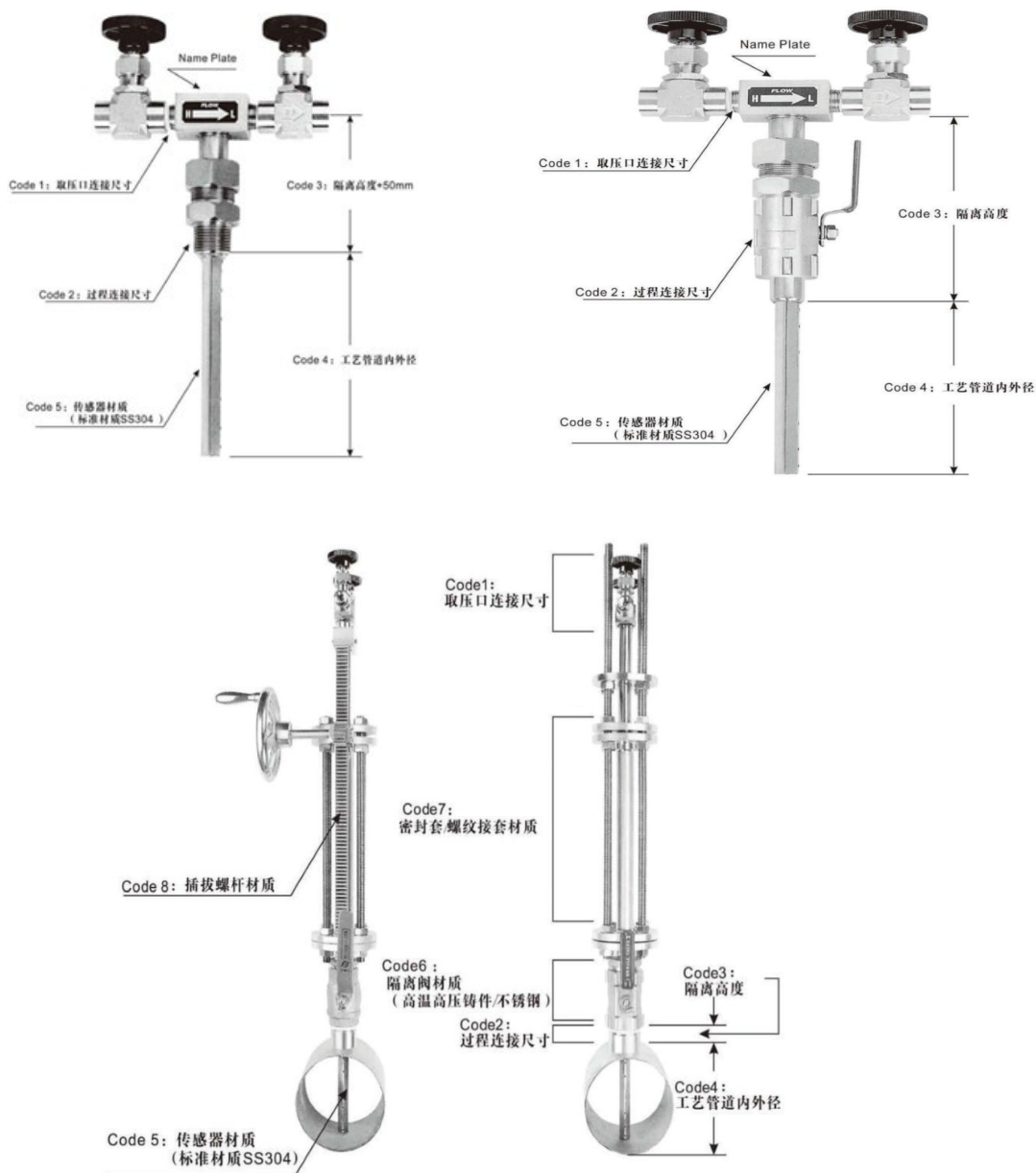


# Installation and Instruction Manual



DAEHAN INSTRUMENT Co., Ltd.

## AVERAGE PITOT TUBE

Models: 301 , 302 , 303 , 304

ISSUED BY:

DESIGN AND ENGINEERING DEPARTMENT.

