

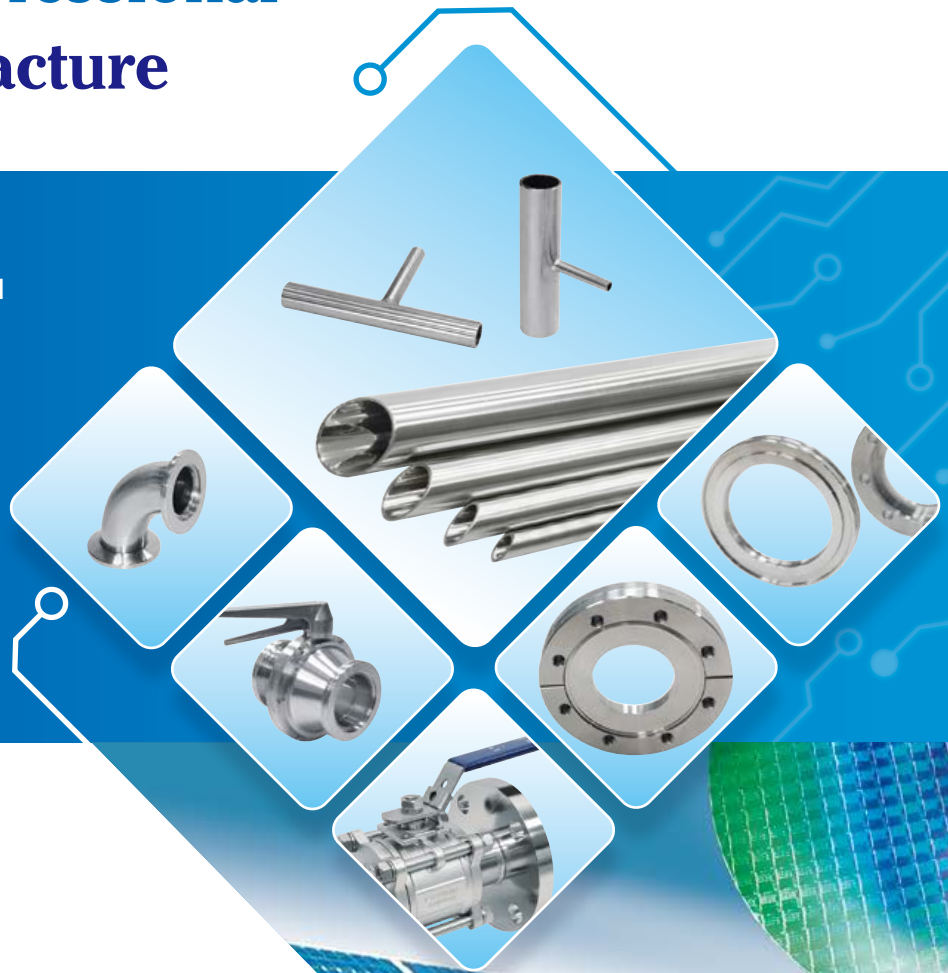


The logo that you can trust

The Best Professional Semi Manufacture

**CSE Group offer you
the best solution.**

- Valve
- Tube & Pipe
- Fitting
- Flange
- Components



<http://www.csee.com.tw>

General Information

CSE Group has been dealing with purity hygienic stainless steel pipes, fittings and valves which use on food, dairy, pharmaceutical for more than 30 years.

Based on specialization and systematic process:

- ▶ R&D-3D/ CAD/ CAM...
- ▶ Basic materials- hot forging, lost wax casting, pipe making, cold drawn pipe
- ▶ Complete processing capabilities- CNC M/C, CNC lathe, forming, bending, welding, surface treatment, electrolytic polishing.
- ▶ Professional/ pure assembly, packaging, Q.C class 10000 clean room packaging.

So far, CSE Group has 3 factories that located in Taiwan, Thailand and China, and there are more than 700 employees in CSE Group able to provide all professional, technical and pure all-round services to meet all your requirements for Semi-Conductor, Pharmaceutical all of Vacuum, Gas, and also for requests to pure pipe line & tube, accessories and valves, as well as OEM, ODM services.

CSE 集團一直致力於生產潔淨無菌用於食品、乳製品、製藥及真空半導體的高純度衛生不銹鋼管、管件和閥門迄今已逾30年。

我們有專業化和系統化流程：

- ▶ R&D-3D/CAD/CAM...
- ▶ 基礎材料-熱鍛、脫蠟鑄造、制管、冷拔管
- ▶ 完整的加工能力-CNC M/C、CNC 車床、成型、彎曲、焊接、表面處理、電解拋光。
- ▶ 專業/純組裝、包裝，Q.C 10000級無塵室包裝。

目前，CSE集團在台灣、泰國和中國的中心擁有3家工廠，CSE集團700多名員工將能夠提供所有專業、技術等十足的全方位服務，可滿足你所有用於半導體、製藥行業的真空，以及氣體所需要的潔淨管道、配件和閥門，以及 OEM、ODM 服務。



TAIWAN



THAILAND



CHINA

CSE has developed our semiconductors, vacuum pipe fittings and components based on its expertise in pharmacy, sanitary fittings, valves and more than 30 years of experience.

Our Vacuum and semiconductor range include.

☐ **Clamp and claw clamp**

Aluminum & stainless steel

☐ **Available Flange, Center Ring**

— KF, ISO specification.

☐ **Pipe & Pipe Elbow, TEE, Reducer**

— All of AP, BA, MP, EP Pipe(Tube) and Elbow, Tee, Reducer. Weld and Flange End ...

Surface – Blasted, Vibrate, Mechanical / Electric polish –

$Ra \leq 0.8\mu m$, M/P, and $Ra \leq 0.25\mu m$ - E/P

CSE憑藉在製藥、衛生管件、閥門方面的專業技術和30多年的經驗，開發了我們的半導體、真空管件和組件。

我們的真空和半導體系列 包括：

☐ **夾鉗和卡夾**

鋁和不銹鋼

☐ **各種法蘭，中心環**

— KF, ISO CF規範。

☐ **管子和彎頭、三通、大小頭**

— 所有 AP、BA、MP、EP 管（管）和彎頭、三通、異徑管。焊接和法蘭端..

表面處理 – 噴砂、振動、機械拋光、電動拋光

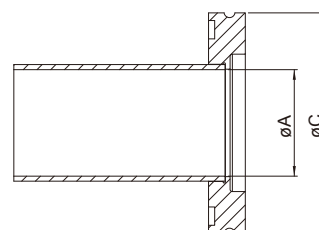
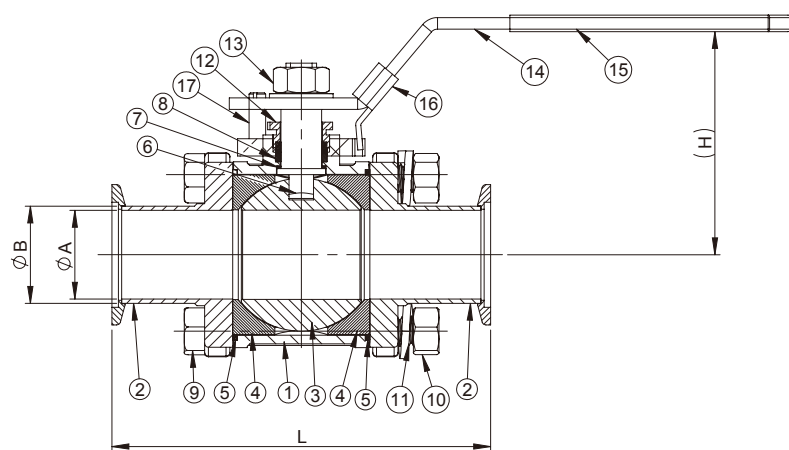
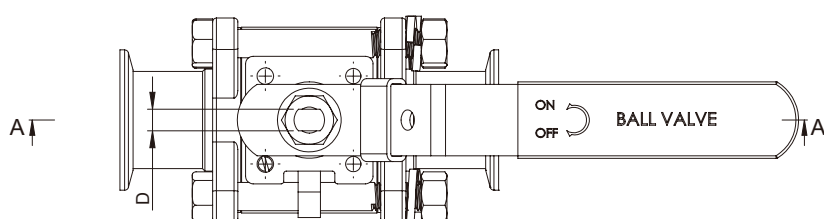
$Ra \leq 0.8\mu m$, M/P 和 $Ra \leq 0.25\mu m$ -E/P。

目前，憑藉靈活的生產能力和嚴格的質量控制，CSE真空、半導體產品已成功推廣到德國、美國、韓國、英國、日本和台灣的市場。

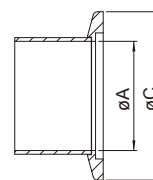


Vacuum Ball Valve Series





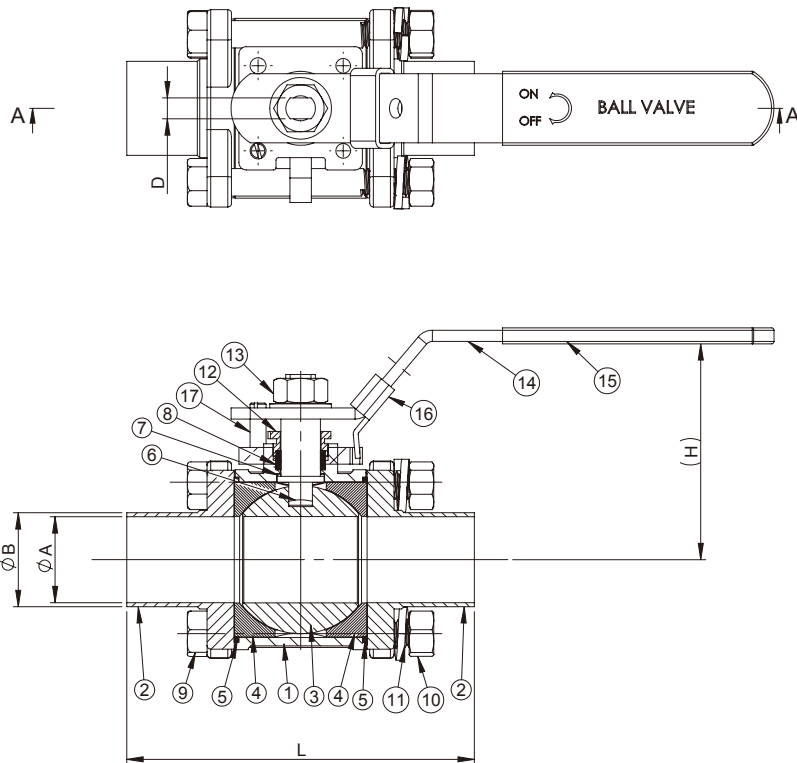
ISO-63 ~ ISO100 Flange



KF10 ~ KF50 Flange

PARTS LIST			
Item	Parts name	QTY	Material
1	Body	1	ASTM-A351-CF8M
2	Cap	2	ASTM-A351-CF8M
3	Ball	1	A351-CF8M
4	Seat	2	PTFE
5	Gasket	2	PTFE
6	Stem	1	AISI 316
7	Thrust washer	1	PTFE
8	Stem packing	1	PTFE
9	Bolt	4	AISI 304
10	HEX. Nut	4	AISI 304
11	Spring washer	5	AISI 304
12	Gland	1	AISI 304
13	Nut	1	AISI 304
14	Handle	1	AISI 304
15	Plastic cover	1	Plastic
16	Lock device	1	AISI 304
17	Stop pin	1	AISI 304

SIZE	ØA	ØB	ØC	H	L
KF-10	9.4	12.7	30.0	58.3	89.0
KF-16	15.8	19.1	30.0	62.9	101.0
KF-25	22.1	25.4	40.0	68.0	114.0
KF-40	34.8	38.1	55.0	87.0	140.0
KF-50	47.5	50.8	75.0	95.0	156.0
ISO-63	60.2	63.5	95.0	127.0	197.0
ISO-80	72.9	76.2	110.0	136.0	229.0
ISO-100	97.4	101.6	130.0	159.0	243.0



PARTS LIST			
Item	Parts name	QTY	Material
1	Body	1	ASTM-A351-CF8M
2	Cap	2	ASTM-A351-CF8M
3	Ball	1	A351-CF8M
4	Seat	2	PTFE
5	Gasket	2	PTFE
6	Stem	1	AISI 316
7	Thrust washer	1	PTFE
8	Stem packing	1	PTFE
9	Bolt	4	AISI 304
10	HEX. Nut	4	AISI 304
11	Spring washer	5	AISI 304
12	Gland	1	AISI 304
13	Nut	1	AISI 304
14	Handle	1	AISI 304
15	Plastic cover	1	Plastic
16	Lock device	1	AISI 304
17	Stop pin	1	AISI 304

