

ADVANTORR

**K[®] KING LAI
GROUP**

AdvanTorr[®]

VACUUM PRODUCTS

INTRODUCTION

AdvanTorr provides high quality vacuum products ranging from conflat flanges, fittings, valves and chambers to various other system components.

AdvanTorr products are manufactured by King Lai Hygienic (Taiwan) who have more than 25 years' experience of supplying high quality vacuum products to several market sectors including, **research institutes, semiconductor, display, LED lighting, thin film solar cell and vacuum coating industries.**

Vacuum is primarily focussed on thin film technologies such as evaporation, sputtering, PECVD, MOCVD and ALD, although surface analysis technologies and ion implant systems are also catered for.

All products are manufactured using the finest grades of stainless steel including SUS304L as standard, which due to the low carbon content has a much lower outgassing rate than that of inferior SS304 material often used by other vendors. High quality 'forged' SS316LN material is also available upon request.

All manufacturing is certified to ISO 9001 and ISO 14001 exacting standards, with full material traceability and certification available to ensure total quality assurance.

All bored and weld flanges related to fabrication components meet 3A standard tube sizes. For European and Japanese standards, please refer to other sections throughout the catalogue for further details.



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Flanges & Fittings

CF		CF Flanges & Fittings	87~105
KF DN		KF Flanges & Fittings DN Flanges & Fittings	109~132
ISO NW		ISO Flanges & Fittings NW Flanges & Fittings	135~150
AD		Adaptors	153~161
BW		Butt Weld Fittings	165~172
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Vacuum Valves

Vacuum
Valves

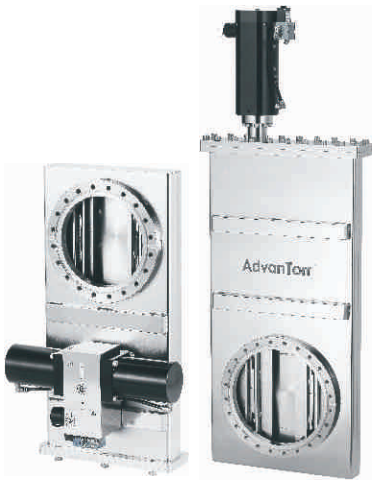
Transfer Slit Valves



Transfer Slit Valves									
Lock system	ARM lock system								
Vacuum level	UHV grade		HV grade						
Valve body material	Stainless steel 304L		Aluminum alloy				Stainless steel 304L		
Aperture	32x222mm	46x236mm	32x222mm	46x236mm	50x336mm	70x500mm	32x222mm	46x236mm	50x336mm 70x500mm

Isolation Valves

SMART Gate Valves			
Lock system	SMART lock system		In - Axis with SMART lock system
Actuator orientation	Side-mounted actuator		Top-mounted actuator
Actuator type	Manual lever / Pneumatic		Manual wheel / Pneumatic
Vacuum level	HV grade		UHV grade HV grade
Flange types	CF / ISO-F Flanges		CF Flanges CF / ISO-F Flanges



Kompact Gate Valves

Lock system	SMART lock system
Vacuum level	UHV Grade
Actuator type	Manuall wheel / Pneumatic
Flange type	CF Flanges



Aluminum Gate Valves

Lock system	SMART lock system
Vacuum level	HV Grade
Actuator type	Pneumatic
Flange type	ISO-F Flanges





Isolation Poppet Valves									
Actuator type	Manual wheel				Pneumatic				
Valve body types	Angle	Y shape	Y shape Z shape		Angle	Heating Angle	Y shape	Y shape Z shape	
Vacuum level	UHV grade	HV grade	UHV grade	HV grade	UHV grade	HV grade	HV grade	UHV grade	HV grade
Flange types	CF Flanges	CF / KF / ISO-K Flanges	CF Flanges	CF / KF / ISO-K Flanges	CF Flanges	CF / KF / ISO-K Flanges	KF Flanges	CF Flanges	CF / KF / ISO-K Flanges

★ Tube ends type available

Isolation Ball Valves		
Actuator type	Manual lever	Pneumatic
Valve body types	Casting	
Flange types	KF Flanges / Tube ends	





Transfer Slit Valves

•Email: info@kinglai.com.tw

•Website: www.advantorr.com



Product Introduction

The Transfer Slit Valve (TSV) is designed to connect two sealed chambers as a 'gate' with the object of transferring from one chamber to the other.

The Transfer Slit Valve is designed for single axis motion with no vibration and smooth, particle free motion. The special 'ARM LOCK' motion ensures that the gate is securely sealed in the closed position when the power and air supply fail during operation.

The Transfer Slit Valve is designed for durable, maintenance-free operation of up to 5 million cycles and due to its simple modular design, is exceptionally easy to service if required.

Vacuum
Valves

Product Features

ARM LOCK

Auto

Relocation

Mechanism

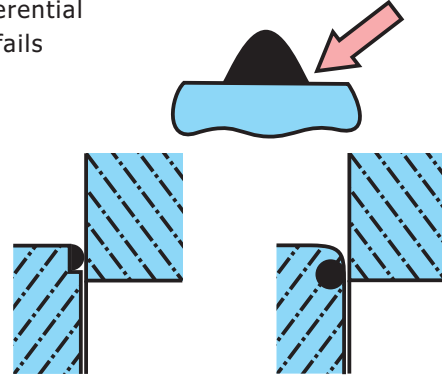
- Will stay in the closed position even against a larger pressure differential
- Maintains the closed position whenever the power and air supply fails
- Vulcanized seal for repeatable, maintenance free operation
- >5 million cycles between maintenance
- For SEMI applications handling wafers up to 450mm

ARM Feature

- Patented mechanism
- Low maintenance cost
- No gears, no need for relocation
- High reliability
- Particle free seal

Vulcanised seal
Particle free sealing technology

No gaps

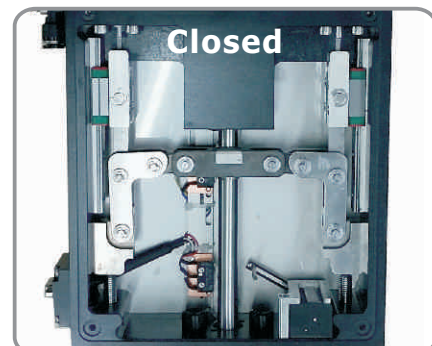
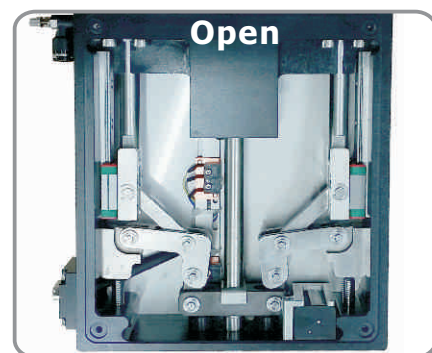


No gaps between
seal and plates

Groove creates
the space to trap
particles



ARM Lock System

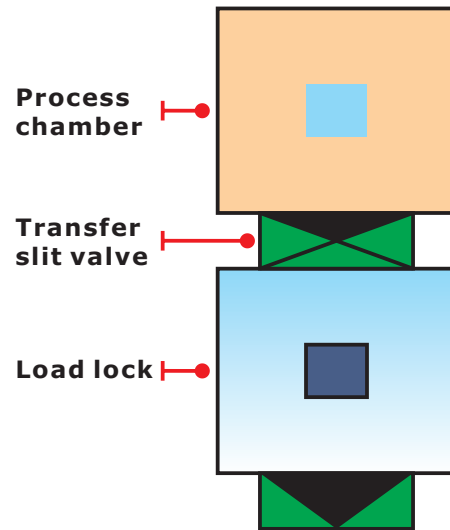


Product's Application

Layout for inline process system.

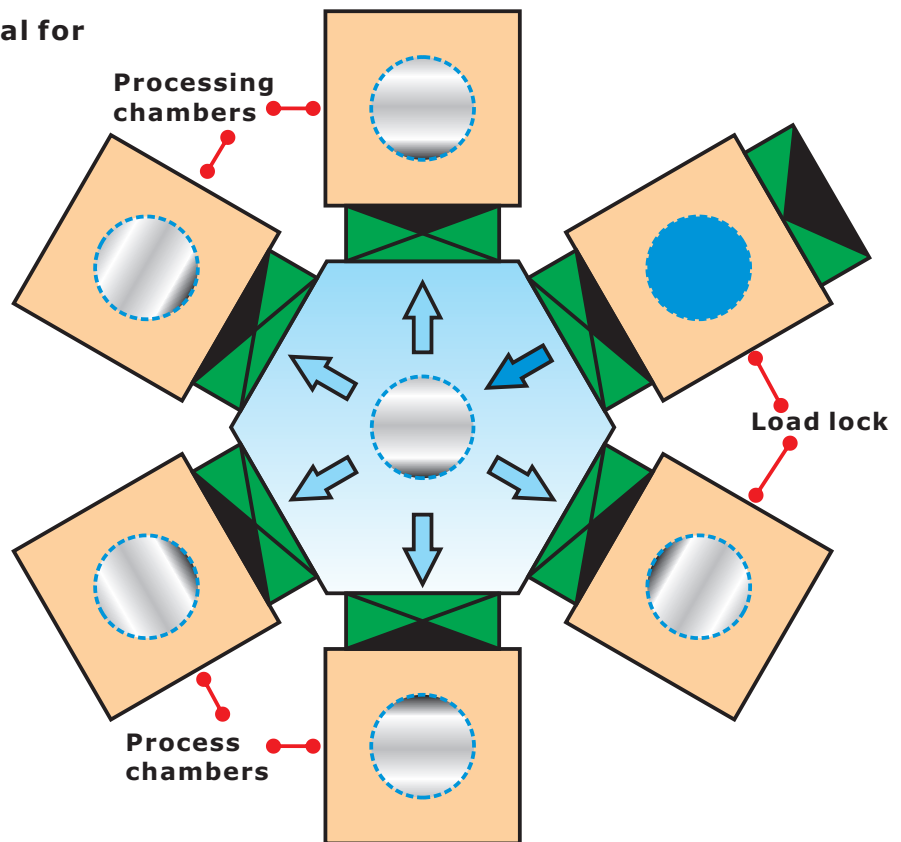
Object transfer: from load lock to process chamber.

The Transfer Slit Valve offers superior performance over circular gate valves with smooth reliable operation and no vibration.

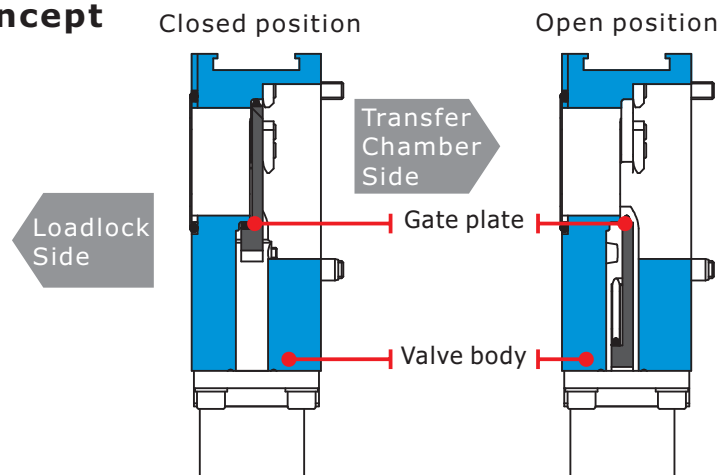


Vacuum Valves

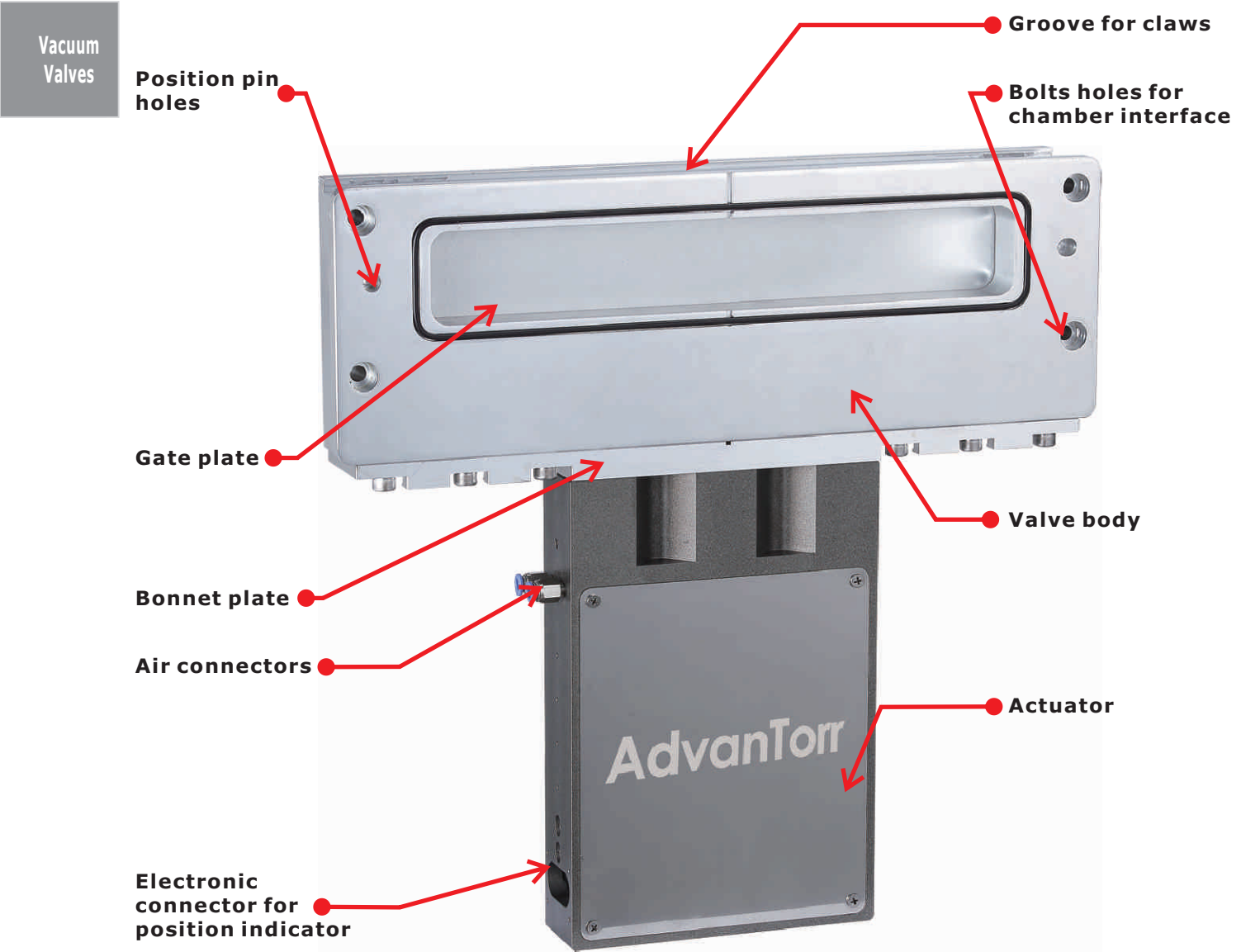
Transfer Slit Valve : Ideal for multiple process chamber systems.



Valve's operation concept



Key Valve Parts



Technical Data

Technical Data for Transfer Slit Valves

	Ultra High Vacuum	High Vacuum
Feedthrough	Welded bellows in AM350	Welded bellows in AM350
Gate seal	FKM vulcanized ring with bonding on the metal (Optional for FFKM)	FKM vulcanized ring with bonding on the metal (Optional for FFKM)
Bonnet seal	OFHC metal gasket	FKM vulcanized ring
Operate pressure range	760 Torr ~ 1×10^{-10} Torr 1,000 mbar ~ 1.33×10^{-10} mbar 100 kPa ~ 1.13×10^{-11} kPa	760 Torr ~ 1×10^{-8} Torr 1,000 mbar ~ 1.33×10^{-8} mbar 100 kPa ~ 1.13×10^{-9} kPa
Leak rate	1×10^{-10} Torr l/s, He 1.33×10^{-10} mbar l/s, He 1.13×10^{-11} kPa l/s, He	1×10^{-9} Torr l/s, He 1.33×10^{-9} mbar l/s, He 1.13×10^{-10} kPa l/s, He
Cycle life	>5,000,000 Cycles(ATM)	
Temperature for valve body	Aluminum version: 150°C (302°F) open and close Stainless steel version= 200°C (392°F) open and close	
Temperature for actuator	100°C (212°F)	
Temperature for solenoid / position indicator	80°C 176°F	
Bake temperature	200°C (392°F) for FKM gate seal	100°C (212°F) for FKM gate seal
Valve body material	SS304L (Optional for SS316L)	SS304L (Optional for SS316L and Aluminum)
Mechanism material	Steel and Aluminum	
Actuator material	Aluminum	
Mouting position	Any	

Vacuum
Valves

Valve operation data

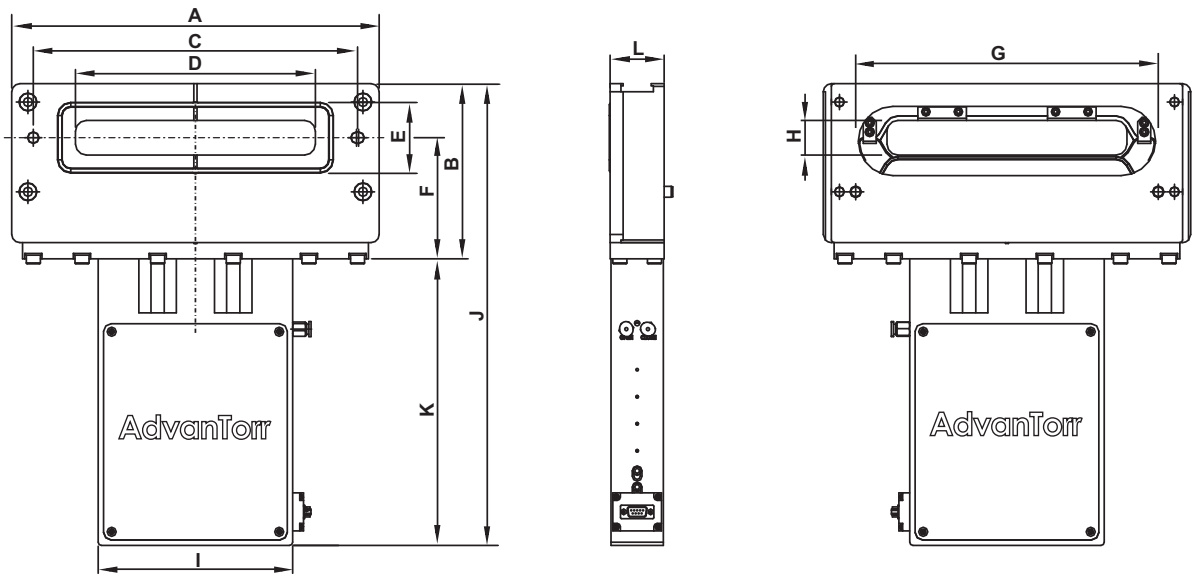
Pneumatic operating pressure	3 bar~5 bar 300 kPa~500 kPa 43 psi~72 psi
Position indicator (included as standard)	Micro switch with 9 pin connector
Cycles counter (included as standard)	Micro switch with visual 7 digital numbers
Solenoid (optional)	Optional for 24V DC, standard
Failure protection (included as standard)	ARM lock system (valve closed position remain and locked)

