



PIPE/TUBE

STAINLESS STEEL
WELDED PIPE/TUBE

MECHANICAL AND STRUCTURAL STAINLESS STEEL ROUND TUBES, ASTM A554/JIS G3446

Thickness Outside Diameter	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	4.0	5.0	6.0
(inch) (mm)														
6.0	0.5	0.6	0.7	0.8	0.9	1.0								
1/4" 6.35	0.5	0.6	0.7	0.8	0.9	1.0								
9/32" 7.14	0.5	0.6	0.7	0.8	0.9	1.0								
5/16" 8.0	0.5	0.6	0.7	0.8	0.9	1.0	1.2							
3/8" 9.53	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5						
10	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5						
7/16" 11.11	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5						
12	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0					
1/2" 12.7	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0					
14	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0					
5/8" 15.9	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0					
18	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0					
3/4" 19.1	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0					
20.5(20)		0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5				
7/8" 22.2		0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5				
23.5(23)		0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5				
1" 25.4		0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
1 1/8" 28.6				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
30				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
1 1/4" 31.8				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
13/8" 35				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
1 1/2" 38.1				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
15/8" 41.3				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
13/4" 44.5				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
17/8" 47.6				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
2" 50.8				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
2 1/8" 54							1.2	1.5	2.0	2.5	3.0			
2 1/4" 57							1.2	1.5	2.0	2.5	3.0			
23/8" 60.3							1.2	1.5	2.0	2.5	3.0	4.0		
2 1/2" 63.5							1.2	1.5	2.0	2.5	3.0	4.0		
3" 76.2							1.2	1.5	2.0	2.5	3.0	4.0		
80								1.5	2.0	2.5	3.0	4.0		
3 1/2" 88.9								1.5	2.0	2.5	3.0	4.0		
4" 101.6								1.5	2.0	2.5	3.0	4.0		
4 1/4" 108								1.5	2.0	2.5	3.0	4.0	5.0	6.0
4 1/2" 114.3								1.5	2.0	2.5	3.0	4.0	5.0	6.0
5" 127								1.5	2.0	2.5	3.0	4.0	5.0	6.0
133									2.0	2.5	3.0	4.0	5.0	6.0
141									2.0	2.5	3.0	4.0	5.0	6.0
6" 152.4									2.0	2.5	3.0	4.0	5.0	6.0
159									2.0	2.5	3.0	4.0	5.0	6.0
6 5/8" 168									2.0	2.5	3.0	4.0	5.0	6.0
8" 203.2									2.0	2.5	3.0	4.0	5.0	6.0
219.00									2.0	2.5	3.0	4.0	5.0	6.0
273.00										2.5	3.0	4.0	5.0	6.0

MECHANICAL AND STRUCTURAL STAINLESS STEEL SQUARE TUBES, ASTM A554/JIS G3446

Thickness Outside Diameter		0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	4.0	5.0	6.0
(inch)	(mm)														
5/16"x 5/16"	8 x 8	0.5	0.6	0.7	0.8	0.9	1.0	1.2							
	10x10	0.5	0.6	0.7	0.8	0.9	1.0	1.2							
1/2" x 1/2"	12.7 x12.7	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5						
5/8" x 5/8"	15.9 x15.9	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5						
3/4" x 3/4"	19 x 19	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0					
	20 x 20		0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0					
7/8" x 7/8"	22 x22		0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0					
1" x 1"	25 x25				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
1 1/8"x1 1/8"	28.6				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
	30 x 30				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
1 1/4" x 1 1/4"	31.8 x31.8				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
1 3/8" x 1 3/8"	35 x 35				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
1 1/2" x 1 1/2"	38 x 38				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
	40 x 40				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0			
1 3/4" x 1 3/4"	45 x 45						1.0	1.2	1.5	2.0	2.5	3.0			
2" x 2"	50 x 50							1.2	1.5	2.0	2.5	3.0	4.0		
	60 x 60							1.2	1.5	2.0	2.5	3.0	4.0		
	70 x 70							1.2	1.5	2.0	2.5	3.0	4.0		
3" x 3"	76.2 x 76.2							1.2	1.5	2.0	2.5	3.0	4.0		
	80 x 80								1.5	2.0	2.5	3.0	4.0	5.0	6.0
	90 x 90								1.5	2.0	2.5	3.0	4.0	5.0	6.0
4" x 4"	100 x 100								1.5	2.0	2.5	3.0	4.0	5.0	6.0

MECHANICAL AND STRUCTURAL STAINLESS STEEL RECTANGULAR TUBES, ASTM A554/JIS G3446

Thickness Outside Diameter		0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	4.0
(inch)	(mm)												
	10x20	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5				
	12.7 x22.2	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5				
1/2" x 1"	13 x 25	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5				
	15 x 30		0.6	0.7	0.8	0.9	1.0	1.2	1.5				
	15 x 50		0.6	0.7	0.8	0.9	1.0	1.2	1.5				
	20 x 30				0.8	0.9	1.0	1.2	1.5	2.0			
	20 x 40				0.8	0.9	1.0	1.2	1.5	2.0			
	20 x 50				0.8	0.9	1.0	1.2	1.5	2.0			
1" x 1 1/2"	25 x 38				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	
	25 x 50				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	
	30 x 50				0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0	
	30 x 60						1.0	1.2	1.5	2.0	2.5	3.0	
	30 x 70						1.0	1.2	1.5	2.0	2.5	3.0	
	40 x 60						1.0	1.2	1.5	2.0	2.5	3.0	
	40 x 80							1.2	1.5	2.0	2.5	3.0	
	45 x 75							1.2	1.5	2.0	2.5	3.0	4.0
2" x 3"	45 x 95							1.2	1.5	2.0	2.5	3.0	4.0
	50 x 75							1.2	1.5	2.0	2.5	3.0	4.0
2" x 4"	40 x 100								1.5	2.0	2.5	3.0	4.0
	50 x 100								1.5	2.0	2.5	3.0	4.0
	60 x 80								1.5	2.0	2.5	3.0	4.0
	60 x 100									2.0	2.5	3.0	4.0
	60 x 120									2.0	2.5	3.0	4.0

WELDED AUSTENITIC STAINLESS STEEL TUBING FOR GENERAL SERVICE, ASTM A269
WELDED AUSTENITIC STEEL BOILER, SUPERHEATER, HEAT-EXCHANGER, AND CONDENSER TUBES, ASTM A249

Thickness(MM) Outside Diameter		0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5	3.0
(inch)	(mm)											
1/4"	6.35	0.5	0.6	0.7	0.8	0.9	1.0					
3/8"	9.5	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5			
1/2"	12.7	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0		
3/4"	19.1		0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0		
1"	25.4		0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0		
1 1/4"	31.8				0.8	0.9	1.0	1.2	1.5	2.0		
1 1/2"	38.1				0.8	0.9	1.0	1.2	1.5	2.0		
2"	50.8				0.8	0.9	1.0	1.2	1.5	2.0		
2 1/2"	63.5						1.0	1.2	1.5	2.0	2.5	
3"	76.2						1.0	1.2	1.5	2.0	2.5	3.0
3 1/2"	88.9							1.2	1.5	2.0	2.5	3.0
4"	101.6							1.2	1.5	2.0	2.5	3.0
4 1/2"	114.3								1.5	2.0	2.5	3.0
5"	127								1.5	2.0	2.5	3.0
6"	152.4								1.5	2.0	2.5	3.0

O.D ≤5/8" Only ASTM A269	ASTM A269: Annealed & Pickled
O.D ≤3/4" Both ASTM A269 And A249	ASTM A249: Bead removed, Annealed & Pickled

INDUSTRIAL STAINLESS STEEL WELDED PIPES, ASTM A312/JIS G3459

Outside Diameter		Outsider Diameter	Thickness(mm)		
NPS	NB	(MM)	SCH5S	SCH10S	SCH40S
1/8"	6	10.29		1.24	1.73
1/4"	8	13.27		1.65	2.24
3/8"	10	17.15		1.65	2.31
1/2"	15	21.34	1.65	2.11	2.77
3/4"	20	26.67	1.65	2.11	2.87
1"	25	33.40	1.65	2.77	3.38
1 1/4"	32	42.16	1.65	2.77	3.56
1 1/2"	40	48.26	1.65	2.77	3.68
2"	50	60.33	1.65	2.77	3.91
2 1/2"	65	73.03	2.11	3.05	5.16
3"	80	88.90	2.11	3.05	5.49
3 1/2"	90	101.60	2.11	3.05	5.74
4"	100	114.30	2.11	3.05	6.02
5"	125	141.30	2.77	3.40	6.55
6"	150	168.28	2.77	3.40	7.11
8"	200	219.08	2.77	3.76	8.18
10	250	273.05	3.40	4.19	9.27

ASTM A312: Annealed & Pickled	Especially Specialized In SCH 5S/10S
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STAINLESS STEEL SEAMLESS PIPE/TUBE

CHEMICAL COMPOSITION

ASTM	Chemical Composition(%)								
	C	Si	Mn	P	S	Cr	Ni	Mo	Others
201(1% nickel)	≤0.150	≤1.00	8.5-10.0	≤0.060	≤0.030	14.00-16.00	≥0.80		N≤0.25
202	≤0.150	≤1.00	7.5-10.0	≤0.060	≤0.030	17.00-19.00	4.00-6.00		N≤0.25
304	≤0.080	≤1.00	≤2.00	≤0.045	≤0.030	18.00-20.00	8.00-10.50		
304L	≤0.030	≤1.00	≤2.00	≤0.045	≤0.030	18.00-20.00	8.00-12.00		
316	≤0.08	≤1.00	≤2.00	≤0.045	≤0.030	16.00-18.00	10.00-14.00	2.00-3.00	
316L	≤0.030	≤1.00	≤2.00	≤0.045	≤0.030	16.00-18.00	10.00-14.00	2.00-3.00	
321	≤0.080	≤1.00	≤2.00	≤0.045	≤0.030	17.00-19.00	9.00-12.00		Ti6≥5°C
409	≤0.080	≤1.00	≤1.00	≤0.040	≤0.030	10.50-11.75	≤0.50		Ti6°C%≤0.70
409L	≤0.030	≤1.00	≤1.00	≤0.040	≤0.030	10.50-11.75	0.50		Ti8°C%≤0.70
430	≤0.120	≤1.00	≤1.00	≤0.040	≤0.030	16.00-18.00			

MECHANICAL PROPERTY

ASTM	Tensile strength(MPa)	Yield strength(MPa)	Elongation(%)	Hardness(HRB)
201(0.8%-1%nickel)	≥655	≥310	≥40	≤100
202	≥620	≥260	≥40	≤100
304	≥515	≥205	≥40	≤92
304L	≥482	≥170	≥40	≤88
316	≥515	≥205	≥40	≤95
316L	≥485	≥170	≥40	≤95
321	≥515	≥205	≥40	≤95
409	≥380	≥205	≥20	≤80
409L	≥350	≥185	≥22	≤80
430	≥450	≥205	≥22	≤80

SURFACE FINISH

Item	Round Tubes		Square & Rectangular Tubes	
	Finish	Description	Finish	Description
Surface finish	Mill Finish	As welded	Mill Finish	As welded
	180#	Buffed after Polishing by 180#	180#	Buffed after polishing by 180#
	400#	Buffed after Polishing by 400#	400#	Buffed after polishing by 400#
	600#	Buffed after Polishing by 600#(mirror)		
	180# Hairline	Hairline finished after polishing 180#	180# Hairline	Hairline finished polishing by 180#
	400# hairline	Hairline finished after polishing 400#	400# Hairline	Hairline finished polishing by 400#

STAINLESS STEEL SOLUTION ANNEALING CONDITION

GB		ASTM		JIS	
Type	Solution annealing	Type	Solution annealing	Type	Solution annealing
0Cr19 Ni9	1010-1150 Water quenching	TP304	1040-1150 Water quenching	SUS304	1010-1150 Water quenching
00Cr19 Ni11	1010-1150 Water quenching	TP304L	1040-1150 Water quenching	SUS304L	1010-1150 Water quenching
0Cr17 Ni12Mo2	1010-1150 Water quenching	TP316	1040-1150 Water quenching	SUS316	1010-1150 Water quenching
00Cr17 Ni14mo2	1010-1150 Water quenching	TP316L	1040-1150 Water quenching	SUS316L	1010-1150 Water quenching

STANDARDS: ASTM A312 / A312 M, ASTM A213/A213M, ASTM A269, ASTM A270.

ASTM A511, ASTM A789, ASTM A790, DIN2462, DIN17458, DIN17456, DIN17440, DIN17226.