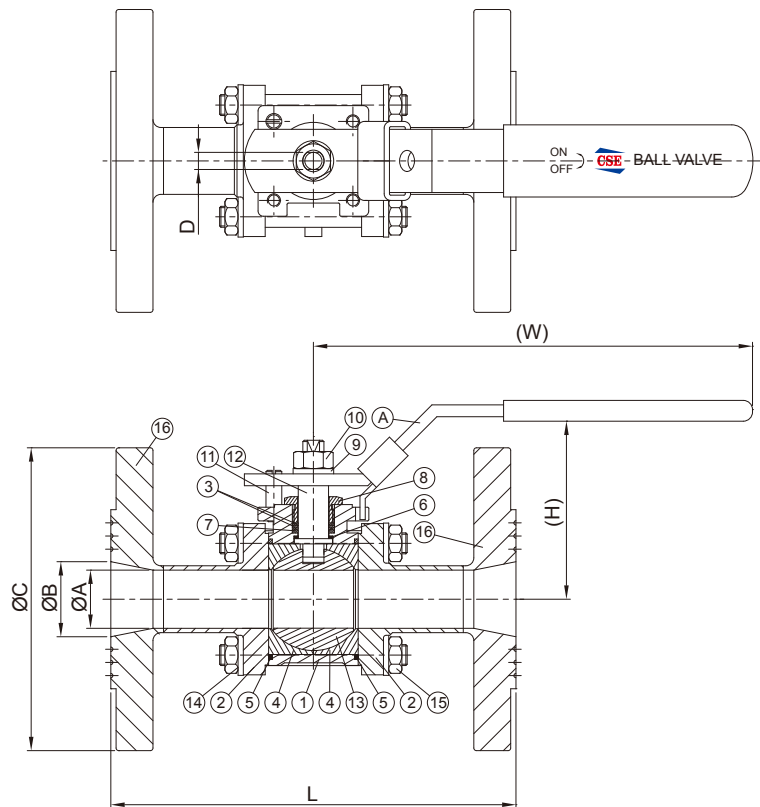
SIZE	ØA (Sch.10)	ØA (Sch.40)	ØB	H	L	TUBE	ØA	ØB	ØC	H	L
15A	17.1	15.8	21.3	58.3	89.0	1/2"	9.4	12.7	25.2	58.3	89.0
20A	22.5	20.9	26.7	62.9	101.0	3/4"	15.8	19.1	25.2	62.9	101.0
25A	27.9	26.6	33.4	66.8	113.8	1"	22.1	25.4	50.5	68.0	114.0
40A	42.7	40.9	48.3	86.8	140.0	1.5"	34.8	38.1	50.5	87.0	140.0
50A	54.8	52.5	60.3	94.5	157.3	2"	47.5	50.8	64.0	95.0	156.0
65A	66.9	62.7	73.0	126.8	197.0	2.5"	60.2	63.5	77.5	127.0	197.0
80A	82.8	77.9	88.9	135.0	229.0	3"	72.9	76.2	91.0	136.0	229.0
100A	108.2	102.3	114.3	155.5	243.4	4"	97.4	101.6	119.0	159.0	243.0

DIN	ØA	ØB	ØC	ISO	ØA	ØB	ØC	D	(H)	L	L1	(W)
DN10	10	13	34	DN8	10.3	13.5	34	5	58.3	89	135	130
DN15	16	19	34	DN10	14	17.2	34	5	62.9	101	135	130
DN20	20	23	34	DN15	18.1	21.3	34	6.5	66.8	113.8	164.8	166.7
DN25	26	29	50.5	DN20	23.7	26.9	50.5	6.5	66.8	113.8	164.8	166.7
DN32	32	35	50.5	DN25	30.5	33.7	50.5	8.5	86.8	140	165	192.5
DN40	38	41	50.5	DN32	39.2	42.4	50.5	8.5	86.8	140	165	192.5
DN50	50	53	64	DN40	45.1	48.3	64	8.5	94.5	157.3	190	192.5
DN65	66	70	91	DN50	57.1	60.3	77.5	12	126.75	197	205	254
DN80	81	85	106	DN65	72.9	76.2	91	12	135	229	264.5	254
				DN80	85.7	88.9	106					
DN100	100	104	119	DN100	111.1	114.3	130	16	155.5	243.4	305.9	335

Chemical Valve



The Ball Valve is 100% pressure tested, cleaned, and assembled in a class 10,000 cleanroom.

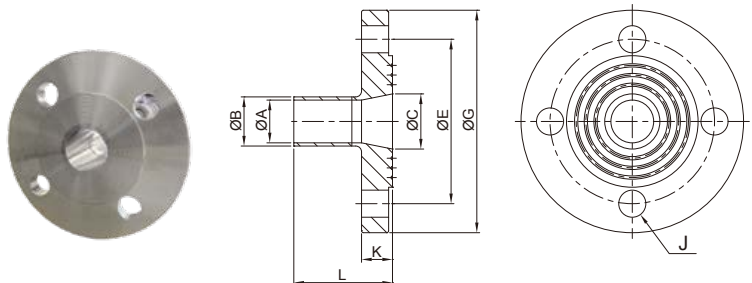


PARTS LIST

Item	Parts name	Q'TY	Material
A	Handle	1	AISI 304
1	Body	1	CF3M AISI 316L
2	Cap	2	CF3M AISI 316L
3	Spring washers	2	AISI 304
4	Seat sealing ring	2	PTFE, FDA complinat
5	Flange sealing ring	2	PTFE, FDA complinat
6	Conical spindle seal	1	PTFE, FDA complinat
7	V-Ring spindle packing	1	PTFE, FDA complinat
8	Gland	1	AISI 304
9	Washer	1	AISI 304
10	Upper spindle nut	1	AISI 304
11	stop pin	1	AISI 304
12	Spindel (Stem)	1	AISI 316L
13	Ball	1	CF3M AISI 316L
14	Bolt	4	AISI 304
15	Nut	8	AISI 304
16	Flange	2	AISI 316L
-	Antistatic device	2	AISI 316

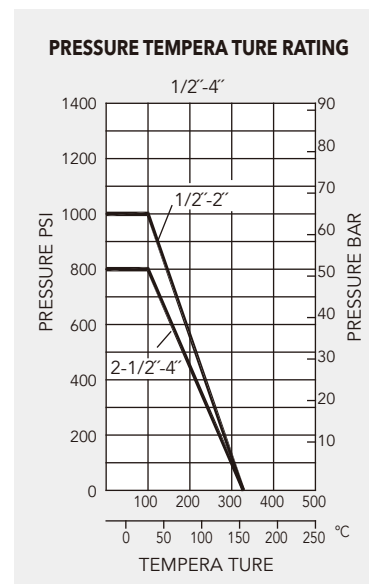
Various

other connection can be provided:
JIS 10K, KF, PN16, ANSI, other flanged type, etc...



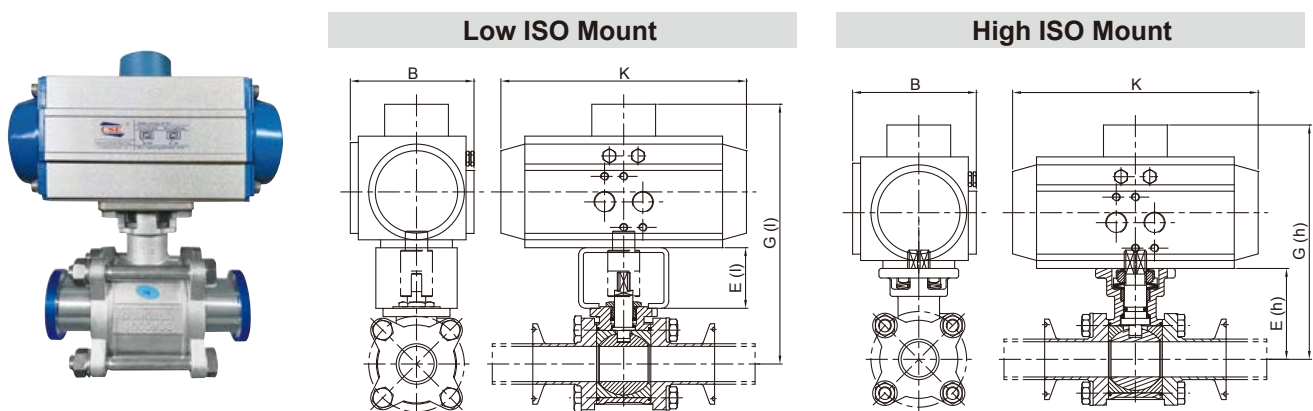
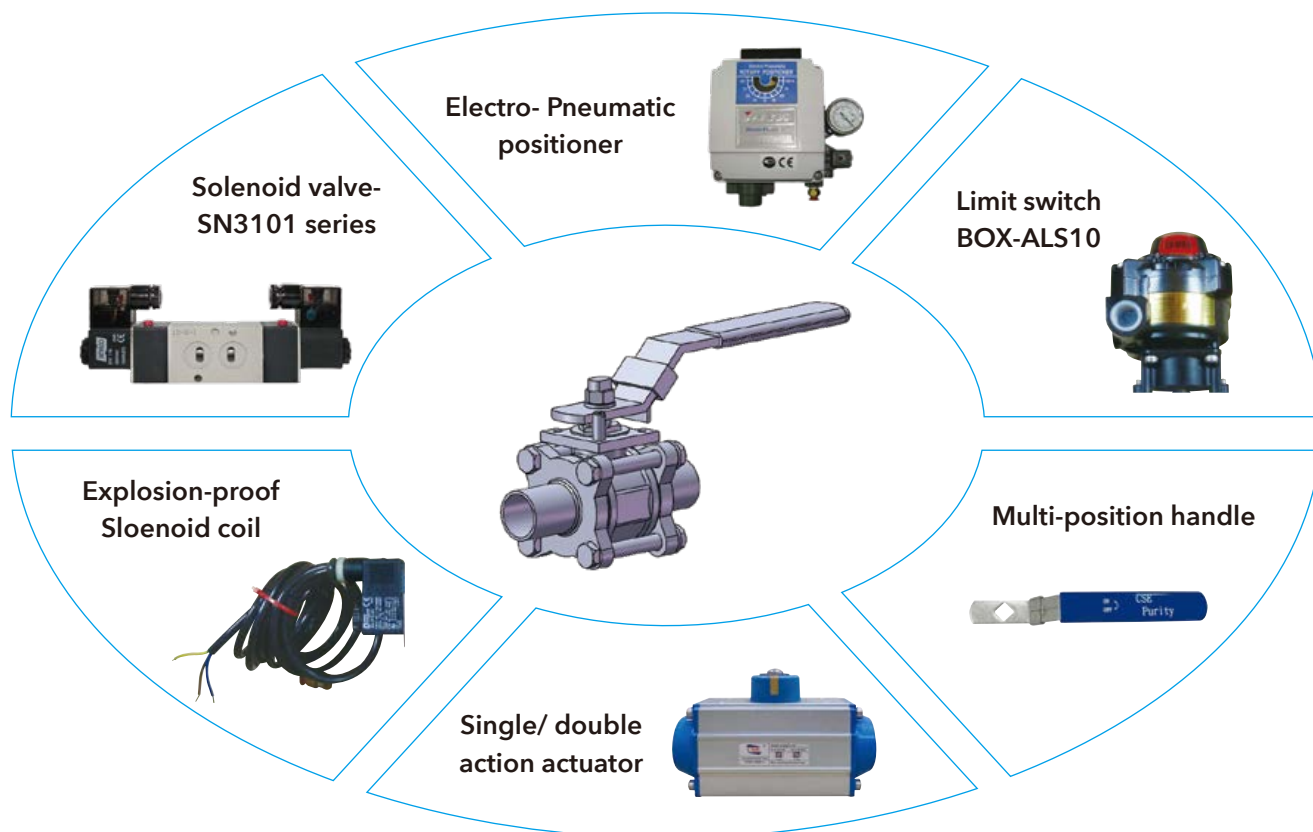
Ball valve Description

- 1 The sanitary ball valves working pressure are all under 10 Bars. 800 or 1000 WOG identified outside of casting bodies are the pressure of bodies tested only.
- 2 The working pressure and temperature of the ball valve are directly related to the temperature and refer to next table
*If you need high-pressure equipment, please replace the ball seat with high-pressure material
- 3 Pay attention to the correct position of opening or closing to ensure normal flow rate.
- 4 Try to use lock design valves and padlocks to ensure a safe position.
- 5 When using a cylinder, the actuator must be tightened with an ISO5211 mounting plate.
- 6 When cleaning the inner valve; be careful not to lose all washers and screws.
*Notice: avoid foreign material inside the tube because this causes the ball seat to wear and cause leakage.
- 7 It cannot be used when the screw is loose or the bolt is insufficient.
*If there is dust or flammable gas in the operating environment, use anti-static devices to avoid danger.



Torque Figure for Bolt Tighten

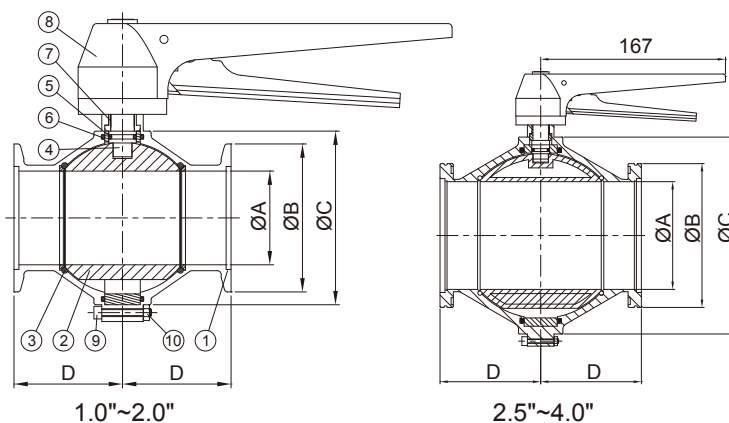
Size	Bolt		Pressure Test		Handle
	Body Bolt	Adapter Bolt	Air Pressure	Water Pressure	+10%↓
1/2"~3/4"	10	10	6KG	22KG	12
1"	10	10			18
1.5"	20	13			25
2"	30	18			40
3"	40	21			50
4"	50	21			70



V type Size	B	K	Torque in.lbs	Low / High mount ISO-5211	E(l)	G(l)	E(h)	G(h)	Double Act. type	Single Act. type
1/2" DN15	70.5	154	90	F03/F04	38	157.8	38.2	128.2	VT050D	VT050 S11
3/4" DN20	70.5	154	100	F03/F04	38	162.1	47.5	137.5	VT050D	VT050 S11
1" DN25	70.5	154	140	F04/F05	38	192.9	57	177	VT050D	VT075 S08
1.5" DN40	89.5	189	240	F05/F07	51.5	230.05	78.55	211.55	VT065D	VT085 S10
2" DN50	102.5	210	480	F05/F07	51.5	261.48	86.5	242.5	VT075D	VT110 S10
2.5" DN65	112.5	229	650	F07/F10	51.5	317.75	109.2	300.2	VT085D	VT125 S08
3" DN80	138.5	226	1150	F07/F10	51.5	343	116.2	324.2	VT110D	VT140 S10
4" DN100	138.5	226	1400	F10/F12	61	372.7	133.5	341.5	VT110D	VT140 S10

