

# Sanitary Pipes / Fittings

## Overview

### Common Specifications

Material	Standards
SUS304	(No. 8A~15A) JIS G3459
SUS316L	(No. 1S~3S) JIS G3447

### Common Specifications (Weld bead portion inside excluded)

Surface Finish	Standards
Inner Surface	#320~400 (Ra≤1.0μm)
Outer Surface	#320~400 (Ra≤2.5μm)

### Table of Applicable Standards

Shape	Page	Standards
Sanitary Pipes (1S ~ 3S)	P.1344~1346	JIS G3447
Sanitary Small Diameter Pipes (SUS316L 8A ~ 15A)	P.1344, 1346	JIS G3459
Clamp	P.1345~1348	IDF/ISO
Thread	P.1346	IDF
Flange	P.1350	JIS B2220

For detailed dimensions, refer to stipulated standards.

### Table of Sanitary Pipes: Depending on Dimension Standard

JIS G3447(1994)			JIS G3459			3A (USA Sanitary Standards)			ISO		DIN (DIN1 1850) (DIN)		
Size	O.D. (D)	Thickness (t)	Size	O.D. (D)	Thickness (t)	Size	O.D. (D)	Thickness (t)	O.D. (D)	Thickness (t)	Size	O.D. (D)	Thickness (t)
-	-	-	8A	13.8	1.65	-	-	-	12	1	DN10	12	1
-	-	-	10A	17.3	1.65	-	-	-	17.2	1	15	18	1
-	-	-	15A	21.7	2.1	-	-	-	21.3	1	20	22	1
1S	25.4	1.2	20A	27.2	2.1	1	25.4	1.25 1.65	25	1.2	25	28	1.5
1.25S	31.8	1.2	25A	34	2.8	1 1/4	-	-	33.7	1.2	32	34	1.5
1.5S	38.1	1.2	32A	42.7	2.8	1 1/2	38.1	1.25 1.65	38	1.2	-	-	-
-	-	-	-	-	-	-	-	-	40	1.2	40	40	1.5
2S	50.8	1.5	40A	48.6	2.8	2	50.8	1.65	51	1.2	50	52	1.5
2.5S	63.5	2	50A	60.5	2.8	2 1/2	63.5	1.65	63.5	1.6	-	-	-
-	-	-	-	-	-	-	-	-	70	1.6	65	70	2
3S	76.3	2	65A	76.3	3	3	76.2	1.65	76.1	1.6	-	-	-

### Information about Sanitary Pipes

Size	O.D. (D)	Thickness (t)	Area of I.D. mm <sup>2</sup>	Cross-sectional Area of Pipes mm <sup>2</sup>	Weight of Pipes kg/m	Capacity of Liquid in Pipes ℓ/m	Flow Rate at Velocity of 1m/sec m <sup>3</sup> /h
8A	13.8	1.65	87	63	0.499	0.11	0.396
10A	17.3	1.65	154	81.1	0.463	0.154	0.554
15A	21.7	2.1	241	129	1.03	0.241	0.868
1S	25.4	1.2	415	91.2	0.723	0.415	1.49
1.25S	31.8	1.2	679	115	0.915	0.679	2.44
1.5S	38.1	1.2	1001	139	1.1	1	3.6
2S	50.8	1.5	1795	232	1.84	1.8	6.46
2.5S	63.5	2	2781	386	3.06	2.78	10
3S	76.3	2	4106	467	3.7	4.11	14.8

Weight of Pipe and Liquid (kg/m) = Weight of Pipe + Amount of Liquid in Pipe

Weight of pipe and liquid indicates a weight per length (m) when pipes is filled with water (calculated as specific gravity 1.0). For liquid with different specific gravity, multiply capacity of pipes by specific gravity, and add weight of pipes to it.

Use flow rate of 1m/sec for calculating flow rate and velocity in pipes and diameter of pipes.