MATERIAL: 304(0Cr18Ni9), 304L(00Cr19Ni10), 304/304L, 316(0Cr17Ni12Mo2), 316L(00 Cr17Ni14Mo2), 316/316L, 321(0Cr18Ni9Ti), 317L (00Cr19Ni13Mo3), 347(0Cr18Ni11Nb), 310S(0Cr25Ni20)

SPECIFICATION: OD: 6-762MM
WT: 0.5-50MM
LONGEST LENGTH: 18000MM

ASTM A312/A312M-03 Standard Specification for Seamless Austenitic Stainless Steel Pipes
ASTM A213/A213M-03c Standard Specification for Seamless Ferritic Boiler, Superheated, and Heat-Exchanger Tubes
ASTM A269-04 Standard Specification for Seamless Austenitic Stainless Steel Tubing for General Service
ASTM A270-02a Standard Specification for Seamless Austenitic Stainless Steel Sanitary Tubing
ASTM A511-96 Standard Specification for Seamless Stainless Steel Mechanical Tubing
ASTM A789/A789M-05b Standard Specification for Seamless Ferritic/Austenitic Stainless Steel Tubing for General Service

ALLOY STEEL PIPE/TUBE

ALLOY STEEL PIPE/TUBE FOR PETROLEUM
CHEMICAL AND ELECTRIC POWER INDUSTRIES

Standard: ASTM A335 (Seamless Ferritic Alloy-Steel Pipe for High-Temperature Service)
ASTM 213(Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes)

Material: Cr5Mo (STFA 25, STPA 25, STBA25, T5, P5)
15CrMo (STFA 22, STPA 22, STBA22, T12, P12)
1.25Cr0.5Mo (STFA 23, STPA 23, STBA23, T11, P11)
Cr9Mo (STFA 26, STPA 26, STBA26, T9, P9)
12Cr1MoV
12Cr2Mo (10CrMo910, T22, P22)
T91 (P91)

Size: Φ10.3-1219x1.0-101.6

STAINLESS STEEL SANITARY PIPE/TUBE



CARBON STEEL SEAMLESS PIPE/TUBE

STAINLESS STEEL SANITARY WELDED TUBING, ASTM A270

ASTM/ASME AND API SPECIFICATION

Thickness(MM) Outside Diameter		1.2	1.5	1.65	2.0	3.0
(inch)	(mm)					
1"	25.4	1.2	1.5	1.65	2.0	
1 1/4"	31.8	1.2	1.5	1.65	2.0	3.0
1 1/2"	38.1	1.2	1.5	1.65	2.0	3.0
2"	50.8	1.2	1.5	1.65	2.0	3.0
2 1/2"	63.5	1.2	1.5	1.65	2.0	3.0
3"	76.2	1.2	1.5	1.65	2.0	3.0
3 1/2"	88.9	1.2	1.5	1.65	2.0	3.0
4"	101.6	1.2	1.5	1.65	2.0	3.0
5"	127	1.2	1.5	1.65	2.0	3.0
6"	152.4		1.5	1.65	2.0	3.0

STAINLESS STEEL SANITARY TUBES DIN11850

Thickness(MM) Outside Diameter	Thickness(MM) Outside Diameter	W.T.
DIN	O.D	1.50
15	18	1.50
20	22	1.50
25	28	1.50
32	34	1.50
40	40	1.50
50	52	1.50
65	70	2.00
80	85	2.00
100	104	2.00
125	129	2.00
150	154	2.00
200	204	2.00

STAINLESS STEEL SANITARY SEAMLESS PIPES, ASTM A270/3A/IDF

Material: 304,304L, 316,316L, 321

Spec: dia 19.1x1.5mm-159x3mm

Fineness: Inner and outer fineness of mirror Ra≤0.8μm, inner and outer mechanical polished and electrical polish Ra≤0.2 μm, external surface can be gross polished or sub-gross polished.

Product Name	Executive standard	Dimension	Steel Code/Steel Grade
Specification for casing and Tubing	API 5CT	φ26.67~168×2.17~12.06	J55,N80
Specification for line pipe	API 5L	φ10.3~610×1.7~40	A,B
Black and Hot-Dipped Zinc-Coated	ASTM A53	φ10.3~426×1.0~36	A,B
Steel Pipe, Welded and Seamless			
Seamless Carbon Steel for High Temperature Service	ASTM A106	φ10.3~426×1.0~36	A,B
Seamless Cold-Drawn Low-Carbon Steel	ASTM A179	φ10.3~426×1.0~36	Low Carbon Steel
Heat Exchanger and Condenser Tubes			
Seamless Carbon Steel Boiler Tubes for High Pressure	ASTM A192	φ10.3~426×1.0~36	Low Carbon Steel
Seamless Cold-Drawn Intermediate Alloy	ASTM A199	φ10.3~426×1.0~36	T5,T22
Steel Heat-Exchanger and Condenser Tubes			
Seamless Medium-Carbon Steel Boiler and Superheater Tubes	ASTM A210	φ10.3~426×1.0~36	A1,C
Seamless Ferritic and Austenitic Alloy Steel	ASTM A213	φ10.3~426×1.0~36	T2, T5, T11, T22
Boiler, Superheater and Heat-Exchanger Tubes			
Seamless Carbon and alloy steel for mechanical Tubing	ASTM A519	φ10.3~426×1.0~36	Carbon Steel, Alloy Steel
Seamless Cold-Drawn Carbon	ASTM A556	φ10.3~426×1.0~36	A2,B2
Steel Feed water Heater Tubes			
Seamless Ferritic Alloy-Steel Pipe for High-Temperature Service	ASTM A335	φ21.3~762×1.0~80	P1, P2, P5, P11, P12 P22, P91

DIN SPECIFICATION

Product Name	Executive standard	Specification	Steel Code /Steel Grade
Seamless Steel Tube for Elevated Temperature	DIN17175	φ16~426×1.0~36	St35.8, St45.8, 17Mn4, 19Mn5, 15Mo3, 13CrMo44
Cold Drawn Seamless Precision Pipe	DIN2391	φ16~426×1.0~36	St35,St45,St52
Seamless Steel pipe for Structural purpose	DIN2393	φ16~426×1.0~36	RSt34-2,RSt37-2, RSt44-2,St52
Seamless Steel Tube	DIN2448/1629/1630	φ16~426×1.0~36	St37/St37.4, St44/St44.4, St52/St52.4

BS SPECIFICATION

Product Name	Executive standard	Dimension	Steel Code/Steel Grade
Seamless Steel Tubes for Machine Structural	BS970	φ10~426×1.0~36	Carbon Steel
Seamless Steel Tubes for Boiler and Heat Exchangers	BS3059	φ10~426×1.0~36	360,410,460,480,490



CARBON STEEL WELDED PIPE/TUBE

1. ERW PIPE

Standard of products: API 5CT, API 5L, ASTM A53, ASTM A252, DIN 1626, ISO559, ISO 3183.1/2, KS 4602, GB/T 3091, GB/T9711.1/2, GB/T 14291, YB/T 4028

Material: Q195, Q215, Q235, GrA, GrB, X42, X52, X56, X60, X65, X70, J55, K55.N80 etc.

Application: low-medium pressure fluid, coal gas transportation, heating steam supply, thermoelectricity, project construction, bridge structure, oil and natural gas pressure steel tube.

Mill's Name	OD(mm)	Wall thickness(mm)																
		2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	12.7
76 mill	21.3	2.5	3.0	3.5														
76 mill	26.8	2.5	3.0	3.5														
76 mill	33	2.5	3.0	3.5	4.0													
76 mill	42	2.5	3.0	3.5	4.0													
76 mill	45	2.5	3.0	3.5	4.0													
76 mill	48	2.5	3.0	3.5	4.0													
76 mill	60	2.5	3.0	3.5	4.0	4.5												
76 mill	70	2.5	3.0	3.5	4.0	4.5												
76 mill	76	2.5	3.0	3.5	4.0	4.5												
114 mill	89		3.0	3.5	4.0	4.5	5.0											
114 mill	95		3.0	3.5	4.0	4.5	5.0											
114 mill	102		3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5								
114 mill	108		3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5								
114 mill	114		3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5								
165 mill	121		3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5								
165 mill	127		3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5								
165 mill	133		3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5								
165 mill	140				4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5						
165 mill	152				4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5						
165 mill	159				4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5		
165 mill	165					4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5		
165 mill	168					4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5		
165 mill	194					4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5		
506 mill	219					4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5		
506 mill	245					4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	
506 mill	273					4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	
506 mill	325						5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	
506 mill	377							5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	12.7
506 mill	402							5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	12.7
506 mill	426							5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	12.7
506 mill	457							5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	12.7
506 mill	508							5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	12.7

2.SSAW PIPE

Standard of products: API 5CT, API 5L, ASTM A252, DIN 1626, ISO559, ISO 3183.1/2, KS, 4602, GB/T911.1/2, SY/T5037, SY/T 5040

Material: Q195, Q215, Q235, GrA, GrB, X42, X52, X56, X60, X65, X70, J55, K55.N80 etc.

Application: oil, gas feeding, tap water, polluted water project, heat supply network, reconstruction, piling, bridge and steel structure and etc.

OD(mm)	Wall thickness(mm)															
	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	20.0
219.1	4.0	5.0	6.0													
273.1		5.0	6.0	7.0												
323.9			6.0	7.0	8.0											
355.6			6.0	7.0	8.0											
406.4			6.0	7.0	8.0	9.0	10.0									
426			6.0	7.0	8.0	9.0	10.0									
457			6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0						
508			6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0						
559				7.0	8.0	9.0	10.0	11.0	12.0	13.0						
610				7.0	8.0	9.0	10.0	11.0	12.0	13.0						
660				7.0	8.0	9.0	10.0	11.0	12.0	13.0						
711				7.0	8.0	9.0	10.0	11.0	12.0	13.0						
762				7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0					
813				7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0					
914					8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0			
1016					8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0			
1067					8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0			
1120							10.0	11.0	12.0	13.0	14.0	15.0	16.0			
1220							10.0	11.0	12.0	13.0	14.0	15.0	16.0			
1420							10.0	11.0	12.0	13.0	14.0	15.0	16.0			
1620							10.0	11.0	12.0	13.0	14.0	15.0	16.0			
1820							10.0	11.0	12.0	13.0	14.0	15.0	16.0			
2020							10.0	11.0	12.0	13.0	14.0	15.0	16.0			
2235									12.0	13.0	14.0	15.0	16.0	17.0	18.0	20.0
2337									12.0	13.0	14.0	15.0	16.0	17.0	18.0	20.0
2438									12.0	13.0	14.0	15.0	16.0	17.0	18.0	20.0
2540									12.0	13.0	14.0	15.0	16.0	17.0	18.0	20.0

Notes:Dimensions other than in the table may be furnished by agreement between the purchaser and the manufacturer.

CARBON STEEL WELDED PIPE/TUBE

4. SQUARE AND RECTANGULAR TUBE

Standard of products: GB/T6728-2002, GB/T6725-2002, JIS3466, EN10219, ASTM A500

Material: Q195, Q215, Q235, GrA, GrB, X42, X52, X56, X60, X65, X70, J55, K55, N80 etc.

Application: large buildings, large equipments, bridge and steel structure and etc.

Square Tube		
20*20*	(1.2-2)	mm
30*30*	(1.5-3)	mm
40*40*	(1.5-4)	mm
50*50*	(1.5-4.5)	mm
60*60*	(2-5)	mm
70*70*	(2.5-5)	mm
80*80*	(2.5-6)	mm
90*90*	(3-7)	mm
100*100*	(4-8)	mm
120*120*	(4-8)	mm
130*130*	(4-10)	mm
135*135*	(4-10)	mm
140*140*	(4-10)	mm
150*150*	(4-10)	mm
160*160*	(4-10)	mm
170*170*	(4-10)	mm
180*180*	(4-10)	mm
200*200*	(4-10)	mm
220*220*	(4-10)	mm
250*250*	(4-10)	mm
300*300*	(4-10)	mm
300*300*	(4-10)	mm
400*400*	(4-10)	mm

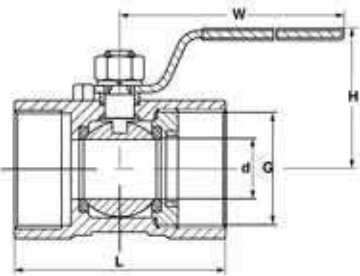
Rectangular Tube		
30*20*	(1.5-2.5)	mm
40*20*	(1.5-3)	mm
40*25*	(1.5-3)	mm
40*30*	(1.5-3)	mm
50*25*	(1.5-3)	mm
50*30*	(1.5-4)	mm
60*30*	(2-4)	mm
60*40*	(2-4)	mm
70*80*	(2-5)	mm
80*40*	(2-5)	mm
80*60*	(3-5)	mm
90*50*	(3-5)	mm
100*50*	(3-5)	mm
120*80*	(3-6)	mm
120*80*	(3-6)	mm
140*80*	(4-7)	mm
150*100*	(4-8)	mm
160*80*	(4-8)	mm
180*100*	(4-10)	mm
200*120*	(4-10)	mm
200*150*	(4-10)	mm
220*140*	(4-12)	mm
250*150*	(4-12)	mm
250*150*	(4-12)	mm
300*200*	(5-14)	mm
350*250*	(6-14)	mm
400*200*	(6-14)	mm
400*250*	(6-14)	mm
400*300*	(6-14)	mm
450*250*	(6-14)	mm
500*300*	(6-14)	mm



VALVES/FITTINGS/FLANGES



INDUSTRIAL VALVES



Feature 1pc Body
Size: 1/4"-2"(DN6-100)
Working Pressure:1000PSI
Threaded End:
Optional BSPT/NPT/DIN2999

DIMENSION LIST

NPS	DN	d	L	H	W
1/4	6	4.2	40	22	80
3/8	10	6	45	26	80
1/2	15	8	57	31	88
3/4	20	12	60	34	88
1	25	15	72	38	105
1-1/4	32	19	79	43	105
1-1/2	40	24	85	50	124
2	50	32	101	57	124

1-PC BALL VALVE,
REDUCER BORE,
1000PSI, FF3-PC BALL VALVE, FULL
BORE, 1000PSI, FF

DIMENSION LIST

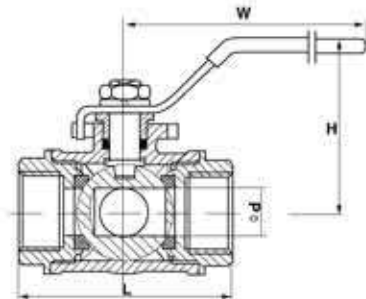
NPS	DN	d	L	H	W	4-d	B
3/8	10	12	65	46	95	7	18
1/2	15	15	75	46	110	8	22
3/4	20	20	85	54	110	8.5	27.5
1	25	25	90	64	140	8.5	34.5
1-1/4	32	32	112	69	140	10	43.5
1-1/2	40	38	120	76	155	10	49.5
2	50	50	145	86	180	11	61.5
2-1/2	65	65	170	120	220	16	77.5
3	80	80	200	150	260	18	90.5
4	100	100	263	170	350	20	115

Feature 3pc Body Full Bore
Size: 1/4"-4"
Working Pressure:1000PSI
Threaded End:
BSPT/NPT/DIN2999
Optional Locked Device Handle
Optional ISO 5211 Mounting Pad

MATERIALS LIST

No	PART NAME	MATERIAL
1	Body	CF8/CF8M
2	Cap	CF8/CF8M
3	Seat	RPTFE
4	Ball	SS304/316
5	Seal Gasket	PTFE
6	Stem Seal	PTFE
7	Stem	SS304/316
8	Anti-static Device	SS304
9	Nut	SS304
10	Stem Packing	PTFE
11	Packing Gland	SS304
12	Spring Washer	SS301
13	Handle	SS304

Feature
"L" or "T" Type
Reducer Bore
Size: 1/4"-2"
Working Pressure: 1000PSI
Thread End: BSPT/NPT/DIN2999
Optional ISO5211 Mounting Pad
Optional Locked Device Handle