Valve's performance data

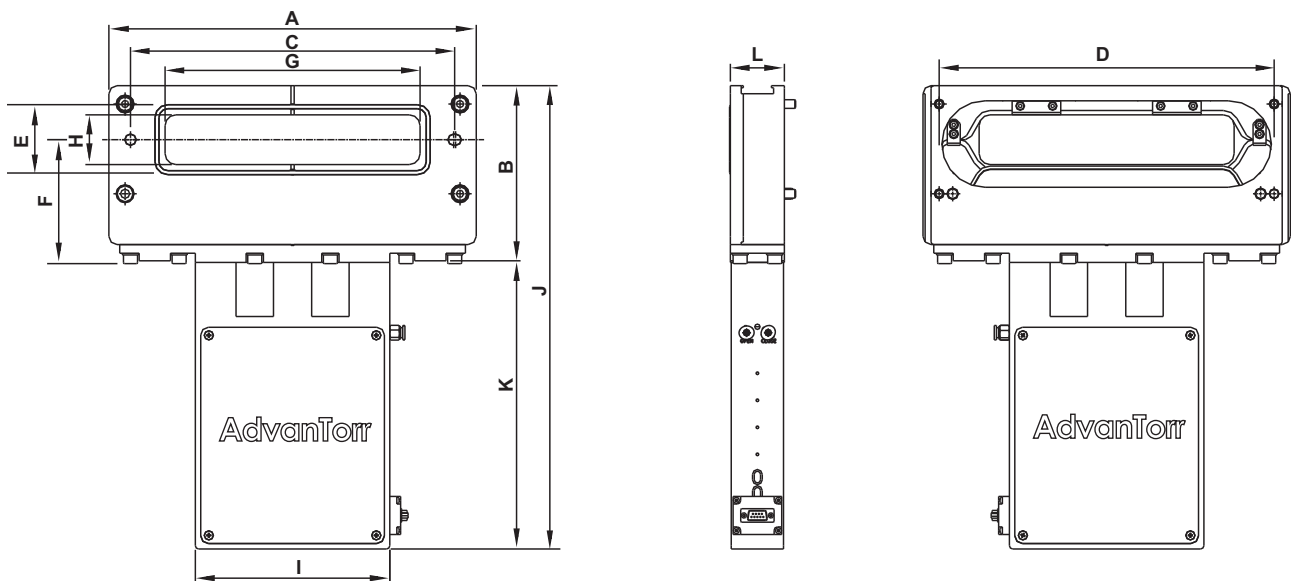
	32x222mm	46x236mm	50x336mm	70x500mm
Maximum differential pressure against gate	<900 Torr <1,200 mbar <120 kpa			
Maximum differential pressure at opening	<22.5 Torr <30 mbar < 3kpa			
Pneumatic valve open / close time	0.5(s)	0.5(s)	0.7(s)	0.9(s)
Valve's conductance (Molecular flow)	1,590(l/s)	3,340(l/s)	5,000(l/s)	10,400(l/s)

Product Order Information

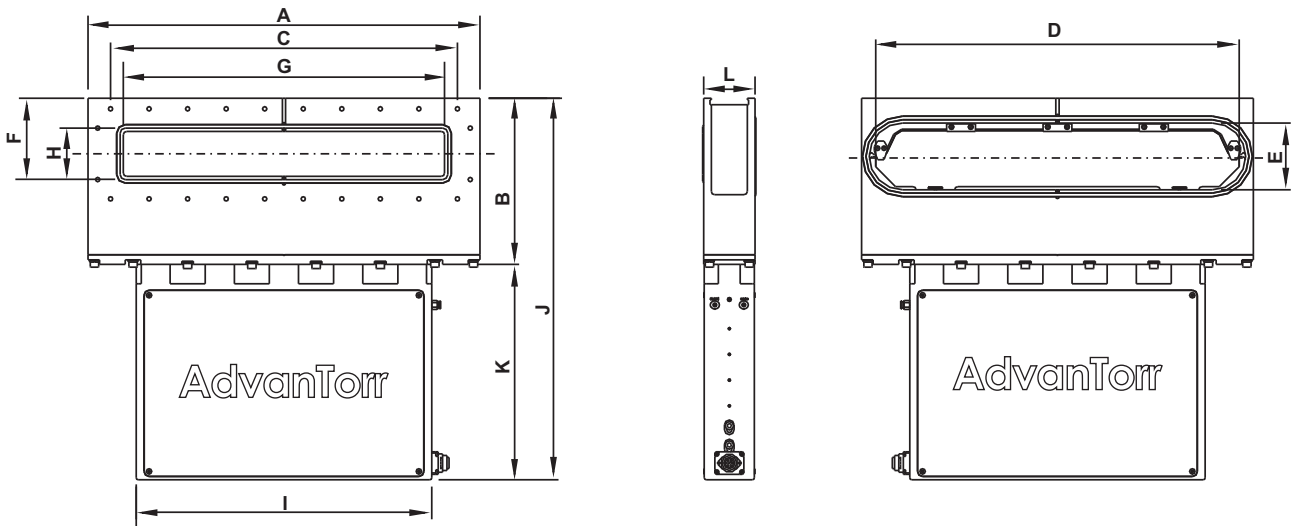
◆ Figure 1



◆ Figure 2



◆ Figure 3



Product Order Information

◆ Transfer Slit Valves, UHV, SS 304L

Dimension in mm

Part Number	Size	Figure	A	B	C	D	E	F	G	H	I	J	K	L
TSV-UHV-32x222	32 x 222	1	340	162	300	222	61	112	222	32	180	429	267	50
TSV-UHV-46x236	46 x 236	2	340	162	300	305	80	112	236	46	180	429	267	50

Vacuum
Valves

◆ Transfer Slit Valves, SS 304L

Dimension in mm

Part Number	Size	Figure	A	B	C	D	E	F	G	H	I	J	K	L
TSV-HV-32x222	32 x 222	1	340	162	300	222	61	112	222	32	180	429	267	50
TSV-HV-46x236	46 x 236	2	340	162	300	305	80	112	236	46	180	429	267	50
TSV-HV-50x336	50 x 336	2	440	162	400	405	81	112	336	50	180	429	267	60
TSV-HV-70x500	70 x 500	3	610	259	540	586	104	127	500	70	460	594	335	80

◆ Transfer Slit Valves, Aluminum

Dimension in mm

Part Number	Size	Figure	A	B	C	D	E	F	G	H	I	J	K	L
TSV-HV-32x222-AL	32 x 222	1	340	162	300	222	61	112	222	32	180	429	267	50
TSV-HV-46x236-AL	46 x 236	2	340	162	300	305	80	112	236	46	180	429	267	50
TSV-HV-50x336-AL	50 x 336	2	440	162	400	405	81	112	336	50	180	429	267	60
TSV-HV-70x500-AL	70 x 500	3	610	259	540	586	104	127	500	70	460	594	335	80





Lock System

Position locked when the valve is open or closed

SMART Vacuum Gate Valves

•Email: info@kinglai.com.tw

•Website: www.advantorr.com



Product Introduction

Vacuum gate valves are used primarily for the protection of high vacuum pumps but can also be used to 'valve-off' two connecting chambers.

The next generation of gate valves using the latest **S.M.A.R.T. technology sealing mechanism**, is designed for both superior performance and smooth, vibration free operation.

S.M.A.R.T.

Soft-shut Mechanism with Auto-Rail Transportation Technology.

Vacuum
Valves

SMART Gate Valves are designed to significantly reduce any vibration during operation, hence minimising particle generation and are therefore ideal for vacuum systems that require a clean environment.

SMART Gate Valves are available in two actuator orientation options; a side-mounted manual or pneumatic actuator (SGV part codes), or the **In-Axis option (AGP part codes) which has a vertically mounted pneumatic only actuator and is ideal for applications** where a small footprint is necessary. Both actuator orientations are available with the **SMART lock system** as standard.

Product Features

- No springs!

Less wear and strain means longer life

- Shock free 'soft shut' SMART technology. ■ S.M.A.R.T

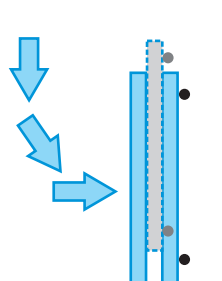
The lowest vibration of any gate valve on the market

- Vulcanized seal for repeatable, maintenance free operation

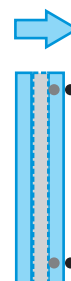
- Optional welded bellows feedthrough for cleanliness and improved service life

- Fail safe locking mechanism.

Locks in both the open and closed positions



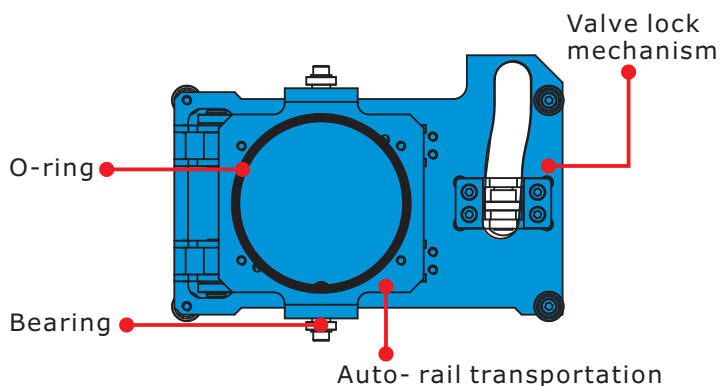
SMART mechanism seal plate operates with no vibration, ensuring particle free operation.



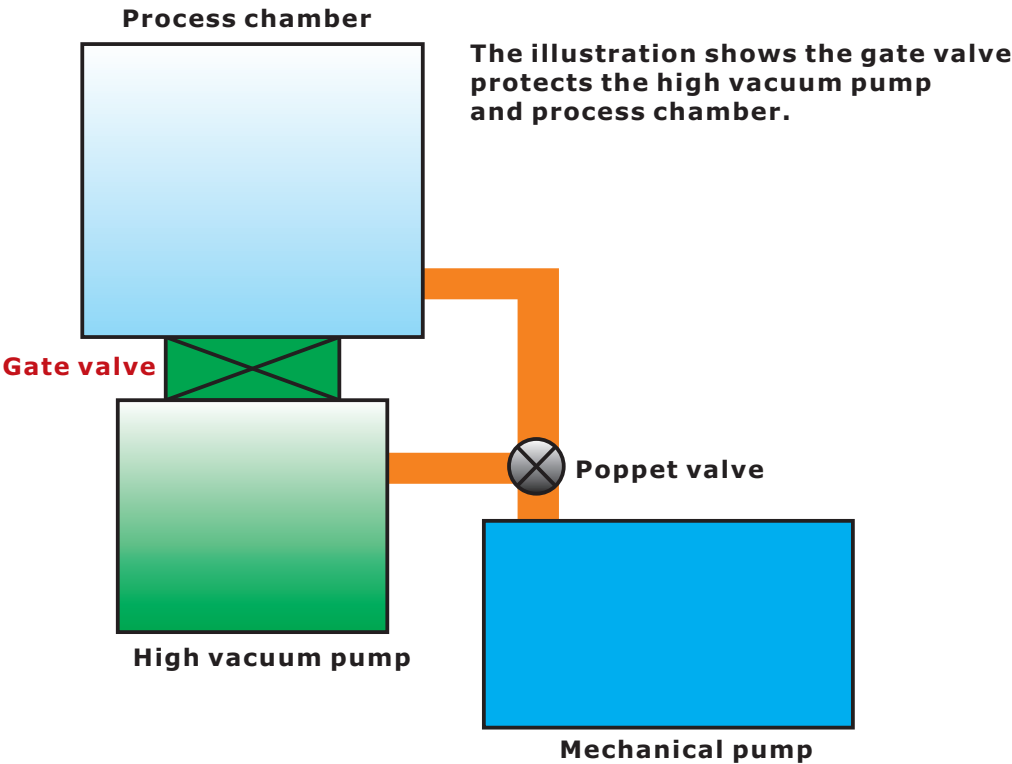
Conventional seal plate designs that use a spring mechanism can be susceptible to vibration during operation.

■ SMART lock system

Position locked when the valve is open or closed.

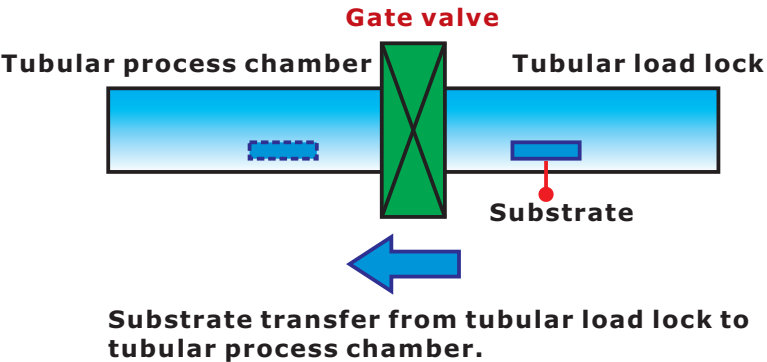


Product's Application

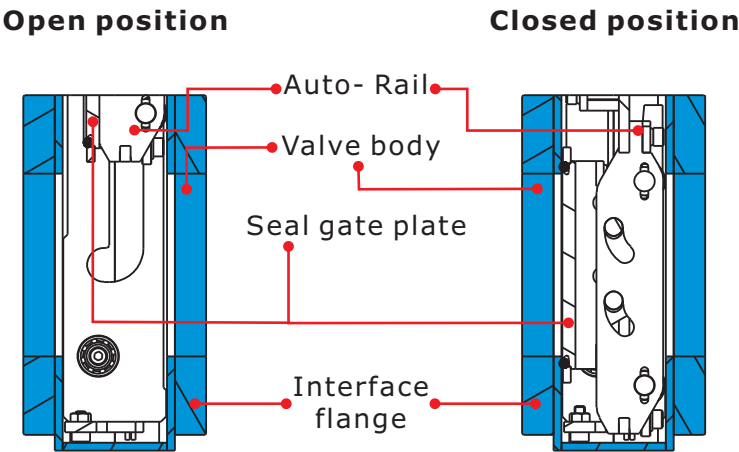


Vacuum
Valves

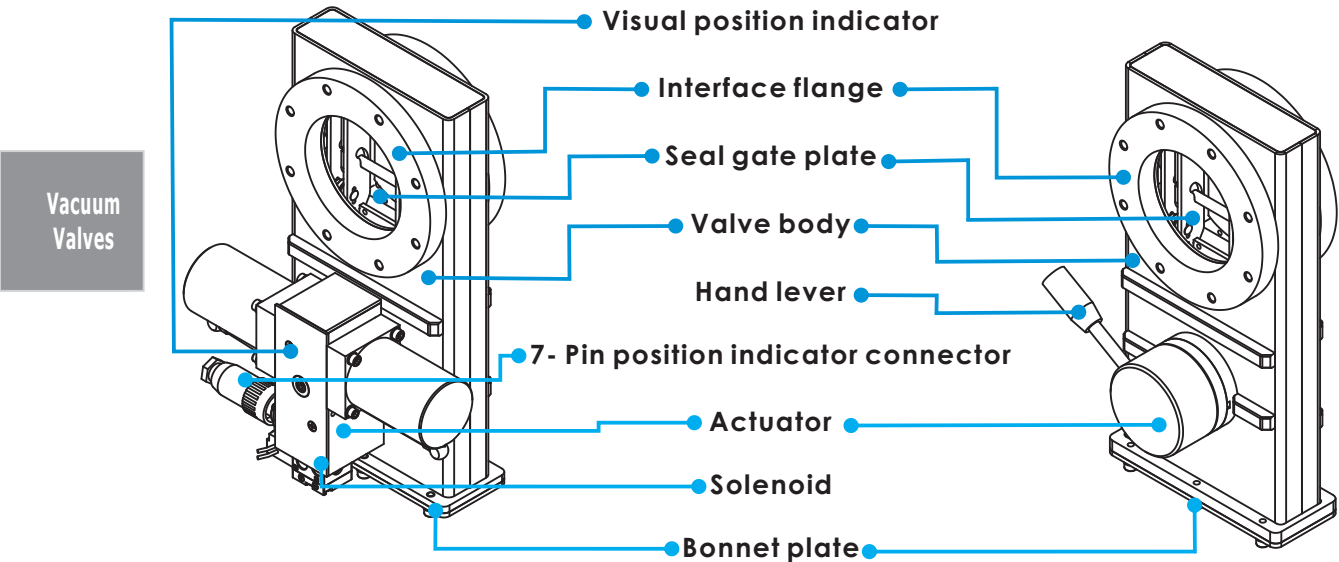
Schematic illustrating the gate valve in position between the two tubular chambers.



Valve's operation concept



Key Valve Parts



Vacuum
Valves

Technical Data for SMART Gate Valve

	High Vacuum
Feedthrough	Rotary type feedthrough
Gate seal	FKM o-ring (Optional for FFKM)
Bonnet seal	FKM O-ring
Operate pressure range	760 Torr ~ 1x10 ⁻⁸ Torr 1,000 mbar~1.33x10 ⁻⁸ mbar 100 kPa~ 1.13x10 ⁻⁹ kPa
Leak rate	1 x 10 ⁻⁹ Torr l/s, He 1.33x10 ⁻⁹ mbar l/s, He 1.13x10 ⁻¹⁰ kPa l/s, He
Cycle life	>200,000 Cycles
Temperature for valve body	250°C (482°F) Open, 200°C (392°F) Closed
Temperature for actuator	200°C
Temperature for solenoid / position indicator	80°C 176°F
Bake temperature	100°C (212°F) for FKM gate seal
Valve body material	SS304L (Optional for SS316L)
Mechanism material	SS304L
Actuator material	SS304L, Aluminum
Mounting position	Any

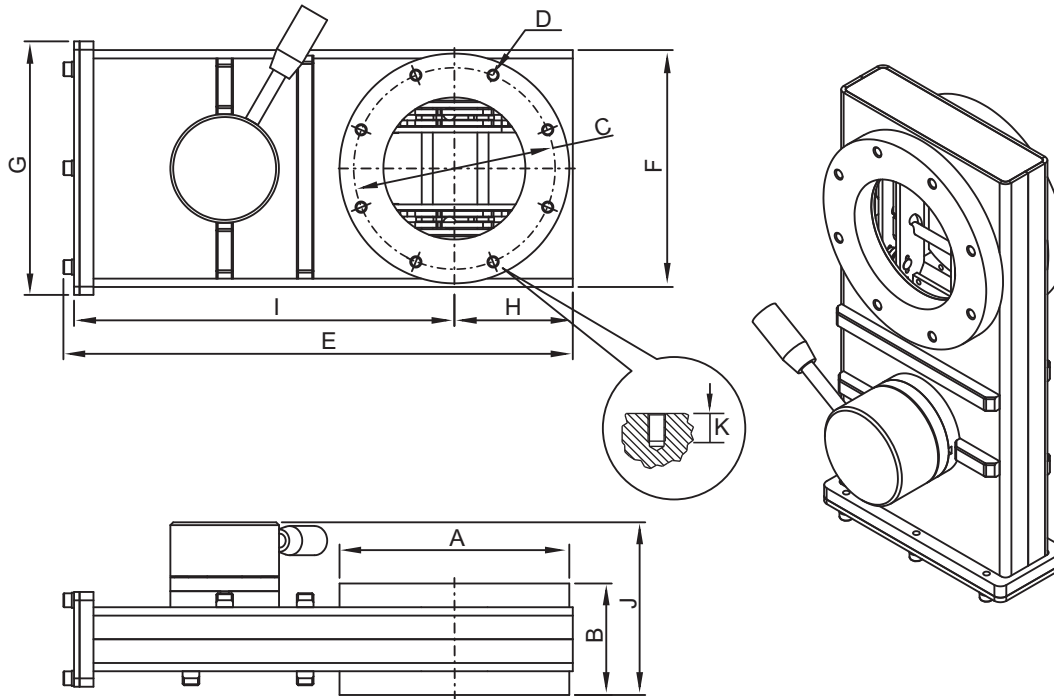
Valve’s operation data

Manual lever	180 degree angle
Pneumatic operating pressure	4 bar~8 bar
Position indicator (included as standard)	Visual indicator and micro switch with 7-pin connector
Solenoid (included as standard)	24V DC, standard option for 12V DC, 110V AC and 220V AC
Failure protection (included as standard)	SMART lock system (valve position remains and locked)

Valve's performance data

	CF6"/ISO-F100	CF8"/ISO-F160	CF10"/ISO-F200	CF12"/ISO-F250
Maximum differential pressure against gate	<1,500 Torr <2,100 mbar < 200kpa			
Maximum differential pressure at opening	<22.5 Torr <30 mbar <3 kpa	<18.7 Torr <25 mbar <2.5 kpa	<15 Torr <20 mbar <2 kpa	<11.2 Torr <15 mbar <1.5 kpa
Pneumatic valve open / close time	1.5(s)	2(s)	2.5(s)	3(s)
Valve's conductance (Molecular flow)	1,700(l/s)	5,100(l/s)	12,000(l/s)	22,000(l/s)

Product Order Information



Vacuum
Valves

♦ Manual Lever SMART Gate Valves, HV, CF Flange

Dimension in mm

Nominal I.D.	Part Number - Inch	Thread D	Part Number - Metric	Thread D	A	B	C	E	F	G	H	I	J	K
DN 63 (2.5")	SGVM-HV-CF450T	8x5/16- 24	SGVM-HV-CF450M	8xM 8	114	80	92	304	142	164	71	226	159	12
DN 100 (4")	SGVM-HV-CF600T	16x5/16- 24	SGVM-HV-CF600M	16xM 8	152	80	130	369	170	192	85	277	166	12
DN 160 (6")	SGVM-HV-CF800T	20x5/16- 24	SGVM-HV-CF800T M	20xM 8	202	80	181	511	234	266	117	385	185	15
DN 200 (8")	SGVM-HV-CF1000T	24x5/16- 24	SGVM-HV-CF1000M	24xM 8	253	90	232	693	316	334	158	525	217	15
DN 250 (10")	SGVM-HV-CF1200T	32x5/16- 24	SGVM-HV-CF1200M	32xM 8	304	110	284	792	368	390	184	597	234	18