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	<b>DESIGN &amp; ENG. DEPT.</b> <b>DAEHAN INSTRUMENT CO., LTD.</b>	
	<i>Doc. Title: Installation and Instruction Manual – 301,302,303,304</i> <b>Doc. Number:</b>	Page:2 / 8
		Rev. No.: 0
		Date: Apr/2020

## Table of Contents

1) INTRODUCTION .....	3
1-1) General.....	3
1-2) Feature of general Pitot tube.....	3
1-3) Measurement of flux .....	3
1-4) Feature of DAEHAN INSTRUMENT CO., LTD. Pitot tube.....	4
2) INSTALLATION .....	5
2-1) In case of verticality tube.....	5
2-2) At the horizontal tube.....	5
2-3) A necessary intuitive tube .....	7
2-4) Limits of a tolerance.....	7
2-5) Average Pitot Tube on-site installation drawing .....	8
2-6) Notice .....	8



## 1) INTRODUCTION

### 1-1) General

DAEHAN INSTRUMENT company worked hard to make a new PITOT TUBE that is solved a many problems in the existing PITOT TUBE such as low pressure drop, require for accuracy of installed location, difficulty of average velocity measurement in pipe.

We has technical help from the korea institute of industrial technology for the six months since 1994. and we succeeded in the development of a new PITOT TUBE.

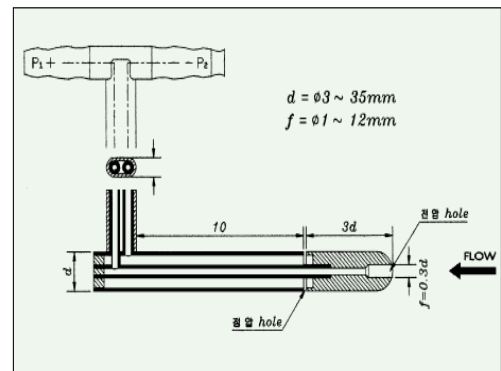
### 1-2) Feature of general Pitot tube

(advantage)

- Simple structure.
- Regardless of a diameter in pipe.
- Measurement of velocity at the relatively small area.

(defect)

- low pressure drop.
- require for accuracy of a installed location and a situation.
- difficulty of average velocity measurement in pipe.



### 1-3) Measurement of flux

Velocity of incompressible fluid is solved by Bernoulli Equation.

$$Q = A.V = A. \sqrt{2g \frac{P_1 - P_2}{r}} \dots \dots \dots \text{equation (1)}$$

P1 : total pressure, V : velocity  
P2 : static pressure, A : area in pine,  
r : specific gravity

Actually. velocity of incompressible fluid is solved by application of velocity and pressure parameter which are obtained to experimental data.

$$Q = A.V = A.C \sqrt{2g \frac{P_1 - P_2}{r}} \dots \dots \dots \text{equation (2)}$$



#### 1-4) Feature of DAEHAN INSTRUMENT CO., LTD. Pitot tube

- 1) Easily measurement of the flux.
  - The value of pressure drop is detected about 2~3 times larger than the existing one.
- 2) Superior efficiency.
  - The pressure drop are observed at 4~8 point in the inner pipe.

$n \quad r/R$	$r_1$	$r_2$	$r_3$	$r_4$	$r_5$
2	0.5	0.866			
3	0.408	0.707	0.912		
4	0.354	0.612	0.790	0.936	