(h)=High (l)=Low

BFV Type Purity Ball Valve



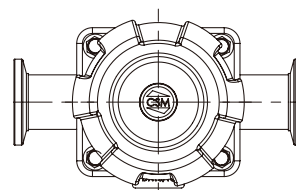
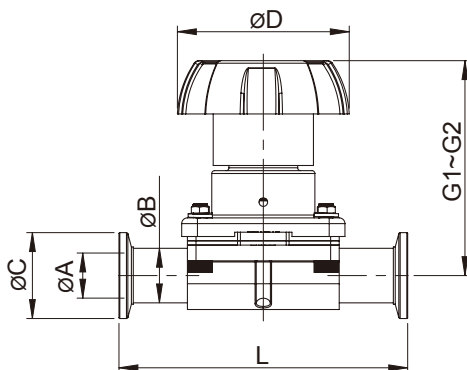
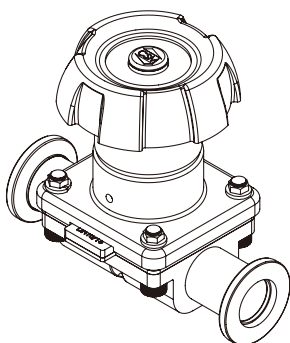
Application:

High purity industries, Semiconductors and pharmaceutical fields

SIZE	øA	øB	øC	D
KF25	22.1	40.01	100	45
KF40	34.8	54.86	105	55
KF50	47.5	74.93	105	55
ISO63	60.2	95	145	65
ISO80	72.9	110.01	159	79
ISO100	97.4	130	198	91

PARTS LIST			
Item	Parts name	QTY	Material
1	Body	2	ASTM-A351-CF8M
2	Ball	1	A351-CF8M
3	O-Ring	2	NBR
4	Stem	1	AISI 316
5	O-Ring	1	NBR
6	O-Ring	1	NBR
7	Sleeve	1	PEEK
8	Handle	1	AISI 304/plastic
9	Bolt	4	AISI 304
10	Nut	4	AISI 304

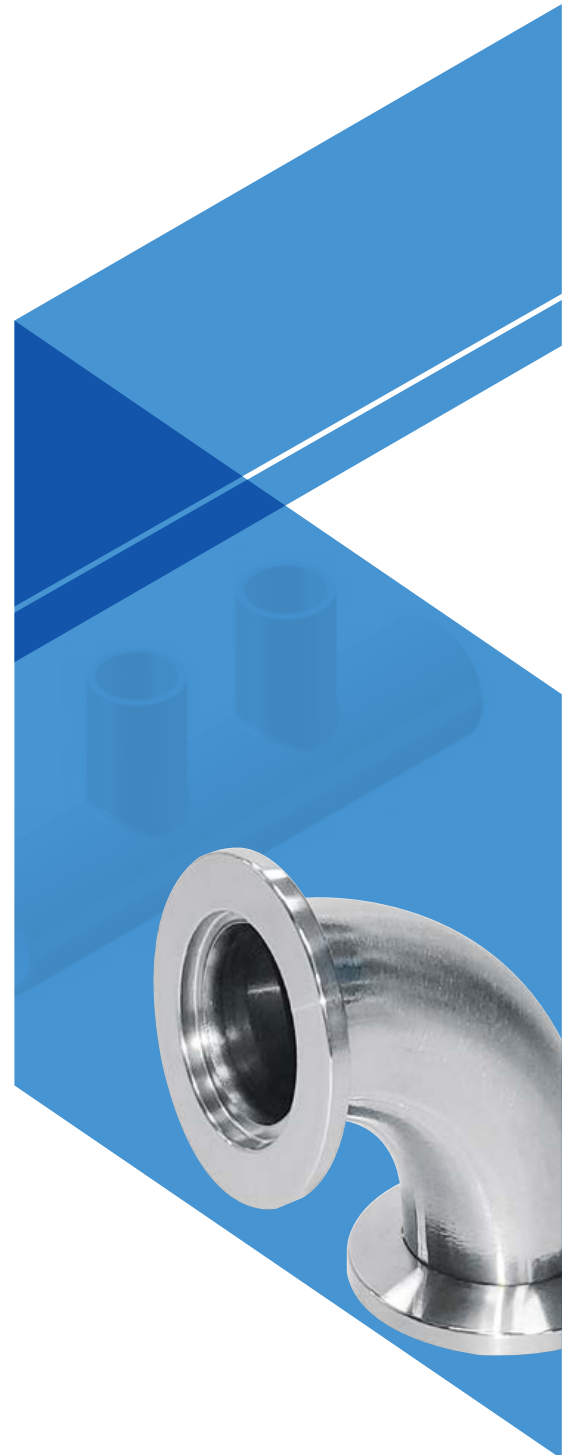
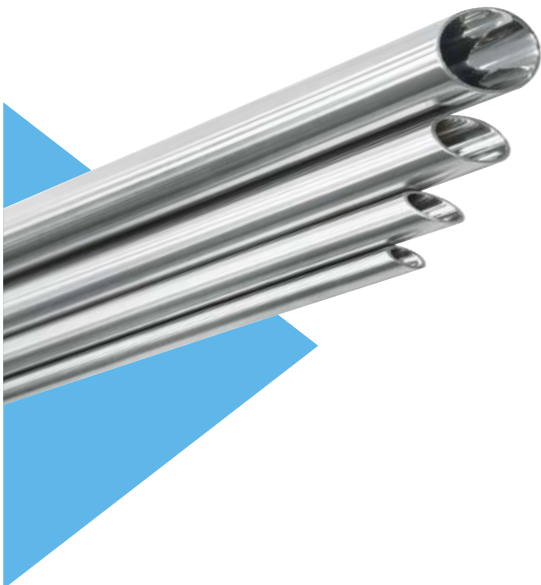
Diaphragm Valve for KF Flange



SIZE	øA	øB	øC	øD	(G1~G2)	L
KF10	9.4	12.7	30	60	(74~83)	88.9
KF16	15.75	19.05	30	60	(74~83)	101.6
KF25	22.1	25.4	40	95	(100~113)	114.3
KF40	34.8	38.1	55	95	(119~134)	139.7
KF50	47.5	50.8	75	118	(135~153)	158.8

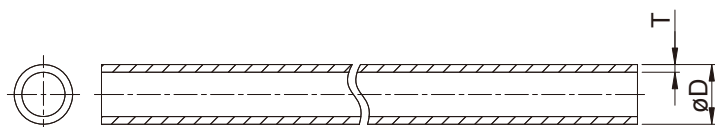
TUBE & FITTINGS

- Stainless Steel Pipes
- Seamless And Welded Austenitic Stainless Steel Pipes
- Inch Size Stainless Steel Pipes
- Elbow And Reducer Fitting
- Tee Fittings
- Multi-tees Fittings
- Vacuum Components



304/304L/316/316L

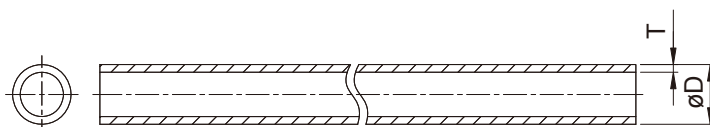
Seamless and Welded Austenitic Stainless Steel Pipes



Size	(øD) Outside diameter	SCH.5S	SCH.10S
		Wall thickness (T)	
1/8"	3.18	0.7	
1/4"	6.35	0.89/1.0	
3/8"	9.53	0.89/1.0	
1/2"	12.7	1.0/1.24	1.24
5/8"	15.88	1.0/1.24	1.65
3/4"	19.05	1.24/1.65	1.65
1.0"	25.4	1.24/1.65	2.8
1.5"	38.1	1.65	2.8
2.0"	50.8	1.65	2.8
2.5"	63.5	1.65	2.8
3.0"	76.2	1.65/2.11	3.0
4.0"	101.6	2.11	3.0
5.0"	127	2.77/3.05	
6.0"	152.4	2.77/3.05	

304/304L/316/316L

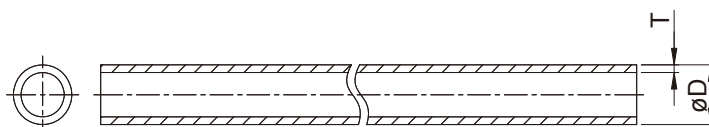
Seamless and Welded Austenitic Stainless Steel Pipes



Size	(ØD) Outside diameter	SCH.5S	SCH.10S	SCH.40S	SCH.80S
		Wall thickness (T)			
1/8"	10.29		1.24	1.73	2.41
1/4"	13.72		1.65	2.24	3.02
3/8"	17.15		1.65	2.31	3.2
1/2"	21.34	1.65	2.11	2.77	3.73
3/4"	26.67	1.65	2.11	2.87	3.91
1.0"	33.4	1.65	2.77	3.38	4.55
1.5"	48.26	1.65	2.77	3.68	5.08
2.0"	60.33	1.65	2.77	3.91	5.54
2.5"	73.03	2.11	3.05	5.16	7.01
3.0"	88.9	2.11	3.05	5.49	7.62
3.5"	101.6	2.11	3.05	5.74	8.08
4.0"	114.3	2.11	3.05	6.02	8.56
5.0"	141.3	2.77	3.4	6.55	9.52
6.0"	168.28	2.77	3.4	7.11	10.97
8.0"	219.08	2.77	3.76	8.18	12.7
10"	273.05	3.4	4.19	9.27	12.7
12"	323.85	3.96	4.57	9.52	12.7

304/304L/316/316L

Seamless and Welded Austenitic Stainless Steel Pipes



Size		(ØD) Outside diameter	SCH.5S	SCH.10S	SCH.20S	SCH.40	SCH.80	SCH.120	SCH.160
			Wall thickness (T)						
6A	1/8"	10.5	1	1.2	1.5	1.7	2.4		
8A	1/4"	13.8	1.2	1.65	2	2.2	3		
10A	3/8"	17.3	1.2	1.65	2	2.3	3.2		
15A	1/2"	21.7	1.65	2.1	2.5	2.8	3.7		4.7
20A	3/4"	27.2	1.65	2.1	2.5	2.9	3.9		5.5
25A	1.0"	34	1.65	2.8	3	3.4	4.5		6.4
32A	1 1/4"	42.7	1.65	2.8	3	3.6	4.9		6.4
40A	1.5"	48.6	1.65	2.8	3	3.7	5.1		7.1
50A	2.0"	60.5	1.65	2.8	3.5	3.9	5.5		8.7
65A	2.5"	76.3	2.1	3	3.5	5.2	7		9.5
80A	3.0"	89.1	2.1	3	4	5.5	7.6		11.1
90A	3.5"	101.6	2.1	3	4	5.7	8.1		12.7
100A	4.0"	114.3	2.1	3	4	6	8.6	11.1	13.5
125A	5.0"	139.8	2.8	3.4	5	6.6	9.5	12.7	15.9
150A	6.0"	165.2	2.8	3.4	5	7.1	11	14.3	18.2
200A	8.0"	216.3	2.8	4	6.5	8.2	12.7	18.2	23
250A	10"	267.4	3.4	4	6.5	9.3	15.1	21.4	28.6
300A	12"	318.5	4	4.5	6.5	10.3	17.4	25.4	33.3

45° 、 90° Elbows (U.S.A Type)

304/304L/316/316L



Size	(øD) Outside diameter	R	L	L1	T	
					5S	10S
1/4"	6.35	20	38	49	0.89/1.0	
3/8"	9.53	23	39	52	0.89/1.0	
1/2"	12.7	25	40	54	1.0/1.24	1.24
5/8"	15.88	28	48	64	1.0/1.24	1.65
3/4"	19.05	30	49	66	1.24/1.65	1.65
1.0"	25.4	33	50	69	1.24/1.65	2.8
1.5"	38.1	57.2	70	104	1.65	2.8
2.0"	50.8	76.2	78	123	1.65	2.8
2.5"	63.5	95.3	91	147	1.65	2.8
3.0"	76.2	95.3	91	147	1.65/2.11	3.0
4.0"	101.6	133.4	107	185	2.11	3.0
5.0"	127	190.5	140	250	2.77/3.05	
6.0"	152.4	228.6	155	290	2.77/3.05	

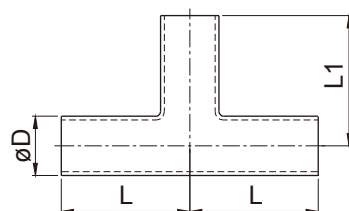
304/304L/316/316L



Size	(øD) Outside diameter	R	L	L1	T	
					5S	10S
8A	13.8	25.4	40	55	1.2	1.65
10A	17.3	25.4	47	62	1.2	1.65
15A	21.7	38.1	52	75	1.65	2.1
20A	27.2	38.1	52	75	1.65	2.1
25A	34	38.1	52	75	1.65	2.8
32A	42.7	47.6	66	94	1.65	2.8
40A	48.6	52.7	70	104	1.65	2.8
50A	60.5	76.2	78	123	1.65	2.8
65A	76.3	95.3	91	147	2.1	3
80A	89.1	114.3	99	166	2.1	3
100A	114.3	152.4	115	204	2.1	3
125A	139.8	190.5	145	250	2.8	3.4
150A	165.2	228.6	155	290	2.8	3.4
200A	216.3	304.8	195	375	2.8	4

304/304L/316/316L

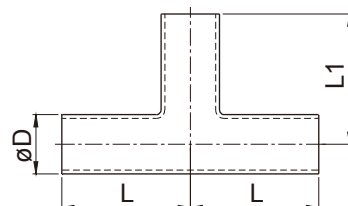
Equal Tee (U.S.A Type)



WELD EQUAL TEES

øD	L	L1
1/4"	35	35
3/8"	37	37
1/2"	39	39
5/8"	49	49
3/4"	52	52
1.0"	55	55
1.5"	74	74
2.0"	77	77
2.5"	90	90
3.0"	97	97
4.0"	110	110
5.0"	140	140
6.0"	160	160