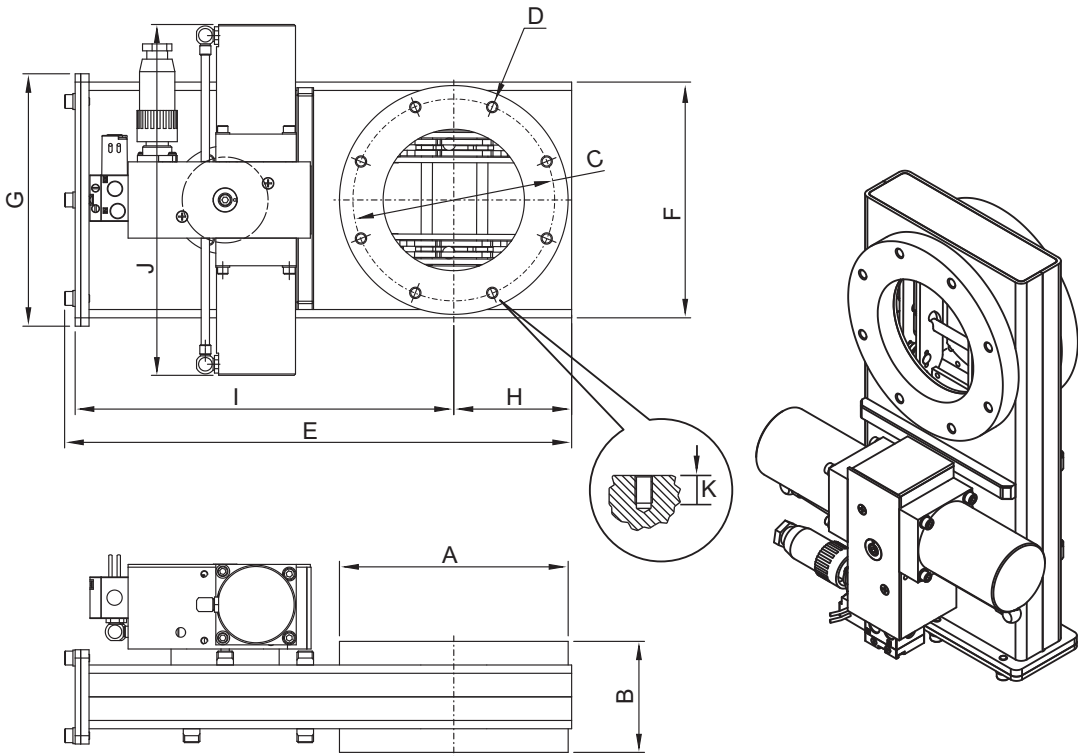
♦ Manual Lever SMART Gate Valves, HV, ISO-F Flange

Dimension in mm

Nominal I.D.	Part Number - Metric	Thread D	A	B	C	E	F	G	H	I	J	K
DN 63 (2.5")	SGVM-HV-ISOF63	4xM8	130	80	110	300	142	154	71	222	118	12
DN 100 (4")	SGVM-HV-ISOF100	8xM8	165	80	145	366	170	182	85	273	119	12
DN 160 (6")	SGVM-HV-ISOF160	8xM10	225	80	200	504	234	250	117	378	138	15
DN 200 (8")	SGVM-HV-ISOF200	12xM10	285	90	260	692	316	334	158	525	169	15
DN 250 (10")	SGVM-HV-ISOF250	12xM10	335	110	310	792	368	390	184	597	186	18

Product Order Information

Vacuum
Valves



♦ Pneumatic SMART Gate Valves, HV, CF Flange

Dimension in mm

Nominal I.D.	Part Number- Inch	Thread D	Part Number- Metric	Thread D	A	B	C	E	F	G	H	I	J	K
DN 63 (2.5")	SGVP-HV-CF450T	8x5/16-24	SGVP-HV-CF450M	8xM8	114	80	92	300	142	154	71	222	230	12
DN 100 (4")	SGVP-HV-CF600T	16x5/16-24	SGVP-HV-CF600M	16xM8	152	80	130	366	170	182	85	273	253	12
DN 160 (6")	SGVP-HV-CF800T	20x5/16-24	SGVP-HV-CF800M	20xM8	202	80	181	504	234	250	117	378	299	15
DN 200 (8")	SGVP-HV-CF1000T	24x5/16-24	SGVP-HV-CF1000M	24xM8	253	90	232	693	316	334	158	525	388	15
DN 250 (10")	SGVP-HV-CF1200T	32x5/16-24	SGVP-HV-CF1200M	32xM8	304	110	284	792	368	390	184	597	386	18

♦ Pneumatic SMART Gate Valves, HV, ISO-F Flange

Dimension in mm

Nominal I.D.	Part Number- Metric	Thread D	A	B	C	E	F	G	H	I	J	K
DN 63 (2.5")	SGVP-HV-ISOF63	4xM8	130	80	110	300	142	154	71	222	230	12
DN 100 (4")	SGVP-HV-ISOF100	8xM8	165	80	145	366	170	182	85	273	253	12
DN 160 (6")	SGVP-HV-ISOF160	8xM10	225	80	200	504	234	250	117	378	299	15
DN 200 (8")	SGVP-HV-ISOF200	12xM10	285	90	260	692	316	334	158	525	388	15
DN 250 (10")	SGVP-HV-ISOF250	12xM10	335	110	310	792	368	390	184	597	386	18

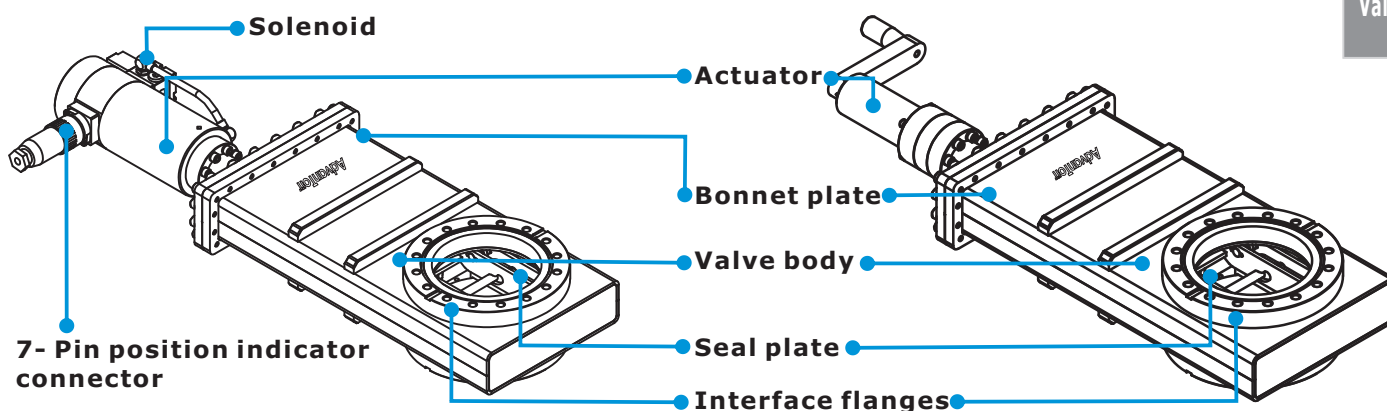
Key Valve Parts

"In-Axis" is **AdvanTorr's** range of SMART gate valves that offers pneumatic only actuation with vertical orientation of the drive mechanism, making them ideal for when a small footprint is required within a system.

Features

- * In-Axis gate valve with integrated S.M.A.R.T. lock system.
- * Welded bellows feedthrough for longer life and ease of service.
- * Low particle generation for clean and sensitive environments.
- * Softshut gate mechanism, ideal for clean processes.

Vacuum
Valves



Technical Data for In- Axis Gate Valve

	Ultra High Vacuum	High Vacuum
Feedthrough	Welded bellows in AM350	Welded bellows in AM350
Gate seal	FKM o-ring (Optional for FFKM)	FKM o-ring (Optional for FFKM)
Bonnet seal	OFHC metal gasket	FKM O-ring
Operate pressure range	760 Torr ~ 1×10^{-10} Torr 1,000 mbar ~ 1.33×10^{-10} mbar 100 kPa ~ 1.13×10^{-11} kPa	760 Torr ~ 1×10^{-8} Torr 1,000 mbar ~ 1.33×10^{-8} mbar 100 kPa ~ 1.13×10^{-9} kPa
Leak rate	1×10^{-10} Torr l/s, He 1.33×10^{-10} mbar l/s, He 1.13×10^{-11} kPa l/s, He	1×10^{-9} Torr l/s, He 1.33×10^{-9} mbar l/s, He 1.13×10^{-10} kPa l/s, He
Cycle life	>50,000 Cycles	>200,000 Cycles
Temperature for valve body	250°C (482°F) Open, 200°C (392°F) Closed	
Temperature for actuator	100°C (212°F)	
Temperature for solenoid / position indicator	80°C 176°F	
Bake temperature	200°C (392°F) for FKM gate seal	100°C (212°F) for FKM gate seal
Valve body material	SS304L (Optional for SS316L)	
Mechanism material	SS304L	
Actuator material	SS304L, Aluminum	
Mounting position	Any	

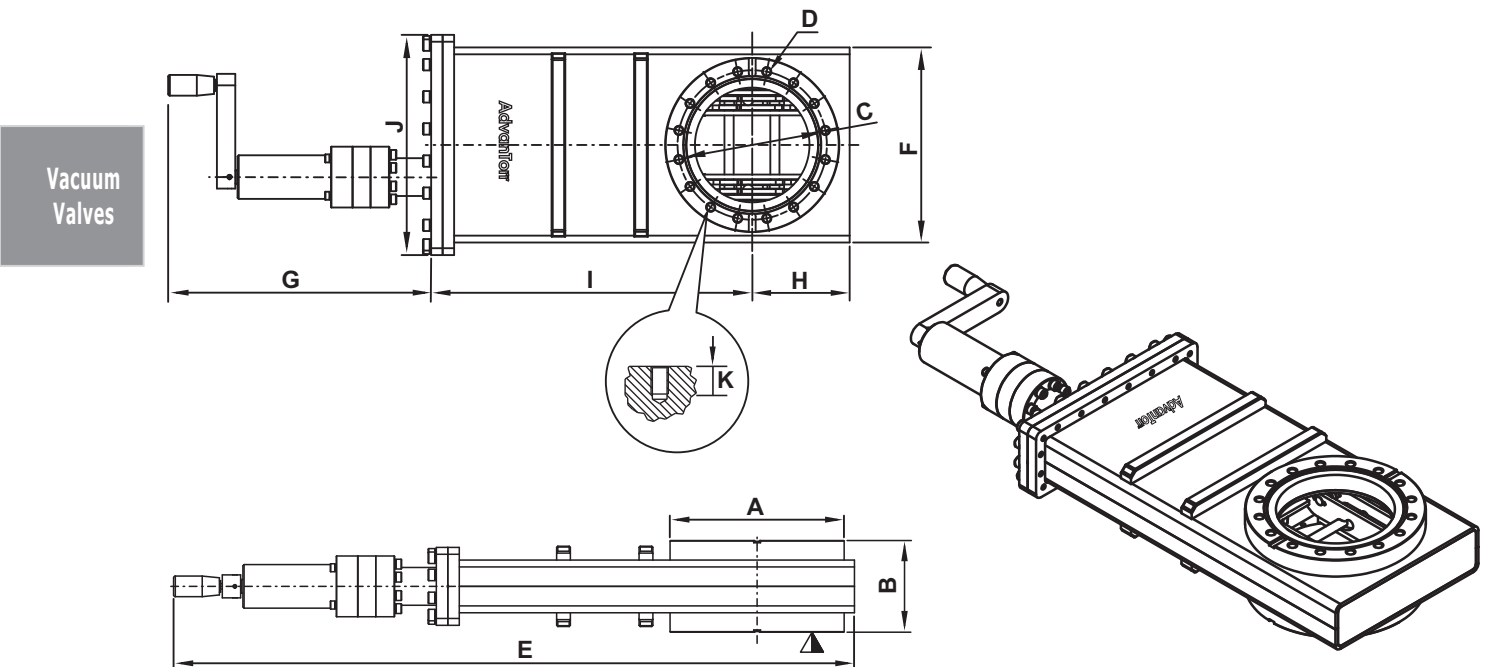
Valve's operation data

Pneumatic operating pressure	4 bar ~ 8 bar 400 kpa ~ 800 kpa 58psi ~ 116 psi
Position indicator (included as standard)	Visual indicator and micro switch with 7-pin connector
Solenoid (included as standard)	24V DC, standard option for 12V DC, 110V AC and 220V AC
Failure protection (included as standard)	SMART lock system (valve position remains and locked)

Valve's performance data

	CF6"/ISO-F100	CF8"/ISO-F160	CF10"/ISO-F200	CF12"/ISO-F250
Maximum differential pressure against gate	<825 Torr <1,100 mbar < 109kpa			
Maximum differential pressure at opening	<22.5 Torr <30 mbar <3 kpa	<18.7 Torr <25 mbar <2.5 kpa	<15 Torr <20 mbar <2 kpa	<11.2 Torr <15 mbar <1.5 kpa
Pneumatic valve open / close time	1.5(s)	2(s)	2.5(s)	3(s)
Valve's conductance (Molecular flow)	1,700(l/s)	5,100(l/s)	12,000(l/s)	22,000(l/s)

Product Order Information



Manual In- Axis Gate Valves, UHV, CF Flange

Dimension in mm

Nominal I.D.	Part Number- Inch	Thread D	Part Number- Metric	Thread D	A	B	C	E	F	G	H	I	J	K
DN 63 (2.5")	AGVM-UHV-CF450T	8x5/16-24	AGVM-UHV-CF450M	8xM8	114	80	92	530	142	231	71	228	164	12
DN 100 (4")	AGVM-UHV-CF600T	16x5/16-24	AGVM-UHV-CF600M	16xM8	152	80	130	594	170	229	85	280	192	12
DN 160 (6")	AGVM-UHV-CF800T	20x5/16-24	AGVM-UHV-CF800M	20xM8	202	80	181	758	234	263	117	378	266	10
DN 200 (8")	AGVM-UHV-CF1000T	24x5/16-24	AGVM-UHV-CF1000M	24xM8	253	90	232	961	316	282	158	521	344	15
DN 250 (10")	AGVM-UHV-CF1200T	32x5/16-24	AGVM-UHV-CF1200M	32xM8	304	110	284	1142	368	356	184	603	402	18

Manual In- Axis Gate Valves, HV, CF Flange

Dimension in mm

Nominal I.D.	Part Number- Inch	Thread D	Part Number- Metric	Thread D	A	B	C	E	F	G	H	I	J	K
DN 63 (2.5")	AGVM-HV-CF450T	8x5/16-24	AGVM-HV-CF450M	8xM8	114	80	92	495	142	196	71	228	154	12
DN 100 (4")	AGVM-HV-CF600T	16x5/16-24	AGVM-HV-CF600M	16xM8	152	80	130	560	170	193	85	282	182	12
DN 160 (6")	AGVM-HV-CF800T	20x5/16-24	AGVM-HV-CF800M	20xM8	202	80	181	758	234	265	117	376	250	10
DN 200 (8")	AGVM-HV-CF1000T	24x5/16-24	AGVM-HV-CF1000M	24xM8	253	90	232	940	316	263	158	519	334	15
DN 250 (10")	AGVM-HV-CF1200T	32x5/16-24	AGVM-HV-CF1200M	32xM8	304	110	284	1142	368	355	184	603	402	18

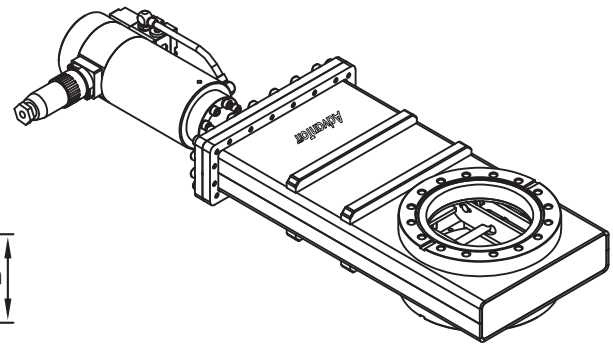
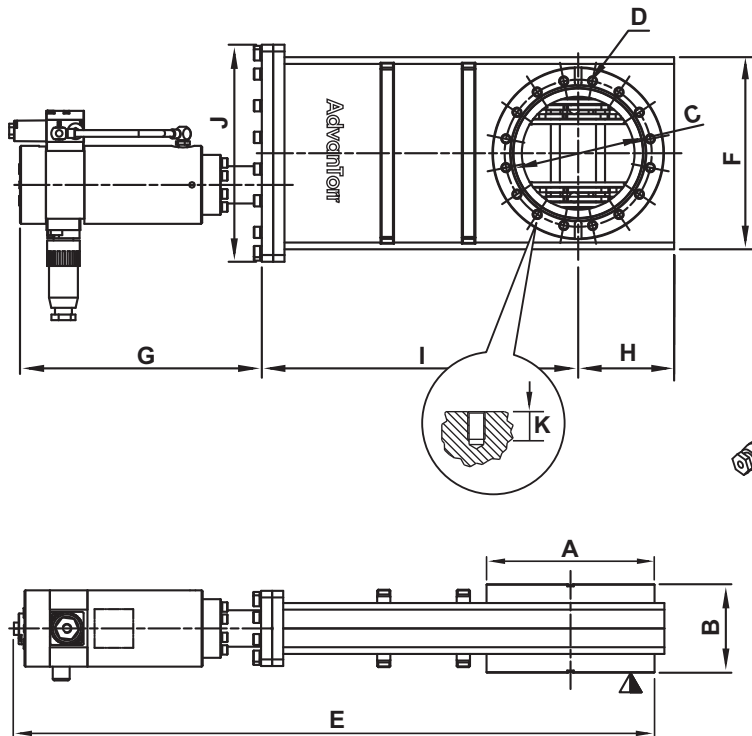
Manual In- Axis Gate Valves, HV, ISO-F Flange

Dimension in mm

Nominal I.D.	Part Number- Metric	Thread D	A	B	C	E	F	G	H	I	J	K
DN 63 (2.5")	AGVM-HV-ISOF63	4xM8	130	80	110	495	142	196	71	228	154	12
DN 100 (4")	AGVM-HV-ISOF100	8xM8	165	80	145	560	170	193	85	282	182	12
DN 160 (6")	AGVM-HV-ISOF160	8xM10	225	80	200	758	234	265	117	376	250	10
DN 200 (8")	AGVM-HV-ISOF200	12xM10	285	90	260	940	316	263	158	519	334	15
DN 250 (10")	AGVM-HV-ISOF250	12xM10	335	110	310	1142	368	355	184	603	402	18

Product Order Information

Vacuum
Valves



♦ Pneumatic In- Axis Gate Valves, UHV, CF Flange

Dimension in mm

Nominal I.D.	Part Number- Inch	Thread D	Part Number- Metric	Thread D	A	B	C	E	F	G	H	I	J	K
DN 63 (2.5")	AGVP-UHV-CF450T	8x5/16-24	AGVP-UHV-CF450M	8xM8	114	80	92	527	142	227	71	229	164	12
DN 100 (4")	AGVP-UHV-CF600T	16x5/16-24	AGVP-UHV-CF600M	16xM8	152	80	130	589	170	224	85	280	192	12
DN 160 (6")	AGVP-UHV-CF800T	20x5/16-24	AGVP-UHV-CF800M	20xM8	202	80	181	746	234	254	117	378	266	10
DN 200 (8")	AGVP-UHV-CF1000T	24x5/16-24	AGVP-UHV-CF1000M	24xM8	253	90	232	948	316	269	158	521	344	15
DN 250 (10")	AGVP-UHV-CF1200T	32x5/16-24	AGVP-UHV-CF1200M	32xM8	304	110	284	1131	368	345	184	602	402	18