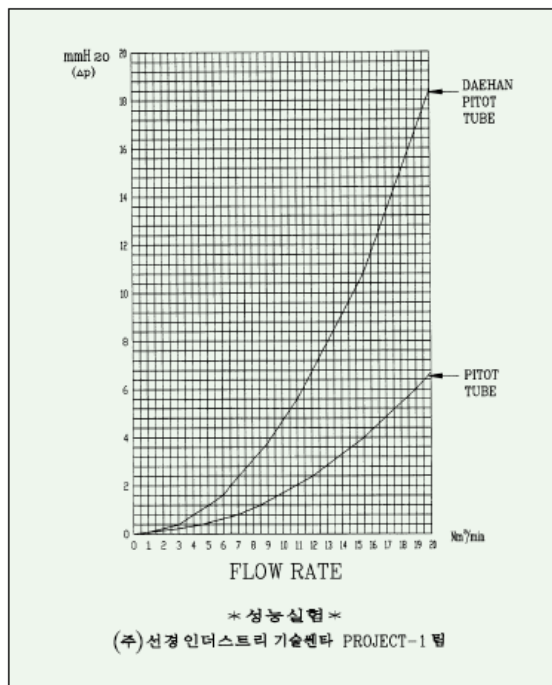


Table 1, For formance test of test of DAEHAN PITOT TUBE vs. PITOT TUB

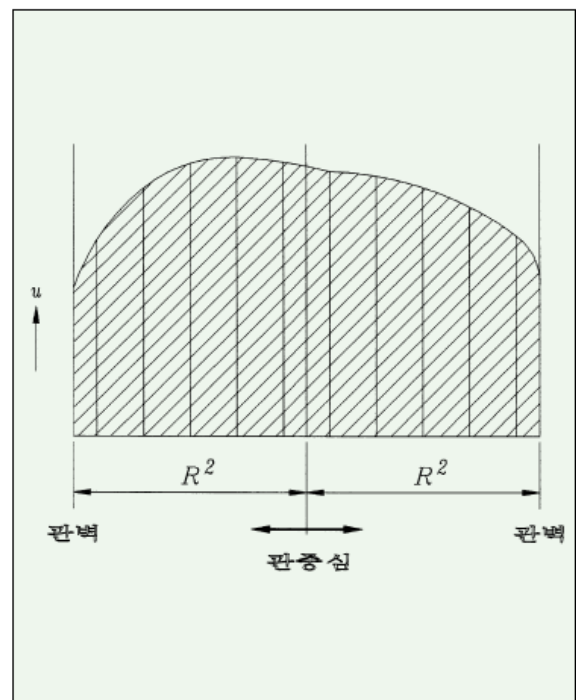
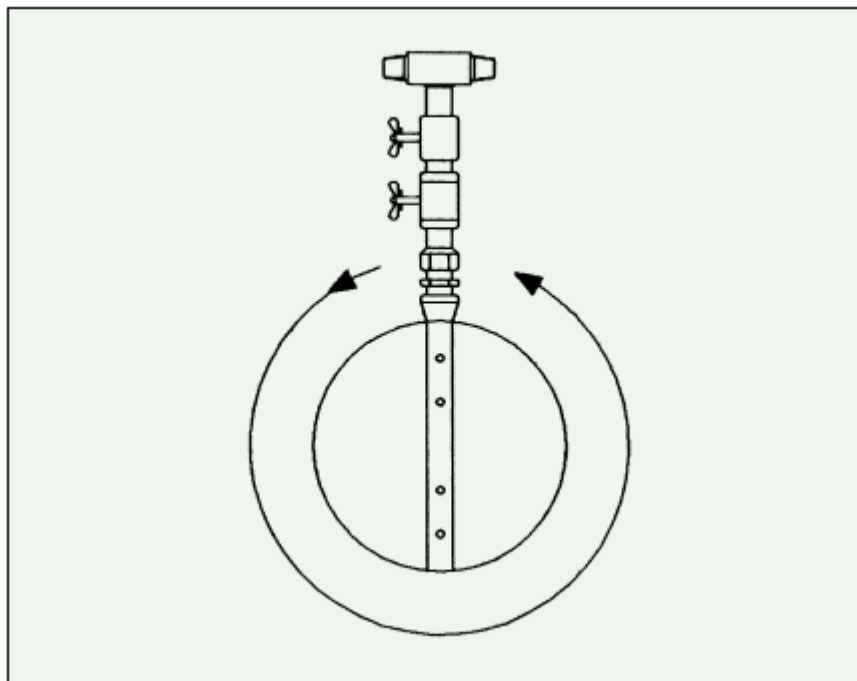


Figure 2, Velocity Profile



## 2) INSTALLATION

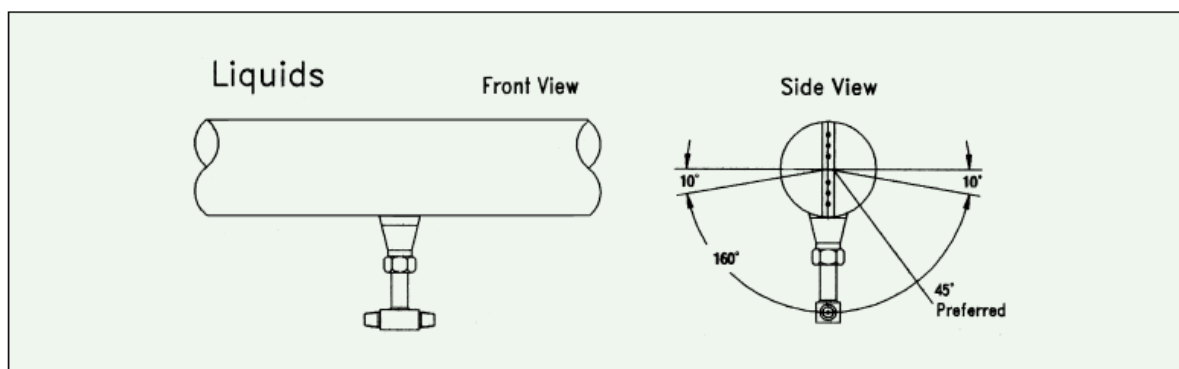
**2-1) In case of verticality tube, install this pitot tube at the point of a horizontal plane. (Refer to the Figure 5)**