304/304L/316/316L

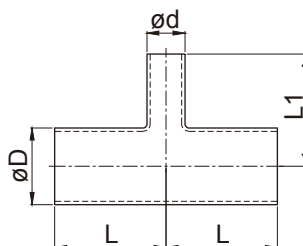


JIS G3459

øD	Long		Short	
	L	L1	L	L1
8A	42	42		
10A	49	49		
15A	59	59	52	52
20A	65	65	55	55
25A	68	68	59	59
32A	88	88	74	74
40A	95	95	77	77
50A	102	102	83	83
65A	121	121	97	97
80A	130	130	103	103
100A	145	145	116	116
125A	160	160		
150A	170	170		
200A	190	190		

304/304L/316/316L

(inch*inch)

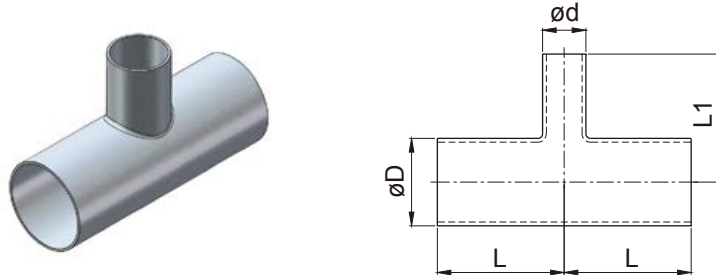


$\phi D \times \phi d$	L	L1	$\phi D \times \phi d$	L	L1	$\phi D \times \phi d$	L	L1
3/8"×1/4"	37	37	1.5"×3/4"	68	62	3.0"×3/8"	61	71
1/2"×1/4"	39	39	1.5"×1.0"	68	62	3.0"×1/2"	61	71
1/2"×3/8"	39	39	2.0"×1/4"	57	57	3.0"×5/8"	72	79
5/8"×1/4"	47	44	2.0"×3/8"	57	57	3.0"×3/4"	72	79
5/8"×3/8"	47	44	2.0"×1/2"	57	57	3.0"×1.0"	72	79
5/8"×1/2"	47	44	2.0"×5/8"	68	65	3.0"×1.5"	90	90
3/4"×1/4"	47	44	2.0"×3/4"	68	65	3.0"×2.0"	90	90
3/4"×3/8"	47	44	2.0"×1.0"	68	65	3.0"×2.5"	97	97
3/4"×1/2"	47	44	2.0"×1.5"	77	77	4.0"×1/4"	61	87
3/4"×5/8"	52	52	2.5"×1/4"	61	63	4.0"×3/8"	61	87
1.0"×1/4"	47	47	2.5"×3/8"	61	63	4.0"×1/2"	61	87
1.0"×3/8"	47	47	2.5"×1/2"	61	63	4.0"×5/8"	72	95
1.0"×1/2"	47	47	2.5"×5/8"	72	71	4.0"×3/4"	72	95
1.0"×5/8"	55	55	2.5"×3/4"	72	71	4.0"×1.0"	72	95
1.0"×3/4"	55	55	2.5"×1.0"	72	71	4.0"×1.5"	90	105
1.5"×1/4"	57	54	2.5"×1.5"	90	83	4.0"×2.0"	90	105
1.5"×3/8"	57	54	2.5"×2.0"	90	83	4.0"×2.5"	110	110
1.5"×1/2"	57	54	3.0"×1/4"	61	71	4.0"×3.0"	110	110
1.5"×5/8"	68	62						

other diemension Can be requirement

304/304L/316/316L

(inch*JIS G3459)

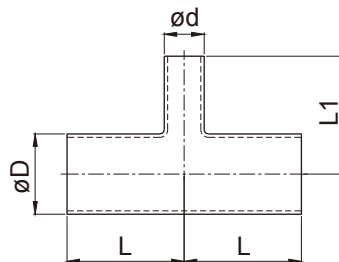


øD*ød	L	L1	øD*ød	L	L1	øD*ød	L	L1
5/8"*8A	47	44	2.0"*15A	68	65	3.0"*20A	72	79
3/4"*8A	47	44	2.0"*20A	68	65	3.0"*25A	72	79
3/4"*10A	52	52	2.0"*25A	68	65	3.0"*32A	90	90
1.0"*8A	47	47	2.0"*32A	77	77	3.0"*40A	90	90
1.0"*10A	55	55	2.0"*40A	77	77	3.0"*50A	90	90
1.0"*15A	55	55	2.5"*8A	61	63	3.0"*65A	97	97
1 1/4"*8A	47	50	2.5"*10A	72	71	4.0"*8A	61	87
1 1/4"*10A	59	59	2.5"*15A	72	71	4.0"*10A	72	95
1 1/4"*15A	59	59	2.5"*20A	72	71	4.0"*15A	72	95
1 1/4"*20A	59	59	2.5"*25A	72	71	4.0"*20A	72	95
1.5"*8A	57	54	2.5"*32A	90	83	4.0"*25A	72	95
1.5"*10A	68	62	2.5"*40A	90	83	4.0"*32A	90	105
1.5"*15A	68	62	2.5"*50A	90	83	4.0"*40A	90	105
1.5"*20A	68	62	3.0"*8A	61	71	4.0"*50A	90	105
1.5"*25A	68	62	3.0"*10A	72	79	4.0"*65A	110	110
2.0"*8A	57	57	3.0"*15A	72	79	4.0"*80A	110	110
2.0"*10A	68	65						

other diemension Can be requirement .

304/304L/316/316L

(JIS G3459*JIS G3459)

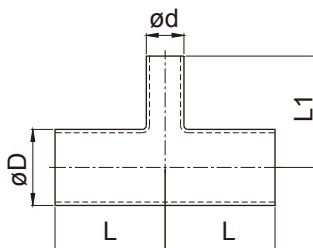


$\phi D \times \phi d$	L	L1	$\phi D \times \phi d$	L	L1	$\phi D \times \phi d$	L	L1
10A*8A	47	44	40A*25A	68	65	80A*10A	72	85
15A*8A	47	44	40A*32A	77	77	80A*15A	72	85
15A*10A	52	52	50A*8A	57	63	80A*20A	72	85
20A*8A	47	47	50A*10A	68	71	80A*25A	72	85
20A*10A	55	55	50A*15A	68	71	80A*32A	88	96
20A*15A	55	55	50A*20A	68	71	80A*40A	88	96
25A*8A	47	50	50A*25A	68	71	80A*50A	88	96
25A*10A	59	59	50A*32A	83	83	80A*65A	103	103
25A*15A	59	59	50A*40A	83	83	100A*8A	61	90
25A*20A	59	59	65A*8A	61	71	100A*10A	72	98
32A*8A	57	54	65A*10A	72	79	100A*15A	72	98
32A*10A	68	62	65A*15A	72	79	100A*20A	72	98
32A*15A	68	62	65A*20A	72	79	100A*25A	72	98
32A*20A	68	62	65A*25A	72	79	100A*32A	88	109
32A*25A	68	62	65A*32A	88	90	100A*40A	88	109
40A*8A	57	57	65A*40A	88	90	100A*50A	88	109
40A*10A	68	65	65A*50A	88	90	100A*65A	116	116
40A*15A	68	65	80A*8A	61	77	100A*80A	116	116
40A*20A	68	65						

other diemension Can be requirement .

304/304L/316/316L

(JIS G3459*inch)

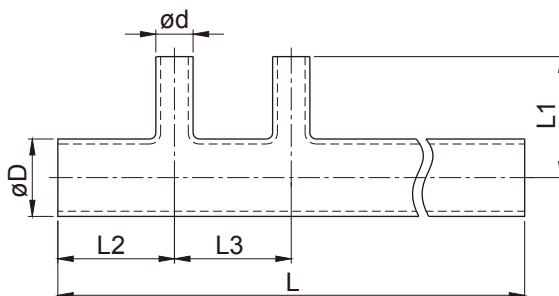
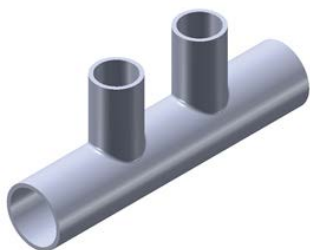


$\phi D \times \phi d$	L	L ₁	$\phi D \times \phi d$	L	L ₁	$\phi D \times \phi d$	L	L ₁
8A*1/4"	42	42	32A*1/2"	57	54	65A*1.5"	88	90
8A*3/8"	42	42	32A*5/8"	68	62	65A*2.0"	88	90
8A*1/2"	42	42	32A*3/4"	68	62	65A*2.5"	97	97
10A*1/4"	47	44	32A*1.0"	68	68	80A*1/4"	61	77
10A*3/8"	47	44	40A*1/4"	57	57	80A*3/8"	61	77
10A*1/2"	47	44	40A*3/8"	57	57	80A*1/2"	61	77
15A*1/4"	47	44	40A*1/2"	57	57	80A*5/8"	72	85
15A*3/8"	47	44	40A*5/8"	68	65	80A*3/4"	72	85
15A*1/2"	47	44	40A*3/4"	68	65	80A*1.0"	72	85
15A*5/8"	52	52	40A*1.0"	68	65	80A*1.5"	88	96
15A*3/4"	52	52	40A*1.5"	77	77	80A*2.0"	88	96
20A*1/4"	47	47	50A*1/4"	57	63	80A*2.5"	103	103
20A*3/8"	47	47	50A*3/8"	57	63	80A*3.0"	103	103
20A*1/2"	47	47	50A*1/2"	57	63	100A*1/4"	61	90
20A*5/8"	55	55	50A*5/8"	68	71	100A*3/8"	61	90
20A*3/4"	55	55	50A*3/4"	68	71	100A*1/2"	61	90
20A*1.0"	55	55	50A*1.0"	68	71	100A*5/8"	72	98
25A*1/4"	47	50	50A*1.5"	83	83	100A*3/4"	72	98
25A*3/8"	47	50	50A*2.0"	83	83	100A*1.0"	72	98
25A*1/2"	47	50	65A*1/4"	61	71	100A*1.5"	88	109
25A*5/8"	59	59	65A*3/8"	61	71	100A*2.0"	88	109
25A*3/4"	59	59	65A*1/2"	61	71	100A*2.5"	116	116
25A*1.0"	59	59	65A*5/8"	72	79	100A*3.0"	116	116
32A*1/4"	57	54	65A*3/4"	72	79	100A*4.0"	116	116
32A*3/8"	57	54	65A*1.0"	72	79			

other dimension Can be requirement .

304/304L/316/316L

(total length fixed)



INCH-SIZE *INCH-SIZE

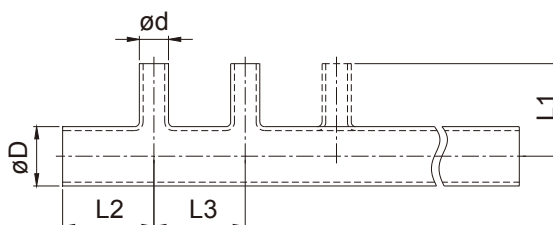
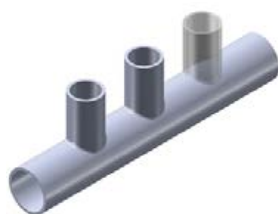
INCH-SIZE	øD	1/4"	3/8"	1/2"	5/8"	3/4"	1.0"	1.5"	2.0"	2.5"	3.0"	4.0"
INCH-SIZE	ød	1/4"、3/8"、1/2"										
L	2 branch	304.8	304.8	304.8	304.8	304.8	304.8	304.8	304.8	304.8	304.8	304.8
	3 branch	457.2	457.2	457.2	457.2	457.2	457.2	457.2	457.2	457.2	457.2	457.2
	4 branch	609.6	609.6	609.6	609.6	609.6	609.6	609.6	609.6	609.6	609.6	609.6
	5 branch	762	762	762	762	762	762	762	762	762	762	762
L1		35	37	39	44	44	47	54	57	63	71	87
L2		76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2	76.2
L3		152.4	152.4	152.4	152.4	152.4	152.4	152.4	152.4	152.4	152.4	152.4

JIS G3459*INCH-SIZE

JISG3459	øD	8A	10A	15A	20A	25A	32A	40A	50A	65A	80A	100A
INCH-SIZE	ød	1/4"、3/8"、1/2"										
L	2 branch	245	245	245	245	245	245	245	245	285	285	285
	3 branch	370	370	370	370	370	370	370	370	430	430	430
	4 branch	495	495	495	495	495	495	495	495	575	575	575
	5 branch	620	620	620	620	620	620	620	620	720	720	720
L1		42	44	44	47	50	54	57	63	71	77	90
L2		60	60	60	60	60	60	60	60	70	70	70
L3		125	125	125	125	125	125	125	125	145	145	145

304/304L/316/316L

(pitch fixed)



INCH-SIZE *INCH-SIZE

INCH-SIZE ϕD	1/4"	3/8"	1/2"	5/8"		3/4"			1.0"			
INCH-SIZE ϕd	1/4"	1/4" ~ 3/8"	1/4" ~ 1/2"	1/4" ~ 1/2"	5/8"	1/4" ~ 1/2"	5/8"	3/4"	1/4" ~ 1/2"	5/8"	3/4"	1.0"
L1	35	37	39	44	49	44	52	52	47	55	55	55
L2	21	21	21	27	27	30	30	30	33	33	33	33
L3	45	45	45	55	57	55	57	59	55	57	59	62