♦ Pneumatic In- Axis Gate Valves, HV, CF Flange

Dimension in mm

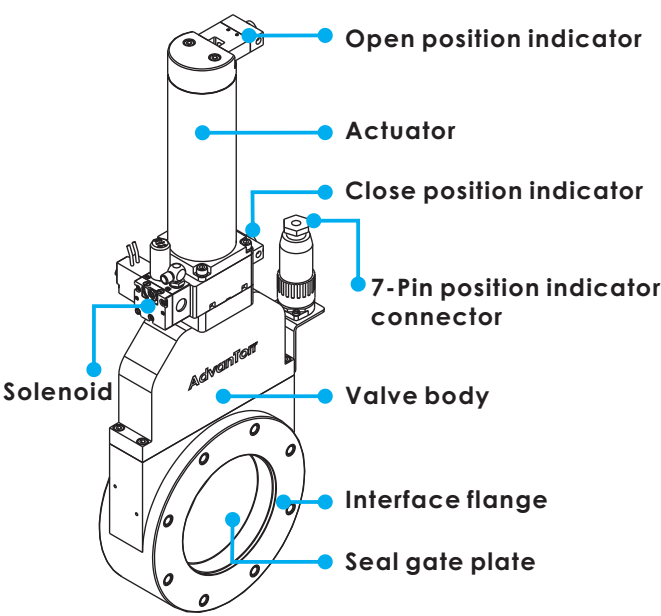
Nominal I.D.	Part Number- Inch	Thread D	Part Number- Metric	Thread D	A	B	C	E	F	G	H	I	J	K
DN 63 (2.5")	AGVP-HV-CF450T	8x5/16-24	AGVP-HV-CF450M	8xM8	114	80	92	492	142	192	71	228	154	12
DN 100 (4")	AGVP-HV-CF600T	16x5/16-24	AGVP-HV-CF600M	16xM8	152	80	130	555	170	188	85	282	182	12
DN 160 (6")	AGVP-HV-CF800T	20x5/16-24	AGVP-HV-CF800M	20xM8	202	80	181	746	234	253	117	376	250	10
DN 200 (8")	AGVP-HV-CF1000T	24x5/16-24	AGVP-HV-CF1000M	24xM8	253	90	232	927	316	250	158	519	334	15
DN 250 (10")	AGVP-HV-CF1200T	32x5/16-24	AGVP-HV-CF1200M	32xM8	304	110	284	1131	368	345	184	603	402	18

♦ Pneumatic In- Axis Gate Valves, HV, ISO-F Flange

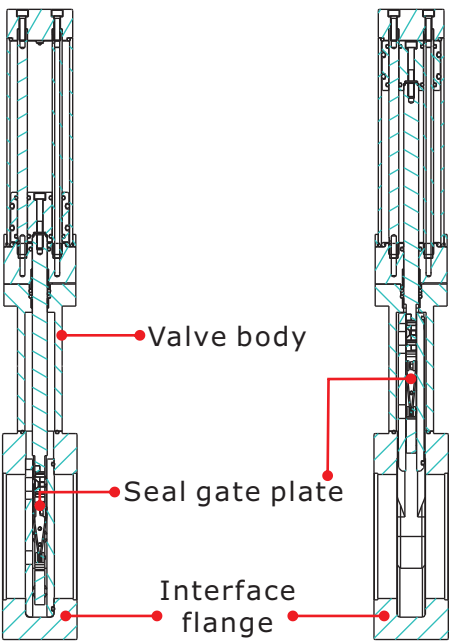
Dimension in mm

Nominal I.D.	Part Number- Metric	Thread D	A	B	C	E	F	G	H	I	J	K
DN 63 (2.5")	AGVP-HV-ISOF63	4xM8	130	80	110	491	142	192	71	228	154	12
DN 100 (4")	AGVP-HV-ISOF100	8xM8	165	80	145	555	170	188	85	282	182	12
DN 160 (6")	AGVP-HV-ISOF160	8xM10	225	80	200	746	234	253	117	376	250	10
DN 200 (8")	AGVP-HV-ISOF200	12xM10	285	90	260	927	316	250	158	519	334	15
DN 250 (10")	AGVP-HV-ISOF250	12xM10	335	110	310	1131	368	345	184	603	402	18

Key Valve Parts



Valve's operation concept



Closed position

Open position

Technical Data for Aluminum Gate Valve

	High Vacuum
Feedthrough	Rotary type feedthrough
Gate seal	FKM o-ring (Optional for FFKM)
Bonnet seal	FKM O-ring
Operate pressure range	DN100~DN200 1x10 ⁻⁷ mbar to 1.6 bar Dn250 1x10 ⁻⁷ mbar to 1.2 bar
Leak rate	1x10 ⁻⁹ mbar l/s ⁻¹
Cycle life	200,000 / 100,000 Cycles
Temperature for valve body	≤120°C(248°F)
Temperature for actuator	≤80°C(176°F)
Temperature for solenoid / position indicator	≤50°C(122°F)
Bake temperature	100°C (212°F) for FKM gate seal
Valve body material	Aluminum
Mechanism material	SS304L, SS303L, SS420L, Aluminum
Actuator material	Aluminum
Mounting position	Any

Valve's operation data

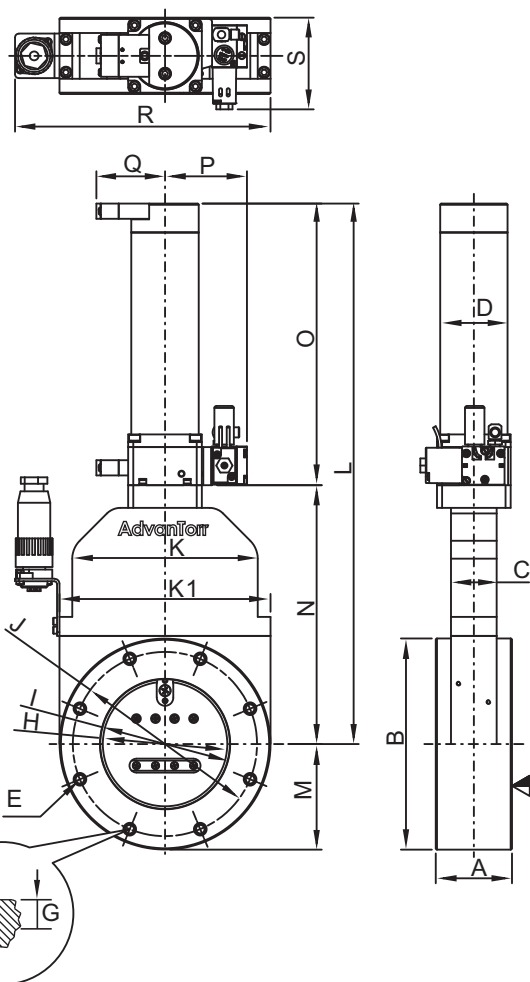
Pneumatic operating pressure	4 bar~7 bar
Position indicator (included as standard)	Visual indicator and micro switch with 7-pin connector
Solenoid (included as standard)	24V DC, standard option for 12V DC, 110V AC and 220V AC
Failure protection (included as standard)	Roller Lock (valve position remains and locked)

Valve's performance data

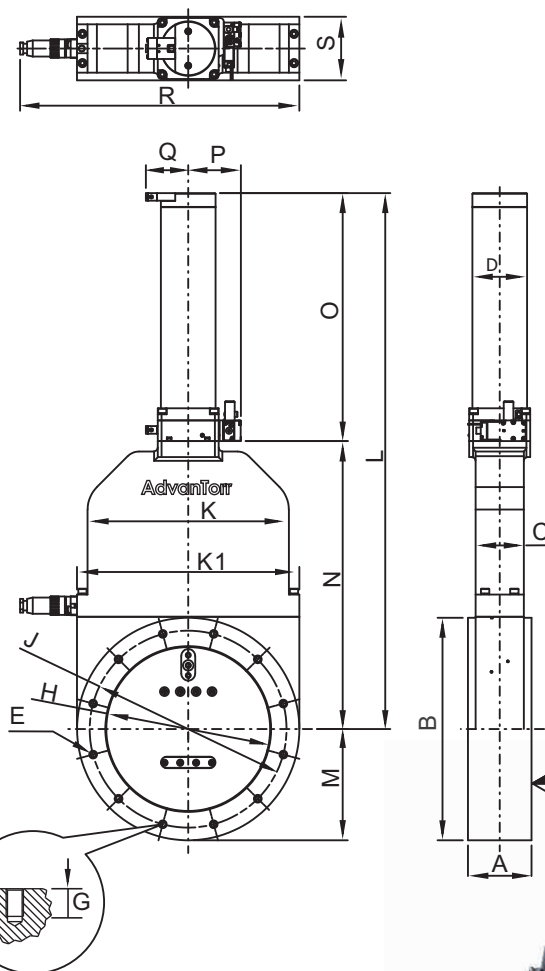
	ISO-F100	ISO-F160	ISO-F200	ISO-F250
Maximum differential pressure against gate	<1,200 Torr <1,600mbr <160kPa	<900 Torr <1,200mbr <120kPa	<900 Torr <1,200mbr <120kPa	<900 Torr <1,200mbr <120kPa
Maximum differential pressure at opening	<22.5 Torr <30mbr <3kPa			
Pneumatic valve open / close time	2(s)	2(s)	3(s)	5(s)
Valve's conductance (Molecular flow)	2,000 (l/s)	6,000 (l/s)	12,000 (l/s)	22,000 (l/s)

Product Order Information

◆ Figure 1



◆ Figure 2



Vacuum
Valves



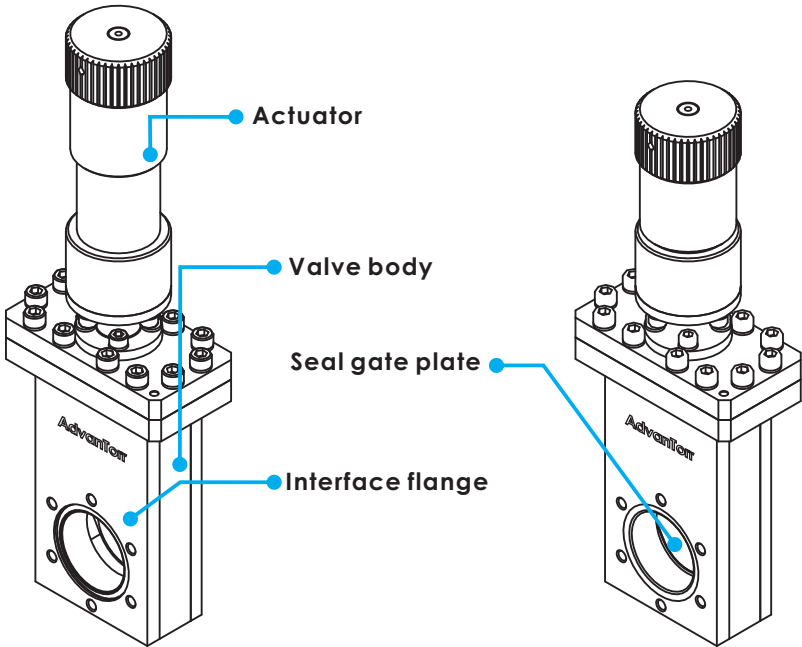
◆ Pneumatic Aluminum Gate Valves

Part Number	Tube OD	Figure	A	B	C	D	Thread E	G	H	I	J
AGV-HV-ISOF100	4"	1	60	166	36	53	8xM8	12	100	102	145
AGV-HV-ISOF160	6"	1	70	237	58	65	8xM10	16	150	153	200
AGV-HV-ISOF200	8"	1	80	288	66	75	12xM10	16	200	213	260
AGV-HV-ISOF250	10"	2	100	350	76	86	12xM10	16	261	-	310

K	K1	L	M	N	O	P	Q	R	S
146	166	425	83	204	222	65	54	201	72
192	237	547	119	280	267	70	60	319	78
243	288	688	144	364	325	72	62	323	83
317	350	843	175	453	390	83	67	440	100

Dimension in mm

Key Valve Parts



Technical Data for Kompact Gate Valve

	Ultra High Vacuum
Feedthrough	Weld-bellows in AM350
Gate seal	FKM o-ring with bonding on the metal
Bonnet seal	Metal gasket
Operate pressure range	1x10 ⁻¹⁰ mbar to 2 bar(abs)
Leak rate (bosy/ valve seat)	1 x 10 ⁻¹⁰ Torr l/s, He 1.33x10 ⁻¹⁰ mbar l/s, He 1.13x10 ⁻¹¹ kPa l/s, He
Cycle life	>50,000 Cycles
Temperature for valve body	≤250°C(482°F) open,≤200°C(392°F) closed
Temperature for actuator	≤200°C(392°F)
Temperature for solenoid / position indicator	≤50°C(122°F) / ≤80°C(176°F)
Bake temperature	200°C (392°F) for FKM gate (bonding) seal
Valve body material	Optional for SS304L and SS316L
Mechanism material	Stainless steel, Aluminum
Actuator material	Aluminum
Mounting position	Any

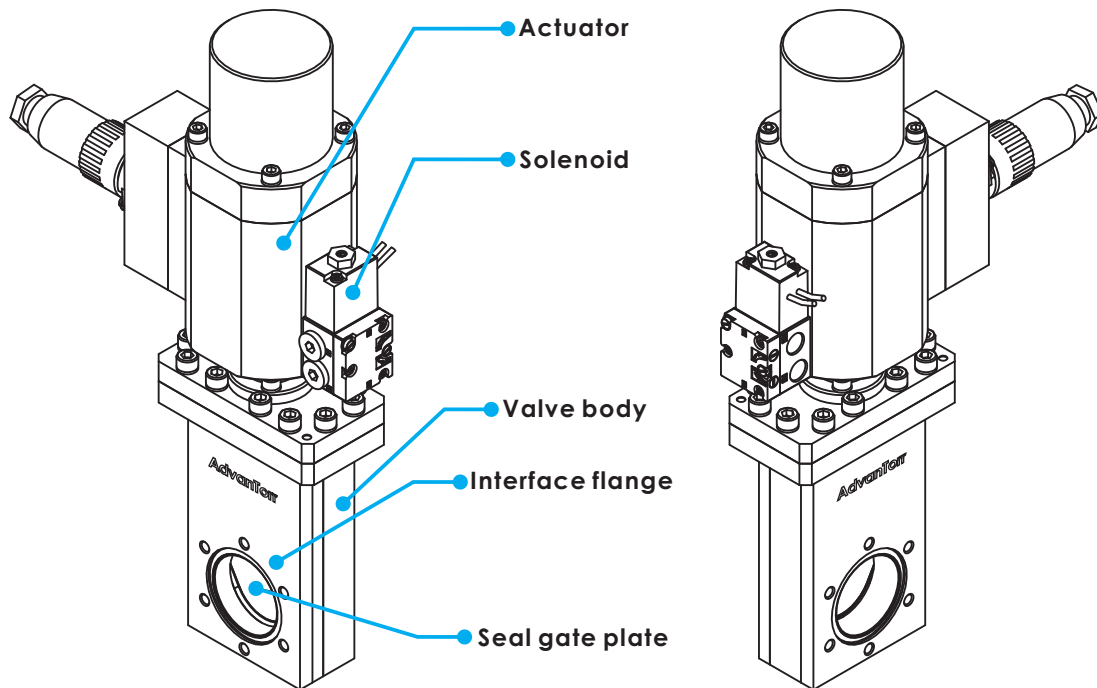
Valve’s operation data

Pneumatic operating pressure	1x10 ⁻¹⁰ mbar to 2 bar(abs)
Compressed air pressure min.- max. Overpressure.	5~7 bar
Position indicator (included as standard)	Visual indicator and micro switch with 7-pin connector
Solenoid (included as standard)	24V DC, standard option for 12V DC, 110V AC and 220V AC
Failure protection (included as standard)	Build in SMART lock system (Valve position remain and locked)

Valve's performance data

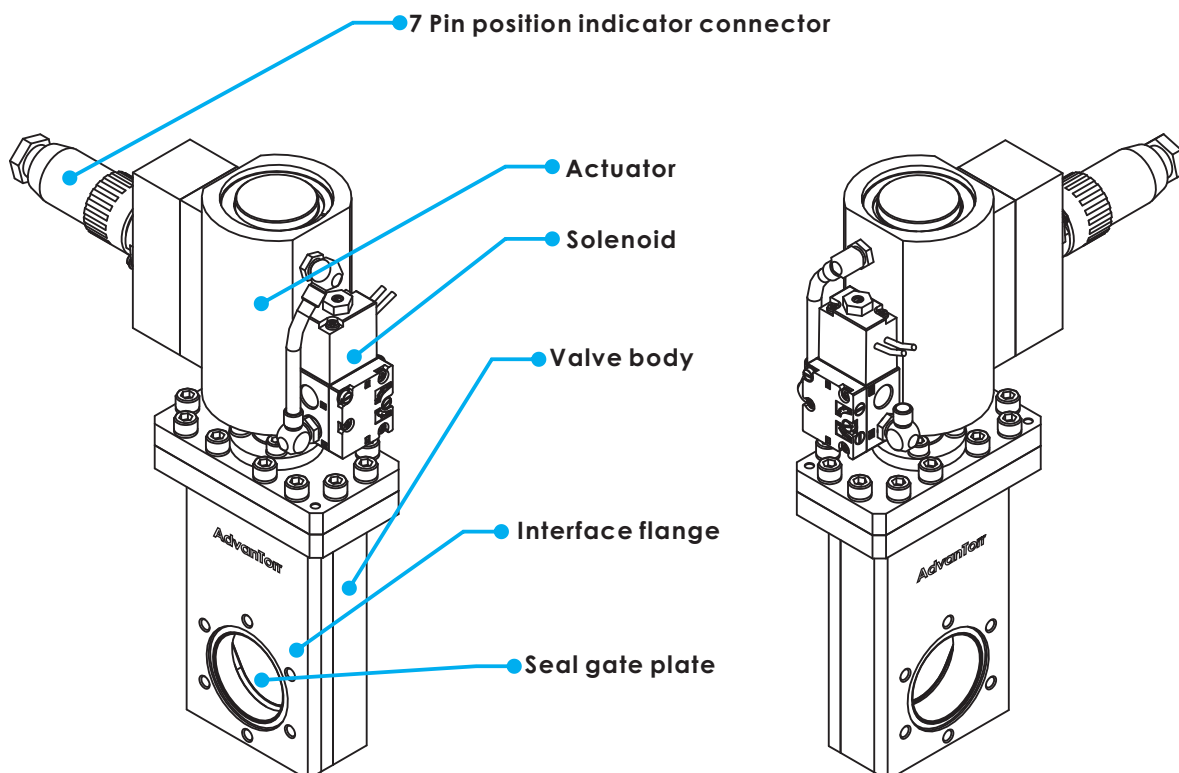
	CF2.75
Maximum differential pressure against gate	≤2 bar
Maximum differential pressure at opening	≤30 mbar
Pneumatic valve open / close time	0.7 (s)
Valve's conductance (Molecular flow)	220 (l/s)

Key Valve Parts of Gate Valve- Single Acting _____



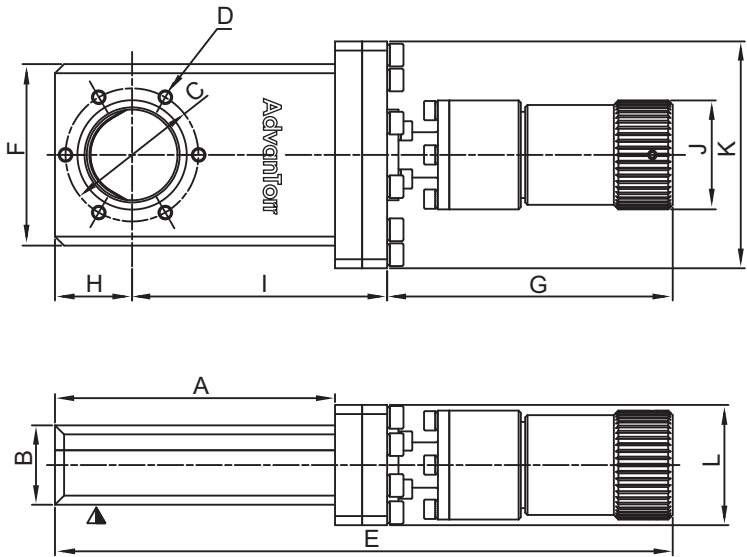
Vacuum
Valves

Key Valve Parts of Gate Valve- Double Acting _____



Product Order Information

Vacuum
Valves



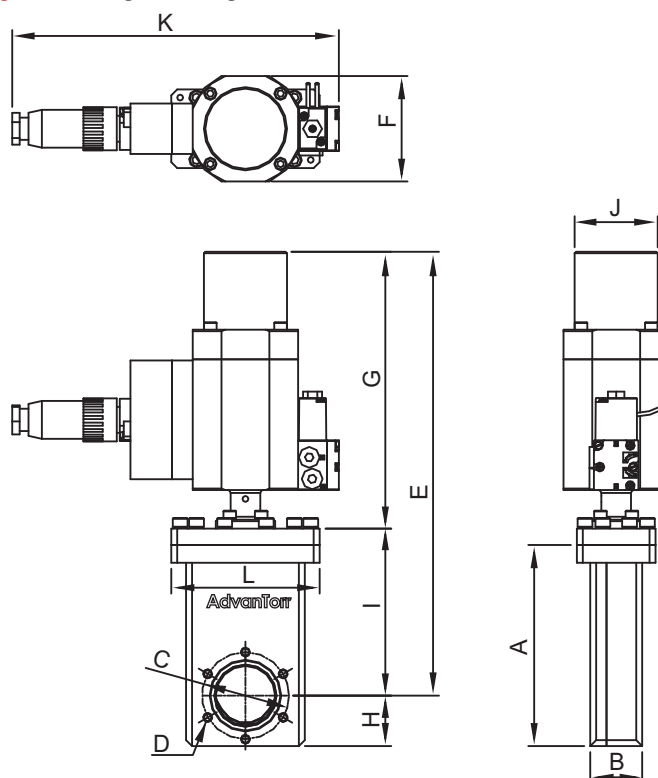
♦ UHV Manual Kompact Gate Valves

Dimension in mm

Part Number	Tube OD	A	B	C	D	E	F	G	H	I	J	K	L
KGM-UHV-CF-275	40	124	35	59	6xM6	273	80	126	34	113	48	100	53