[ Figure 5]

**2-2) At the horizontal tube, we are select installation method by a kind of fluid**

In case of liquid, install this pitot tube at the bottom tip in the tube. (Refer to the Figure 6)



[Figure 6]



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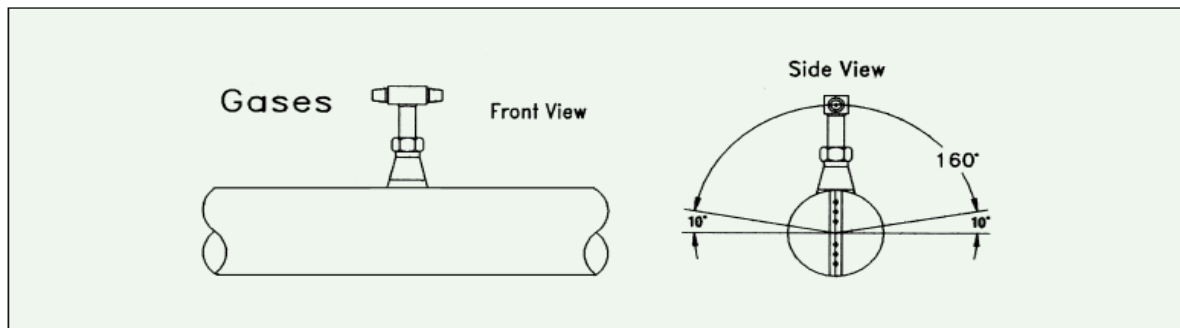
**Doc. Title:** Installation and Instruction Manual – 301,302,303,304  
**Doc. Number:**

Page:6 / 8

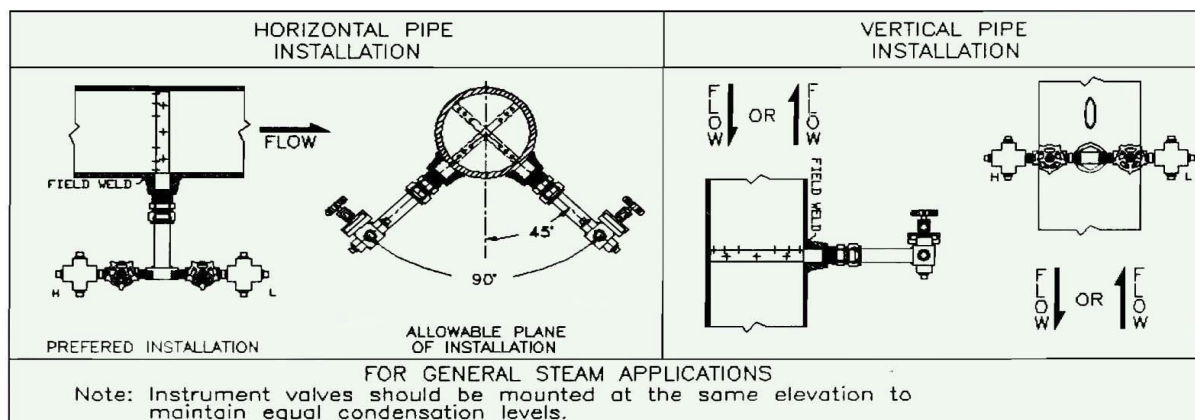
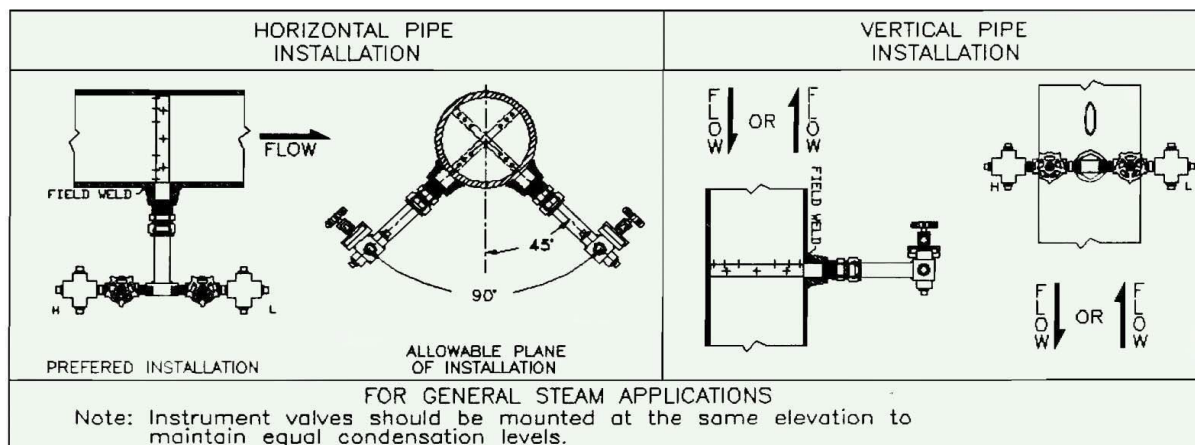
Rev. No.: 0