2-PC BALL VALVE,
FULL BORE,
1000PSI, FF"T" OR "L" TYPE THREE WAY
1000PSI STANDARD
BORE STAINLESS
STEEL BALL VALVE

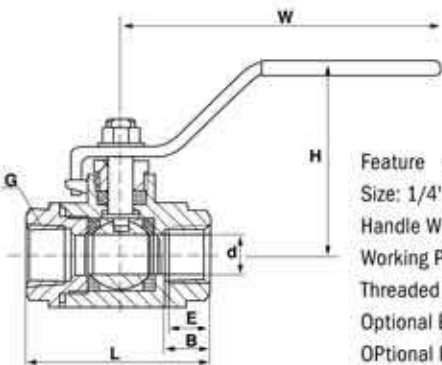
DIMENSION LIST

NPS	DN	d	L	H	W	B	ISO 5211	S
1/4	8	4.2	64	32	85	32	F2	(7)
3/8	10	6	64	32	95	32	F2	(7)
1/2	15	10	68	34	108	34	F3	(9)
3/4	20	15	78	60	115	39	F3	(9)
1	25	20	86	60	135	43	F4	(9)
1-1/4	32	25	111	76	150	55.5	F4	(11)
1-1/2	40	32	126	85	175	63	F5	(11)
2	50	40	143	95	190	71.5	F5	(11)

Note:() for optional demension

MATERIALS LIST

No	PART NAME	MATERIAL
1	Body	CF8/CF8M
2	Cap	CF8/CF8M
3	Seat	RPTFE
4	Ball	SS304/316
5	Seal Ring	PTFE
6	Stem Seal	PTFE
7	Stem	SS304/SS316
8	Stem Nut	SS304
9	Stem Packing	PTFE
10	Packing Gland	SS304
11	Spring Washer	SS301
12	Handle	SS304
13	Anti-Static Device	SS304



Feature 2pc Body Full Bore
Size: 1/4"-4"(DN8-100)
Handle With Locked device
Working Pressure:1000PSI
Threaded End:
Optional BSPT/NPT/DIN2999
Optional ISO 5211 Mounting Pad

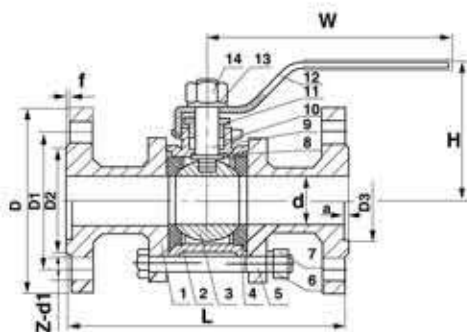
DIMENSION LIST

NPS	DN	d	L	H	W
1/4	6	10	55	42	95
3/8	10	10	55	42	95
1/2	15	15	64	51	108
3/4	20	20	75	58	115
1	25	25	85	77	135
1-1/4	32	32	102	83	150
1-1/2	40	38	108	97	175
2	50	50	124	106	190
2-1/2	65	65	163	122	220
3	80	80	185	133	250

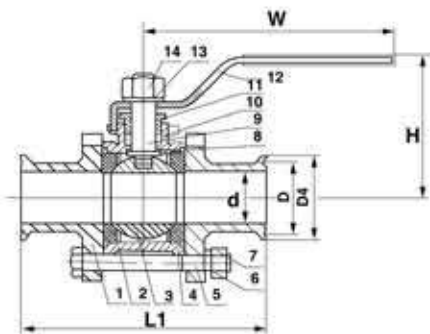
MATERIALS LIST

No	PART NAME	MATERIAL
1	Body	CF8/CF8M
2	Cap	CF8/CF8M
3	Seat	RPTFE
4	Ball	SS304/316
5	Seal Gasket	PTFE
6	Stem	SS304/316
7	Nut	SS304
8	Stem Packing	PTFE
9	Packing Gland	SS304
10	Thrust Washer	SS301
11	Handle	SS304

INDUSTRIAL VALVES



Flanged Ball Valve



Quick Connected Ball Valve

MATERIALS LIST

No	PART NAME	MATERIAL
1	Cap	CF8M
2	Body	CF8M
3	Ball	PTFE
4	Seat	SS316
5	Bolt	SS304
6	Washer	SS304
7	Nut	SS304
8	Stem seal	PTFE
9	Stem	SS316
10	Packing	PTFE
11	Packing Gland	SS304
12	Handle	SS304
13	Washer	SS301
14	Stem Nut	SS304

DIMENSION LIST

Size		Flange End										Clamp End		
DN	d	L	H	D	D1	D2	f	PN4.0		Z	d1	D	D4	L1
								a	D3					
15	15	130	77	95	65	45	2	4	14	4	14	43.5	50.5	108
20	20	150	77	105	75	55	2	4	14	4	14	43.5	50.5	130
25	25	160	88	115	85	65	2	4	14	4	14	43.5	50.5	138
32	32	180	113	135	100	78	2	4	18	4	18	43.5	50.5	152
40	40	200	132	145	110	85	3	4	18	4	18	56.5	64	166
50	50	230	142	160	125	100	3	4	18	4	18	56.5	64	198
65	65	290	173	180	145	120	3	4	18	4/8	18	83.5	91	230
80	80	310	182	190	160	135	3	4	18	4/8	18	96	106	249
100	100	350	250	215/230	180/190	122/160	3	4.5	18/23	4/8	18/23	-	-	-

Note:For PN25 and PN40

3PC FULL BORE STAINLESS STEEL FLANGE END BALL VALVE



FULL BORE 200PSI STAINLESS STEEL GATE VALVE



DIMENSION LIST

NPS	d	H	L	W
1/2	15	105	50	70
3/4	20	108	60	70
1	25	135	65	80
1-1/4	32	145	75	80
1-1/2	40	155	85	90
2	50	185	95	100

3PC FULL BORE STAINLESS STEEL CLAMP END BALL VALVE



FULL BORE 200PSI STAINLESS STEEL GLOBE VALVE



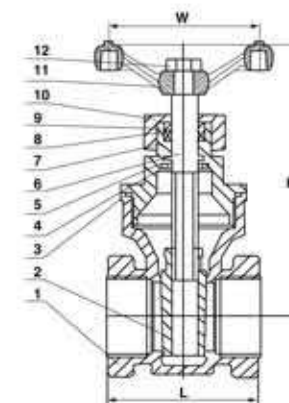
DIMENSION LIST

NPS	d	H	L	W
1/2	15	105	50	70
3/4	20	108	60	70
1	25	135	65	80
1-1/4	32	145	75	80
1-1/2	40	155	85	90
2	50	185	95	100

Feature
Full Bore
Size 1/4" to 2"
Working Pressure: 200PSI
Female Threaded End:
BSPT/NPT/DIN2999

MATERIALS LIST

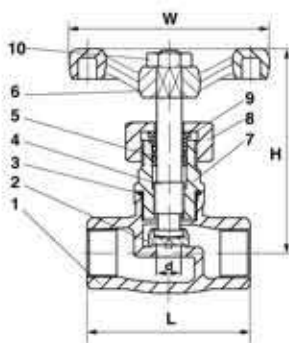
No	PART NAME	MATERIAL
1	Body	CF8/CF8M
2	Disc	CF8/CF8M
3	Seal Ring	SS316
4	Snap Spring	SS316
5	Washer	PTFE
6	Stem	SS316/304
7	Bonnet	CF8/CF8M
8	Packing	PTFE
9	Gasket	PTFE
10	Gland nut	SS316
11	Handwheel	HT(C.R.)
12	Nut	SS316



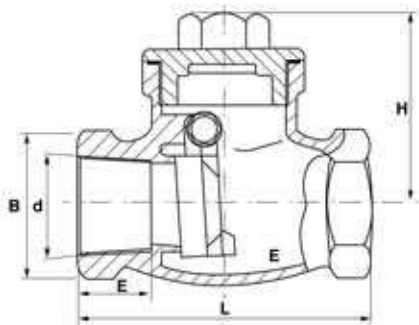
Feature
Full Bore
Size 1/4" to 2"
Working Pressure: 200PSI
Female Threaded End:
BSPT/NPT/DIN2999

MATERIALS LIST

No	PART NAME	MATERIAL
1	Body	CF8M/CF8
2	Disc	CF8M/CF8
3	Seal Ring	SS316/SS304
4	Stem	SS316/SS304
5	Packing	PTFE
6	Handwheel	HT(C.R.)
7	Bonnet	CF8M/CF8
8	Gland Nut	SS316
9	Packing Gasket	SS316
10	Nut	SS316



INDUSTRIAL VALVES

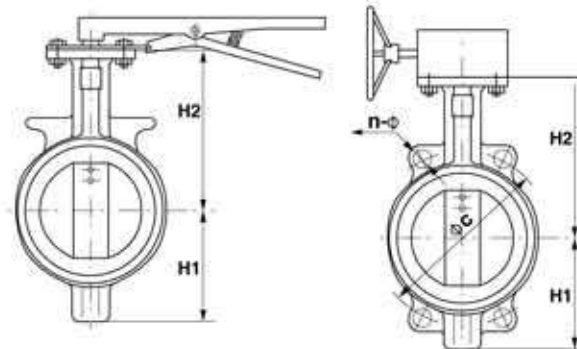
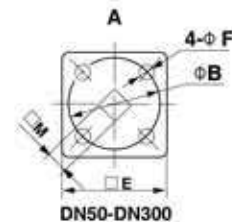
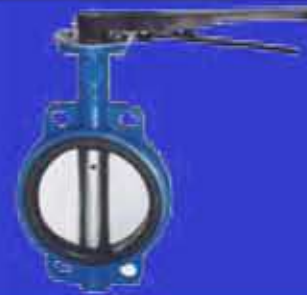


**SWING CHECK
VALVE 200PSI/
600PSI**



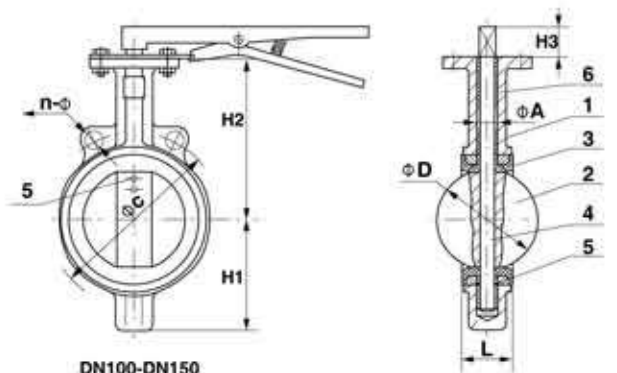
Feature Full Bore Size 1/4" to 2"
Working Pressure: 200PSI/600PSI
Female Threaded End: BSPT/NPT/DIN2999

**WAFER TYPE
BUTTERFLY
VALVE**



DN50-DN80

DN200-DN300



DN100-DN150

DIMENSION LIST

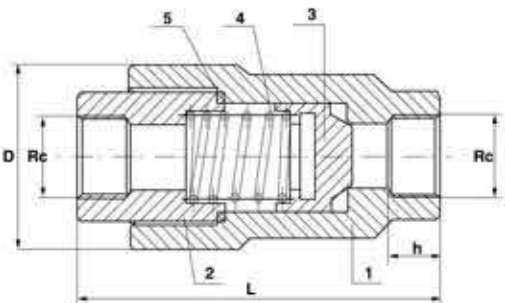
NPS	d	H	L
1/4	8	36	58
3/8	10	36	58
1/2	15	40	66
3/4	20	54	80
1	25	59	90
1-1/4	32	62.5	105
1-1/2	40	73	120
2	50	85	140

MATERIALS LIST

No	PART NAME	MATERIAL
1	Body	CF8M
2	Disc	CF8M
3	Seal Ring	PTFE
4	Pin	SS304
5	Cap	CF8

MATERIALS LIST

No	DESCRIPTION	MATERIAL
1	Body	SS316/CI
2	Disc	SS316
3	Seat	TEFLON/EPDM
4	Stem	SS316
5	Taper pin	SS316
6	Bushing	TEFLON/PTFE
7	"O" ring	EPDM/NBR



**PN160/320
VERTICAL
CHECK VALVE**



Feature
Working pressure: 200PSI/600PSI
Temperature range: -20~232℃
Suitable medium: water, oil, air and some corrosive liquid
Thread kinds: NPT, BSPT, BSP, DIN259/2999

DIMENSION LIST

DN	Rc	L	h	D
15	1/2	100	15	50
20	3/4	120	16	60
25	1	130	18	68
32	1-1/4	150	20	82
40	1-1/2	170	22	95
50	2	190	25	110

MATERIALS LIST

PART NAME	MATERIAL
Body	SS304
End Cap	SS304
Disc	SS316
Spring	SS301
Seat Ring	Asbestos

DIMENSION LIST

DN	H1	H2	H3	L	Φ A	4-Φ F	Φ B	Φ P	Φ M	Φ O
DN50	70	130	32	45	12.7	70	50/70	7/9	9	52.9
DN65	76	143	32	48	12.7	70	50/70	7/9	9	64.6
DN80	85	155	32	49	12.7	70	50/70	7/9	9	79.04
DN100	106	170	32	55	15.8	70	70	9	11	104.4
DN125	124	190	32	58	19.05	70	70	9	14	129.5
DN150	136	210	32	59	19.05	70	70	9	14	155.8
DN200	168	243	36	64	22.2	102	102	11	17	202.7
DN250	205	282	36	70	28.6	115	102/125	11/13	22	250.7
DN300	237	310	36	80	31.8	115	102/125	11/13	22	301.9

DN	DIN PN10		DIN PN16		ANSI B16.1		JIS 10K	
	ΦC	□-Φ	ΦC	□-Φ	ΦC	□-Φ	ΦC	□-Φ
DN50	125	4-Φ18	125	4-Φ18	120.65	19	120	4-Φ19
DN65	145	4-Φ18	145	4-Φ18	139.7	19	140	4-Φ19
DN80	160	4-Φ18	160	8-Φ18	152.4	19	150	8-Φ19
DN100	180	8-Φ18	180	8-Φ18	190.5	19	175	8-Φ19
DN125	210	8-Φ18	210	8-Φ18	215.9	22.4	210	8-Φ23
DN150	240	8-Φ23	240	8-Φ23	241.3	22.4	240	8-Φ23
DN200	295	8-Φ23	295	12-Φ23	298.45	22.4	290	12-Φ23
DN250	350	12-Φ23	355	12-Φ27	361.95	25.4	355	12-Φ25
DN300	400	12-Φ23	410	12-Φ27	431.8	25.4	400	16-Φ25