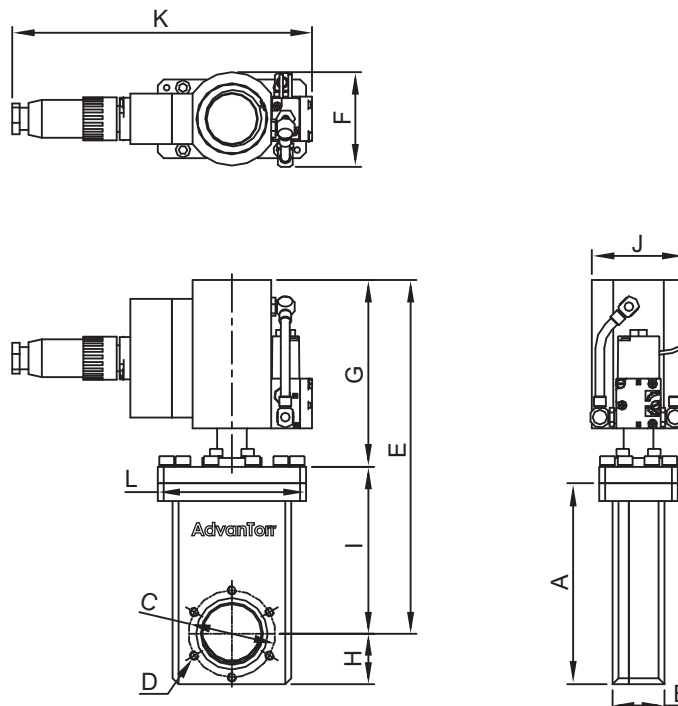
Product Order Information

Figure 1- Single Acting



Vacuum
Valves

Figure 2- Double Acting



◆ UHV Pneumatic Kompact Gate Valves

Dimension in mm

Part Number	Tube OD	Figure	A	B	C	D	E	F	G	H	I	J	K	L
KGP-UHV-CF-275-S	40	1	136	35	59	6xM6	299	71	187	34	113	56	220	100
KGP-UHV-CF-275-D	40	2	136	35	59	6xM6	239	64	126	34	113	63	202	100



Vacuum Poppet Valves

•Email: info@kinglai.com.tw

•Website: www.advantorr.com



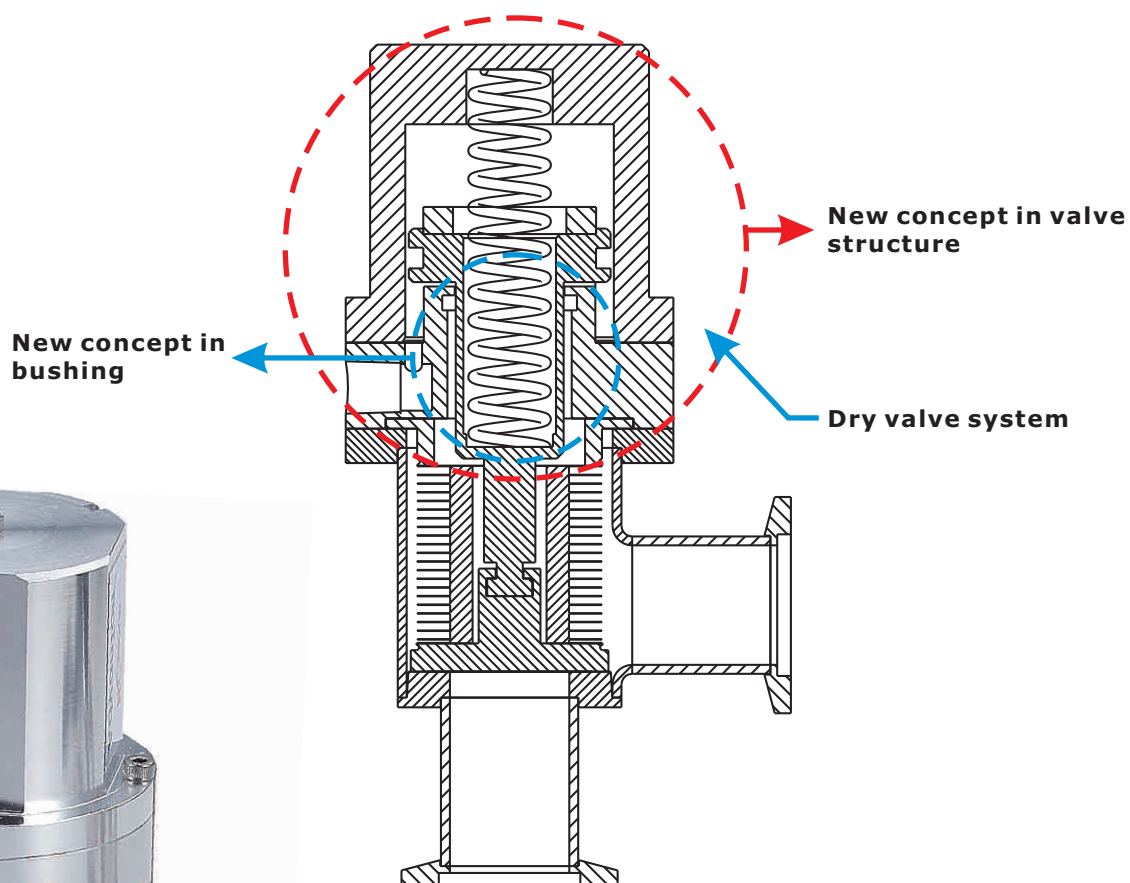
Product Introduction

Isolation Poppet Valves are typically used as 'shut-off' devices and are installed in roughing and fore lines where most applications connect to an exhaust system and there is a potential risk of contamination. In addition, special design 'dry valves' offer the necessary protection for vacuum systems when back streaming occurs. The Poppet Valves use edge welded bellows as standard and provide optimum conductance with a small footprint design.

Vacuum Valves

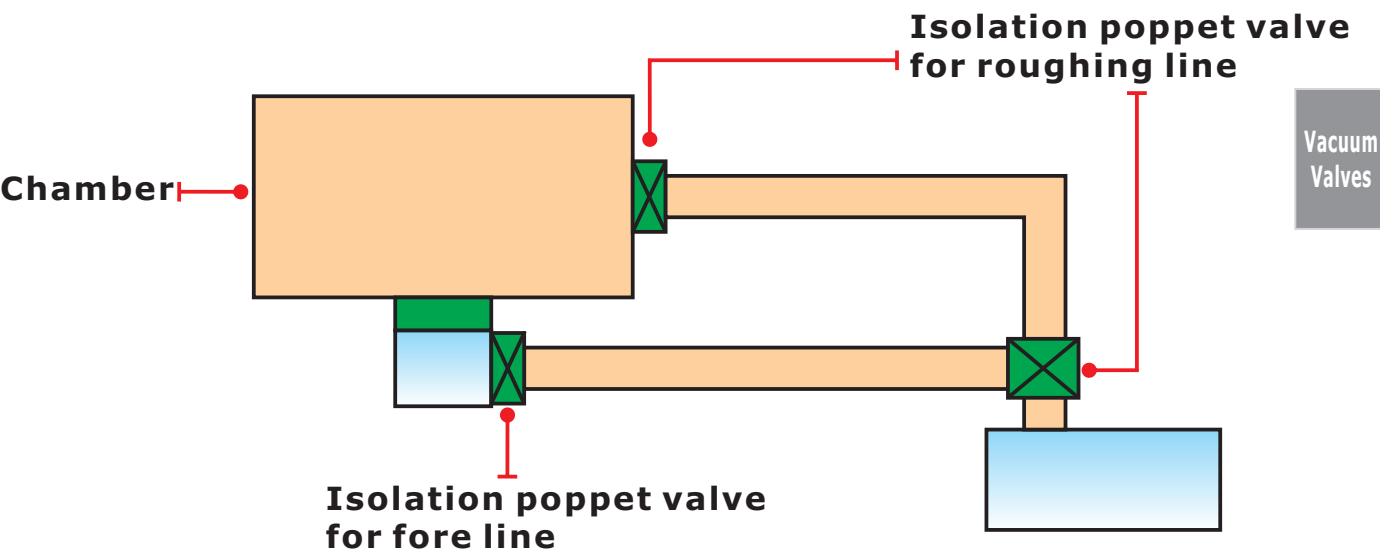
Product Features

- Available in a wide range of sizes from 3/4" to 2" orifice.
- > 1 million cycles between service intervals.
- Compact, low profile, small footprint design.
- Spring returned to 'closed' during power / air failure.
- High purity, dry valve system with a self-lubricating mechanism, significantly reduces particle generation.

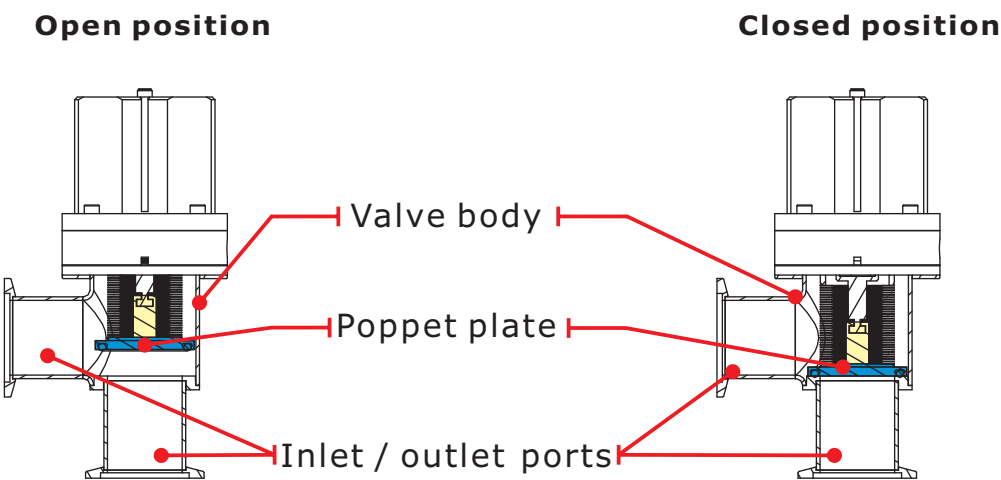


Product's Application

Poppet valves in roughing and fore lines.

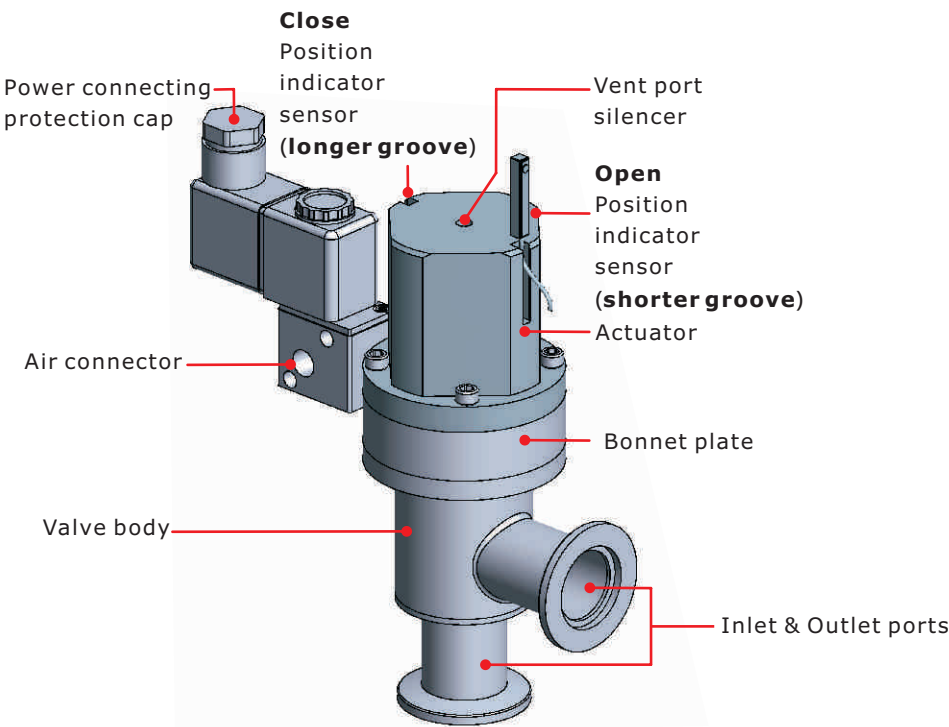


Valve's operation concept



Key Valve Parts

Key parts of poppet valve- single acting



Technical data for poppet angle / inline valves

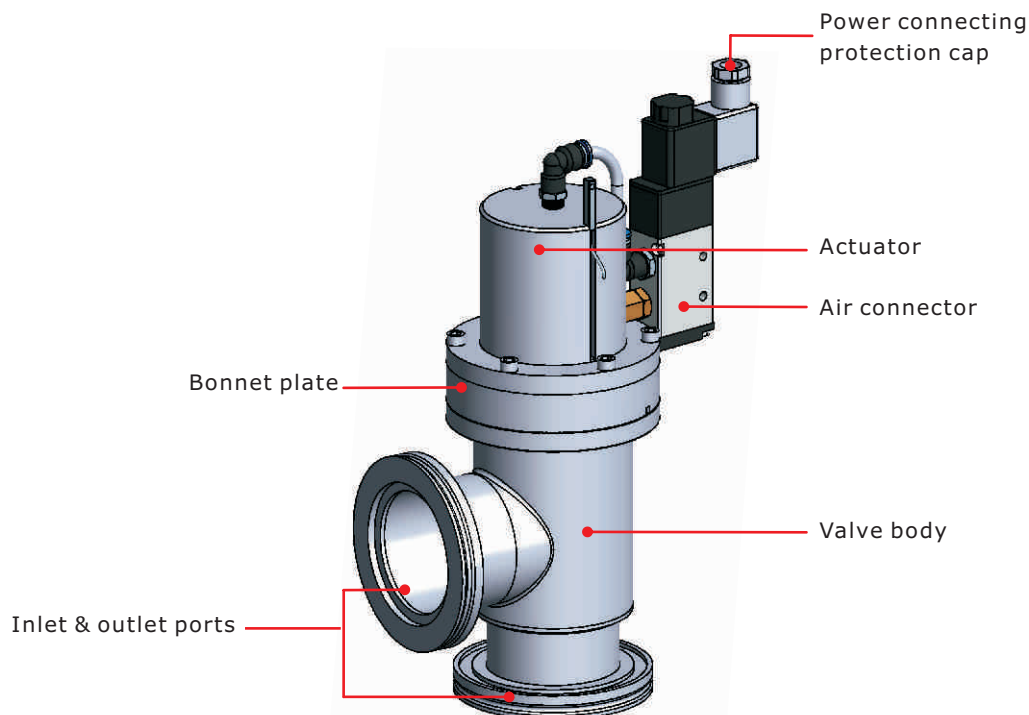
	Ultra High Vacuum	High Vacuum
Feedthrough	Welded bellows in AM350	Welded bellows in AM350
Gate seal	FKM o-ring (Optional for FFKM)	FKM o-ring (Optional for FFKM)
Bonnet seal	OFHC metal gasket	FKM
Operate pressure range	2,500 Torr ~ 1x10 ⁻¹⁰ Torr 2,000 mbar~1.33x10 ⁻¹⁰ mbar 200 kPa~ 1.13x10 ⁻¹¹ kPa	2,500 Torr ~ 1x10 ⁻⁸ Torr 2,000 mbar~1.33x10 ⁻⁸ mbar 200 kPa~ 1.13x10 ⁻⁹ kPa
Leak rate	1 x 10 ⁻¹⁰ Torr l/s, He 1.33x10 ⁻¹⁰ mbar l/s, He 1.13x10 ⁻¹¹ kPa l/s, He	1 x 10 ⁻⁹ Torr l/s, He 1.33x10 ⁻⁹ mbar l/s, He 1.13x10 ⁻¹⁰ kPa l/s, He
Cycle life	>1,000,000 Cycles	
Temperature for valve body	250°C (482°F) Open, 200°C (392°F) Closed	
Temperature for actuator	100°C (212°F)	
Temperature for solenoid / position indicator	80°C 176°F	
Bake temperature	200°C (392°F) for FKM gate seal	100°C (212°F) for FKM gate seal
Valve body material	SS304L (Optional for SS316L)	
Mechanism material	SS304L	
Actuator material	Aluminum	
Mounting position	Any	

Valve’s operation data

Pneumatic operating pressure	4 bar~ 5.5 bar 400 kpa~ 550 kpa 58 psi~ 80 psi
Position indicator (Optional)	Optional magnetic sensor with wire end
Solenoid (optional)	Optional for 24V DC, standard
Failure protection (included as standard)	Spring closed for KF16, KF25, KF40, KF50, CF1.33", CF2.75"

Key Valve Parts

Key parts of Poppet Valve- double acting



Vacuum
Valves

Valve's performance data

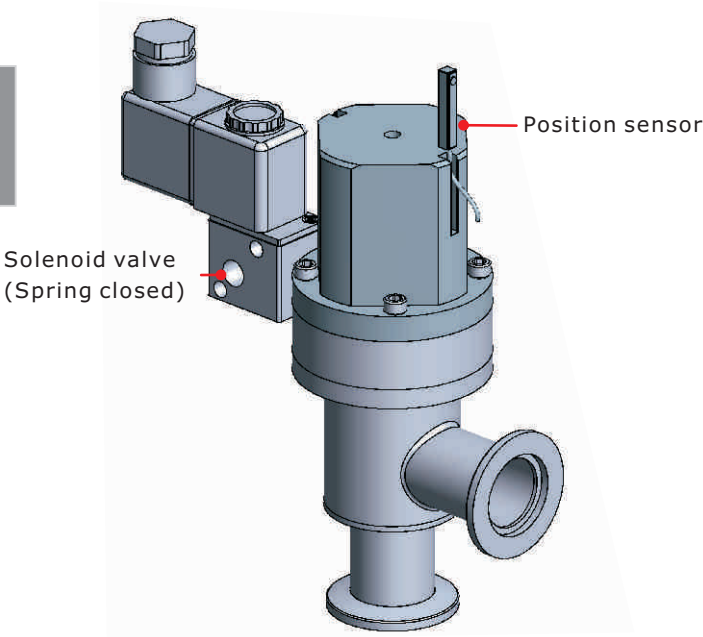
	KF16/CF1.33"	KF25/CF2.12"	KF40/CF2.75"	KF50/CF3.38"	ISO-K63/CF4.5"
Maximum differential pressure against gate	2,025 Torr 2,700 mbar 270 kpa	1,800 Torr 2,400 mbar 240 kpa	1,725 Torr 2,300 mbar 230 kpa	1,500 Torr 2,000 mbar 200 kpa	2,925 Torr 3,900 mbar 390 kpa
Maximum differential pressure at opening	1,500 Torr 2,000 mbar 200 kpa				
Pneumatic valve open / close time	0.5(s)	0.6(s)	0.8(s)	0.9(s)	0.7(s)
Valve's conductance angle type (molecular flow)	6(l/s)	15(l/s)	48(l/s)	82(l/s)	170(l/s)
Valve's conductance inline type (molecular flow)	5(l/s)	12(l/s)	44(l/s)	66(l/s)	135(l/s)

