AVERAGE PITOT TUBE

■ MODEL : DHIF-PT600 SERIES **DAEHAN & DS INSTRUMENT CO.,LTD**

■ APPLICATIONS

The Most Accurate and Reliable
Technology for Measuring Gas, Liquid and Steam
Superior Signal Stability and Greater Resistance to Clogging
Bi-directional flow measurement.

■ SPECIFICATIONS

☐ Average Pitot Tube Type
- Single Support Flange Type
- Double Support Flange Type
- Isolation Valve Type
- Isolation Valve & Rod Type

☐ Flange Ratings
- JIS 10, 16, 20, 30, 40 and 63K
- ANSI class 150, 300, 600,900,1500,2500#

☐ Nominal pipe sizes available
- 15mm ~ 3200 mm(1/2"~128")

☐ MATERIAL
- Carbon steel
- Stainless Steel (304SS,316SS,321SS,321H)
- Low Alloy (A335-P5,P9,P11,P12,P22,P91)

☐ Flow Turndown
- Typically > 10:1

☐ Accuracy
- Typically ±1~1.5% un-Calibrated
- Typically ±0.5% Calibrated.(It's the Liquid examination)
- Typically ±1% Calibrated.(It's the Gas examination)

■ DESCRIPTION

The Averaging Pitot Tube is a differential pressure producer suitable for liquid, gas and steam flow measurement. It offers simple, low cost installation into pipes and ducts, and high energy savings due to its low unrecovered pressure loss.
There are no moving parts or sharp edges to wear, so long term accuracy can be maintained.
'Hot-Tap' versions are available which allow the Averaging Pitot Tube to be withdrawn from the process whilst still under pressure.
Versions fitted with an optional manifold allow close mounting of differential pressure transmitters.
For true mass flowmeasurement, a multivariable transmitter may be fitted.

■ BENEFITS

- Unique profile shape enables high flow turndown
- Dual averaging for better accuracy
- One-piece outer tube for optimum strength
- Suitable for pipe sizes from 10mm to 5000mm (and larger with a special 2 piece construction)
- Optional direct mounting transmitter arrangement
- Low permanent pressure loss means low energy consumption - and significant cost benefits

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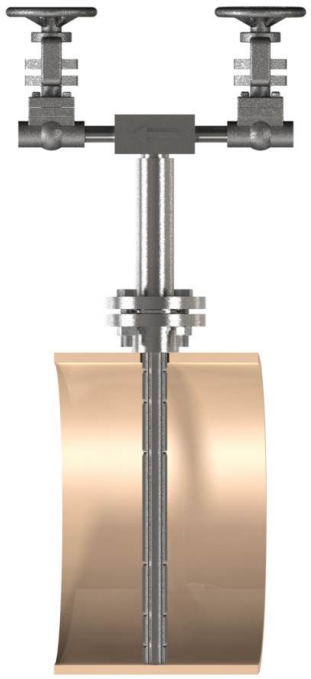
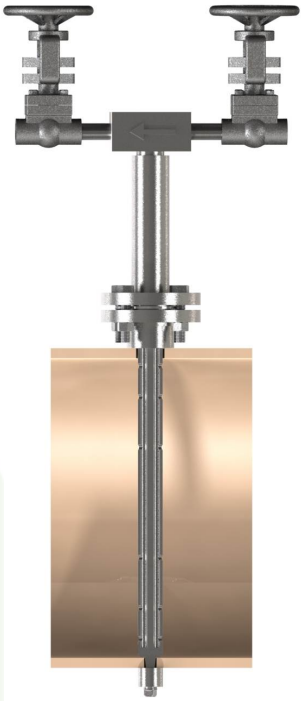
■ AVERAGE PITOT TUBE TYPE

▶ Single Support Flange Type
(Model : DHIF-PT610)



▶ Double Support Flange Type
(Model : DHIF-PT620)



▶ Isolation Valve Type
(Model : DHIF-PT630)

▶ Isolation Valve & Rod Type
(Model : DHIF-PT640)

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■ REQUIRED STRAIGHT LENGTHS OF AVERAGE PITOT TUBE

Required straight lengths for Average Pitot Tube

Single 90˚ bend		Two or more 90˚bends in the same Plane		Two or more 90˚bends in the Different Plane		Reducer		Expander		Tee Connection With Different Diameters		Full bore ball or gate valve fully open	
1		2		3		4		5		7		6	
A	B	A	B	A	B	A	B	A	B	A	B	A	B
9	4	14	4	24	4	8	4	8	4	7	4	24	4
A	B	A	B	A	B	A	B	A	B	A	B	A	B
6	3	8	3	9	4	8	3	8	3			9	4

where the recommended straight pipe sections for fully developed flow characteristics are not available, a comparison measurement Can be taken to adjust the measured-value accuracy to the conditions of the metering pipe. The single-point measurement ensures that the differential pressure corresponds to the true speed so that the specified accuracy is achieved.

a. The radius of curvature of the bend shall be greater than or equal to the pipe diameter.
b. Column "A" Upstream Required straight lengths. (Norminal pipe Diameters)
c. Column "B" Downstream Required straight lengths. (Norminal pipe Diameters)