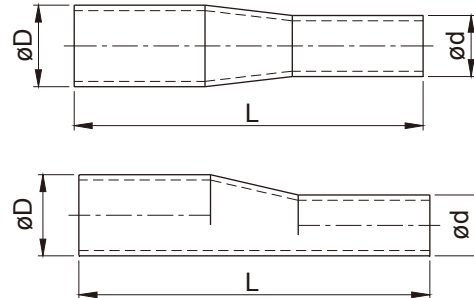
INCH-SIZE ϕD	1.5"					2.0"					
INCH-SIZE ϕd	1/4" ~ 1/2"	5/8" ~ 3/4"	3/4"	1.0"	1.5"	1/4" ~ 1/2"	5/8" ~ 3/4"	3/4"	1.0"	1.5"	2.0"
L1	54	62	62	62	74	57	65	65	65	77	77
L2	45	45	45	45	45	50	50	50	50	50	50
L3	55	57	59	62	73	60	62	64	67	75	83

INCH-SIZE ϕD	2.5"							
INCH-SIZE ϕd	1/4" ~ 1/2"	5/8" ~ 3/4"	3/4"	1.0"	1.5"	2.0"	2.5"	2.5"
L1	63	71	71	71	83	83	90	90
L2	65	65	65	65	65	65	65	65
L3	63	65	68	70	78	86	94	94

INCH-SIZE ϕD	3.0"							
INCH-SIZE ϕd	1/4" ~ 1/2"	5/8" ~ 3/4"	3/4"	1.0"	1.5"	2.0"	2.5"	3.0"
L1	71	79	79	79	90	90	97	97
L2	68	68	68	68	68	68	68	68
L3	67	68	71	74	82	90	98	104

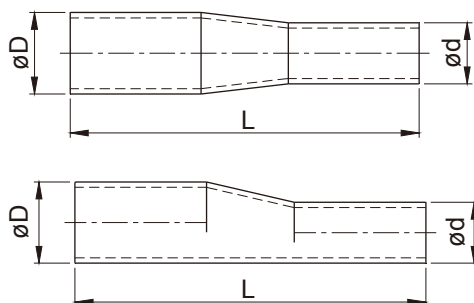
INCH-SIZE ϕD	4.0"								
INCH-SIZE ϕd	1/4" ~ 1/2"	5/8" ~ 3/4"	3/4"	1.0"	1.5"	2.0"	2.5"	3.0"	4.0"
L1	87	95	95	95	105	105	110	110	110
L2	86	86	86	86	86	86	86	86	86
L3	80	85	89	92	100	103	110	120	130

304/304L/316/316L



Size		Concentric	Eccentric
øD (inch-size)	ød (A size / inch-size)	L3	
1/4"	1/8"	70	
3/8"	1/4"	70	80
1/2"	1/4" ~ 3/8"	75	85
5/8"	8A 1/4" ~ 1/2"	90	
3/4"	8A ~ 10A 1/4" ~ 5/8"	100	
1.0"	8A ~ 15A 1/4" ~ 3/4"	105	
1.5"	8A ~ 25A 1/4" ~ 1 1/4"	125	
2.0"	8A ~ 40A 1/4" ~ 1.5"	130	
2.5"	8A ~ 50A 1/4" ~ 2.0"	140	
3.0"	8A ~ 50A 1/4" ~ 2.5"	165	
4.0"	8A ~ 80A 1/4" ~ 3.0"	175	
5.0"	8A ~ 100A 1/4" ~ 4.0"	230	
6.0"	8A ~ 125A 1/4" ~ 5.0"	250	

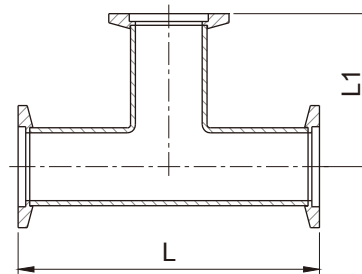
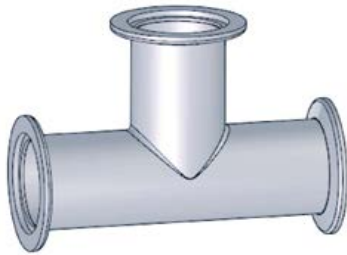
304/304L/316/316L



Size		Concentric	Eccentric
øD (inch-size)	ød (A size / inch-size)	L3	
8A	1/4" ~ 1/2"	80	85
10A	8A 1/4" ~ 1/2"	90	
15A	8A ~ 10A 1/4" ~ 3/4"	100	
20A	8A ~ 15A 1/4" ~ 1.0"	105	
25A	8A ~ 20A 1/4" ~ 1 1/4"	120	
32A	8A ~ 25A 1/4" ~ 1.5"	125	
40A	8A ~ 32A 1/4" ~ 1.5"	130	
50A	8A ~ 40A 1/4" ~ 2.0"	140	
65A	8A ~ 50A 1/4" ~ 2.5"	165	
80A	8A ~ 65A 1/4" ~ 3.0"	170	
100A	8A ~ 80A 1/4" ~ 4.0"	180	
125A	8A ~ 100A 1/4" ~ 5.0"	250	
150A	8A ~ 125A 1/4" ~ 6.0"	260	
200A	8A ~ 150A 1/4" ~ 6.0"	280	

304/304L/316/316L

KF Equal Flange Tee (U.S.A Type)



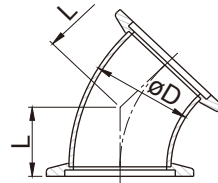
Size	L	L1
KF10	63.5	31.75
KF16	58.4	29.2
KF25	102.8	51.6
KF40	122	61
KF50	160	80



KF / ISO 45° 、90° Flange Elbows (U.S.A Type)

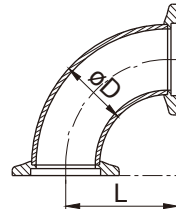
304/304L/316/316L

KF 45° ELBOWS



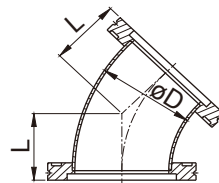
Size	(ØD) Outside diameter	L
KF 25	25.4	19.59
KF 40	38.1	27.5
KF 50	50.8	35.37

KF 90° ELBOWS



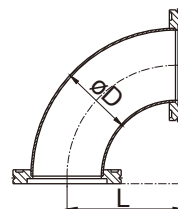
Size	(ØD) Outside diameter	L
KF 25	25.4	41.91
KF 40	38.1	61.01
KF 50	50.8	80.01

ISO 45° ELBOWS



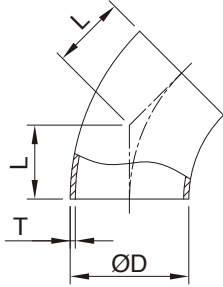
Size	(ØD) Outside diameter	L
ISO 63	63.5	46.05
ISO 80	76.2	53.94
ISO 100	101.6	69.73

ISO 90° ELBOWS

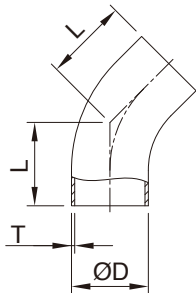


Size	(ØD) Outside diameter	L
ISO 63	63.5	101.85
ISO 80	76.2	120.9
ISO 100	101.6	159

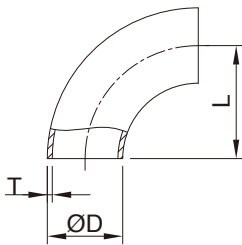
45° Short Elbow



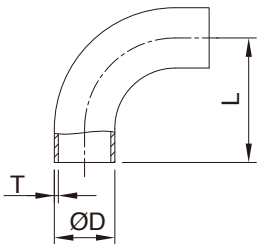
45° Long Elbow



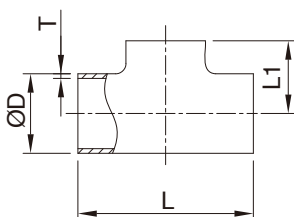
90° Short Elbow



90° Long Elbow



Welding Tee



45° Elbow

Size	ØD	L	T
1.0"	25.4	15.8	1.65
1.5"	38.1	23.8	1.65
2.0"	50.8	31.75	1.65
2.5"	63.5	39.6	1.65
3.0"	76.2	47.6	1.65
4.0"	101.6	63.5	2.1

45° Elbow

Size	ØD	L	T
1.0"	25.4	30.2	1.65
1.5"	38.1	41.3	1.65
2.0"	50.8	58.7	1.65
2.5"	63.5	76.2	1.65
3.0"	76.2	93.7	1.65
4.0"	101.6	122.2	2.1

90° Bend

Size	ØD	L	T
1.0"	25.4	38.1	1.65
1.5"	38.1	57.2	1.65
2.0"	50.8	76.2	1.65
2.5"	63.5	95.25	1.65
3.0"	76.2	114.3	1.65
4.0"	101.6	152.4	2.1

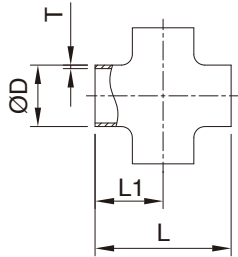
90° Bend

Size	ØD	L	T
1.0"	25.4	52.4	1.65
1.5"	38.1	74.6	1.65
2.0"	50.8	103.2	1.65
2.5"	63.5	131.8	1.65
3.0"	76.2	160.3	1.65
4.0"	101.6	211.1	2.1

Tee

Size	ØD	L	L1	T
1.0"	25.4	95.2	47.6	1.65
1.5"	38.1	114.4	57.2	1.65
2.0"	50.8	152.4	76.2	1.65
2.5"	63.5	152.4	76.2	1.65
3.0"	76.2	165.2	82.6	1.65
4.0"	101.6	196.8	98.4	2.1

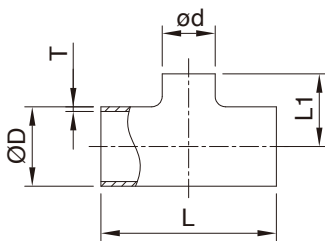
Cross



Cross

Size	ØD	L	L1	T
1.0"	25.4	95.2	47.6	1.65
1.5"	38.1	114.4	57.2	1.65
2.0"	50.8	152.4	76.2	1.65
2.5"	63.5	152.4	76.2	1.65
3.0"	76.2	165.2	82.6	1.65
4.0"	101.6	196.8	98.4	2.1

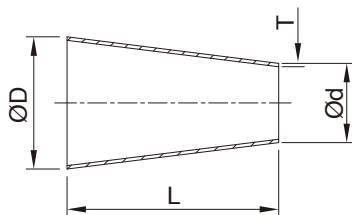
Reducing Tee



Reducing Tee

Size	ØD	Ød	L	L1	T
1.5"x1.0"	38.1	25.4	114.3	53.98	1.65
2.0"x1.0"	50.8	25.4	152.4	60.3	1.65
2.0"x1.5"	50.8	38.1	152.4	63.5	1.65
2.5"x1.5"	63.5	38.1	152.4	69.85	1.65
2.5"x2.0"	63.5	50.8	152.4	82.55	1.65
3.0"x1.5"	76.2	38.1	165.1	76.2	1.65
3.0"x2.0"	76.2	50.8	165.1	88.90	1.65
3.0"x2.5"	76.2	63.5	165.1	82.55	1.65
4.0"x2.0"	101.6	50.8	196.8	101.6	2.1
4.0"x2.5"	101.6	63.5	196.8	95.25	2.1
4.0"x3.0"	101.6	76.2	196.8	95.25	2.1

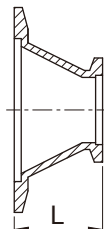
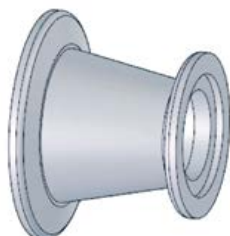
Concentric Reducer



Concentric Reducer

Size	ØD	Ød	L	T
1.5"x1.0"	38.1	25.4	50.8	1.65
2.0"x1.5"	50.8	38.1	50.8	1.65
2.5"x1.5"	63.5	38.1	101.6	1.65
2.5"x2.0"	63.5	50.8	50.8	1.65
3.0"x1.5"	76.2	38.1	152.4	1.65
3.0"x2.0"	76.2	50.8	101.6	1.65
3.0"x2.5"	76.2	63.5	50.8	1.65
4.0"x1.5"	101.6	38.1	254	2.1
4.0"x2.0"	101.6	50.8	203.2	2.1
4.0"x2.5"	101.6	63.5	152.4	2.1
4.0"x3.0"	101.6	76.2	101.6	2.1

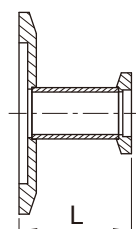
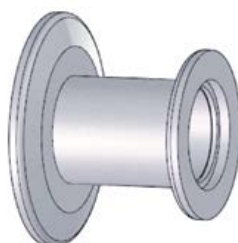
Conical reducer



Material: S.S. 304/316L

Size	L
KF25* KF16	39.9
KF40* KF16	39.9
KF40* KF25	39.9
KF50* KF16	39.9
KF50* KF25	39.9
KF50* KF40	39.9

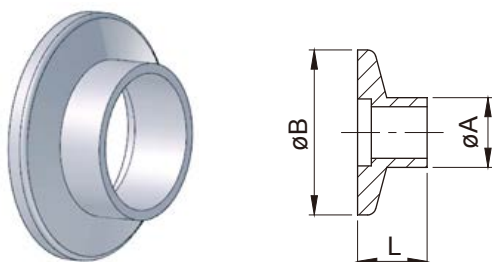
Straight reducer



Material: S.S. 304/316L

Size	L
KF25* KF16	39.9
KF40* KF16	39.9
KF40* KF25	39.9
KF50* KF16	39.9
KF50* KF25	39.9
KF50* KF40	39.9

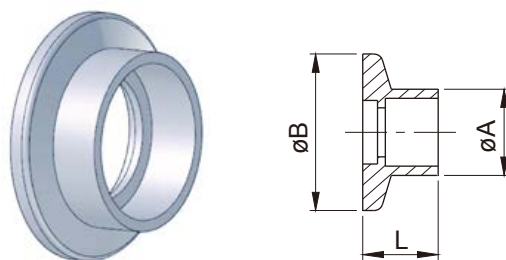
Weld flange



Material: S.S. 304/316L

Size	ϕA	ϕB	L
KF10	12.7	30	12.7
KF16	19.05	30	12.7
KF25	25.4	40	12.7
KF40	38.1	55	19.1
KF50	50.8	75	19.1