	ISO-K 80	ISO-K 100/CF6"	ISO-K 160/CF8"	ISO-K 200	ISO-K 250
Maximum differential pressure against gate	2,925 Torr 3,900 mbar 391 kpa	2,925 Torr 3,900 mbar 392 kpa	3,300 Torr 4,400 mbar 440 kpa	3,300 Torr 4,400 mbar 441 kpa	3,300 Torr 4,400 mbar 442 kpa
Maximum differential pressure at opening	1,500 Torr 2,000 mbar 200 kpa				
Pneumatic valve open / close time	0.7(s)	0.8(s)	1.5(s)	2.5(s)	2.8(s)
Valve's conductance angle type (molecular flow)	220(l/s)	490(l/s)	1090(l/s)	1,600(l/s)	2,650(l/s)
Valve's conductance inline type (molecular flow)	184(l/s)	406(l/s)	N/A	N/A	N/A

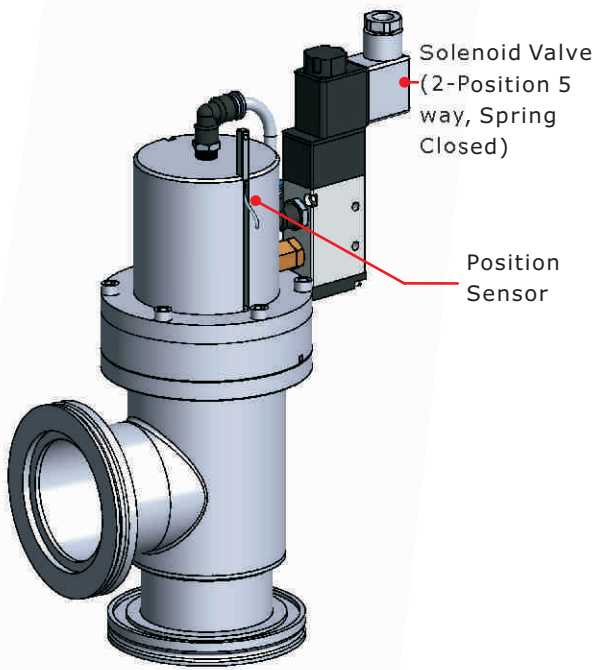
Product Order Information

Vacuum
Valves

Single acting



Double acting



ACCESSORIES

Position Sensor
with LED Light Indication

Part Number	Size	Specification
PS-A-R	KF10~KF50 ISO63~ISO250	Reed type with trim assembly
PS-A-N	KF10~KF50 ISO63~ISO250	NPN
PS-A-P	KF10~KF50 ISO63~ISO250	PNP



Solenoid Valve Kit

Part Number	Size	Specification
SVK-DC12-KF	KF10~KF50	DC 12V, 50/60 Hz
SVK-DC12-ISO63100	ISO63~ISO100	
SVK-DC12-ISO160250	ISO160~ISO250	
SVK-DC24-KF	KF10~KF50	DC 24V, 50/60 Hz
SVK-DC24-ISO63100	ISO63~ISO100	
SVK-DC24-ISO160250	ISO160~ISO250	
SVK-AC110-KF	KF10~KF50	AC 110V, 50/60 Hz
SVK-AC110-ISO63100	ISO63~ISO100	
SVK-AC110-ISO160250	ISO160~ISO250	
SVK-AC220-KF	KF10~KF50	AC 220V, 50/60 Hz
SVK-AC220-ISO63100	ISO63~ISO100	
SVK-AC220-ISO160250	ISO160~ISO250	



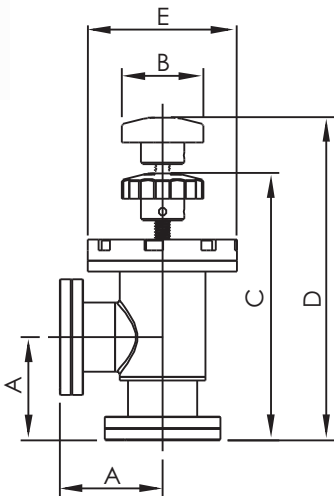
Product Order Information



Vacuum
Valves

Manual angle poppet valves, UHV, CF Flange

Part Number	Tube OD	A	B	C	D	E
MAV-UHV-CF-133	3/4"	41	60	124	148	70
MAV-UHV-CF-133-1	3/4"	55	60	139	163	70
MAV-UHV-CF-212	1"	53	60	133	157	70
MAV-UHV-CF-275	1 1/2"	63	60	162	186	86
MAV-UHV-CF-275-1	1 1/2"	67	60	193	217	86
MAV-UHV-CF-338	2"	76	60	197	238	110
MAV-UHV-CF-338-1	2"	78	60	199	240	110
MAV-UHV-CF-450	2 1/2"	91	60	210	252	122
MAV-UHV-CF-450-1	2 1/2"	86	60	204	246	122

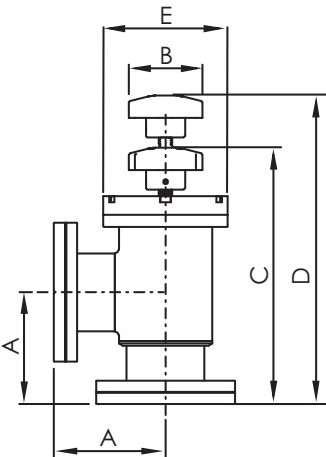


* Bonnet sealed via OFHC gasket



Manual angle poppet valves, HV, CF Flange

Part Number	Tube OD	A	B	C	D	E
MAV-HV-CF-133	3/4"	41	60	124	148	61
MAV-HV-CF-133-1	3/4"	55	60	138	162	61
MAV-HV-CF-212	1"	50	60	131	155	61
MAV-HV-CF-212-1	1"	53	60	133	157	61
MAV-HV-CF-275	1 1/2"	63	60	162	186	77
MAV-HV-CF-275-1	1 1/2"	67	60	165	189	77
MAV-HV-CF-338	2"	72	60	193	234	85
MAV-HV-CF-338-1	2"	78	60	199	240	85
MAV-HV-CF-450	2 1/2"	91	60	210	252	102
MAV-HV-CF-450-1	2 1/2"	86	60	204	246	102



* Bonnet sealed via FKM O-Ring

Product Order Information

Vacuum Valves



Figure 1

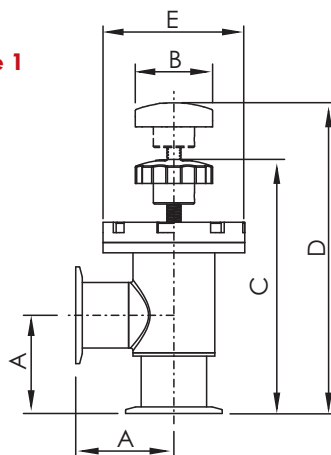
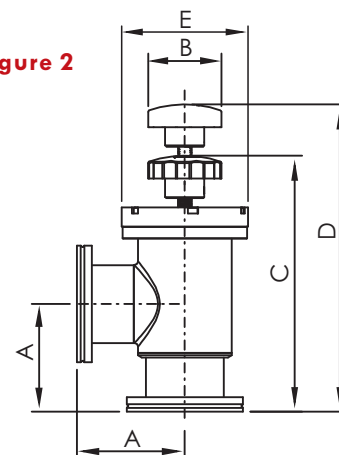
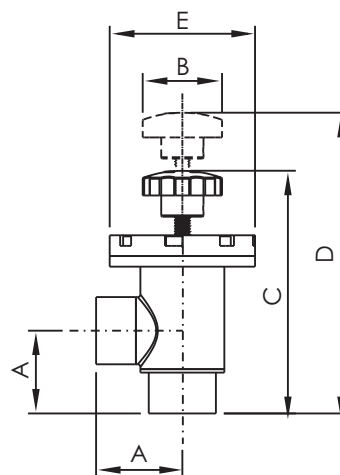


Figure 2



Manual angle poppet valves, HV, KF / ISO Flanges

Part Number	Tube OD	Figure	A	B	C	D	E
MAV-HV-KF-16	3/4"	1	40	60	123	147	61
MAV-HV-KF-16-1	3/4"	1	55	60	138	162	61
MAV-HV-KF-25	1"	1	50	60	130	154	61
MAV-HV-KF-25-1	1"	1	52	60	132	156	61
MAV-HV-KF-40	1 1/2"	1	65	60	164	188	77
MAV-HV-KF-50	2"	1	70	60	191	232	85
MAV-HV-KF-50-1	2"	1	76	60	198	239	85
MAV-HV-ISOK-63	2 1/2"	2	88	60	209	251	102
MAV-HV-ISOK-63-1	2 1/2"	2	83	60	204	246	102



Manual angle poppet valves, HV Tube Ends

Part Number	Tube OD	A	B	C	D	E
MAV-HV-BW-075	3/4"	51	60	134	158	61
MAV-HV-BW-100	1"	48	60	128	153	61
MAV-HV-BW-150	1 1/2"	61	60	160	184	77
MAV-HV-BW-200	2"	72	60	194	235	85

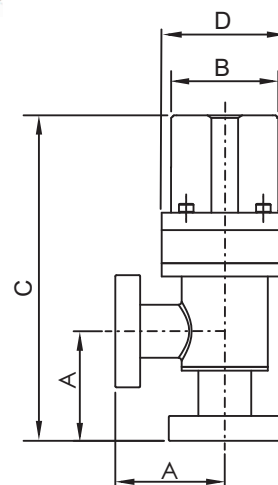
Product Order Information



Pneumatic angle poppet valves, UHV, CF Flange

Part Number	Tube OD	Acting	A	B	C	D
PAV-UHV-CF-133	3/4"	Single acting	41	52	147	70
PAV-UHV-CF-133-1	3/4"	Single acting	55	52	162	70
PAV-UHV-CF-212	1"	Single acting	53	52	156	70
PAV-UHV-CF-275	1 1/2"	Single acting	63	65	174	86
PAV-UHV-CF-275-1	1 1/2"	Single acting	67	65	178	86
PAV-UHV-CF-338	2"	Single acting	72	67	234	110
PAV-UHV-CF-338-1	2"	Single acting	78	67	240	110
PAV-UHV-CF-450	2 1/2"	Double acting	91	70	251	122
PAV-UHV-CF-450-1	2 1/2"	Double acting	86	70	246	122
PAV-UHV-CF-600	4"	Double acting	113	89	342	171
PAV-UHV-CF-600-1	4"	Double acting	118	89	348	171

*Bonnet sealed via OFHC gasket

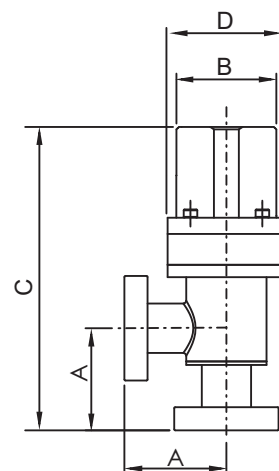


Vacuum
Valves



Pneumatic angle poppet valves, HV, CF Flange

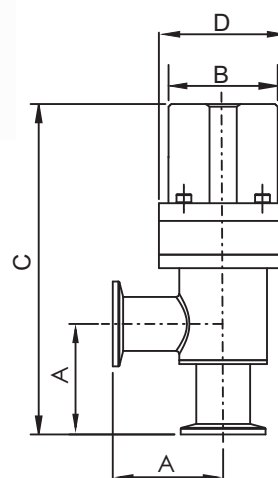
Part Number	Tube OD	Acting	A	B	C	D
PAV-HV-CF-133	3/4"	Single acting	41	52	147	61
PAV-HV-CF-133-1	3/4"	Single acting	55	52	162	61
PAV-HV-CF-212	1"	Single acting	50	52	154	61
PAV-HV-CF-212-1	1"	Single acting	53	52	156	61
PAV-HV-CF-275	1 1/2"	Single acting	63	65	174	77
PAV-HV-CF-275-1	1 1/2"	Single acting	67	65	178	77
PAV-HV-CF-338	2"	Single acting	72	67	234	85
PAV-HV-CF-338-1	2"	Single acting	78	67	240	85
PAV-HV-CF-450	2 1/2"	Double acting	91	70	251	102
PAV-HV-CF-450-1	2 1/2"	Double acting	86	70	246	102
PAV-HV-CF-600	4"	Double acting	113	89	342	165
PAV-HV-CF-600-1	4"	Double acting	118	89	348	165
PAV-HV-CF-800	6"	Double acting	144	140	449	227
PAV-HV-CF-800-1	6"	Double acting	165	140	469	227



Product Order Information

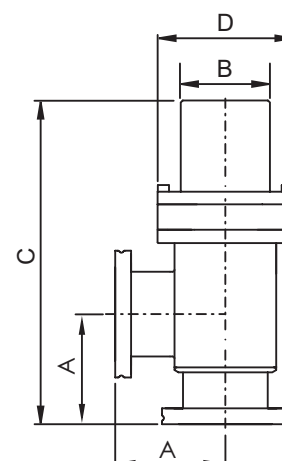
Vacuum
Valves

Pneumatic angle poppet valves, HV, KF Flange Single acting



Part Number	Tube OD	A	B	C	D
PAV-HV-KF-16	3/4"	40	52	147	61
PAV-HV-KF-16-1	3/4"	55	52	161	61
PAV-HV-KF-25	1"	50	52	154	61
PAV-HV-KF-25-1	1"	52	52	156	61
PAV-HV-KF-40	1 1/2"	65	65	176	77
PAV-HV-KF-50	2"	70	67	232	85
PAV-HV-KF-50-1	2"	76	67	238	85

Pneumatic angle poppet valves, HV, ISO-K Flange Double acting



Part Number	Tube OD	A	B	C	D
PAV-HV-ISOK-63	2 1/2"	88	70	248	102
PAV-HV-ISOK-63-1	2 1/2"	83	70	243	102
PAV-HV-ISOK-80	3"	90	82	284	132
PAV-HV-ISOK-80-1	3"	89	82	283	132
PAV-HV-ISOK-100	4"	108	89	338	165
PAV-HV-ISOK-100-1	4"	114	89	344	165
PAV-HV-ISOK-160	6"	138	140	442	227
PAV-HV-ISOK-160-1	6"	159	140	463	227
PAV-HV-ISOK-200	8"	178	140	648	285
PAV-HV-ISOK-200-1	8"	210	140	659	285
PAV-HV-ISOK-250	10"	208	202	668	353
PAV-HV-ISOK-250-1	10"	260	202	720	353

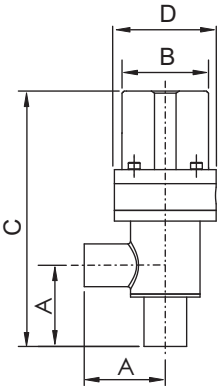
Product Order Information

Pneumatic angle poppet valves, Tube Ends



Vacuum
Valves

Part Number	Tube OD	A	B	C	D	Acting
PAV-HV-BW-075	¾"	51	61	156	61	Single acting
PAV-HV-BW-100	1"	48	61	152	61	Single acting
PAV-HV-BW-150	1½"	61	77	173	77	Single acting
PAV-HV-BW-200	2"	72	85	243	85	Single acting
PAV-HV-BW-250	2½"	76	102	236	102	Double acting
PAV-HV-BW-300	3"	83	132	277	132	Double acting
PAV-HV-BW-400	4"	112	151	332	165	Double acting
PAV-HV-BW-600	6"	126	228	478	227	Double acting
PAV-HV-BW-800	8"	162	249	578	285	Double acting
PAV-HV-BW-1000	10"	201	311	636	353	Double acting



Product Order Information

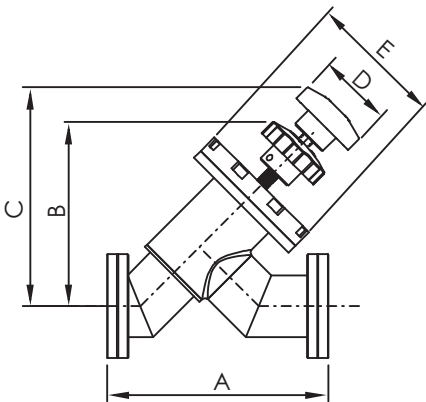
Vacuum
Valves



Manual inline poppet valves, UHV, CF Flange

Part Number	Tube OD	A	B	C	D	E
MIV-UHV-CF-133	¾"	119	100	117	60	70
MIV-UHV-CF-212	1"	113	97	115	60	70
MIV-UHV-CF-275	1½"	133	123	140	60	86
MIV-UHV-CF-338	2"	182	151	180	60	100
MIV-UHV-CF-450	2½"	216	158	188	60	122

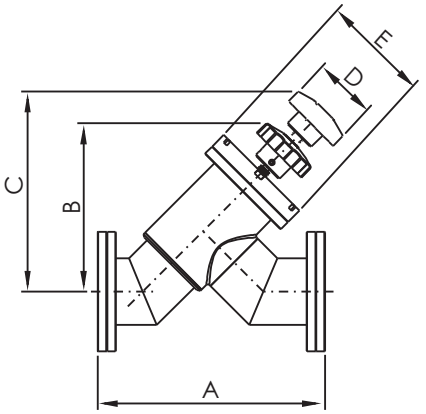
* Bonnet sealed via OFHC gasket



Manual inline poppet valves, HV, CF Flange

Part Number	Tube OD	A	B	C	D	E
MIV-HV-CF-133	¾"	119	100	117	60	61
MIV-HV-CF-212	1"	107	97	114	60	61
MIV-HV-CF-275	1½"	133	123	140	60	77
MIV-HV-CF-338	2"	182	152	181	60	85
MIV-HV-CF-450	2½"	216	160	190	60	102

* Bonnet sealed via FKM O-Ring



Product Order Information

Vacuum
Valves



Figure 1

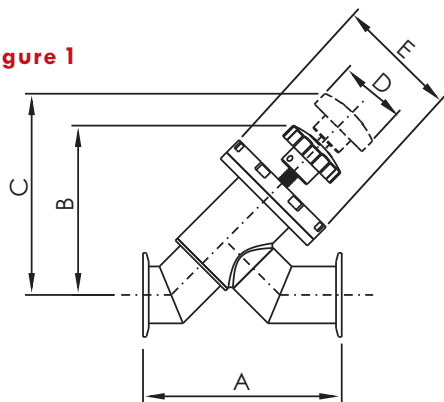
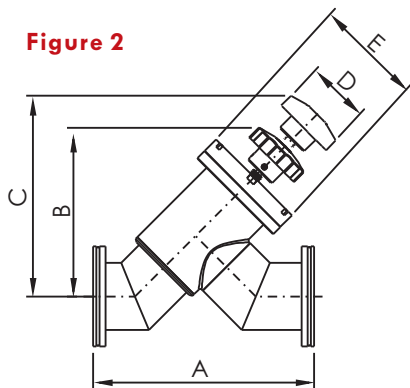
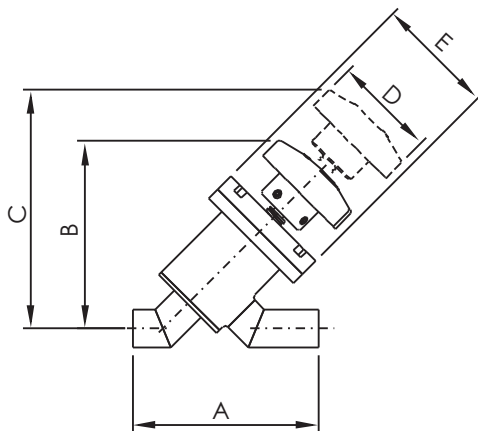


Figure 2



Manual inline poppet valves, HV, KF / ISO Flange

Part Number	Tube OD	Figure	A	B	C	D	E
MIV-HV-KF-16	3/4"	1	102	100	117	60	61
MIV-HV-KF-25	1"	1	107	97	114	60	61
MIV-HV-KF-40	1 1/2"	1	130	123	140	60	77
MIV-HV-KF-50	2"	1	178	152	180	60	85
MIV-HV-ISOK-63	2 1/2"	2	209	160	190	60	102

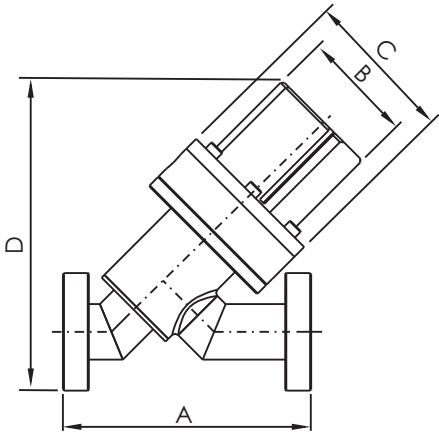


Manual inline poppet valves, HV Tube Ends

Part Number	Tube OD	A	B	C	D	E
MIV-HV-BW-075	3/4"	94	100	117	60	61
MIV-HV-BW-100	1"	99	97	114	60	61
MIV-HV-BW-150	1 1/2"	123	123	140	60	77
MIV-HV-BW-200	2"	170	152	180	60	85