Ex.) For flow velocity when using 2S pipe at 10m<sup>3</sup>/h: V (Velocity of Flowing Fluid) = 10(m<sup>3</sup>/h)/6.46[(m<sup>3</sup>/h)/(1m/sec)]=1.55m/sec

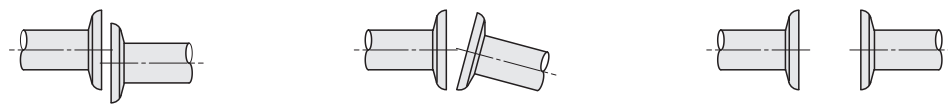
### Recommended Tightening Torque and Incompatible Mounting Method

Tightening torque for 1S ~ 3S should be 3N·m, and for 8A ~ 15A should be 3N·m or more. Further tightening or loading of pipes may deform the gaskets and cause liquid slug, leakages and damages.

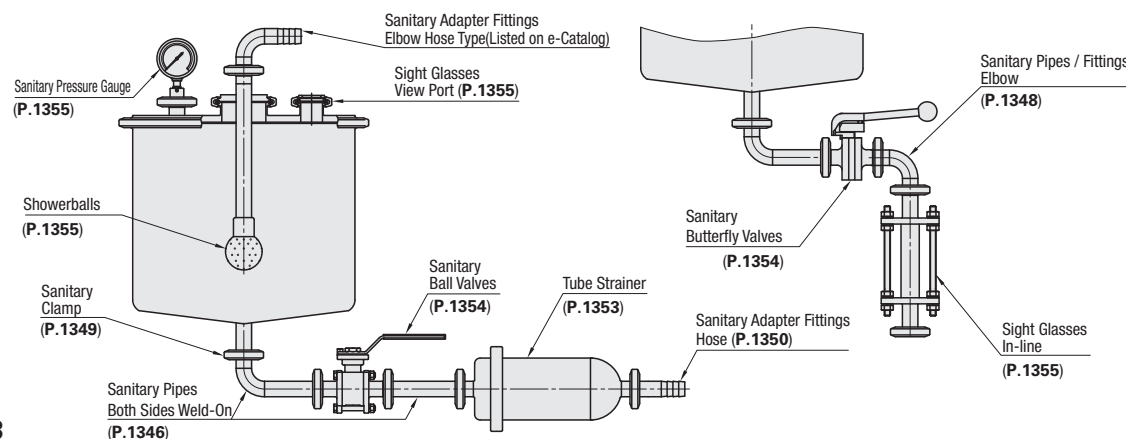
When fluid leaks during use, retighten pipes with torque above. If this fails to stop leakage, replace gaskets.

### <Incompatible Mounting Methods>

- Pipes are not aligned.
- Pipes are not horizontally aligned.
- There is too much clearance between pipe fittings.



### Example of Plumbing Sanitary Pipe and Listed Page

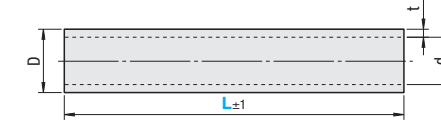
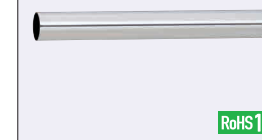


# Sanitary Pipes

## Standard / Weld-On Short Sleeve

### Standard

Type	Material	Surface Finish		Standards
		Inner Surface	Outer Surface	
SNPE	SUS304	#320~400 (Ra≤1.0μm)	#320~400 (Ra≤2.5μm)	(No. 8A~15A) JIS G3459
SNPS	SUS316L	#320~400 (Ra≤1.0μm)	#320~400 (Ra≤2.5μm)	(No. 1S~3S) JIS G3447