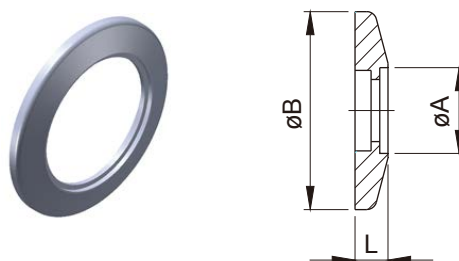
Socket weld flange



Material: S.S. 304/316L

Size	ϕA	ϕB	L
KF10	16.5	30	12.7
KF16	20.5	30	12.7
KF25	29	40	12.7
KF40	44.7	55	12.7
KF50	57.4	75	12.7

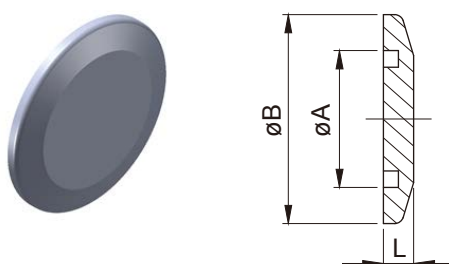
Bored flange



Material: S.S. 304/316L

Size	$\varnothing A$	$\varnothing B$	L
KF25	25.7	40	5.1
KF40	38.4	55	5.1
KF50	51.1	75	5.1

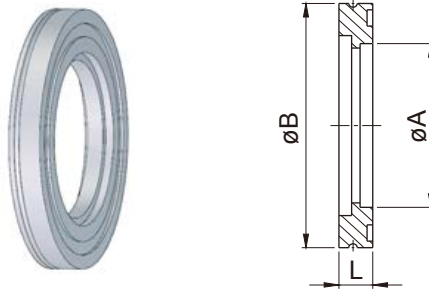
Blank flange



Material: S.S. 304/316L

Size	$\varnothing A$	$\varnothing B$	L
KF10	12.2	30	5.1
KF16	17.2	30	5.1
KF25	26.2	40	5.1
KF40	41.2	55	5.1
KF50	52.2	75	5.1

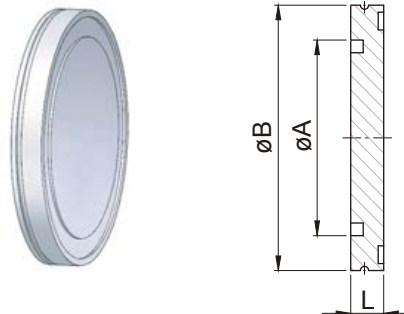
Bored flange



Material: S.S. 304/316L

Size	ϕA	ϕB	L
ISO63	63.7	95	12
ISO80	76.4	110	12
ISO100	101.8	130	12
ISO160	152.9	180	12
ISO200	203.7	240	12
ISO250	254.5	290	12

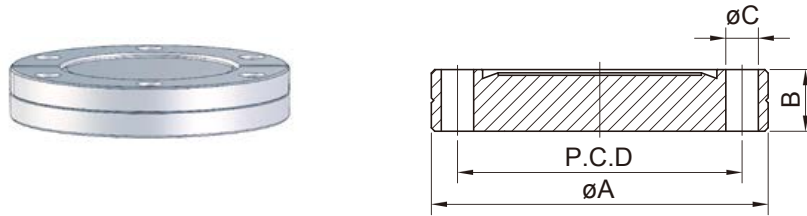
Blank flange



Material: S.S. 304/316L

Size	ϕA	ϕB	L
ISO63	70	95	12
ISO80	83	110	12
ISO100	102	130	12
ISO160	153	180	12
ISO200	213	240	12
ISO250	261	290	12

CF 16-350 Blank-Nonrotatable

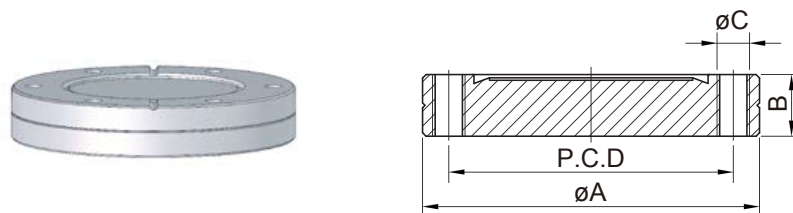


Material: S.S. 304 / 316L

Part Number	A		B	C*No. Tapped Bolt Holes	P.C.D
	mm	inch			
CF16B	33.8	1.33"	7.5	4.4*6	26.9
CF35B	69.5	2.75"	12.7	6.7*6	58.7
CF63B	113.6	4.50"	18	8.4*8	92.1
CF100B	151.6	6.00"	20	8.4*16	130.3
CF150B	202.5	8.00"	22	8.4*20	181
CF200B	253.2	10.00"	24.7	8.4*24	231.8
CF250B	336.5	13.25"	28.5	10.3*30	306.5
CF300B	355.6	14.00"	28.5	10.3*30	325.7
CF350B	419.1	16.50"	28.5	10.3*36	388.9

Measure: mm

CF 16-350 Blank-Nonrotatable with Tapped Bolt Holes

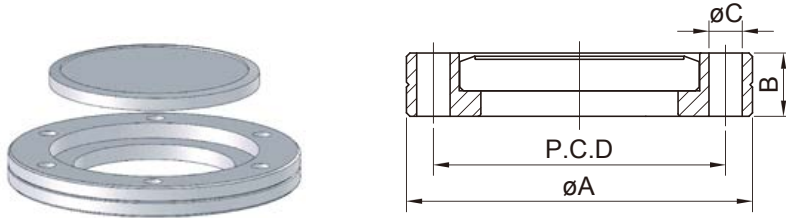


Material: S.S. 304 / 316L

Part Number	A		B	C*No. Tapped Bolt Holes	P.C.D
	mm	inch			
CF16BT	33.8	1.33"	7.5	M4*6	26.9
CF35BT	69.5	2.75"	12.7	M6*6	58.7
CF63BT	113.6	4.50"	18	M8*8	92.1
CF100BT	151.6	6.0"	20	M8*16	130.3
CF150BT	202.5	8.00"	22	M8*20	181
CF200BT	253.2	10.00"	24.7	M8*24	231.8
CF250BT	336.5	13.25"	28.5	M10*30	306.5
CF300BT	355.6	14.00"	28.5	M10*30	325.7
CF350BT	419.1	16.50"	28.5	M10*36	388.9

Measure: mm

CR 16-350 Blank-Rotatable

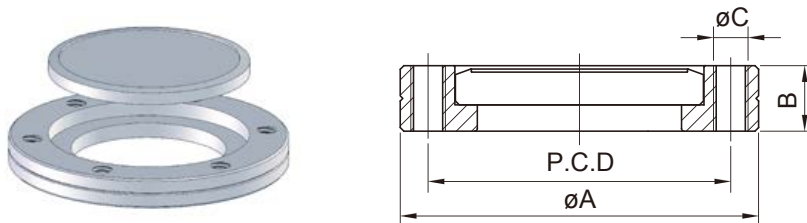


Material: S.S. 304 / 316L

Part Number	A		B	C*No. Tapped Bolt Holes	P.C.D
	mm	inch			
CR16B	33.8	1.33"	7.5	4.4*6	26.9
CR35B	69.5	2.75"	12.7	6.7*6	58.7
CR63B	113.6	4.50"	18	8.4*8	92.1
CR100B	151.6	6.00"	20	8.4*16	130.3
CR150B	202.5	8.00"	22	8.4*20	181
CR200B	253.2	10.00"	24.7	8.4*24	231.8
CR250B	336.5	13.25"	28.5	10.3*30	306.5
CR300B	355.6	14.00"	28.5	10.3*30	325.7
CR350B	419.1	16.50"	28.5	10.3*36	388.9

Measure: mm

CR 16-350 Blank-Rotatable with Tapped Bolt Holes

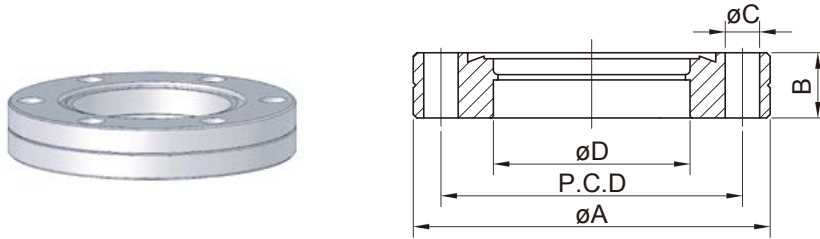


Material: S.S. 304 / 316L

Part Number	A		B	C*No. Tapped Bolt Holes	P.C.D
	mm	inch			
CR16BT	33.8	1.33"	7.5	M4*6	26.9
CR35BT	69.5	2.75"	12.7	M6*6	58.7
CR63BT	113.6	4.50"	18	M8*8	92.1
CR100BT	151.6	6.00"	20	M8*16	130.3
CR150BT	202.5	8.00"	22	M8*20	181
CR200BT	253.2	10.00"	24.7	M8*24	231.8
CR250BT	336.5	13.25"	28.5	M10*30	306.5
CR300BT	355.6	14.00"	28.5	M10*30	325.7
CR350BT	419.1	16.50"	28.5	M10*36	388.9

Measure: mm

CF 16-350 Bored Flange-Nonrotatable

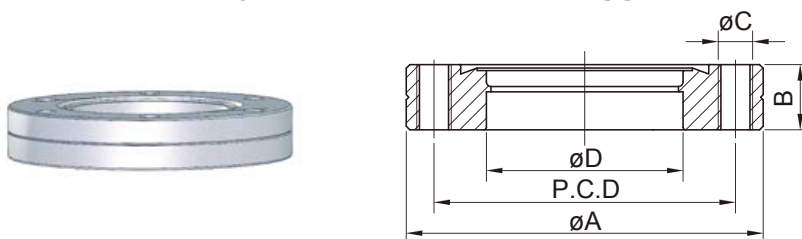


Material: S.S. 304 / 316L

Part Number	A		B	C*No.	D	P.C.D
	mm	inch				
CF16B19	33.8	1.33"	7.5	4.4*6	19.3	26.9
CF35B38	69.5	2.75"	12.7	6.7*6	38.3	58.7
CF35B43	69.5	2.75"	12.7	6.7*6	42.9	58.7
CF63B64	113.6	4.50"	18	8.4*8	63.7	92.1
CF100B102	151.6	6.00"	20	8.4*16	101.8	130.3
CF150B153	202.5	8.00"	22	8.4*20	152.8	181
CF200B204	253.2	10.00"	24.7	8.4*24	203.7	231.8
CF250B254	336.5	13.25"	28.5	10.3*30	254.5	306.5
CF300B305	355.6	14.00"	28.5	10.3*30	305.4	325.7
CF350B356	419.1	16.5"	28.5	10.3*36	356.1	388.9

Measure: mm

CF 16-350 Bored Flange-Nonrotatable with Tapped Bolt Holes

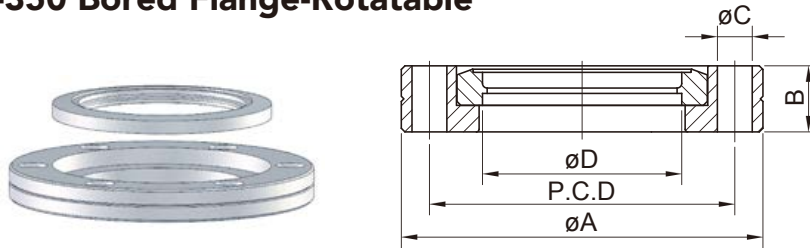


Material: S.S. 304 / 316L

Part Number	A		B	C*No. Tapped Bolt Holes	D	P.C.D
	mm	inch				
CF16B19T	33.8	1.33"	7.5	M4*6	19.3	26.9
CF35B38T	69.5	2.75"	12.7	M6*6	38.3	58.7
CF35B43T	69.5	2.75"	12.7	M6*6	42.9	58.7
CF63B64T	113.6	4.50"	18	M8*8	63.7	92.1
CF100B102T	151.6	6.00"	20	M8*16	101.8	130.3
CF150B153T	202.5	8.00"	22	M8*20	152.8	181
CF200B204T	253.2	10.00"	24.7	M8*24	203.7	231.8
CF250B254T	336.5	13.25"	28.5	M10*30	254.5	306.5
CF300B305T	355.6	14.00"	28.5	M10*30	305.4	325.7
CF350B356T	419.1	16.5"	28.5	M10*36	356.1	388.9

Measure: mm

CR 16-350 Bored Flange-Rotatable

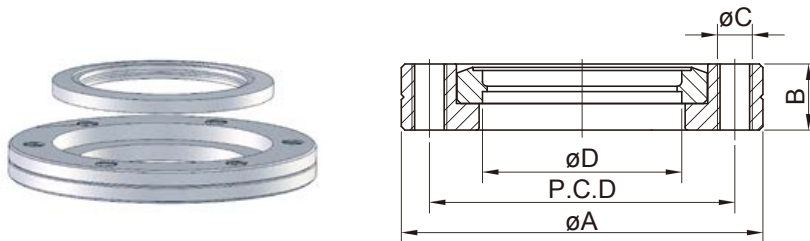


Material: S.S. 304 / 316L

Part Number	A		B	C*No.	D	P.C.D
	mm	inch				
CR16B19	33.8	1.33"	7.5	4.4*6	19.3	26.9
CR35B38	69.5	2.75"	12.7	6.7*6	38.3	58.7
CR35B43	69.5	2.75"	12.7	6.7*6	42.9	58.7
CR63B64	113.6	4.50"	18	8.4*8	63.7	92.1
CR100B102	151.6	6.00"	20	8.4*16	101.8	130.3
CR150B153	202.5	8.00"	22	8.4*20	152.8	181
CR200B204	253.2	10.00"	24.7	8.4*24	203.7	231.8
CR250B254	336.5	13.25"	28.5	10.3*30	254.5	306.5
CR300B305	355.6	14.0"	28.5	10.3*30	305.4	325.7
CR350B356	419.1	16.5"	28.5	10.3*36	356.1	388.9