Product Order Information

Vacuum
Valves

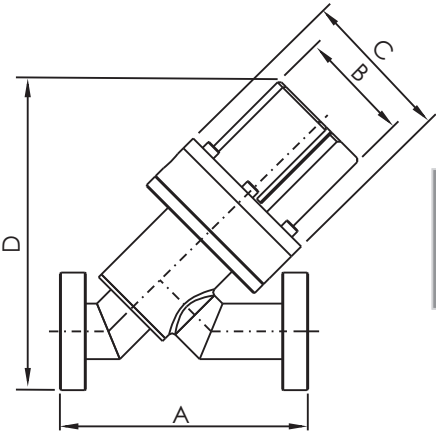


Pneumatic inline poppet valves, UHV, CF Flange

Part Number	Tube OD	A	B	C	D	Acting
PIV-UHV-CF-133	3/4"	119	52	70	133	Single acting
PIV-UHV-CF-212	1"	114	52	70	141	Single acting
PIV-UHV-CF-275	1 1/2"	133	65	86	171	Single acting
PIV-UHV-CF-338	2"	182	66	110	228	Single acting
PIV-UHV-CF-450	2 1/2"	216	70	122	251	Double acting
PIV-UHV-CF-600	4"	355	89	171	367	Double acting

* Bonnet sealed via OFHC gasket

Product Order Information



Vacuum
Valves

Pneumatic inline poppet valves, HV, CF Flange

Part Number	Tube OD	A	B	C	D	Acting
PIV-HV-CF-133	¾"	119	52	61	135	Single acting
PIV-HV-CF-212	1"	107	52	61	141	Single acting
PIV-HV-CF-275	1½"	133	65	77	171	Single acting
PIV-HV-CF-338	2"	182	67	85	228	Single acting
PIV-HV-CF-450	2½"	216	70	102	251	Double acting
PIV-HV-CF-600	4"	355	89	165	367	Double acting
PIV-HV-CF-800	6"	394	140	227	489	Double acting

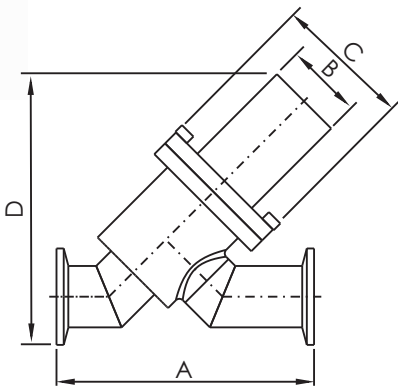
Product Order Information

Vacuum
Valves



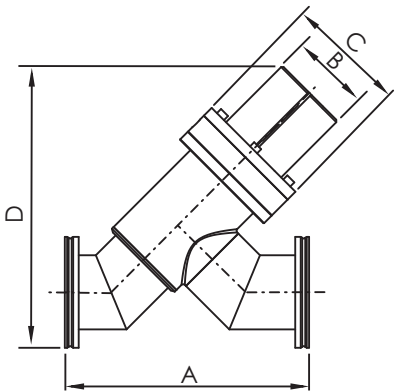
Pneumatic inline poppet valves, HV, KF Flange
Single acting

Part Number	Tube OD	A	B	C	D
PIV-HV-KF-16	3/4"	102	52	61	132
PIV-HV-KF-25	1"	107	52	61	134
PIV-HV-KF-40	1 1/2"	130	65	77	162
PIV-HV-KF-50	2"	178	67	85	223



Pneumatic inline poppet valves, HV, ISO-K Flange
Double acting

Part Number	Tube OD	A	B	C	D
PIV-HV-ISOK-63	2 1/2"	209	70	102	242
PIV-HV-ISOK-80	3"	268	82	132	280
PIV-HV-ISOK-100	4"	345	89	165	357
PIV-HV-ISOK-160	6"	381	140	227	477

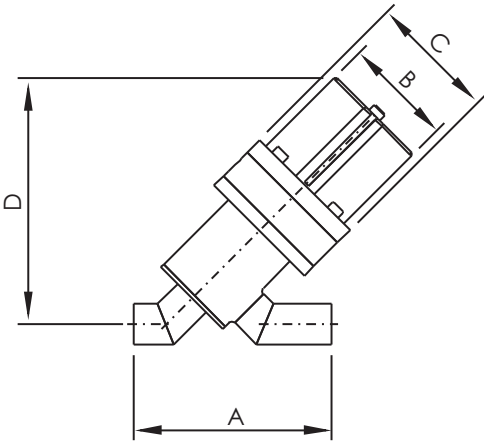


Product Order Information

Vacuum
Valves

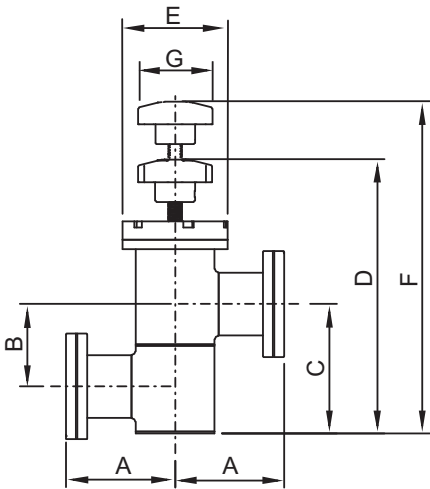
Pneumatic inline poppet valves, HV Tube Ends

Part Number	Tube OD	A	B	C	D
PIV-HV-BW-075	¾"	94	52	61	117
PIV-HV-BW-100	1"	99	52	61	114
PIV-HV-BW-150	1½"	123	65	77	135
PIV-HV-BW-200	2"	170	67	85	185



Product Order Information

Vacuum
Valves



Manual inline poppet valves, Z- type, HV, CF Flang

Part Number	Tube OD	A	B	C	D	E	F	G
MZV-HV-CF-133	3/4"	55	29	47	132	61	180	60
MZV-HV-CF-212	1"	52	35	54	134	61	182	60
MZV-HV-CF-275	1 1/2"	62	48	74	172	77	208	60
MZV-HV-CF-338	2"	88	67	105	222	85	263	60
MZV-HV-CF-450	2 1/2"	86	79	125	239	102	282	60



Figure 1

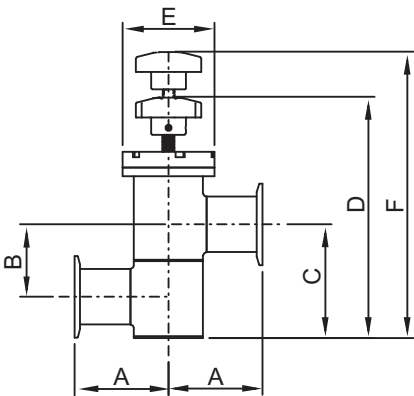
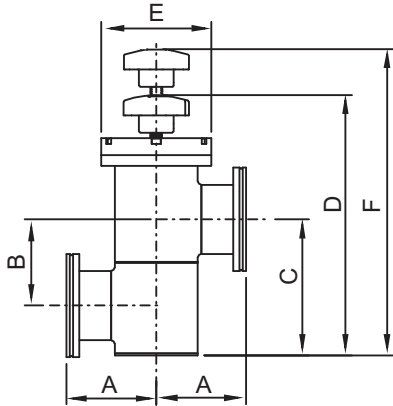


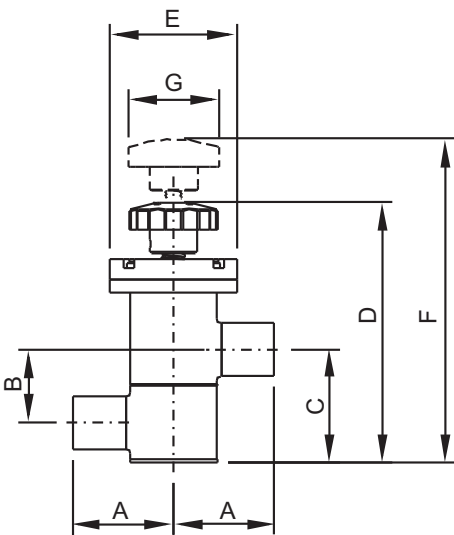
Figure 2



Manual inline poppet valves, Z- type, HV, KF / ISO Flanges

Part Number	Tube OD	Figure	A	B	C	D	E	F	G
MZV-HV-KF-16	3/4"	1	55	29	47	132	61	180	60
MZV-HV-KF-25	1"	1	52	35	54	134	61	182	60
MZV-HV-KF-40	1 1/2"	1	61	48	74	172	77	208	60
MZV-HV-KF-50	2"	1	86	67	105	222	85	263	60
MZV-HV-ISOK-63	2 1/2"	2	83	79	125	239	102	282	60

Product Order Information



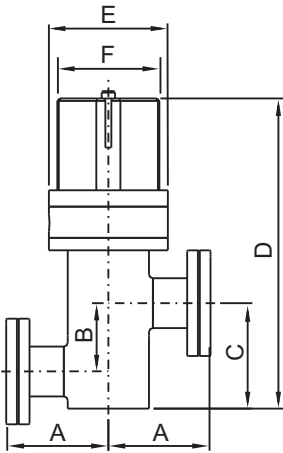
Vacuum
Valves

Manual inline poppet valves, Z- type, HV Tube Ends

Part Number	Tube OD	A	B	C	D	E	F	G
MZV-HV-BW-075	¾"	51	29	47	132	61	180	60
MZV-HV-BW-100	1"	48	35	54	134	61	182	60
MZV-HV-BW-150	1 ½"	57	48	74	172	77	208	60
MZV-HV-BW-200	2"	83	67	105	222	85	263	60

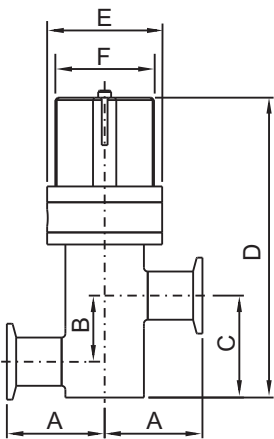
Product Order Information

Vacuum
Valves



Pneumatic inline poppet valves, Z- type, HV, CF Flange

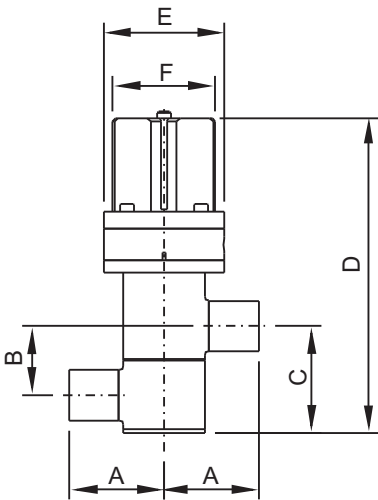
Part Number	Tube OD	A	B	C	D	E	F	Acting
PZV-HV-CF-133	3/4"	55	29	47	156	61	52	Single acting
PZV-HV-CF-212	1"	52	35	54	158	61	52	Single acting
PZV-HV-CF-275	1 1/2"	62	48	74	184	77	65	Single acting
PZV-HV-CF-338	2"	88	67	105	262	85	67	Single acting
PZV-HV-CF-450	2 1/2"	86	79	125	281	102	70	Double acting



Pneumatic inline poppet valves, Z- type, HV, KF Flange

Part Number	Tube OD	A	B	C	D	E	F	Acting
PZV-HV-KF-16	3/4"	55	29	47	156	61	52	Single acting
PZV-HV-KF-25	1"	52	35	54	158	61	52	Single acting
PZV-HV-KF-40	1 1/2"	61	48	74	184	77	65	Single acting
PZV-HV-KF-50	2"	86	67	105	262	85	67	Single acting
PZV-HV-ISOK-63	2"	83	79	125	281	102	70	Double acting

Product Order Information



Vacuum
Valves

Pneumatic inline poppet valves, Z- type, HV Tube Ends

Part Number	Tube OD	A	B	C	D	E	F
PZV-HV-BW-075	¾"	51	29	47	156	61	52
PZV-HV-BW-100	1"	48	35	54	158	61	52
PZV-HV-BW-150	1 ½"	57	48	74	184	77	65
PZV-HV-BW-200	2"	83	67	105	262	85	67

Product Order Information

Vacuum
Valves

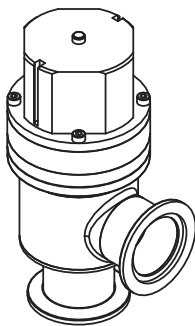


Figure 1

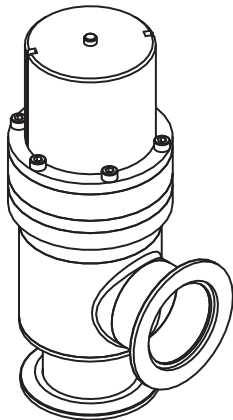
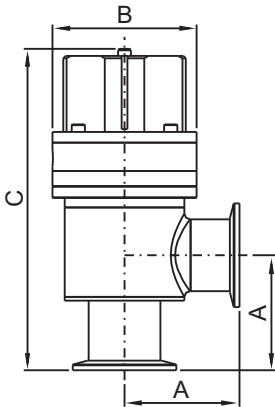
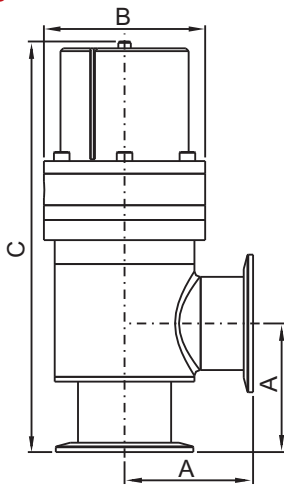


Figure 2



Heating angle poppet valves, HV, KF Flange

Part Number	Tube OD	Figure	A	B	C
HAV-HV-KF-40	1 1/2"	1	61	77	170
HAV-HV-KF-50	2"	2	70	88	224





Vacuum Ball Valves

•Email: info@kinglai.com.tw

•Website: www.advantorr.com



Product Information

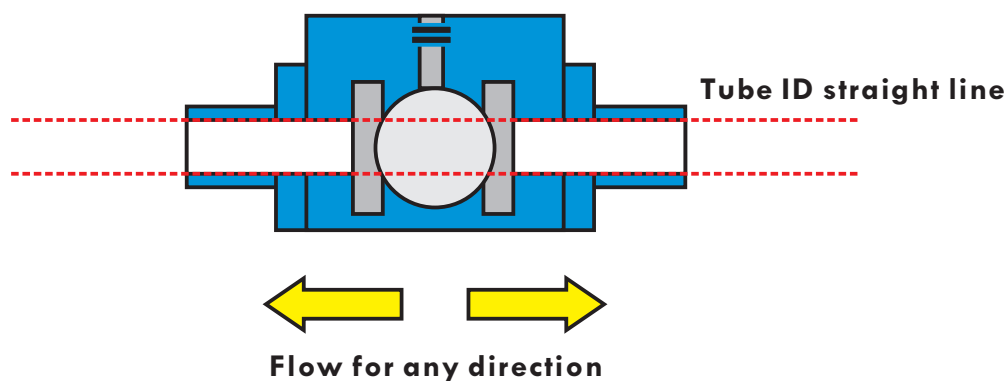
Vacuum Ball Valves are ideal for high and coarse vacuum applications, one of which is the exhaust section of a system where it's designed to protect against harsh processes involving particles or even powder. The valve's main body is manufactured from a single billet of stainless steel, whereas the inlet and outlet sections are manufactured from forged metal.

Vacuum Valves

Vacuum Ball Valves are ideal for high-chemical or high-temperature environments since they are manufactured using high-grade SS 316L or SS 316Ti materials. Optional materials for the gate seal are also available including FKM, FFKM and Teflon.

Product Features

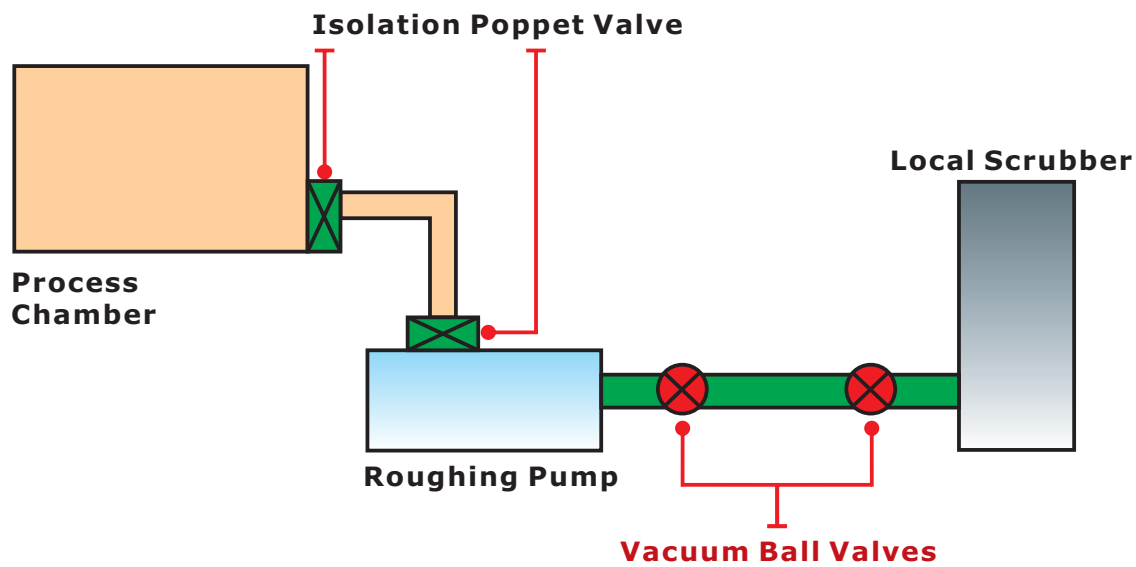
- Ideal for high or coarse vacuum.
- Available in a range of sizes from KF16 to KF50.
- Can protect systems from harsh environments.
- Simple valve body design with three casting pieces.
- Option for high-chemical resistance.