INDUSTRIAL PIPES-FITTINGS & FLANGES

150LBS SS304/SS316 & MALLEABLE
IRON THREADED FITTINGS

STANDARD ANSI B16.3/ISO4144

HIGH PRESSURE FITTINGS

STANDARD ANSI B16.11
MATERIAL: ASTM A105; SS304;
SS316 & ALLOY STEEL

BUTT-WELDED FITTINGS

STANDARD: ANSI B16.9, DIN
MATERIAL: ASTM A234WPB; SS304; SS316 & ALLOY STEEL

INDUSTRIAL FLANGES

STANDARD: ANSI B16.5; ANSI
B16.47; DIN; BS & JIS
MATERIAL: ASTM A105; SS304;
SS316 & ALLOY STEEL

SANITARY VALVES

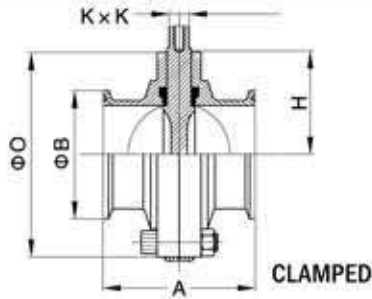
SANITARY BUTTERFLY VALVE



SANITARY CHECK VALVE



CONNECTION
WELDED
CLAMPED
THREADED



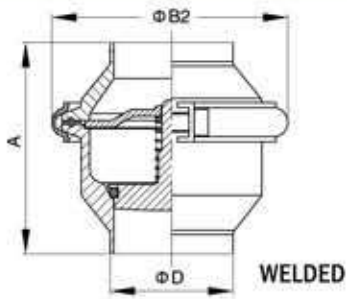
CLAMPED

DIN	Size	D	B	KxK	A	H
	DN15	78.0	34.0	8.0x8.0	66.0	39.0
	DN20	78.0	34.0	8.0x8.0	66.0	39.0
	DN25	78.0	50.5	8.0x8.0	66.0	39.0
	DN32	86.0	50.5	8.0x8.0	66.0	43.0
	DN40	90.0	50.5	8.0x8.0	70.0	45.0
	DN50	102.0	64.0	10.0x10.0	76.0	51.0
	DN65	120.0	91.0	10.0x10.0	80.0	60.0
	DN80	139.0	106.0	11.0x11.0	84.0	69.5
	DN100	154.0	119.0	11.0x11.0	104.0	77.0
	DN125	185.0	145.0	11.0x11.0	136.0	92.5
	DN150	215.0	167.0	11.0x11.0	146.0	107.5

SMS	Size	D	B	KxK	A	H
	25	78.0	50.5	8.0x8.0	66.0	39.0
	32	78.0	50.5	8.0x8.0	66.0	39.0
	38	86.0	50.5	8.0x8.0	70.0	43.0
	51	102.0	64.0	10.0x10.0	76.0	62.0
	63	115.0	77.5	10.0x10.0	80.0	57.5
	76	128.0	91.0	10.0x10.0	84.0	64.0
	89	139.0	106.0	11.0x11.0	90.0	69.5
	102	154.0	119.0	11.0x11.0	104.0	77.0

3A	Size	D	B	KxK	A	H
	1/2"	78.0	25.4	8.0x8.0	66.0	39.0
	3/4"	78.0	25.4	8.0x8.0	66.0	39.0
	1"	78.0	50.5	8.0x8.0	66.0	39.0
	1 1/2"	86.0	50.5	8.0x8.0	70.0	43.0
	2"	102.0	64.0	10.0x10.0	76.0	51.0
	2 1/2"	115.0	77.5	10.0x10.0	80.0	57.5
	3"	128.0	91.0	10.0x10.0	84.0	64.0
	4"	154.0	119.0	11.0x11.0	106.0	77.0
	5"	185.0	145.0	11.0x11.0	136.0	92.5
	6"	215.0	167.0	11.0x11.0	146.0	107.5
	8"	285.0	217.0	14.0x14.0	166.0	142.5

CONNECTION
WELDED
CLAMPED
THREADED



WELDED

DIN	Size	B2	D	A
	DN15	87.0	18.0	76.5
	DN20	87.0	22.0	76.5
	DN25	87.0	28.0	76.5
	DN32	87.0	34.0	76.5
	DN40	87.0	40.0	76.5
	DN50	100.0	52.0	87.9
	DN65	115.0	70.0	96.5
	DN80	128.0	85.0	116.5
	DN100	164.0	104.0	156.5

SMS	Size	B2	D	A
	25	87.0	25.4	76.5
	32	87.0	31.8	76.5
	38	87.0	38.1	76.5
	51	100.0	50.8	87.9
	63	115.0	63.5	96.5
	76	128.0	76.2	116.5
	89	128.0	89.0	116.5
	102	164.0	101.6	156.5

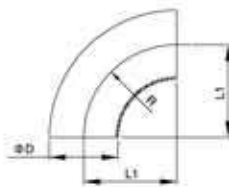
3A	Size	B2	D	A
	1/2"	87.0	12.7	76.5
	3/4"	87.0	19.1	76.5
	1"	87.0	25.4	76.5
	1 1/2"	87.0	38.1	76.5
	2"	100.0	50.8	87.9
	2 1/2"	115.0	63.5	96.5
	3"	128.0	76.2	116.5
	4"	164.0	101.6	156.5

SANITARY PIPE-FITTINGS



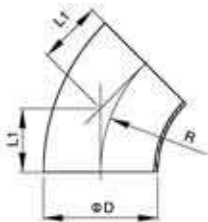
ELBOW (DIN)

Short-type Welded
elbow(90°)



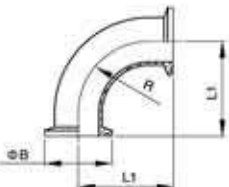
Size	L1	D	R
DN10	26.0	12.0	26.0
DN15	35.0	18.0	35.0
DN20	40.0	22.0	40.0
DN25	50.0	28.0	50.0
DN32	55.0	34.0	55.0
DN40	60.0	40.0	60.0
DN50	70.0	52.0	70.0
DN65	80.0	70.0	80.0
DN80	90.0	85.0	90.0
DN100	100.0	104.0	100.0
DN125	187.0	129.0	187.0
DN150	225.0	154.0	225.0

Welded elbow (45°)



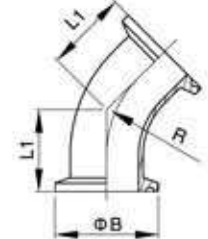
Size	L1	D	R
DN10	10.7	12.0	26.0
DN15	14.5	18.0	35.0
DN20	16.5	22.0	40.0
DN25	20.7	28.0	50.0
DN32	22.8	34.0	55.0
DN40	24.8	40.0	60.0
DN50	29.0	52.0	70.0
DN65	33.2	70.0	80.0
DN80	37.3	85.0	90.0
DN100	41.5	104.0	100.0
DN125	77.5	129.0	187.0
DN150	93.2	154.0	225.0

Clamped elbow (90°)



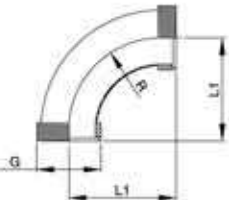
Size	L1	B	R
DN15	53.0	34.0	35.0
DN20	58.0	34.0	40.0
DN25	71.0	50.5	50.0
DN32	76.5	50.5	55.0
DN40	81.5	50.5	60.0
DN50	91.5	64.0	70.0
DN65	108.0	91.0	80.0
DN80	118.0	106.0	90.0
DN100	128.0	119.0	100.0

Clamped elbow(45°)



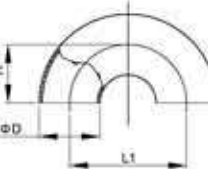
Size	L1	B	R
DN20	34.5	34.0	40.0
DN25	42.2	50.5	50.0
DN32	44.3	50.5	55.0
DN40	46.3	50.5	60.0
DN50	50.5	64.0	70.0
DN65	61.2	91.0	80.0
DN80	65.3	106.0	90.0
DN100	69.5	119.0	100.0

Threaded elbow (90°)



Size	L1	G	R
DN20	59.0	RD44x1/6	40.0
DN25	70.0	RD52x1/6	50.0
DN32	75.0	RD58x1/6	55.0
DN40	80.0	RD65x1/6	60.0
DN50	91.0	RD78x1/6	70.0
DN65	103.0	RD95x1/6	80.0
DN80	115.0	RD110x1/4	90.0
DN100	128.0	RD130x1/4	100.0

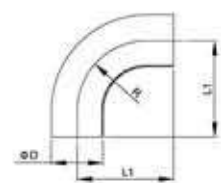
Welded elbow (180°)



Size	L1	D	H
DN15	70.0	18.0	35.0
DN20	80.0	22.0	40.0
DN25	100.0	28.0	50.0
DN32	110.0	34.0	55.0
DN40	120.0	40.0	60.0
DN50	140.0	52.0	70.0
DN65	160.0	70.0	80.0
DN80	180.0	85.0	90.0
DN100	200.0	104.0	100.0

ELBOW (DIN)

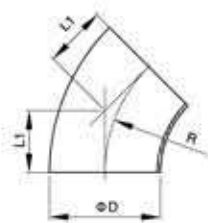
Long-type Welded elbow (90°)



Size	L1	D	R
DN10	38.0	12.0	26.0
DN15	47.0	18.0	35.0
DN20	52.0	22.0	40.0
DN25	70.0	28.0	50.0
DN32	78.0	34.0	55.0
DN40	85.0	40.0	60.0
DN50	97.0	52.0	70.0
DN65	110.0	70.0	80.0
DN80	118.0	85.0	90.0
DN100	140.0	104.0	100.0

ELBOW (3A)

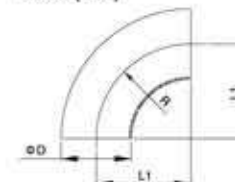
Short-type Welded elbow (45°)



Size	L1	D	R
1"	15.8	25.4	38.1
1 1/2"	23.8	38.1	57.2
2"	31.8	50.8	76.2
2 1/2"	39.7	63.5	95.3
3"	47.6	76.2	114.3
4"	63.5	101.6	152.4
6"	94.7	152.4	228.6

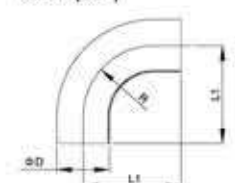
ELBOW (SMS)

Short-type Welded elbow (90°)



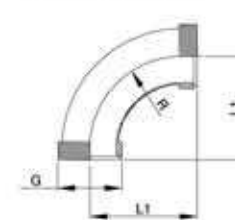
Size	L1	D	R
25	38.1	25.4	38.1
38	57.2	38.1	57.2
51	76.2	50.8	76.2
63	95.2	63.5	95.2
76	114.3	76.2	114.3
102	152.4	101.6	152.4

Long-type Welded elbow (90°)



Size	L1	D	R
25	55.0	25.4	25.4
38	70.0	38.1	38.1
51	82.0	50.8	50.8
63	105.0	63.5	63.5
76	110.0	76.2	76.2
102	150.0	101.6	101.6

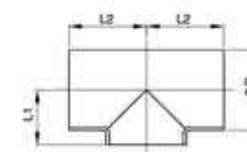
Threaded elbow(90°)



Size	L1	G	R
25	56	RD40x1/6	38.1
38	77	RD60x1/6	57.2
51	96	RD70x1/6	76.2
63	119	RD85x1/6	95.2
76	139	RD98x1/6	114.3
102(S)	179	RD125x1/6	152.4
102(B)	179	RD132x1/6	152.4

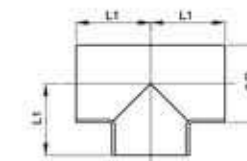
TEE (DIN)

Short-type welded



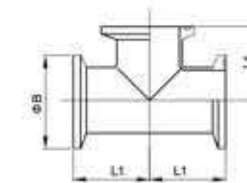
Size	L1	L2	D
DN10	7.5	26.0	12.0
DN15	10.5	35.0	18.0
DN20	12.5	40.0	22.0
DN25	16.0	50.0	28.0
DN32	19.5	55.0	34.0
DN40	22.5	60.0	40.0
DN50	30.0	70.0	52.0
DN65	39.5	80.0	70.0
DN80	47.5	90.0	85.0
DN100	58.0	100.0	104.0
DN125	70.5	187.0	129.0
DN150	83.0	225.0	154.0

Long-type welded



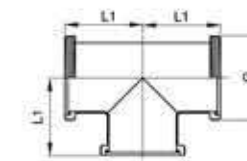
Size	L1	D
DN10	26.0	12.0
DN15	35.0	18.0
DN20	40.0	22.0
DN25	50.0	28.0
DN32	55.0	34.0
DN40	60.0	40.0
DN50	70.0	52.0
DN65	80.0	70.0
DN80	90.0	85.0
DN100	100.0	104.0
DN125	187.0	129.0
DN150	225.0	154.0

Clamped



Size	L1	B
DN15	53.0	34.0
DN20	58.0	34.0
DN25	71.5	50.5
DN32	76.5	50.5
DN40	81.5	50.5
DN50	91.5	64.0
DN65	108.0	91.0
DN80	118.0	106.0
DN100	128.0	119.0

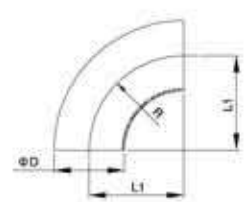
Threaded



Size	L1	G
DN20	59.0	RD44x1/6
DN25	70.0	RD52x1/6
DN32	75.0	RD58x1/6
DN40	80.0	RD65x1/6
DN50	91.0	RD78x1/6
DN65	105.0	RD95x1/6
DN80	115.0	RD110x1/4
DN100	128.0	RD130x1/4

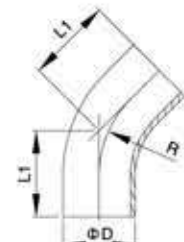
ELBOW (3A)