Measure: mm

CR 16-350 Bored Flange-Rotatable with Tapped Bolt Holes

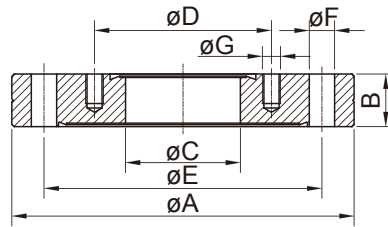


Material: S.S. 304 / 316L

Part Number	A		B	C*No. Tapped Bolt Holes	D	P.C.D
	mm	inch				
CF16B19T	33.8	1.33"	7.5	M4*6	19.3	26.9
CF35B38T	69.5	2.75"	12.7	M6*6	38.3	58.7
CF35B43T	69.5	2.75"	12.7	M6*6	42.9	58.7
CF63B64T	113.6	4.50"	18	M8*8	63.7	92.1
CF100B102T	151.6	6.00"	20	M8*16	101.8	130.3
CF150B153T	202.5	8.00"	22	M8*20	152.8	181
CF200B204T	253.2	10.00"	24.7	M8*24	203.7	231.8
CF250B254T	336.5	13.25"	28.5	M10*30	254.5	306.5
CF300B305T	355.6	14.00"	28.5	M10*30	305.4	325.7
CF350B356T	419.1	16.5"	28.5	M10*36	356.1	388.9

Measure: mm

CF 16-250 Reducing Flange

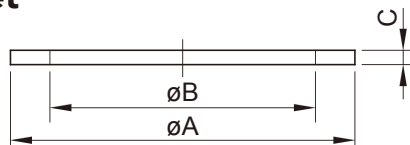


Material: S.S. 304 / 316L

Part Number	A		B	C	D	E	F*No.	C*No. Tapped Bolt Holes
	mm	inch						
CF35R16	69.5	2.75"	12.7	15.8	26.9	58.7	6.7*6	M4*6
CF63R16	113.6	4.50"	18	15.8	26.9	92.1	8.4*8	M4*6
CF63R35	113.6	4.50"	18	38.1	58.7	92.1	8.4*8	M6*6
CF100R35	151.6	6.00"	20	38.1	58.7	130.3	8.4*16	M6*6
CF100R63	151.6	6.00"	20	63.5	92.1	130.3	8.4*16	M8*8
CF150R35	202.5	8.00"	22	38.1	58.7	181	8.4*20	M6*6
CF150R63	202.5	8.00"	22	63.5	92.1	181	8.4*20	M8*16
CF150R100	202.5	8.00"	22	101.6	130.3	181	8.4*20	M6*6
CF200R35	253.2	10.00"	24.7	38.1	58.7	231.8	8.4*24	M8*8
CF200R63	253.2	10.00"	24.7	63.5	92.1	231.8	8.4*24	M8*16
CF200R100	253.2	10.00"	24.7	101.6	130.3	231.8	8.4*24	M8*8
CF200R150	253.2	10.00"	24.7	152.4	181	231.8	8.4*24	M8*20
CF250R35	336.5	13.25"	28.5	38.1	58.7	306.5	10.3*30	M6*6
CF250R63	336.5	13.25"	28.5	63.5	92.1	306.5	10.3*30	M8*8
CF250R100	336.5	13.25"	28.5	101.6	130.3	306.5	10.3*30	M8*16
CF250R150	336.5	13.25"	28.5	152.4	181	306.5	10.3*30	M8*20
CF250R200	336.5	13.25"	28.5	203.2	231.8	306.5	10.3*30	M8*24

Measure: mm

CF 16-250 Copper Gasket

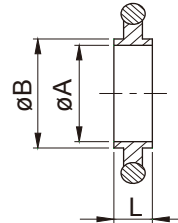


Material: Pure Copper / OFHC / Viton

Part Number	Flange Size	A	B	C
CF16CG	CF16	21	16	2
CF35CG	CF35	48	37	2
CF63CG	CF63	82	63	2
CF100CG	CF100	120	101	2
CF150CG	CF150	171	152	2
CF200CG	CF200	222	203	2
CF250CG	CF250	294	269	2

Measure: mm

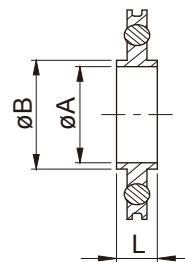
KF Type



Material: S.S. 304/316L

Size	$\varnothing A$	$\varnothing B$	L
KF10	10	12	8
KF16	16	17	8
KF25	25	26	8
KF40	40	41	8
KF50	50	52	8

ISO Type

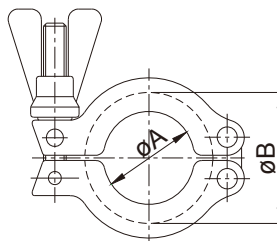


Material: S.S. 304/316L

Size	$\varnothing A$	$\varnothing B$	L
ISO63	66.8	69.6	8
ISO80	79.75	82.6	8
ISO100	98.8	101.6	8
ISO160	149.86	152.6	8
ISO200	207.8	212.6	8
ISO250	257.5	260.4	8

KF Clamp

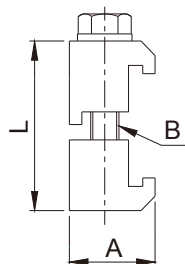
304/ALU



Size	ϕA	ϕB
KF10~16	22	35
KF20~25	32	45
KF32~40	47	60
KF50	66	80

ISO Double Claw Clamp

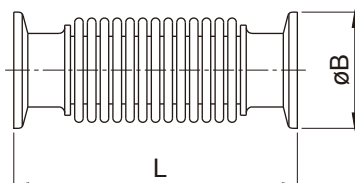
304/ALU



Size	A	B	L
ISO63~100	24.1	M8 or 5/16"	50.3
ISO160~250	27.9	M10 or 5/16"	52.1
ISO320~500	34	M12 or 5/16"	65

KF Type

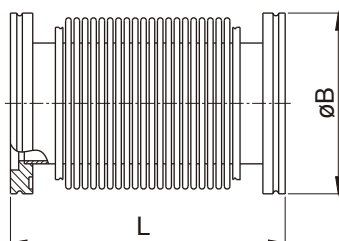
304/304L/316/316L



Size	øB	L
KF16	30	250/500/750/1000
KF25	40	250/500/750/1000
KF40	55	250/500/750/1000
KF50	75	250/500/750/1000

ISO Type

304/304L/316/316L



Size	øB	L
ISO63	95	250 / 500 / 750 / 1000
ISO80	110	250 / 500 / 750 / 1000
ISO100	130	250 / 500 / 750 / 1000

Pipe Fitting

unit:mm

Size	($\phi D \cdot \phi d$) outside diameter	(T) wall thickness
1/4"~3/4"	$\pm 1\%$	$\pm 10\%$
15A~65A		$\pm 10\%$
80A~200A		$\pm 10\%$
250A		+15% / -12.5%
300A~800A		+15% / -12.5%

Elbow

Size	(R) bend radius	(L、L1) center to end
1/4"~3/4"	± 0.8	± 0.8
15A~65A	± 1.6	± 1.6
80A~200A	± 1.6	± 1.6
250A		+20 / -5
300A~800A		+20 / -5

Tee

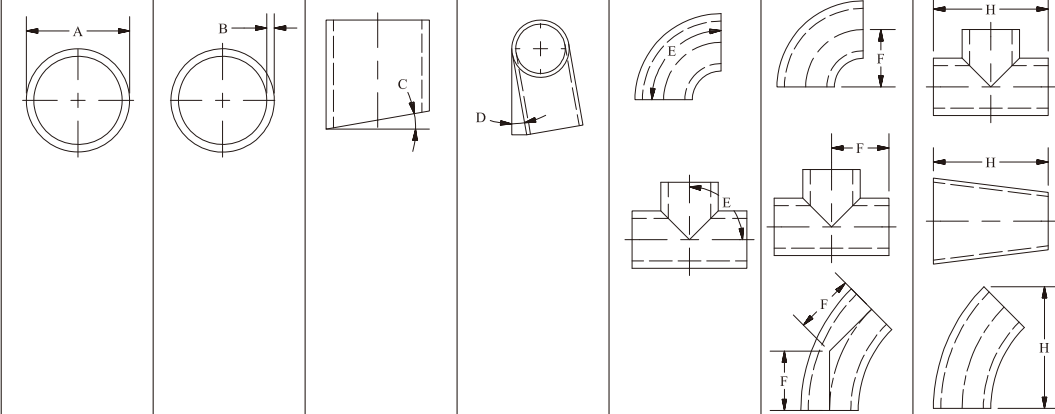
Size	(L、L1) center to end
1/4"~3/4"	± 0.8
15A~65A	± 1.6
80A~200A	± 1.6
250A	+20 / -5
300A~800A	+20 / -5

Reducer

Size	(L) over all length
1/4"~3/4"	± 0.8
15A~65A	± 1.6
80A~200A	± 1.6
250A	+20 / -5
300A~800A	+20 / -5

Multi-Tees

Size	(L) total length	(L1) center to end	(L2) length at end	(L3) branch pitch	verticality	levelness
1/4"~3/4"	+5 / -0	± 0.8	± 1.6	± 1.6	$\pm 1^\circ$	$\pm 1^\circ$
15A~65A		± 1.6	± 1.6	± 1.6		
80A~200A		± 1.6	± 1.6	± 3.2		
250A		+20		± 3.2		
300A~800A		5				

Nominal size	O.D. Roundness	Wall thickness	End squaren ess	Off plane	Angularity	Center to end	End to end
1/2"	+/- .015"	.050"-.071"	.010" MAX	+/- 1°	+/- 1/2°	+/- .030"	+/- .045"
3/4"	+/- .015"	.050"-.071"	.010" MAX	+/- 1°	+/- 1/2°	+/- .030"	+/- .045"
1"	+/- .015"	.050"-.071"	.010" MAX	+/- 1°	+/- 1/2°	+/- .030"	+/- .045"
1-1/2"	+/- .015"	.050"-.071"	.015" MAX	+/- 1°	+/- 1/2°	+/- .030"	+/- .045"
2"	+/- .015"	.050"-.071"	.015" MAX	+/- 1°	+/- 1/2°	+/- .030"	+/- .045"
2-1/2"	+/- .020"	.050"-.071"	.020" MAX	+/- 1°	+/- 1/2°	+/- .045"	+/- .060"
3"	+/- .031"	.050"-.071"	.030" MAX	+/- 1-1/2°	+/- 1°	+/- .050"	+/- .060"
4"	+/- .040"	.066"-.091"	.030" MAX	+/- 1-1/2°	+/- 1°	+/- .050"	+/- .060"
6"	+/- .050"	.094"-115"	.050" MAX	+/- 1-1/2°	+/- 1-1/2°	+/- .060"	+/- .075"
8"	+/- .050"	.105"-126"	.060" MAX	+/- 1-1/2°	+/- 1-1/2°	+/- .060"	+/- .075"
							

JIS Specification

Grade	C	Mn	P	S	Si	Cr	Ni	Mo
SUS304TP	≤0.08	≤2.00	≤0.045	≤0.030	≤1.00	18.0-20.0	8.0-11.0	
SUS304LTP	≤0.030	≤2.00	≤0.045	≤0.030	≤1.00	18.0-20.0	9.0-13.0	
SUS316TP	≤0.08	≤2.00	≤0.045	≤0.030	≤1.00	16.0-18.0	10.0-14.0	2.00-3.00
SUS316LTP	≤0.030	≤2.00	≤0.045	≤0.030	≤1.00	16.0-18.0	12.0-16.0	2.00-3.00

unit: %

ASTM Specification

Grade	C	Mn	P	S	Si	Cr	Ni	Mo
TP304	≤0.08	≤2.00	≤0.045	≤0.030	≤1.00	18.0-20.0	8.0-11.0	
TP304L	≤0.035	≤2.00	≤0.045	≤0.030	≤1.00	18.0-20.0	8.0-13.0	
TP316	≤0.08	≤2.00	≤0.045	≤0.030	≤1.00	16.0-18.0	10.0-14.0	2.00-3.00
TP316L	≤0.035	≤2.00	≤0.045	≤0.030	≤1.00	16.0-18.0	10.0-14.0	2.00-3.00

unit: %

EP管 EP grade

管内目視檢查 visual exam. of internal pipe	管内粗糙度檢驗 surface roughness measurement (SEMI F19-0304)	油份殘留測試 oil residue measurement	純水阻抗值測試 pure-water resistivity measurement
表面無可見髒污 及刮傷殘留 no visible scratch or contamination on the surface	超高純度等級 (特殊氣體) ultra high purity grade $Ra \leq 0.125\mu m (5\mu in)$ for $OD \leq 4'' (100A)$	標準值 $< 0.01mg/ft^2$ Max. $< 0.01mg/ft^2$	純水出口阻抗值 $\geq 17.5M\Omega_{cm}$
	高純度等級 (大宗氣體) high purity grade $Ra \leq 0.25\mu m (10\mu in)$		

微塵測試 particle count	離子殘留測試 Ion leaching check sealed water ion chromatography	鉻鐵比 Cr/Fe ratio (SEMI F19-0304)	氧氣鉻及氧化鐵比 CrO / FeO ratio (SEMI F19-0304)	氧化膜層厚度 oxide layer thickness (SEMI F19-0304)
每一立方英尺cfm 0.1 μm 微塵小於1顆 0.1 μm particle , less than 1 per cfm	5 ng/cm ² 以下	≥ 1.5	≥ 2.0	$\geq 15\text{\AA}$

BA / MPEP / MPS管 BA grade

管内目視檢查 visual exam. of internal pipe	管内粗糙度檢驗 surface roughness measurement (SEMI F19-0304)	油份殘留測試 oil residue measurement	純水阻抗值測試 pure-water resistivity measurement
表面無可見髒污及刮傷殘留 no visible scratch or contamination on the surface	$Ra \leq 0.3\mu m (12\mu in)$ for $OD \leq 4'' (100A)$ $Ra \leq 0.5\mu m (20\mu in)$ for $OD \geq 5'' (125A)$	標準值 $< 0.1mg/ft^2$ Max. $< 0.1mg/ft^2$	

微塵測試 particle count	離子殘留測試 Ion leaching check sealed water ion chromatography	鉻鐵比 Cr/Fe ratio (SEMI F19-0304)	氧氣鉻及氧化鐵比 CrO / FeO ratio (SEMI F19-0304)	氧化膜層厚度 oxide layer thickness (SEMI F19-0304)
每一立方英尺cfm 0.3 μm 微塵小於10顆 0.3 μm particle , less than 10 per cfm	10 ng/cm ² 以下	MPEP ≥ 1.0	MPEP ≥ 1.0	MPEP $\geq 15\text{\AA}$

The different of EP & MP

何謂電解拋光？

電解拋光是一種高潔淨的表面處理技術，適合多種金屬工件(不鏽鋼、銅等)，其中又以不鏽鋼之效果為佳，平滑、潔淨、無菌、抗蝕的優點。

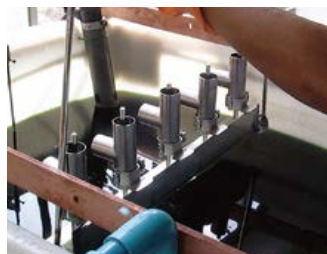
What is EP ?