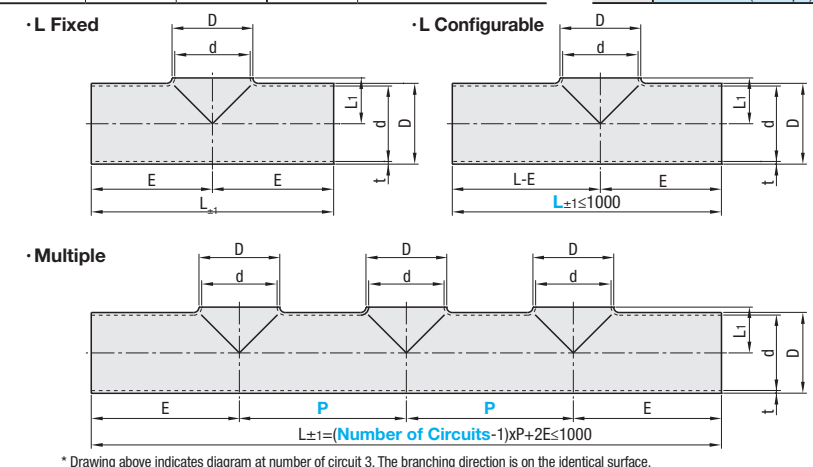


Part Number	Type	No.	L 1mm Increment	D	d	t	Unit Price/100mm SNPE		Unit Price/100mm SNPS	
							Unit Price	L Pipe Price/100mm	Unit Price	L Pipe Price/100mm
SNPS	50~1500	8A	-	13.8	10.5	1.65	-	-	-	-
		10A		17.3	14	-	-	-	-	
		15A		21.7	17.5	2.1	-	-	-	-
SNPE SNPS	50~1500	1S	-	25.4	23	1.2	-	-	-	-
		1.5S		38.1	35.7	1.5	-	-	-	-
		2S		50.8	47.8	1.5	-	-	-	-
		2.5S		63.5	59.5	2	-	-	-	-
		3S		76.3	72.3	2	-	-	-	-

<Price Calculation Method> Price = Unit Price + L Pipe Price. For L pipe price, a charge is added for every 100mm of L dimension.

### Weld-On Short Sleeve

Type	L Fixed			Material	Standards	Common Specifications (Weld bead portion inside excluded)
	L Fixed	L Configurable	Multiple			
SNPW	SNPWL	SNPWL	SNPWL	SUS304	(No.1S~3S) JIS G3447	Surface Finish Inner Surface: #320~400 (Ra≤1.0μm) Outer Surface: #320~400 (Ra≤2.5μm)



\* Drawing above indicates diagram at number of circuit 3. The branching direction is on the identical surface.

Part Number	Type	No.	L		D	d	L <sub>1</sub>	t	E	SNPW		Unit Price/mm SNPWL	
			Fixed	Configurable 1mm Increment						Unit Price	Unit Price	L Pipe Price /100mm	
SNPW SNPWL	-	1S	68	70~1000	25.4	23	14	1.2	34	-	-	-	-
		1.5S	98	100~1000	38.1	35.7	21	1.5	49	-	-	-	-
		2S	122	130~1000	50.8	47.8	28	1.5	61	-	-	-	-
		2.5S	168	170~1000	63.5	59.5	34	2	84	-	-	-	-
		3S	178	180~1000	76.3	72.3	40.5	2	89	-	-	-	-

<Price Calculation Method> Price = Unit Price + L Pipe Price. For L pipe price, a charge is added for every 100mm of L dimension. For L pipe price, a charge is added for every 100mm of L dimension.

Part Number	Type	No.	Number of Circuits	P 1mm Increment	D	d	L <sub>1</sub>	t	E	Unit Price/mm SNPWM			
										Unit Price		L Pipe Price /100mm	
SNPWM	-	1S	2	68~300	25.4	23	14	1.2	34	-	-	-	-
		1.5S		98~300	38.1	35.7	21	1.5	49	-	-	-	-
		2S		122~300	50.8	47.8	28	1.5	61	-	-	-	-
		2.5S		168~300	63.5	59.5	34	2	84	-	-	-	-
		3S		178~300	76.3	72.3	40.5	2	89	-	-	-	-

Specify P within range of L=(Number of Circuits-1)×P+2E≤1000.

<Price Calculation Method> Price = Unit Price + L Pipe Price. For L pipe price, a charge is added for every 100mm of L dimension. For L pipe price, a charge is added for every 100mm of L dimension.

Ordering Example	Part Number	L
	SNPE2S	500
	SNPW1.5S	365
	SNPW2S	365
Part Number	Number of Circuits	P
SNPWM2S	2	P150