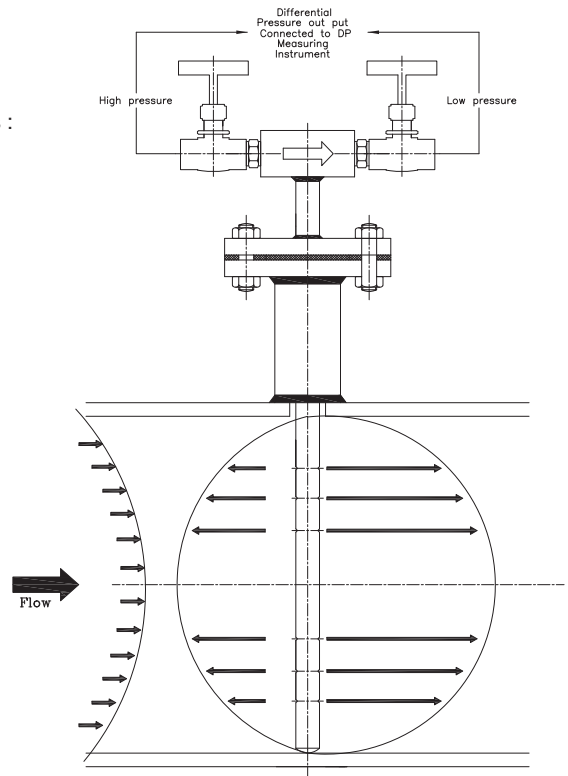


Measurement principal of pitot tube

Averaging pitot tubes are generally used for large line sizes or ducts where other primary devices become relatively expensive.

Averaging pitot tube comprises of following components :

- Outer impact tube
- Internal averaging tube
- Low pressure chamber
- Head



The outer impact tube has a number of pressure sensing holes facing upstream which are positioned at equal annular points in accordance with a loglinear distribution.

The total pressure developed at each upstream hole by the impact of the flowing medium are firstly averaged within the outer impact tube and then to a second order (and more accurately) averaged within the internal averaging tube.

This pressure is represented at the head as the high pressure component of the DP output.

The low pressure component is generated from a single sensing hole located on the downstream side of the outer impact tube.

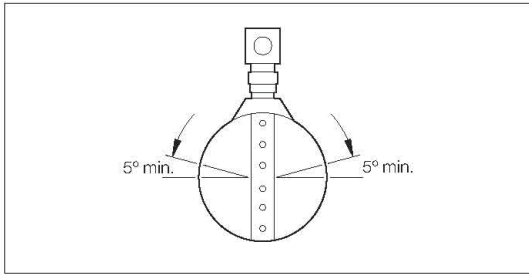
Stable flow coefficient which is the result of typical diamond shape, makes it a reliable flow measuring primary flow element.

Simple and inexpensive, long term accuracy within acceptable limits over wide range of flow, low permanent pressure loss and minimum operating cost makes it ideal choice of any design engineer.

Orientation in pipe

1. Horizontal pipe mounting - Gas

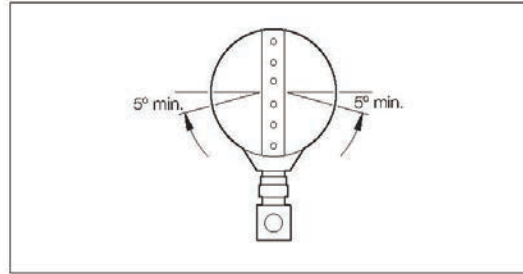
To ensure the instrument lines contain only gas, install APT with the instrument connections above the centre line of the pipe, at least 5° above the horizontal



<Horizontal pipe mounting - Gas>

2. Horizontal pipe mounting - Liquids

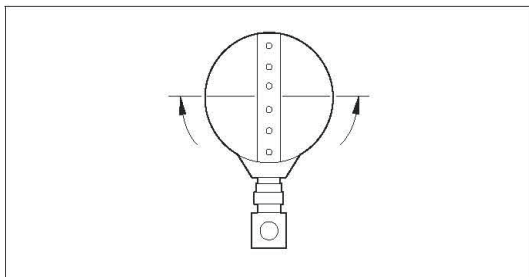
To ensure the instrument lines contain only the process liquid, install APT with the instrument connections below the centre line of the pipe, at least 5° below the horizontal



<Horizontal pipe mounting - Liquid>

3. Horizontal pipe mounting - Steam

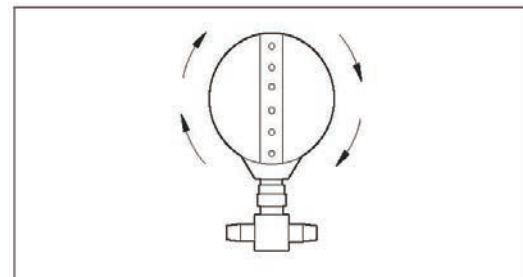
To ensure the instrument lines contain only steam, install APT with the instrument connections at or below the centre line of the pipe



<Horizontal pipe mounting - Steam>

4. Vertical pipe mounting - All applications

Any lateral - mounting angle is suitable

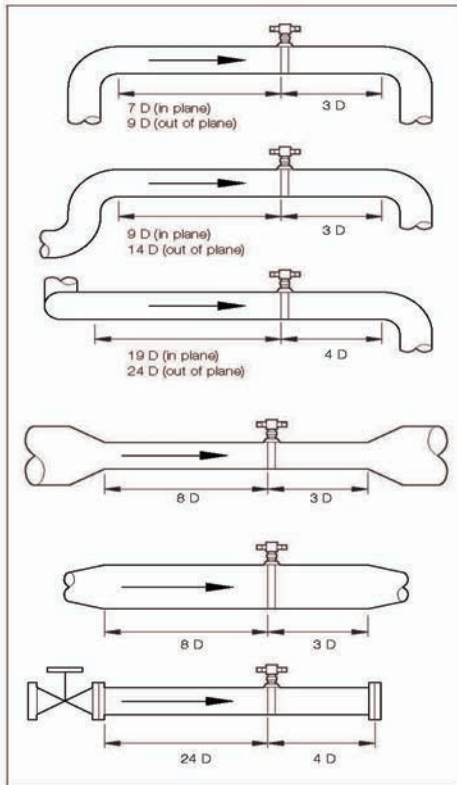


<Vertical pipe mounting - All applications>

Recommended straight run

In common with other differential pressure primary flow elements, averaging pitot tubes require a well developed flow profile. Disturbances created by various pipe configurations can reduce measurement accuracy. Recommended upstream and downstream straight pipe lengths are shown below, in terms of multiples of the pipe diameter.

Averaging pitot tubes installed with shorter pipe lengths can still provide an repeatable flow measurement.



Large empty rectangular area for writing or drawing.