Short-type Welded elbow (90°)



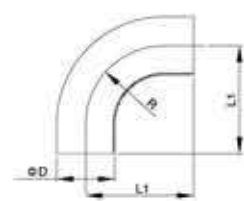
Size	L1	D	R
1/2"	19.05	12.7	19.05
3/4"	28.5	19.1	28.5
1"	38.1	25.4	38.1
1 1/2"	57.2	38.1	57.2
2"	76.2	50.8	76.2
2 1/2"	95.3	63.5	95.3
3"	114.3	76.2	114.3
4"	152.4	101.6	152.4
6"	228.6	152.4	228.6

Long-type Welded elbow (45°)



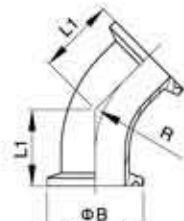
Size	L1	D	R
1"	30.2	25.4	38.1
1 1/2"	41.3	38.1	57.2
2"	58.7	50.8	76.2
2 1/2"	76.2	63.5	95.3
3"	93.7	76.2	114.3
4"	122.2	101.6	152.4

Long-type Welded elbow (90°)



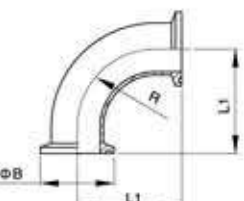
Size	L1	D	R
1"	52.4	25.4	38.1
1 1/2"	74.6	38.1	57.2
2"	103.2	50.8	76.2
2 1/2"	131.8	63.5	95.3
3"	160.3	76.2	114.3
4"	211.1	101.6	152.4

Clamped elbow (45°)



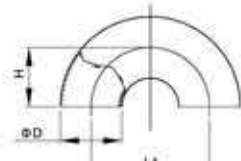
Size	L1	B	R
1"	28.6	50.5	38.1
1 1/2"	36.5	50.5	57.2
2"	44.5	64.0	76.2
2 1/2"	52.4	77.5	95.3
3"	60.3	91.0	114.3
4"	79.4	119.0	152.4

Clamped elbow (90°)



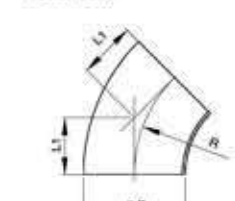
Size	L1	B	R
1"	50.8	50.5	38.1
1 1/2"	69.9	50.5	57.2
2"	88.9	64.0	76.2
2 1/2"	108.0	77.5	95.3
3"	127.0	91.0	114.3
4"	168.3	119.0	152.4

Welded elbow(180°)



Size	L1	D	H
1"	76.2	25.4	38.1
1 1/2"	114.3	38.1	57.2
2"	152.4	50.8	76.2
2 1/2"	190.5	63.5	95.3
3"	228.6	76.2	114.3
4"	304.8	101.6	152.4

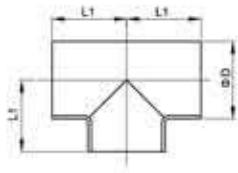
Short-type welded elbow(45°)



Size	L1	D	R
25	15.8	25.4	38.7
38	23.7	38.1	57.2
51	31.8	50.8	76.2
63	39.6	63.5	95.3
76	47.5	76.2	114.3
102	63.2	101.6	152.4

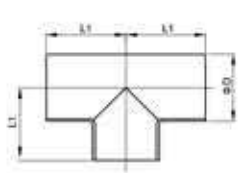
TEE (3A)

Short-type welded



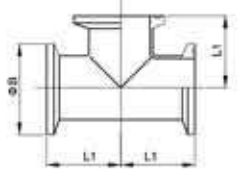
Size	L1	D
1"	28.6	25.4
1 1/2"	42.05	38.1
2"	52.35	50.8
2 1/2"	59.55	63.5
3"	65.9	76.2
4"	87.35	101.6

Long-type welded



Size	L1	D
1"	47.6	25.4
1 1/2"	57.2	38.1
2"	76.2	50.8
2 1/2"	76.2	63.5
3"	82.6	76.2
4"	98.4	101.6

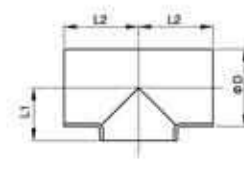
Clamped



Size	L1	B
1"	60.3	50.5
1 1/2"	69.9	50.5
2"	88.9	64.0
2 1/2"	88.9	77.5
3"	95.3	91.0
4"	114.3	119.0

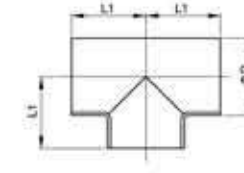
TEE (SMS)

Short-type welded



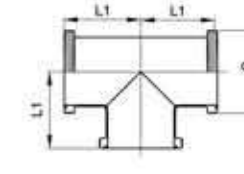
Size	L1	L2	D
25	14.5	55.0	25.4
38	21.5	70.0	38.0
51	29.5	82.0	50.8
63	36.0	105.0	63.5
76	43.0	110.0	76.2
102	57.0	150.0	101.6

Long-type welded



Size	L1	D
25	55.0	25.4
38	70.0	38.0
51	82.0	50.8
63	105.0	63.5
76	110.0	76.2
102	150.0	101.6

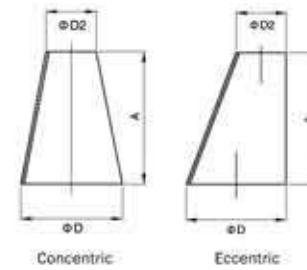
Threaded



Size	L1	G
25	73.0	RD40x1/6
38	90.0	RD60x1/6
51	102.0	RD70x1/6
63	128.5	RD85x1/6
76	134.5	RD98x1/6
102(S)	177.0	RD125x1/6
102(B)	177.0	RD132x1/6

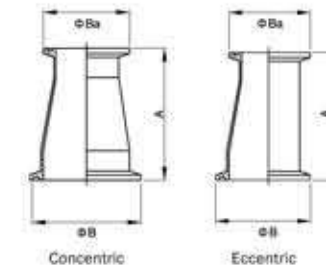
REDUCER (DIN)

Welded reducer



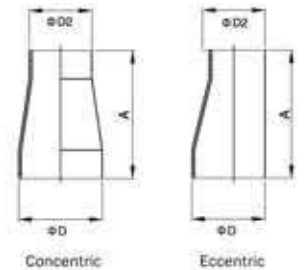
Size	A	D	D2
DN20/15	7.0	22.0	18.0
DN25/20	11.0	28.0	22.0
DN32/20	22.0	34.0	22.0
DN32/25	11.0	34.0	28.0
DN40/20	33.0	40.0	22.0
DN40/25	22.0	40.0	28.0
DN40/32	11.0	40.0	34.0
DN50/25	44.0	52.0	28.0
DN50/32	33.0	52.0	34.0
DN50/40	22.0	52.0	40.0
DN65/25	73.0	70.0	28.0
DN65/32	62.0	70.0	34.0
DN65/40	51.0	70.0	40.0
DN65/50	29.0	70.0	52.0
DN80/40	78.0	85.0	40.0
DN80/50	56.0	85.0	52.0
DN80/65	27.0	85.0	70.0
DN100/50	90.0	104.0	52.0
DN100/65	61.0	104.0	70.0
DN100/80	34.0	104.0	85.0

Clamped reducer



Size	A	B	Ba
DN20/15	86.0	34.0	34.0
DN25/20	86.0	50.5	34.0
DN32/20	106.0	50.5	34.0
DN32/25	106.0	50.5	50.5
DN40/20	128.0	50.5	34.0
DN40/25	128.0	50.5	50.5
DN40/32	128.0	50.5	50.5
DN50/25	141.0	64.0	50.5
DN50/32	141.0	64.0	50.5
DN50/40	141.0	64.0	50.5
DN65/25	151.0	91.0	50.5
DN65/32	151.0	91.0	50.5
DN65/40	146.0	91.0	50.5
DN65/50	146.0	91.0	64.0
DN80/40	166.0	106.0	50.5
DN80/50	151.0	106.0	64.0
DN80/65	146.0	106.0	91.0
DN100/50	192.0	119.0	64.0
DN100/65	159.0	119.0	91.0
DN100/80	152.0	119.0	106.0

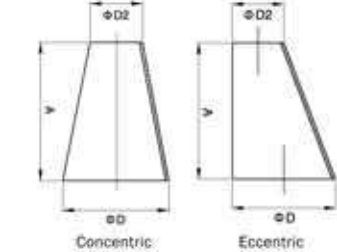
Welded reducer



Size	A	D	D2
DN20/15	60.0	22.0	18.0
DN25/20	60.0	28.0	22.0
DN32/20	80.0	34.0	22.0
DN32/25	80.0	34.0	28.0
DN40/20	102.0	40.0	22.0
DN40/25	102.0	40.0	28.0
DN40/32	88.0	40.0	34.0
DN50/25	115.0	52.0	28.0
DN50/32	129.0	52.0	34.0
DN50/40	113.0	52.0	40.0
DN65/25	125.0	70.0	28.0
DN65/32	125.0	70.0	34.0
DN65/40	120.0	70.0	40.0
DN65/50	130.0	70.0	52.0
DN80/40	140.0	85.0	40.0
DN80/50	125.0	85.0	52.0
DN80/65	120.0	85.0	70.0
DN100/50	160.0	104.0	52.0
DN100/65	127.0	104.0	70.0
DN100/80	120.0	104.0	85.0

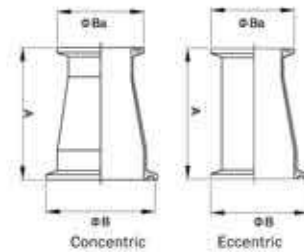
REDUCER (3A)

Welded reducer



Size	A	D	D2
1.5"/1.0"	50.8	38.1	25.4
2.0"/1.0"	101.64	50.8	25.4
2.0"/1.5"	50.8	50.8	38.1
2.5"/1.5"	101.6	63.5	38.1
2.5"/2.0"	50.8	63.5	50.8
3.0"/1.5"	152.4	76.2	38.1
3.0"/2.0"	101.6	76.2	50.8
3.0"/2.5"	50.8	76.2	63.5
4.0"/2.0"	203.2	101.6	50.8
4.0"/2.5"	152.4	101.6	63.5
4.0"/3.0"	101.6	101.6	76.2

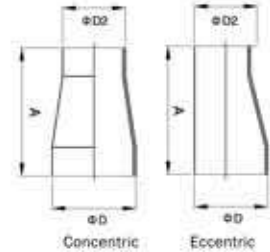
Clamped reducer



Size	A	B	Ba
1.5"/1.0"	76.2	50.5	50.5
2.0"/1.0"	127.0	64.0	50.5
2.0"/1.5"	76.2	64.0	50.5
2.5"/1.5"	127.0	77.5	50.5
2.5"/2.0"	76.2	77.5	64.0
3.0"/1.5"	177.8	91.0	50.5
3.0"/2.0"	127.0	91.0	64.0
3.0"/2.5"	76.2	91.0	77.5
4.0"/2.0"	231.8	119.0	64.0
4.0"/2.5"	181.0	119.0	77.5
4.0"/3.0"	130.2	119.0	91.0

REDUCER (SMS)

Welded reducer



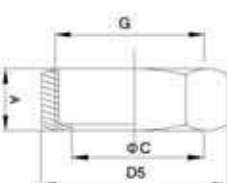
Size	A	D	D2
1.5"/1.0"	39.0	38.1	25.4
2.0"/1.0"	57.0	50.8	25.4
2.0"/1.5"	39.0	50.8	38.1
2.5"/1.5"	57.0	63.5	38.1
2.5"/2.0"	39.0	63.5	50.8
3.0"/1.5"	74.0	76.2	38.1
3.0"/2.0"	57.0	76.2	50.8
3.0"/2.5"	39.0	76.2	63.5
4.0"/2.0"	95.0	101.6	50.8
4.0"/2.5"	78.0	101.6	63.5
4.0"/3.0"	60.0	101.6	76.2

SANITARY UNION SERIES



UNION(3A)

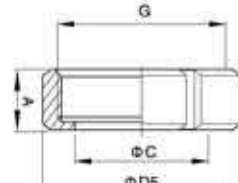
Hex nut



Size	A	G(TACME)	D5	C
1"	23.0	38.02x1/8	52.0	30.3
1 1/2"	24.6	51.54x1/8	70.6	43.4
2"	27.0	65.05x1/8	88.0	56.5
2 1/2"	29.6	78.56x1/8	105.5	69.6
3"	32.5	92.08x1/8	123.0	82.7
4"	38.1	120.14x1/6	159.0	108.9

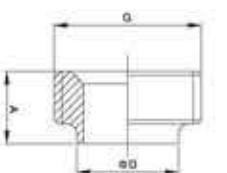
UNION(RJT)

Round nut



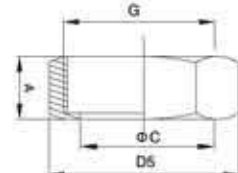
Size	A	G(TWHIT)	C	D5
1"	22.0	45.7x8	33.3	58.5
1 1/2"	22.0	58.4x8	46.0	74.0
2"	22.0	72.7x6	58.7	85.5
2 1/2"	22.0	85.4x6	71.4	98.5
3"	22.0	98.1x6	84.1	111.6
4"	22.0	123.8x6	109.6	138.0

Male



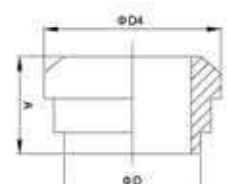
Size	D	G(TACME)	A
1"	25.4	37.13x1/8	15TRF 15A
1 1/2"	38.1	50.65x1/8	18.3 34.9
2"	50.8	64.1x1/8	18.3 38.1
2 1/2"	63.5	77.6x1/8	19.1 38.1
3"	76.2	91.1x1/8	22.3 44.5
4"	101.6	119.25x1/6	26.2 44.5

Hex nut



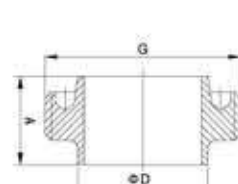
Size	A	G(TWHIT)	C	D5
1"	22.0	45.7x8	33.3	58.7
1 1/2"	22.0	58.4x8	46.0	75.1
2"	22.0	72.7x6	58.7	91.7
2 1/2"	22.0	85.4x6	71.4	106.4
3"	22.0	98.1x6	84.1	120.3
4"	22.0	123.8x6	109.6	150.4