EP is surface condition processing technology, which can be applied on various metal (Stainless steel, alloy steel etc) for obtaining high clean quality on surface .

EP process on stainless steel metal can obtain an advantage on metal surface with smooth, Clean, bacteria free and superior corrosion resistance finished .



半成品清洗
Semi-finished



加工
Products processed

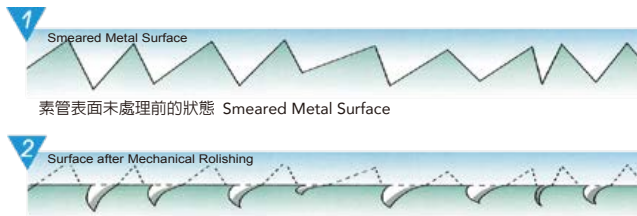


成品清洗
Cleaning the finished



檢驗
Inspect

Mechanical polishing (MP) & electro-polishing (EP)

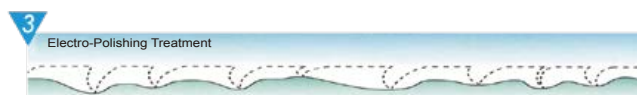


機械拋光可迅速降低表面粗糙狀態，惟其缺點為：

1. 雖肉眼觀察可達鏡面效果，但總面積更多，易造成微塵累積管壁。
2. 嚴重破壞不鏽鋼表面鈍化層，常見SUS304晶界位置出現鏽斑。
3. 處理過程粉塵嚴重，且易包覆於管壁中，即使精密洗淨亦不易控制潔淨度。

Although mechanical polishing (MP) is able to reduce the roughness from smeared stainless surface rapidly, there are still some defects:

1. Surface roughness (Ra) is only approx.. 0.3-0.5 μ m that still has great possibility of adhering particles.
2. The passivation layer must be destroyed after MP and caused rust easily.
3. During MP, the particle adhering problem on the interior surface is too tough to meet perfect purity even if after high purity cleaning procedure.



電解拋光能有效補救機械拋光之缺點，利用表層溶解方式，再次平坦不鏽鋼表面，且鐵離子優先解離形成表面富鉻化，提高抗蝕性。

The performance of electro-polishing is able to smooth away all the defects of MP. The features of EP are as following:

1. The stainless surface is dissolved by EP liquid to remove all the particles and reduce roughness (Ra) to 0.05 μ m.
2. During EP process, feion separates out first of all and let a passivation layer (Cr₂O₃) be created on the stainless surface for higher resistance of corrosion.



Perfect mirror finished surface without any impurities.

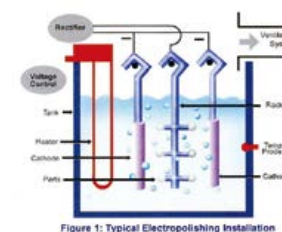


Figure 1: Typical Electropolishing Installation

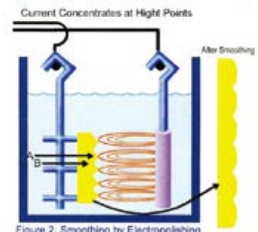


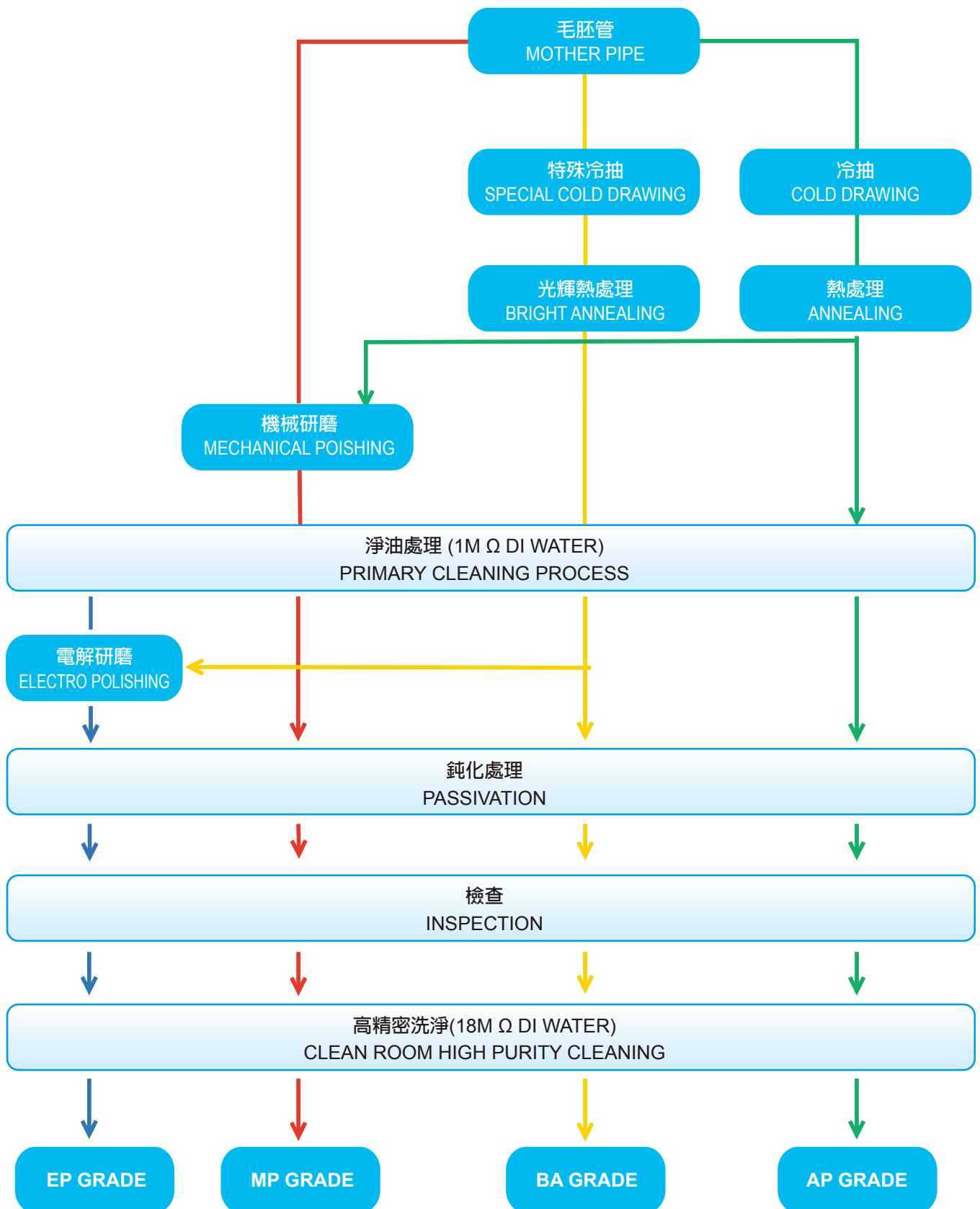
Figure 2: Smoothing by Electropolishing

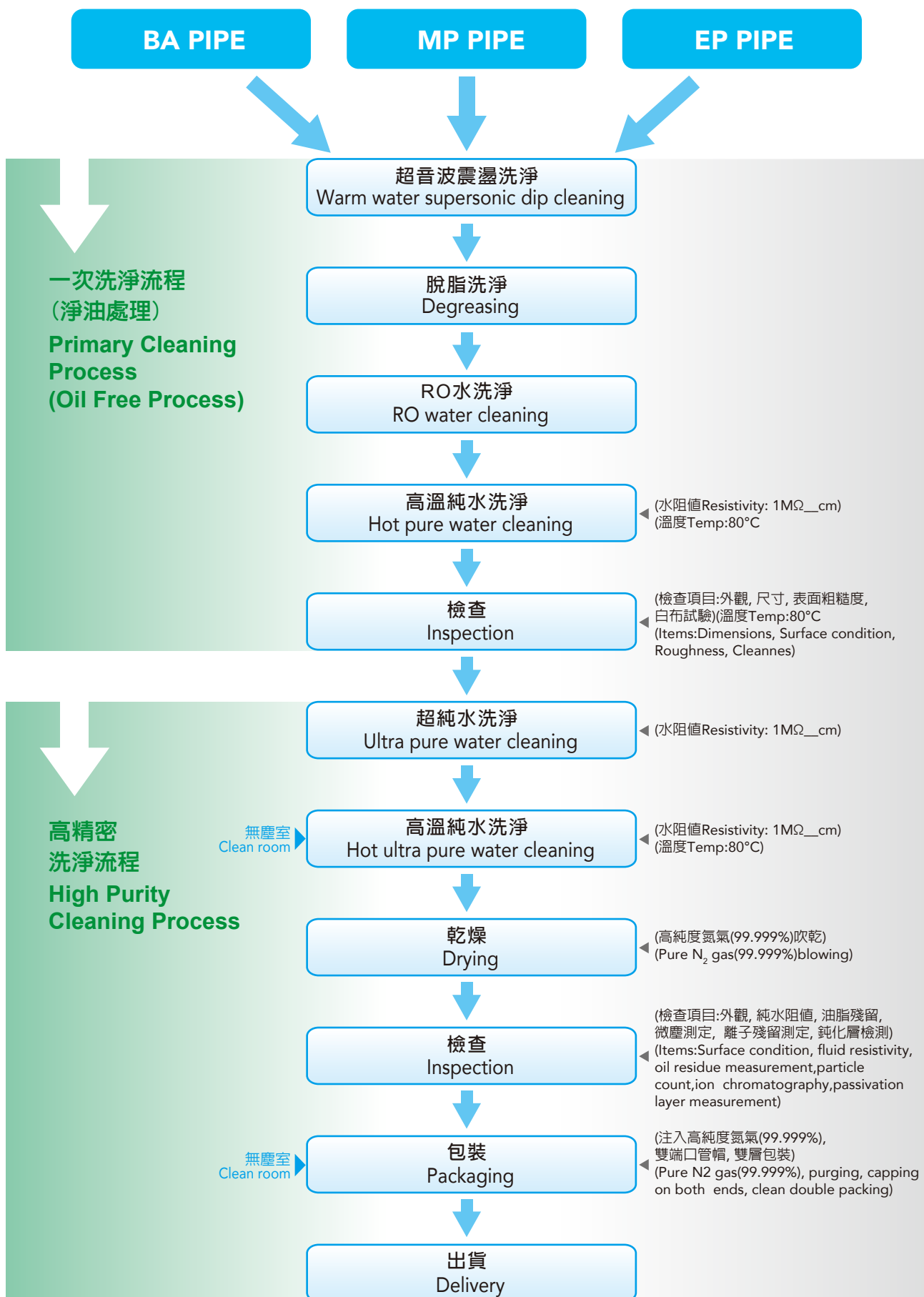
電解拋光之優點

- 1、拋光能力佳:電解拋光時，大約儲蓄0.005mm-0.01mm的不平面，如電解拋光前輔以機械拋光處理，達一定程度的平滑表面，則電解拋光可大幅改上工見表面粗糙度2倍以上，將表面粗糙(Ra)最高提升至0.05 μ m。
- 2、高潔淨性:經電解加工處理之不鏽鋼工件在其表面會產生氫化層、碳化層、氧化銹、應力層，並滯留雜質容易滋生細菌，使金屬疲乏，電解拋光可以有效將這些問題一一清除。
- 3、抗蝕性強:對不鏽鋼(stainless steel)而言，電解拋光所產生的鈍化層是其中一項重要的附加價值，由於不鏽鋼成分中，鐵(Fe)鎳(Ni)的電解速率大於鉻加上氧氣在高溫下形成的陽極膜使鉻演化成Cr₂O₃，也就是鈍化層，抗蝕效果比未經EP之不鏽鋼工件高數倍至數十倍，電解拋光改善工件表面品質正合乎半導體廠、光電廠、生化製藥廠製成的要求，因為潔淨與否將影響產品良率。

Advantage of EP

1. Superior performance in polishing: it can dramatically improve the surface roughness on metal to Ra 0.05 μ m.
2. High purity: EP can remove particle, metal fatigue and oxidized metal from work piece, As well make surface smoothly, on which bacteria can not survived, smooth surface will help to solve the problem of particle adherent.
3. High resistance of corrosion: passivation layer is a very important product, which is created on the surface of stainless steel during EP process, stainless steel work piece processed with EP can obtain around 10 times corrosion resistance superior than no-EP one.







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