■ PRINCIPLES OF THE METHOD OF MEASUREMENT AND COMPUTATION

Average Pitot tubes can be used to indicate fluid flow velocity by measuring the difference between the static and dynamic pressures in fluids

The principle is based on the **Bernoulli Equation** where each term can be interpreted as a form of pressure

$\mathbf{p + 1/2\ \rho\ v^2 + \gamma\ h}$ = constant along a streamline ---(1)

where

p = static pressure (relative to the moving fluid) (Pa)

ρ = density (kg/m^3)

v = flow velocity (m/s)

γ = ρ g = specific weight (N/m^3)

g = acceleration of gravity (m/s^2)

h = elevation height (m)

Flow Velocity

In a measuring point we regard the hydrostatic pressure as a constant, h1 = h2 and this part can be eliminated. Since v2 is zero, (2) can be modified to:

$p_1 + 1/2\ \rho\ v_1^2 = p_2$ ---(3) or $v_1 = [2\ (p_2 - p_1) / \rho]^{1/2}$ ---(4)

where

$\mathbf{p_2 - p_1 = dp}$ (differential pressure)

The pitot tube is a simple and convenient instrument to measure the difference between static, total and dynamic pressure (or head).

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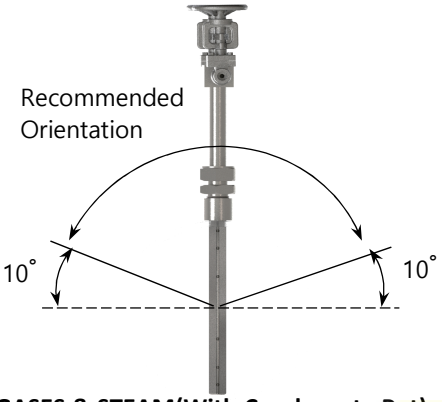
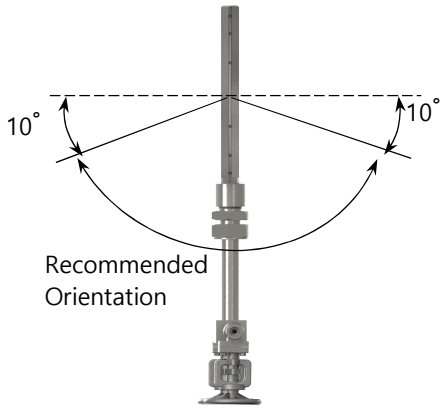
■ PRESSURE TAP ORIENTATION

▶ HORIZONTAL PIPING

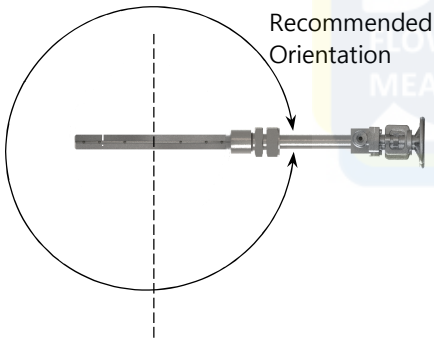


■ GASES & STEAM(With Condensate Pot)



■ LIQUIDS & STEAM(Without Condensate Pot)

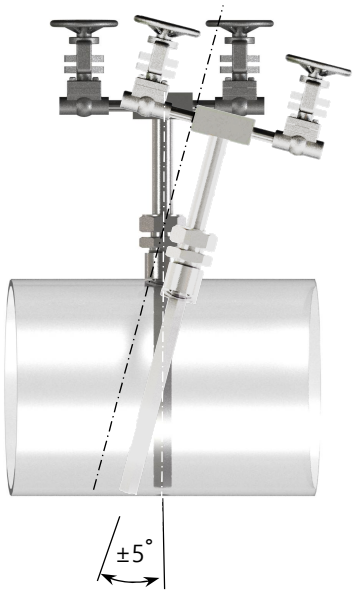
▶ VERTICAL PIPING



■ LIQUIDS & GAS & STEAM

• Vertical Piping mounting- All applications any lateral - mounting angle is suitable

■ LIMITS OF TOLERANCE



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■ ORDERING INFORMATION

MAIN ORDER	CODE	DESCRIPTION
1. Base Model	DHIF - PT600 SERIES	Base Model
2. Type	PT610	Single Support Flange Type
	PT620	Double Support Flange Type
	PT630	Isolation Valve Type
	PT640	Isolation Valve Type & Rod Type
3. Line Size	□□□ A	Pipe Size (mm)
4. Probe/Flange Material	A	316SS(316LSS)
	B	304SS(304LSS)
	C	Carbon steel
	OP	Option
5. Mounting Connection	1	ANSI 150# 1-1/2" (15A~350A)
	2	ANSI 150# 2" (400A~650A)
	3	ANSI 150# 3" (700A~3200A)
	4	ANSI 300# 1-1/2" (15A~350A)
	5	ANSI 300# 2" (400A~650A)
	6	ANSI 300# 3" (700A~3200A)
	O	Option
6. Valve Type	N	Needle Valve
	G	Gate Valve
	L	Globe Valve
	B	Ball Valve
	O	Option
7. DP Transmitter	T	Transmitter Include.
	E	Transmitter Exclude.
8. Probe Quantity	1	1 Pair
	2	2 Pair
	3	3 Pair
	4	4 Pair
9. Option	OP	Option