Liner



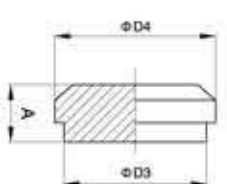
Size	D	D4	A
1"	25.4	33.3	14PRF 14A
1 1/2"	38.1	46.8	18.3 38.1
2"	50.8	60.3	19.1 38.1
2 1/2"	63.5	73.8	22.3 44.5
3"	76.2	87.3	23.1 44.5
4"	101.6	114.3	26.2 44.5

Male



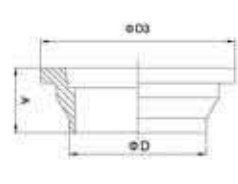
Size	A	G	D
1"	27.0	45.7x8	25.6
1 1/2"	27.0	58.4x8	38.3
2"	27.0	72.7x6	51.0
2 1/2"	27.0	85.4x6	63.7
3"	27.0	98.1x6	76.4
4"	27.0	123.8x6	101.8

End cap(16A)



Size	A	D3	D4
1"	11.9	29.5	33.3
1 1/2"	14.3	42.6	46.8
2"	15.9	55.7	60.3
2 1/2"	16.7	68.8	73.8
3"	18.3	81.9	87.3
4"	20.6	108.1	114.3

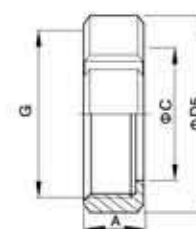
Liner



Size	A	D	D3
1"	19.5	25.6	41.3
1 1/2"	19.5	38.3	54.0
2"	19.5	50.8	66.7
2 1/2"	19.5	63.5	79.4
3"	19.5	76.2	92.1
4"	19.5	101.8	117.6

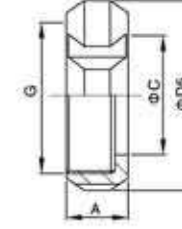
SHORT-TYPE UNION(SMS)

Round nut



Size	A	G	D5	C
25	20.1	RD40x1/6	50.0	32.0
32	20.0	RD48x1/6	60.0	40.0
38	22.0	RD60x1/6	72.0	48.0
51	22.0	RD70x1/6	82.0	60.5
63	25.0	RD85x1/6	97.0	74.0
76	26.0	RD98x1/6	111.0	87.0
89	28.0	RD110x1/6	125.0	100.0
102(S)	30.0	RD125x1/4	138.0	117.0
102(B)	30.0	RD132x1/6	146.0	117.0

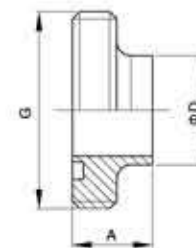
Round nut



LONG-TYPE UNION(SMS)

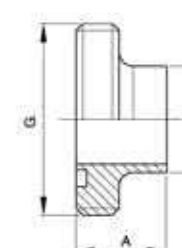
Size	A	G	D5	C
25	20.0	RD40x1/6	50.0	32.0
38	25.0	RD60x1/6	72.0	48.0
51	26.0	RD70x1/6	82.0	60.5
63	30.0	RD85x1/6	97.0	74.0
76	32.0	RD98x1/6	111.0	87.0
102(S)	32.0	RD125x1/4	138.0	117.0
102(B)	45.0	RD132x1/6	146.0	117.0

Male



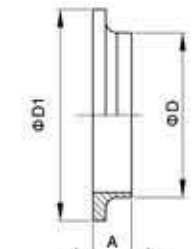
Size	A	G	D
25	18.0	RD40x1/6	25.4
32	18.0	RD48x1/6	32.0
38	20.0	RD60x1/6	38.1
51	20.0	RD70x1/6	50.8
63	24.0	RD85x1/6	63.5
76	25.0	RD98x1/6	76.2
89	26.0	RD110x1/6	89.0
102(S)	27.0	RD125x1/4	101.6
102(B)	27.0	RD132x1/6	101.6

Male



Size	A	D	G
25	19.0	25.4	RD40x1/6
38	23.0	38.1	RD60x1/6
51	23.0	50.8	RD70x1/6
63	27.0	63.5	RD85x1/6
76	27.0	76.2	RD98x1/6
102(S)	27.0	101.6	RD125x1/4
102(B)	30.0	101.6	RD132x1/6

Circular liner



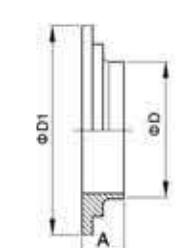
Size	A	D	D1
25	12.0	25.4	35.5
32	12.0	32.0	43.5
38	13.0	38.1	55.5
51	13.0	50.8	65.5
63	14.0	63.5	80.5
76	14.0	76.2	93.8
89	15.0	89.0	105.8
102(S)	17.0	101.6	118.0
102(B)	17.0	101.6	127.8

Circular liner



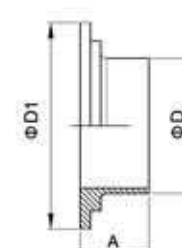
Size	A	D	D1
25	15.0	25.4	35.5
38	20.0	38.1	55.5
51	20.0	50.8	65.5
63	21.0	63.5	80.5
76	21.0	76.2	93.8
102(S)	21.0	101.6	118.0
102(B)	21.0	101.6	127.8

Stepped liner



Size	A	D	D1
25	12.0	25.4	35.5
32	12.0	32.0	43.5
38	13.0	38.1	55.5
51	13.0	50.8	65.5
63	14.0	63.5	80.5
76	14.0	76.2	93.8
89	15.0	89.0	105.8
102(S)	17.0	101.6	118.0
102(B)	17.0	101.6	127.8

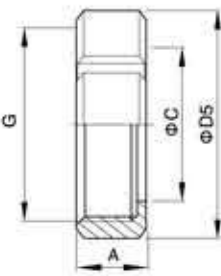
Stepped liner



Size	A	D	D1
25	15.0	25.4	35.5
38	20.0	38.1	55.5
51	20.0	50.8	65.5
63	21.0	63.5	80.5
76	21.0	76.2	93.8
102(S)	21.0	101.6	118.0
102(B)	21.0	101.6	127.8

SHORT-TYPE UNION(DIN11850)

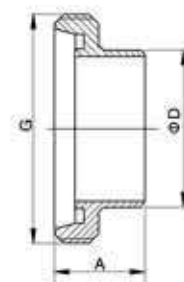
Round nut



Size	A	G	D5	C
DN15	18.0	RD34x1/8	44.0	25.0
DN20	20.0	RD44x1/6	54.0	31.0
DN25	21.0	RD52x1/6	63.0	36.0
DN32	21.0	RD58x1/6	70.0	42.0
DN40	21.0	RD65x1/6	78.0	49.0
DN50	22.0	RD78x1/6	92.0	62.0
DN65	25.0	RD95x1/6	110.0	80.0
DN80	27.0	RD110x1/4	125.0	94.0
DN100	29.0	RD130x1/4	146.0	115.0
DN125	32.0	RD160x1/4	178.0	138.0
DN150	38.0	RD190x1/4	210.0	164.0

LONG-TYPE UNION(DIN11851)

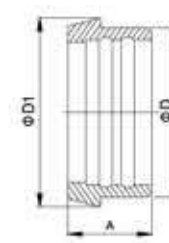
Long-type male



Size	A	D	G
DN15	21.0	21.0	RD34x1/8
DN20	24.0	25.0	RD44x1/6
DN25	29.0	31.0	RD52x1/6
DN32	32.0	37.0	RD58x1/6
DN40	33.0	43.0	RD65x1/6
DN50	35.0	55.0	RD78x1/6
DN65	40.0	72.0	RD95x1/6
DN80	45.0	87.0	RD110x1/4
DN100	54.0	106.0	RD130x1/4
DN125	46.0	132.0	RD160x1/4
DN150	50.0	157.0	RD190x1/4

EXPANDED UNION(DIN11851)

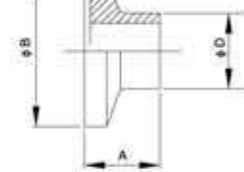
Expanded liner



Size	A	D	D1
DN15	17.0	24.0	28.0
DN20	18.0	30.0	36.0
DN25	22.0	35.0	44.0
DN32	25.0	41.0	50.0
DN40	26.0	48.0	56.0
DN50	28.0	61.0	68.0
DN65	32.0	79.0	86.0
DN80	37.0	93.0	100.0
DN100	44.0	114.0	121.0
DN125	34.0	137.0	150.0
DN150	37.0	163.0	176.0

SANITARY FERRULE

3A



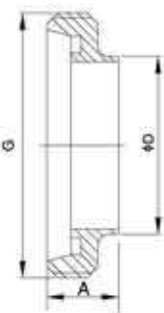
Size	A	B	D
14WMP 1/2"	12.7	25.4	12.7
3/4"	12.7	25.4	19.1
14MMP 1/2"	21.5	25.4	12.7
3/4"	21.5	25.4	19.1
14AMP 1/2"	28.6	25.4	12.7
3/4"	28.6	25.4	19.1

3A



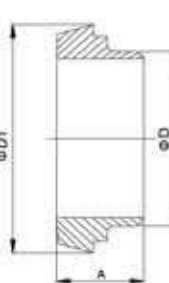
Size	B	D	A
14WMP	12.7	25.4	12.7
14MMP	21.5	25.4	12.7
14AMP	28.6	25.4	12.7
1"	50.5	25.4	12.7
1 1/2"	50.5	38.1	12.7
2"	64.0	50.8	12.7
2 1/2"	77.5	63.5	12.7
3"	91.0	76.2	12.7
4"	119.0	101.6	15.8
6"	167.0	152.4	22.2
8"	217.7	203.2	22.2
10"	268.5	254.0	22.2

Male



Size	A	D	G
DN15	17.0	18.0	RD34x1/8
DN20	19.0	22.0	RD44x1/6
DN25	20.0	28.0	RD52x1/6
DN32	20.0	34.0	RD58x1/6
DN40	20.0	40.0	RD65x1/6
DN50	21.0	52.0	RD78x1/6
DN65	23.0	70.0	RD95x1/6
DN80	25.0	85.0	RD110x1/4
DN100	28.0	104.0	RD130x1/4
DN125	30.0	129.0	RD160x1/4
DN150	35.0	154.0	RD190x1/4

Long-type liner



Size	A	D	D1
DN15	17.0	21.0	28.0
DN20	18.0	25.0	36.0
DN25	22.0	31.0	44.0
DN32	25.0	37.0	50.0
DN40	26.0	43.0	56.0
DN50	28.0	55.0	68.0
DN65	32.0	72.0	86.0
DN80	37.0	87.0	100.0
DN100	44.0	106.0	121.0
DN125	34.0	132.0	150.0
DN150	37.0	157.0	176.0

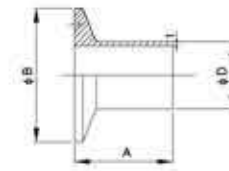
Expanded male



Size	A	D	G
DN15	21.0	24.0	RD34x1/8
DN20	24.0	30.0	RD44x1/6
DN25	29.0	35.0	RD52x1/6
DN32	32.0	41.0	RD58x1/6
DN40	33.0	48.0	RD65x1/6
DN50	35.0	61.0	RD78x1/6
DN65	40.0	79.0	RD95x1/6
DN80	45.0	93.0	RD110x1/4
DN100	54.0	114.0	RD130x1/4
DN125	46.0	137.0	RD160x1/4
DN150	50.0	163.0	RD190x1/4

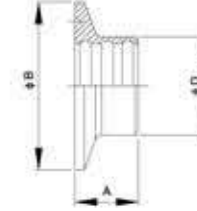
FERRULE

SMS



Size	A	B	D	t
φ25	21.5	50.5	25.4	1.25/1.5
φ32	21.5	50.5	31.8	1.25/1.5
φ38	21.5	50.5	38.1	1.25/1.5
φ51	21.5	64.0	50.8	1.25/1.5
φ63	21.5	77.5	63.5	1.5/2.0
φ76	21.5	91.0	76.3	2.0
φ89	21.5	106.0	89.0	2.0
φ102	21.5	119.0	101.6	2.0

Expanded ferrule(14RMP)



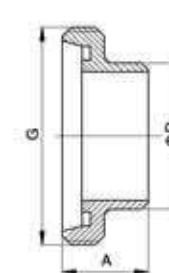
Size	A	B	D
1"	19.1	50.5	29.5
1 1/2"	28.6	50.5	42.6
2"	33.3	64.0	55.7
2 1/2"	34.9	77.5	68.8
3"	36.5	91.0	81.9
4"	38.1	119.0	108.1

Liner



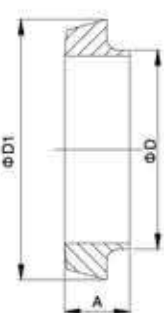
Size	A	D	D1
DN15	13.0	18.0	28.0
DN20	15.0	22.0	36.0
DN25	17.0	28.0	44.0
DN32	17.0	34.0	50.0
DN40	19.0	40.0	56.0
DN50	20.0	52.0	68.0
DN65	20.0	70.0	86.0
DN80	23.0	85.0	100.0
DN100	26.0	104.0	121.0
DN125	33.0	129.0	150.0
DN150	34.0	154.0	176.0

Long-type male



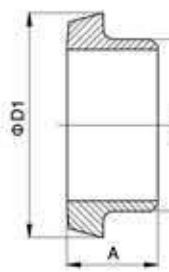
Size	A	D	G
DN15	21.0	24.0	RD34x1/8
DN20	24.0	30.0	RD44x1/6
DN25	29.0	35.0	RD52x1/6
DN32	32.0	41.0	RD58x1/6
DN40	33.0	48.0	RD65x1/6
DN50	35.0	61.0	RD78x1/6
DN65	40.0	79.0	RD95x1/6
DN80	45.0	93.0	RD110x1/4
DN100	54.0	114.0	RD130x1/4
DN125	46.0	137.0	RD160x1/4
DN150	50.0	163.0	RD190x1/4