Date: Apr/2020

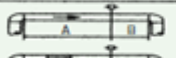


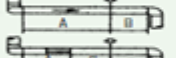



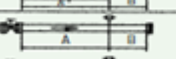

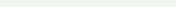
In case of gas, install this pitot tube at the top end in the tube. (Refer to the Figure 7)



(Figure 7)

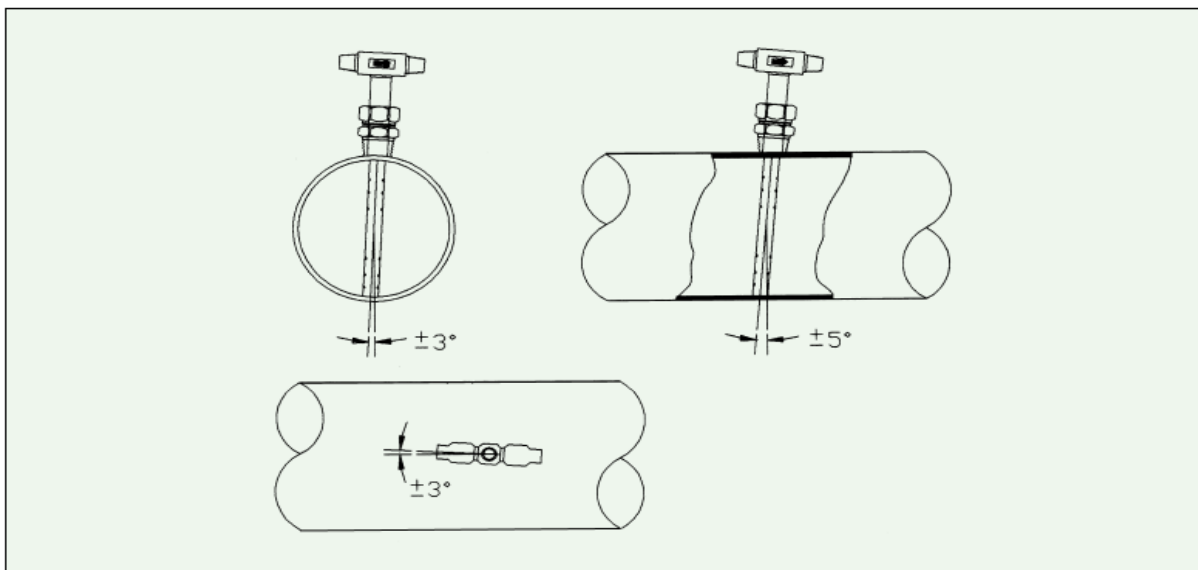


## 2-3) A necessary intuitive tube (Refer to the Table 4)

직관부	상류측 직관부					하류측 직관부 B
	Conditioner 가 없는 경우		Conditioner 를 설치할 경우			
	동일평면내 A	동일평면외 A	A'	A	C'	
	7	9				3
			6	3	3	
	9	14				3
			8	4	4	
	19	24				4
			9	4	5	
	7	8				3
			8	4	4	
	7	8				3
			8	4	4	
	24	24				4
			9	4	5	

[Table 4]

## 2-4) Limits of a tolerance (Refer to the Figure 8)



[Figure 8]





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**Doc. Title:** Installation and Instruction Manual – 301,302,303,304  
**Doc. Number:**

Page:8 / 8

Rev. No.: 0

Date: Apr/2020

## 2-5) Average Pitot Tube on-site installation drawing



## 2-6) Notice

- 1) Avoidance a dusty place
  - If pressure detection hole is closed up an opening with dusts, you can solve through a spray of high pressure air
- 2) Not congenial to turbulent flow
- 3) Not using the place of high pressure steam, vibration existence.