Liner



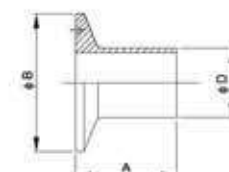
Size	A	D	D1
DN15	13.0	18.0	28.0
DN20	13.0	22.0	36.0
DN25	14.0	28.0	44.0
DN32	14.0	34.0	50.0
DN40	16.0	40.0	56.0
DN50	17.0	52.0	68.0
DN65	18.0	70.0	86.0
DN80	20.0	85.0	100.0
DN100	22.0	104.0	121.0
DN125	29.0	129.0	150.0
DN150	30.0	154.0	176.0

Long-type liner



Size	A	D	D1
DN15	17.0	24.0	28.0
DN20	18.0	30.0	36.0
DN25	22.0	35.0	44.0
DN32	25.0	41.0	50.0
DN40	26.0	48.0	56.0
DN50	28.0	61.0	68.0
DN65	32.0	79.0	86.0
DN80	37.0	93.0	100.0
DN100	44.0	114.0	121.0
DN125	34.0	137.0	150.0
DN150	37.0	163.0	176.0

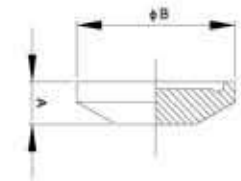
DIN



Size	A	B	D
DN15	18.0	34.0	18.0
DN20	18.0	34.0	22.0
DN25	21.5	50.5	28.0
DN32	21.5	50.5	34.0
DN40	21.5	50.5	40.0
DN50	28.0	64.0	52.0
DN65	28.0	91.0	70.0
DN80	28.0	106.0	85.0
DN100	28.0	119.0	104.0
DN125	38.0	145.0	129.0
DN150	38.0	167.0	154.0

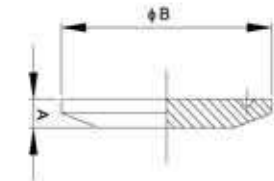
END CAP

3A-16AMP



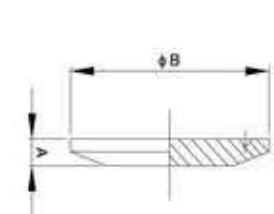
Size	A	B
1/2"	6.3	25.4
3/4"	6.3	25.4

3A-16AMP



Size	A	B
1"	6.3	50.5
1 1/2"	6.3	50.5
2"	6.3	64.0
2 1/2"	6.3	77.5
3"	6.3	91.0
4"	7.9	119.0
6"	11.1	167.0
8"	11.1	217.7
10"	11.1	268.5

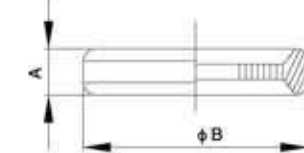
DIN



Size	A	B
DN15	6.3	34.0
DN20	6.3	34.0
DN25	6.3	50.5
DN32	6.3	50.5
DN40	6.3	50.5
DN50	6.3	64.0
DN65	6.3	91.0
DN80	6.3	106.0
DN100	6.3	119.0
DN125	11.1	145.0
DN150	11.1	167.0

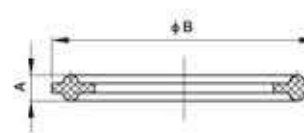
GASKET FOR FERRULE

3A



Size	A	B
1/2"	4.5	21.8
3/4"	4.5	21.8

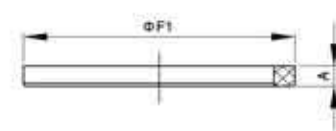
DIN



Size	A	B
DN15	5.0	34.0
DN20	5.0	34.0
DN25	5.0	50.5
DN32	5.5	50.5
DN40	5.5	50.5
DN50	5.5	64.0
DN65	5.5	91.0
DN80	5.5	106.0
DN100	5.5	119.0
DN125	5.5	145.0
DN150	5.5	167.0

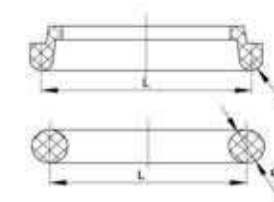
GASKET FOR UNION

SMS



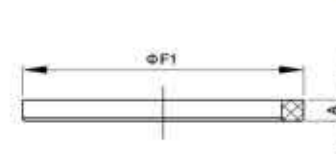
Size	A	F1
25	5.5	33.0
32	5.5	40.0
38	5.5	48.0
51	5.5	61.0
63	5.5	73.0
76	6.0	86.0
89	6.0	99.0
102	6.0	114.0

RJT



Size	L	R	d
1"	33.3	3.2	6.6
1 1/2"	46.0	3.2	6.6
2"	58.7	3.2	6.6
2 1/2"	71.4	3.2	6.6
3"	84.1	3.2	6.6
4"	109.5	3.2	6.6

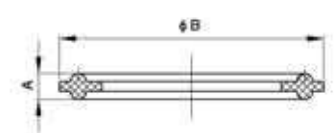
DIN



Size	A	F1
DN15	5.0	26.0
DN20	5.0	33.0
DN25	5.0	40.0
DN32	5.0	46.0
DN40	5.0	52.0
DN50	5.0	64.0
DN65	5.0	81.0
DN80	6.0	95.0
DN100	6.0	114.0
DN125	7.0	142.0
DN150	7.0	167.0

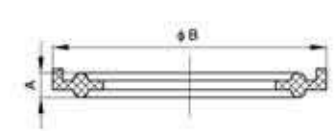
GASKET FOR FERRULE

3A



Size	A	B
1"	5.0	50.5
1 1/2"	5.0	50.5
2"	5.5	64.0
2 1/2"	5.5	77.5
3"	5.5	91.0
4"	5.5	119.0
6"	5.5	167.0
8"	5.5	217.7
10"	5.5	268.5

SMS

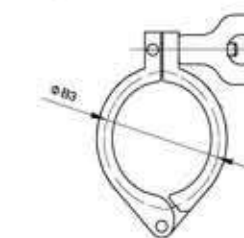


Size	A	B
1"	5.0	52.7
1 1/2"	5.0	52.7
2"	5.5	66.2
2 1/2"	5.5	79.7
3"	5.5	93.2
4"	5.5	121.2



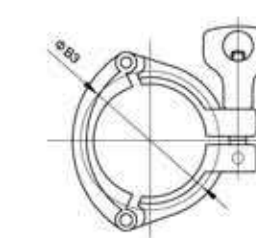
SANITARY CLAMP SERIES

Clamp-Single pin heavy duty(13MHH)



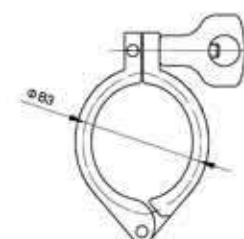
Size	B3
1/2"	28.0
3/4"	28.0
1"	53.9
1 1/2"	53.9
2"	67.4
2 1/2"	80.9
3"	94.4
4"	122.4
6"	170.4
8"	221.2
10"	270.0

Clamp - Three section(13MHM-3P)



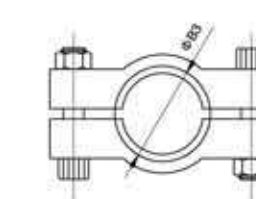
Size	B3
1"	53.9
1 1/2"	53.9
2"	67.4
2 1/2"	80.9
3"	94.4
4"	122.4

DIN



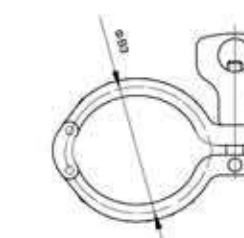
Size	B3
DN10	37
DN15	37
DN20	37
DN25	53
DN32	53
DN40	53
DN50	67
DN65	94
DN80	109
DN100	122

Clamp - Bolted high pressure (13MHP)



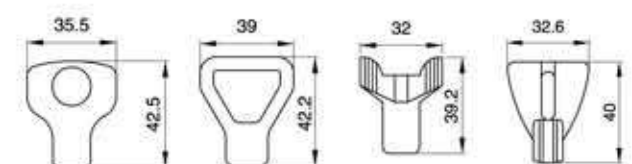
Size	B3
1"	52.0
1 1/2"	52.0
2"	65.5
2 1/2"	79.0
3"	92.5
4"	120.5

Clamp- Double-pin heavy duty (13MHM-DP)



Size	B3
1"	53.6
1 1/2"	53.6
2"	67.0
2 1/2"	80.6
3"	94.0
4"	122.0
6"	170.0
8"	220.8

Nut



STAINLESS STEEL



STAINLESS STEEL SHEET AND COIL

TECHNICAL DATA



PRODUCT
STAINLESS STEEL HR/CR SHEET/COIL
ASTM A240/A480, JIS G4305, DIN 17441(EN 10204 3.1)

Product	Finish	Grade	Thickness(mm)	Standard Width(mm)
CR Coil/sheet	2B	201/202	0.4-3.0	1219/1250
CR Coil/sheet	2B	304/304L/316L	0.4-3.0	1000/1219/1250/1500/1524
CR Coil/sheet	2B	430	0.3-3.0	1000/1219/1250/1524
CR Coil/sheet	BA	201/202	0.4-2.0	1219/1250
CR Coil/sheet	BA	304/304L/316L	0.4-2.0	1000/1219/1250
CR Coil/sheet	BA	430	0.3-2.0	1000/1219/1250
CR Coil/sheet	No.4	201/202	0.4-3.0	1219/1250
CR Coil/sheet	No.4	304/304L/316L	0.4-3.0	1000/1219/1250/1500/1524
CR Coil/sheet	No.4	430	0.3-3.0	1000/1219/1250
CR Coil/sheet	HL	304/304L/316L	0.4-3.0	1000/1219/1250/1500/1524
CR Coil/sheet	No.5	304/304L/316L	0.4-3.0	1000/1219/1250/1500/1254
CR Coil/sheet	No.8	304/304L/316L	0.7-2.0	1219/1250
HR Coil/sheet/plate	No.1	201/202	3.0-6.0	1219/1250
HR Coil/sheet/plate	No.1	304/304L/316L	3.0-80.0	1000/1219/1250/1500/1524

Product features:

- Both-sides polished available
- Coating: laser foil, PVC, PE, Paper

3. Package weight(standard):

CR coil: 4-7 mts per coil CR sheet: 2mts per bundle
 HR coil: 10mts per coil HR sheet: 4mts per bundle
 (customization for coil/sheet weight is available)



TECHNICAL DATA

SURFACE FINISHING AND APPLICATIONS

Surface finishes	Definition	Applications
No.1	The surface is finished by heat treatment and pickling or process corresponding thereto after hot rollings	Chemical tanks and piping, petroleum refining equipment
2 B	Those finished after cold rolling, by heat treatment, pickling or other equivalent treatment and lastly by cold rolling to give an appropriate luster	Medical equipment, food processing, architectural applications, cooking utensils, kitchen sinks
BA	Those processed with bright heat treatment after cold rolling.	Cooking utensils, electric appliance,
No.4	Those finished by polishing with No.150 to No.180 abrasives specified in JIS R6001	Architectural applications, medical equipment, automobile, food processing, kitchen counters
HL	Those finished by polishing so as to give continuous polishing streaks by using abrasives of suitable grain size	
No.8	A mirror-like reflective surface, which is obtained by polishing with successively finer abrasives and buffing extensively with all grit lines are removed	Building entrances, building column casing, elevator's walls & doors, counter, sculptures

TECHNICAL DATA

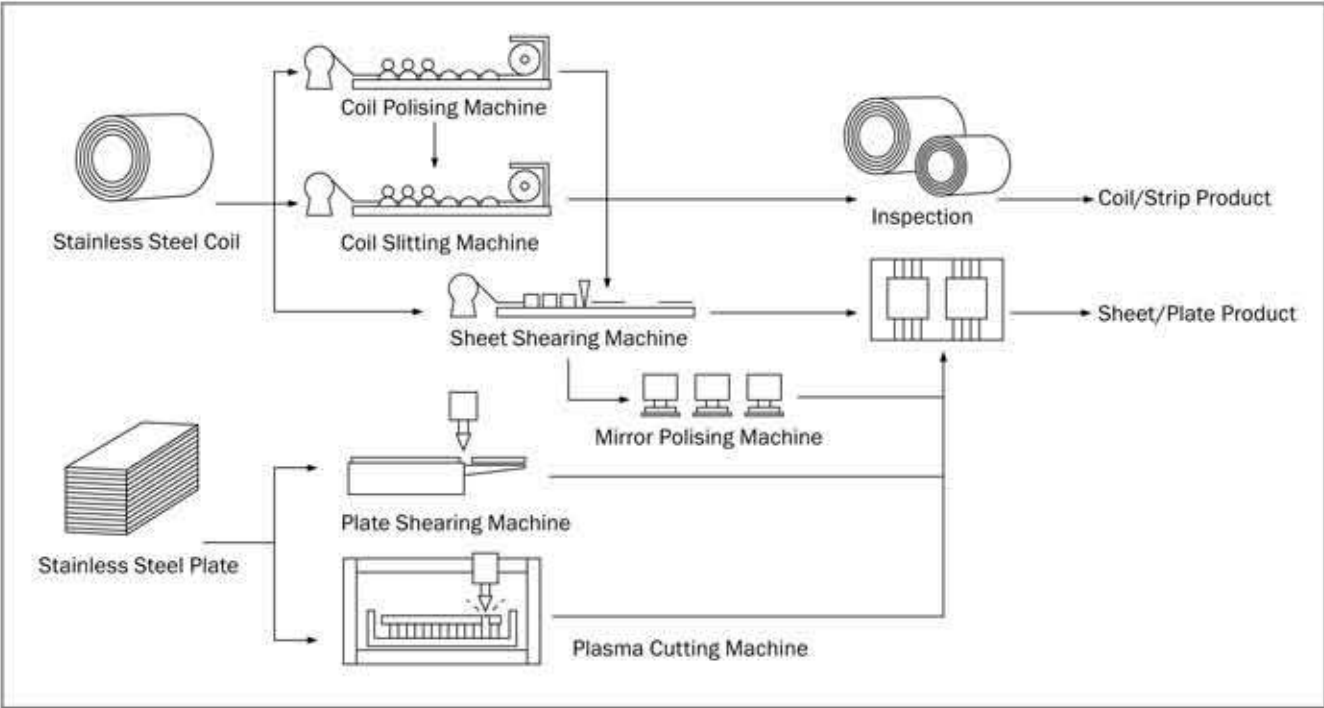
TABLE OF THE CHEMICAL COMPOSITION OF STAINLESS STEEL PLATES & SHEETS

Grade		Chemical Composition (%)								
		C	Si	Mn	P	S	Ni	Cr	Mo	N
ASTM A240	304	≤0.08	≤0.75	≤2.00	≤0.045	≤0.03	8-10.5	18-20	-	≤0.1
	304L	≤0.03	≤0.75	≤2.00	≤0.045	≤0.03	8-12	18-20	-	≤0.1
	316	≤0.08	≤0.75	≤2.00	≤0.045	≤0.03	10-14	16-18	2-3	≤0.1
	316L	≤0.03	≤0.75	≤2.00	≤0.045	≤0.03	10-14	16-18	2-3	≤0.1
	430	≤0.12	≤1.00	≤1.00	≤0.040	≤0.03	≤0.75	16-18	-	-
JIS G4304	SUS304	≤0.08	≤1.00	≤2.00	≤0.045	≤0.03	8-10.5	18-20	-	-
JIS G4305	SUS304L	≤0.03	≤1.00	≤2.00	≤0.045	≤0.03	9-13	18-20	-	-
	SUS316	≤0.08	≤1.00	≤2.00	≤0.045	≤0.03	10-14	16-18	2-3	-
	SUS316L	≤0.03	≤1.00	≤2.00	≤0.045	≤0.03	12-15	16-18	2-3	-
	SUS430	≤0.12	≤0.75	≤1.00	≤0.040	≤0.03	-	16-18	-	-

Type	Basic Mass(kg/mm²m2)	Formula
304/304L	7.93	Sheet weight(kg) = 7.93 x thickness(mm) x width(m) x length(m)
316/316L	7.98	Sheet weight(kg) = 7.98 x thickness(mm) x width(m) x length(m)
430	7.70	Sheet weight(kg) = 7.7 x thickness(mm) x width(m) x length(m)

MANUFACTURING PROCESS

COIL/STRIP/SHEET/PLATE



STAINLESS STEEL FLAT/ANGLE/ROUND/HEX BAR

SS ROUND BAR	COLD DRAW	DIAMETER (MM)	
		1-50	
	HOT ROLLED ANNEALED&PICKLED	12-130	
SS ANGLE BAR	HOT FORGING ANNEALED	100-250	
	HOT ROLLED ANNEALED&PICKLED	THICKNESS(MM)	WIDTH (MM)
		3-5	25*25
		3-8	30*30
		3-6	40*40
		4-7	50*50
		4-8	60*60
		5-9	70*70
		6-10	75*75
		6-12	80*80
		7-12	100*100
SS FLAT BAR	COLD DRAW	THICKNESS(MM)	WIDTH (MM)
		3	25,30,35,40,45,50
		4	25,30,35,40,45,50,55,60,65
		5-16	25,30,35,40,45,50,55,60,65,70,75,80,85,90,95,100
		18-20	25,30,35,40,45,50,55,60,65,70,75,80,85,90,95,100,105,110,115, 120,125,130
	HOT ROLLED ANNEALED&PICKLED	THICKNESS(MM)	WIDTH (MM)
		3	25,30,35,40,45,50
		4	25,30,35,40,45,50,55,60,65
		5-16	25,30,35,40,45,50,55,60,65,70,75,80,85,90,95,100
		18-20	25,30,35,40,45,50,55,60,65,70,75,80,85,90,95,100,105,110,115, 120,125,130
SS SQUARE BAR	COLD DRAW	DIAMETER (MM)	
		5x5,6x6,8x8,10x10,12x12,15x15,20x20,25x25,30x30,	
	HOT ROLLED ANNEALED&PICKLED	35x35,40x40,45x45,50x50	
		10x10,12x12,14x14,15x15,16x16,18x18,20x20,22x22,25x25,30x30,35x35,40x40,45x45,50x50	
HEXAGONAL BAR	COLD DRAW	BETWEEN 5-41,EVERY SIZE	
WIRE ROD	HOT ROLLED ANNEALED&PICKLED	BETWEEN 5.5-14,EVERY SIZE	
THIN WIRE	COLD DRAW	BETWEEN 1-12,EVERY SIZE	



ALUMINIUM



Alloy: 1x, 3x, 5x, 8x series
 Temper: O, F, H12, H14, H16,
 H18, H22, H24, H26, H32, H34,
 H36, H38, H112
 Thickness: 0.2mm~7mm
 Width: 30mm~1500mm



Alloy: 1x, 3x, 5x, 8x series
 Temper: O, F, H12, H14, H16, H
 18, H19, H32, H34, H36, H38,
 H111, H112, H321
 Thickness: 0.2~500 mm
 Width: 500~1500 mm
 Length: 2000~10000 mm



Alloy: 1050, 1100, 1235,
 3001, 3003, 8011
 Thickness: 0.006~0.2 mm
 Width: 200~1800 mm



ALUMINIUM AND ITS ALLOY STRIP IN COIL

Variety	Alloy	Temper	Size(mm)	
			Thickness	Width
Hot rolled coil	1x, 3x, 5x, 8x series	O, F, H112	2.5~7.0	900~1500
Stock for micron foil	1235	H14	0.25~0.50	900~1500
Coating sheet	1x, 3x, 5x series	H14, H16, H18, H22, H24, H26	0.18~0.75	1200~1500
Curtain coil	1100, 3003	H12, H22, H24, H26	1.5~3.0	1000~1500
	5005, 5052	H22, H24, H32, H34	1.5~3.0	1000~1500
Lithographic coil	1050	H18	0.23~0.28	650~1500
Can stock	3104	H19	0.28~0.31	1000~1550
Ceiling stock	1x, 3x series	H14, H24, H16, H26	0.4~1.0	200~1450
	5005, 5052	H24, H22	0.4~1.0	200~1450
Bottle lids stock	8011	H16, H18	0.20~0.30	500~1500
Coil for Al-composite pipe	1x, 3x, 8x series	O, H22	0.2~1.5	30~1500
Other coils	1x, 3x, 8x series and 5005, 5052	O, H1x, H2x	0.20~6.0	60~1500
	5x series	O, H1x, H2x, H3x	0.3~4.0	900~1500

ALUMINIUM AND ITS ALLOY PLATE AND SHEET

Variety	Alloy	Temper	Size(mm)		
			Thickness	Width	Length
Heat treatment non-reinforced plate & sheet	1x, 3x, 8x series	O, F, H12, H14, H16, H	0.2~1.0	500~1500	500~4000
		18, H19, H111, H112	1.1~2.0	1000~1500	2000~10000
			2.1~7.0	1000~1500	2000~10000
	5x series	O, F, H12, H14, H16, H18	0.2~1.0	1000~1500	2000~10000
		, H19, H32, H34, H36, H	1.1~2.0	1000~1500	2000~10000
		38, H111, H112, H321	2.1~7.0	1000~1500	2000~10000
			4.0~150	1000~1500	2000~10000
Tread plate	1x, 3x, 5x series	O, F, H22, H24, H26	Bottom thickness 1.0~4.0	1000~1500	2000~10000
Stucco	1x, 3x, 5x series	O, F, H12, H14, H16, H18, H22, H24, H26, H32	0.2~1.0	500~1500	Coil

ALUMINIUM FOIL

Variety	Alloy	Temper	Size(mm)			
			Thickness	Width	I.D	Max O.D
Appliance foil	8011	O	0.01~0.02	200~700	76.2, 152.4	450
Cable foil	1050	O	0.1~0.2	200~600	76.2	800
Pharmacy foil	1235, 8011	H18, H19	0.018~0.022	400~600	76.2	600
Air-conditioner foil	1100, 8011,	H22, H24,	0.07~0.20	400~1310	150, 200, 505	1450
	3102	H26, H19				
Cigarette foil	1235	O	0.006~0.007	460~1320	76.2	400
Further fabricating foil	8011	O, H22, H24,	0.012~0.06	300~1300	76.2	1300
		H26, H18				
Electronic foil	3003, 3001	H19	0.02~0.05	500~1000	76.2	1450
Lithographic sheet	1050	H18	0.14~0.15	600~1470	150, 200	1200
Decoration foil	1100, 3003	H18	0.026~0.15	1240~1400	150, 200	1200

GALVANIZED STEEL



Remarks:

1. Tolerance for thickness, width, flatness ect, can conform to the individual product specification.
2. Coil inside diameters can be either 508mm or 610mm, maximum coil outside diameter is 2000mm.
3. Weight of a single coil can be from 3 to 15 metric tons.
4. Please make enquires to our Sales& Marketing Division for products with special specifications.



HOT-DIP GALVANIZED STEEL SHEET COIL

Product Name	Hot-dip Galvanized Steel Sheet Coils	
Specifications	JIS G3302 1998	SGCC
		SGC340,SGC400,SGC490,SGC570,SGCH
		SGCD1,SGCD2,SGCD3
	ASTM A653M 2003	SGHC,SGH340,SGH400,SGH440,SGH490
		CS Type A,CS Type B,CS Type C
		FS Type A, FS Type B
		SS GR230, SS GR255,SS GR275,
		SS GR340,SS GR550
		DDS,EDDS
	AS 1397 2001	G1,G2,G3
		G250,G300,G350,G450,G550
	EN10327 2004	DX51D,DX52D,DX53D
	EN10326 2004	S220GD,S250GD,S280GD,
		S320GD,S350GD,S550GD
Steel Thickness (mm)		0.2-2.0
Width (mm)		600-1500
Coating Mass	JIS G3302 1998	Z08,Z12,Z18,Z20,Z22,Z25,Z27,(Z35,Z45)
	ASTM A653M	Z80,Z120,Z180,Z200,Z220,Z250,Z275,(Z350,Z450)
	AS 1397 2001	Z100,Z200,Z275,(Z350,Z450)
	EN10326/7	Z100,Z140,Z200,Z225,Z275,(Z350,Z450)
Spangle		Regular Spangle, Minimized Spangle, Extra-Smooth
Chemical Surface Treatment		Chromating Treatment, Oiled or Anti-finger print

GALVALUME (55% Al-Zn) COATED STEEL COIL

Product Name	GALVALUME(55% Al-Zn) coated steel coil	
Specifications	JIS G3321 1998	SGLCC,SGL400,SGL440,SGL570
		SGLCD
	ASTM A792M 2003	CS Type A,B,C, FS
		DS
		SS Grade 230,255,275,340,550
	EN10327 2004	DX51D,DX52D,DX53D
	EN10326 2004	S220GD,S250GD,S280GD,S320GD,
		S350GD,S550GD
Steel Thickness (mm)		0.2-2.0
Width (mm)		600-1500
Coating Mass	JIS G3321 1998	AZ90,AZ120,AZ150
	ASTM A792M	AZM70,AZM90,AZM100,AZM150
	EN10326/7	AZ100,AZ150
Spangle		Regular Spangle
Chemical Surface Treatment		Chromated Treatment, Oiled or Anti-finger print

Remarks:

1. Tolerance for thickness, width, flatness ect, can conform to the individual product specification.
2. Coil inside diameters can be either 508mm or 610mm, maximum coil outside diameter is 2000mm.
3. Weight of a single coil can be from 3 to 15 metric tons.
4. Please make enquires to our Sales& Marketing Division for products with special specifications.



PRE-PAINTED STEEL COIL

Specifications of Pre-painted Products			
Product Type	Product Spec.	Substrate Spec.	Coating Designation
Pre-painted	JIS G3312 1994	JIS G3302 1998	JIS G3302 1998
hot-dip galvanized	CGCC,CGCH ,CGCD1,CGC340,	SGCC,SGCH,SGCD1,SGC340,	Z10,Z12,Z18,Z20
steel coil	CGC400,CGC440,CGC570	SGC400,SGC440,SGC570	Z22,Z25,Z27,Z35
ASTM A755M 2001		ASTM A653M 2003	ASTM A653M 2003
		CS Type A,B,C FS Type A,B	Z100,Z120,Z180,
		SS Grade 230,255,275,340,550	Z275,Z350
EN10169 1997		EN10327 2004	EN10326/7 2004
		DX51D,DX52D,DX53D	Z100,Z140,Z200,
		EN10326 2004	Z225,Z275
		S220GD,S250GD,S280GD	
		S320GD,S350GD,S550GD	
Pre-painted	JIS G3322 1998	JIS G3321 1998	JIS G3321 1998
55% Al-Zn coated	CGLCC,CGLCD,CGLC400,	SGLCC,SGLCD,SGL400,	AZ90,AZ120
steel coil	CGLC440,CGLC570	SGL440,SGL570	AZ150,AZ170
ASTM A755M 2001		ASTM A792M 2003	ASTM A792M 2003
		CS Type A,B,C FS Type A,B	AZM70,AZM90,AZM100,
		SS Grade 230,255,275,340,550	AZM150,AZM165,AZM180
EN10169 1997		EN10327 2004	EN10326/7 2004
		DX51D,DX52D,DX53D	AZ100,AZ150,AZ185
		EN10326 2004	
		S220GD,S250GD,S280GD	
		S320GD,S350GD,S550GD	
Steel Thickness (mm)		0.2-2.0	
Width (mm)		600-1250	
Coating Thickness		Primer: PU or Epoxy 5~7um Top coat:15-20um	

1. Protective film can be applied.
2. Please provide sample panels for color requirement.

CHARACTERISTICS AND COMPARISON OF DIFFERENT SURFACE ASPECTS AND COATING TYPE



Hot-dip Galvanized(Zinc Coated)		55% Al-Zn Coated	
	Regular Spangle	Mininized(Zero) Spangle	
Production Method	Spangle produced by crystallization solidification.	Blow zinc powder or atomized fog onto the molten zinc layer acts as nucleation sites or control the compositeion of pot for the minimized spangle.	The coating alloy comprises about 55% Al,1.5% Si and balanced zinc.
Characteristics	Good adhesion and weathering resistance.	Uniform surface and attractive finish after painting.	Uniform and pleasing appearance, good adhesion included.
Applications	Guardrails,gutters and down spouts, shutter door.	Pre-paint and post paint applications, gutters and down spouts,ceiling suspension bars, shutter door rails.	Gutters,auto parts,electrical appliances,vending machines, refrigerators,ovens, for pre-paint, showcases.