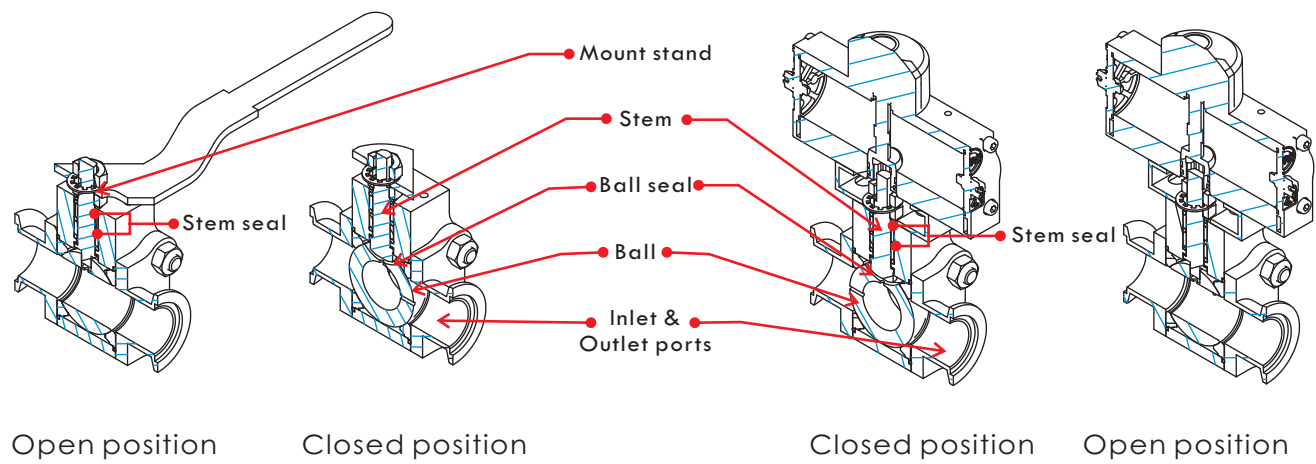
Product's Application

Layout for Process System

Vacuum Ball Valves are positioned within the Scrubber Line



Valve's Operation Concept



Technical Data

Technical Data for Vacuum Ball Valve

	Medium Vacuum
Feedthrough	FKM o-ring
Gate seal	PTFE packing
Bonnet seal	FKM
Operate pressure range	4,500 Torr~ 1x10 ⁻⁵ Torr 6,000 mbar~ 1.33x10 ⁻⁵ mbar 600 kpa~ 1.33x10 ⁻⁶ kpa
Leak rate	1x10 ⁻⁸ Torr l/s, He 1.33x10 ⁻⁸ mbar l/s, He 1.33x10 ⁻⁹ kpa l/s, He
Cycle life	>30,000 Cycles
Temperature for valve body	200°C (392°F) Open and Close
Temperature for actuator	150°C 302°F
Temperature for solenoid / position indicator	80°C 176°F
Bake temperature	100°C (212°F) for FKM gate seal
Valve body material	Casting SS316L
Mechanism material	SS316L
Actuator material	Pneumatic version = Aluminum Manual version = SS304L Handle with plastic cover
Mounting position	Any

Valve operation data

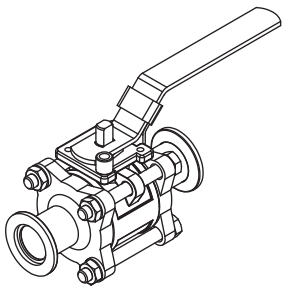
Pneumatic operating pressure	4 bar~8 bar 400 kPa~800 kPa 58 psi~116 psi
Position indicator (included as standard for pneumatic version)	Integrated visual indicator
Solenoid (optional)	Optional for 24V DC, standard
Failure protection (included as standard)	Integrated handle hook with manual version (Open/ Closed position locked)

Valve's Performance data

	KF16	KF25	KF40	KF50
Maximum differential pressure against gate	4,500 Torr 6,000 mbar 600 kpa			
Maximum differential pressure at opening	4,500 Torr 6,000 mbar 600kpa			
Pneumatic valve open / close time	2(s)	3(s)	3(s)	4(s)
Valve's conductance inline type (Molecular flow)	5(l/s)	12(l/s)	33(l/s)	54(l/s)

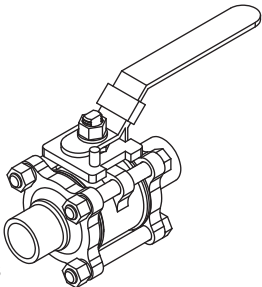
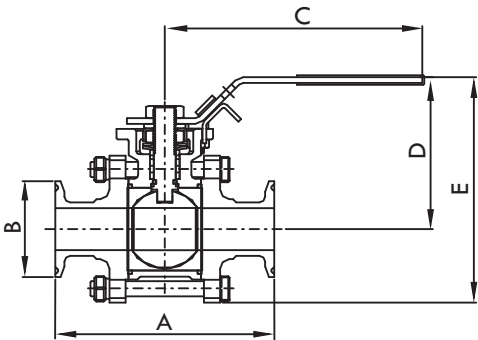
Product Order Information

Vacuum
Valves



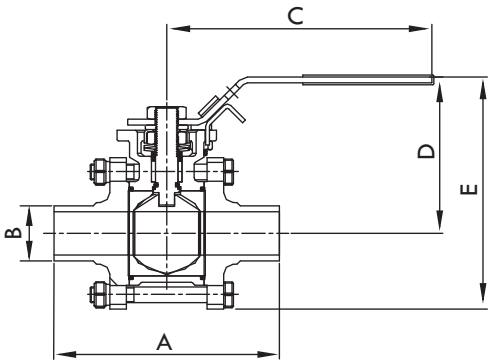
Manual Casting Ball Valves, SUS316L, KF Flange

Part Number	Tube OD	A	B	C	D	E
MBV-CT-KF-16	¾"	110	30	138	70	98
MBV-CT-KF-25	1"	123	40	138	79	108
MBV-CT-KF-40	1½"	148	55	191	97	137
MBV-CT-KF-50	2"	166	75	191	107	154



Manual Casting Ball Valves, SUS316L, Tube Ends

Part Number	Tube OD	A	B	C	D	E
MBV-CT-075	¾"	103	19	138	70	98
MBV-CT-100	1"	115	25	138	79	108
MBV-CT-150	1½"	140	38	191	97	137
MBV-CT-200	2"	158	51	191	107	154

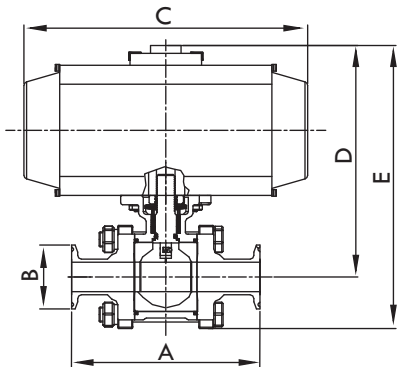


Product Order Information

Vacuum
Valves

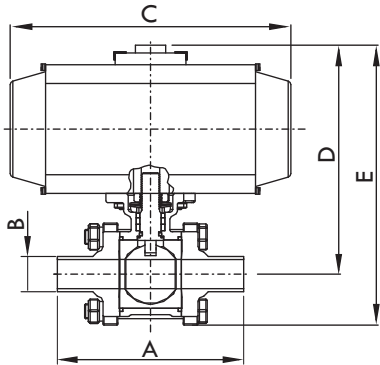
Pneumatic Casting Ball Valves, SUS316L

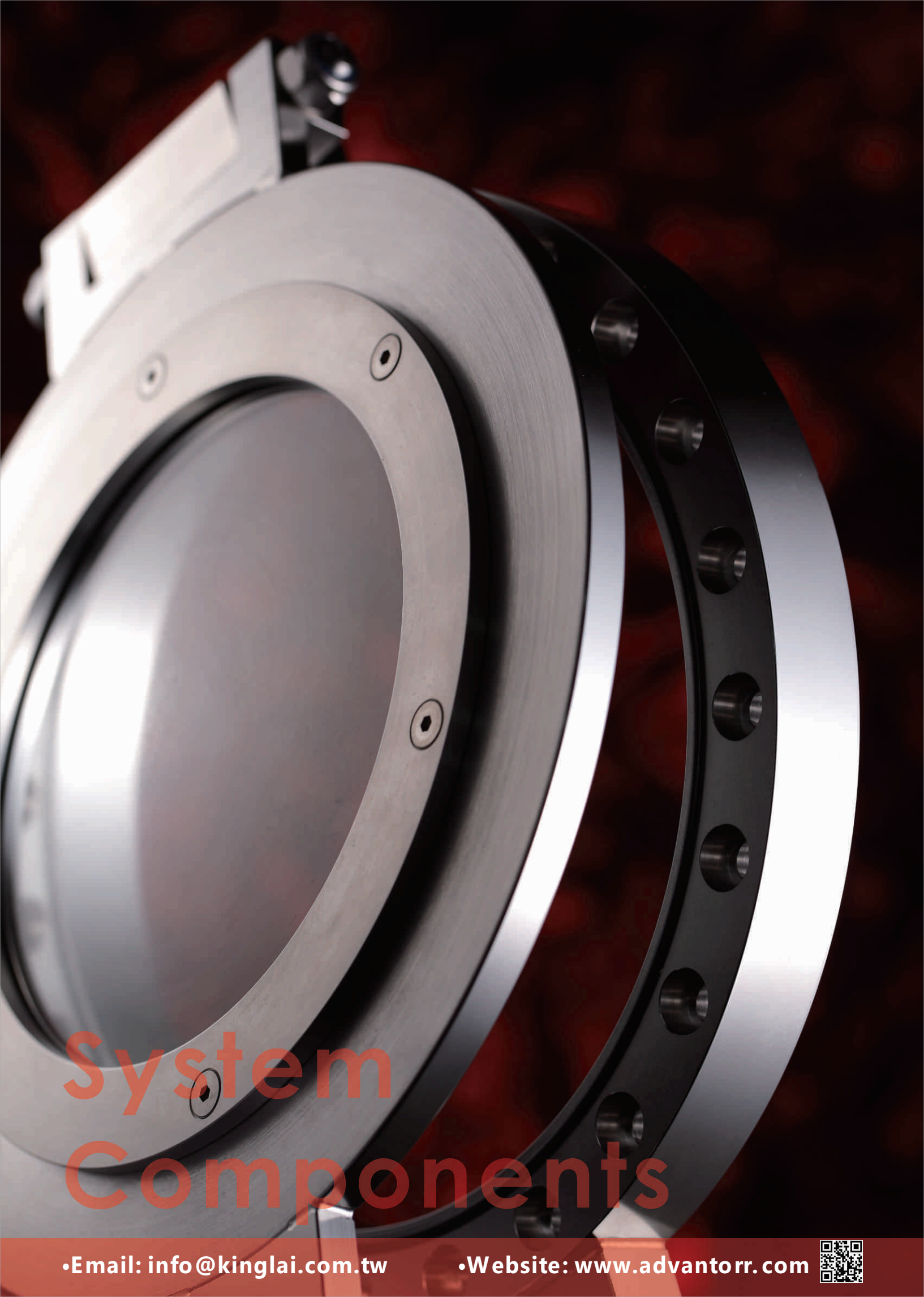
Part Number	Tube OD	A	B	C	D	E
PBV-CT-KF-16	3/4"	110	30	147	136	164
PBV-CT-KF-25	1"	123	40	147	145	174
PBV-CT-KF-40	1 1/2"	148	55	168	173	213
PBV-CT-KF-50	2"	166	75	184	195	243



Pneumatic Casting Ball Valves, SUS316L

Part Number	Tube OD	A	B	C	D	E
PBV-CT-075	3/4"	103	19	147	136	164
PBV-CT-100	1"	115	25	147	145	174
PBV-CT-150	1 1/2"	140	38	168	173	213
PBV-CT-200	2"	158	51	184	195	243





System Components

•Email: info@kinglai.com.tw

•Website: www.advantorr.com



System Components



System
Components

Vacuum Chambers				
Geometry	D Type	Box Type	Tall Cylinder Type	
Vacuum level	HV grade	HV grade	HV grade	UHV grade
Materials	SS 304L/316L	SS 304L/316L	SS 304L/316L	SS 304L/316L

Vacuum Chambers				
Geometry	Short Cylinder Type		Spherical Type	Bell Type
Vacuum level	HV grade	UHV grade	UHV grade	UHV grade
Materials	SS 304L/316L	SS 304L/316L	SS 304L/316L	SS 304L/316L

Electrical Power Feedthrough		
Conductor Material	SS304	OFHC
Flange type	CF/KF Flanges	CF/KF Flanges



Vacuum Quick Access Doors		
Door type	Viewport	Blank flange
Flange type	CF Flanges	CF Flanges

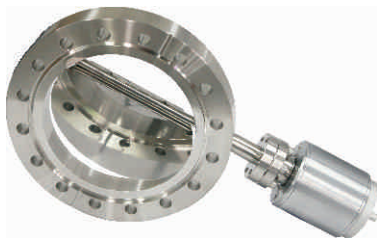


Vacuum Viewports							
Vacuum level	UHV grade			HV grade			
Viewport materials	Kodial	Fuse silica	Sapphire	Kodial		Fuse silica	Sapphire
Viewport bonding method	Brazed	Brazed	Brazed	Brazed	O-ring sealed	Brazed	Brazed
Flange type	CF Flanges	CF Flanges	CF Flanges	KF/ ISO-K Flanges	ISO-K Flanges	KF Flanges	KF Flanges

Viewport LED Light	
Body Material	Aluminum
Flange type	CF Flanges



Vacuum Viewport Shutters	
Vacuum level	UHV grade
Flange type	CF Flange



Product Information

King Lai utilizes state-of-the-art manufacturing and inspection equipment which is dedicated solely to our vacuum chamber department. We can fabricate chambers in a range of shapes and sizes up to 6 meters x 2.5 meters x 1.8 meters but in addition, we hold a large inventory of raw material in SS 304, SS 316L and aluminium alloy which are commonly used throughout the fabrication of HV and UHV chambers.

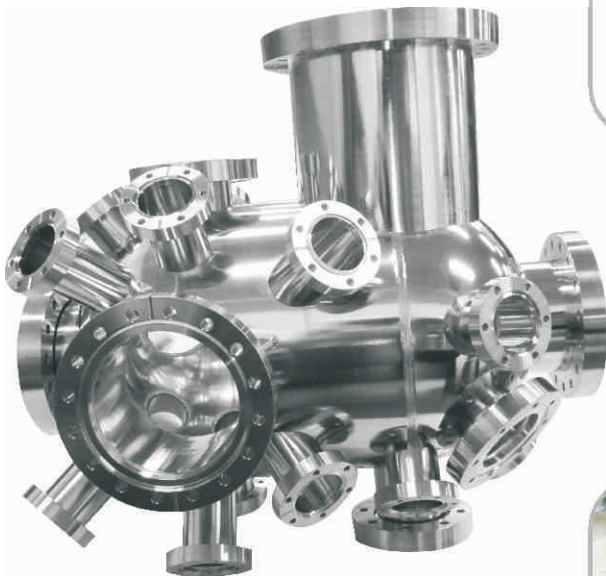
In addition to a standard range of vacuum chambers, we can also accommodate bespoke designs to meet customer's specific requirements in a range of sizes and materials. Through thorough communication, our team of designers are able to understand the exact requirements of our customers, and with careful control during each production process, coupled with rigorous inspection, we aim to provide vacuum chambers that go above and beyond the customers' expectation.

System
Components

Please contact us for further information.

Key Processes

- Water-Jet Cutting
- 5-Axis Machining Centre
- Bridge-Type Machining Centre
- Welding Platform
- CATIA 3D / Solid Works 3D
- Electro-polishing
- TIG Welding
- Class 10,000 Clean Room
- Ultrasonic Cleaning with DI Water

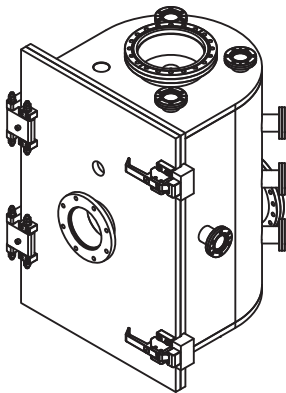


Vacuum Chambers

Product Order Information

D Type Stainless Steel Chambers

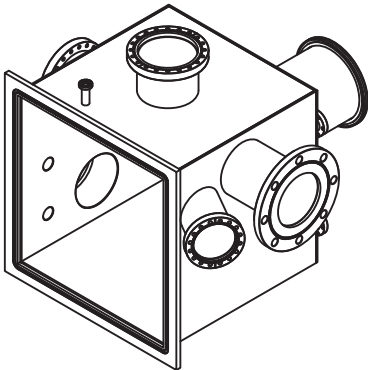
- Optional SS304 / SS316L material
- 100mm Viewport with o-ring seal
- Customized port configuration CF/KF/ISO
- Optional water cooling
- Optional inner shielding plates
- Customized designs available on request
- Body wall thickness 6mm/10mm, Plate wall thickness 20mm



Part Number	Size	Product Description
DCH-500x450-X-X	500mm x 450mm	D-Chamber H500xW450
DCH-750x450-X-X	750mm x 450mm	D-Chamber H750xW450
DCH-1000x450-X-X	1000mm x 450mm	D-Chamber H1000xW450

Box Type Stainless Steel Chambers

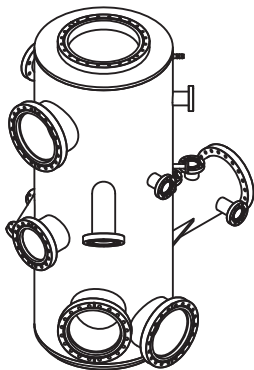
- Optional SS304 / SS316L material
- 100mm Viewport with o-ring seal
- Customized port configuration CF/KF/ISO
- Optional water cooling
- Optional inner shielding plates
- Customized designs available on request
- Body wall thickness 6mm/10mm, Plate wall thickness 20mm



Part Number	Size	Product Description
BCH-500x450-X-X	500mm x 450mm	Box Chamber H500xW450
BCH-750x450-X-X	750mm x 450mm	Box Chamber H750xW450
BCH-1000x450-X-X	1000mm x 450mm	Box Chamber H1000xW450

Tall Cylinder Type Stainless steel Chambers

- Optional SS304 / SS316L material
- Customized port configuration
- Optional water cooling (double Wall)
- Optional LN2 Cold Trap
- Customized designs available on request
- Body wall thickness 6mm/10mm, top and bottom zero length flanges.



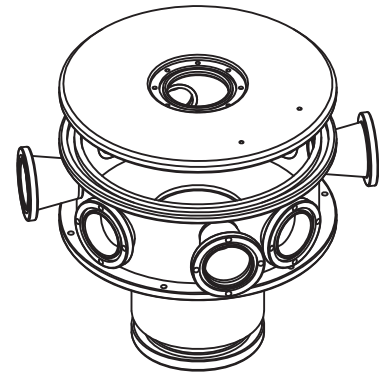
Part Number	Size	Product Description
TCCH-254x500-X-X	OD10" x 500mm	Tall Cylinder Type Stainless Steel Chamber 10" X 500mm
TCCH-254x750-X-X	OD10" x 750mm	Tall Cylinder Type Stainless Steel Chamber 10" X 750mm
TCCH-305x750-X-X	OD12" x 750mm	Tall Cylinder Type Stainless Steel Chamber 12" X 750mm
TCCH-305x1000-X-X	OD12" x 1000mm	Tall Cylinder Type Stainless Steel Chamber 12" X 1000mm
TCCH-356x750-X-X	OD14" x 750mm	Tall Cylinder Type Stainless Steel Chamber 14" X 750mm
TCCH-356x1000-X-X	OD14" x 1000mm	Tall Cylinder Type Stainless Steel Chamber 14" X 1000mm

System
Components

Product Order Information

Short Cylinder Type Stainless Steel Chambers

- Optional SS304 / SS316L material
- Customized port configuration CF/KF/ISO
- Customized designs available on request (Up to 900mm OD, 500mm height)
- Body wall thickness 6mm / 10mm, top and bottom flanges are both gasket seal or o-ring seal.

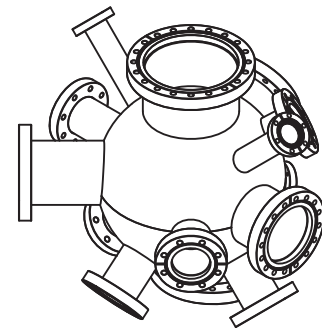


System
Components

Part Number	Size	Product Description
SCCH-254x100	OD10" x 100mm	Short Cylinder Type Stainless Steel Chamber 10"x100mm
SCCH-305x200	OD12" x 200mm	Short Cylinder Type Stainless Steel Chamber 12"x200mm
SCCH-356x200	OD14" x 200mm	Short Cylinder Type Stainless Steel Chamber 14"x200mm
SCCH-457x250	OD18" x 250mm	Short Cylinder Type Stainless Steel Chamber 18"x250mm
SCCH-610x250	OD24" x 250mm	Short Cylinder Type Stainless Steel Chamber 24"x250mm

Spherical Type Stainless Steel Chambers

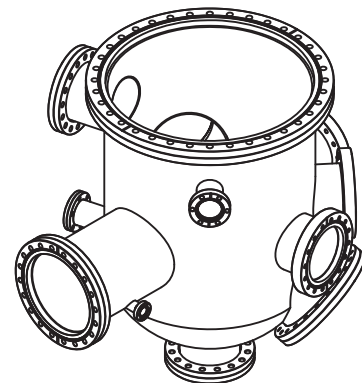
- Optional SS304 / SS316L material
- Customized port configuration
- Customized designs available on request
- Body wall thickness 6mm / 10mm



Part Number	Size	Product Description
SCH-254	10" Spherical	Spherical Type Stainless Steel Chamber 10"
SCH-300	12" Spherical	Spherical Type Stainless Steel Chamber 12"
SCH-457	18" Spherical	Spherical Type Stainless Steel Chamber 18"

Bell Type Stainless Steel Chambers

- Optional SS304 / SS316L material
- Customized port configuration
- Optional water cooling (double Wall)
- Optional LN2 Cold Trap
- Customized designs available on request
- Body wall thickness 6mm / 10mm



Part Number	Size	Product Description
BLCH-305x500-X-X	OD12" x 500mm	Bell Type Stainless Steel Chamber OD12" x 500mm
BLCH-305x750-X-X	OD12" x 750mm	Bell Type Stainless Steel Chamber OD12" x 750mm
BLCH-356x750-X-X	OD14" x 750mm	Bell Type Stainless Steel Chamber OD14" x 750mm
BLCH-356x1000-X-X	OD14" x 1000mm	Bell Type Stainless Steel Chamber OD14" x 1000mm

Product Information

In application, EPF (Electrical Power Feedthrough) is transmitting high voltage or high current from atmosphere into vacuum chamber.
EPF is the key component for subtract heating device, E-beam evaporator or other devices which need high voltage and current.

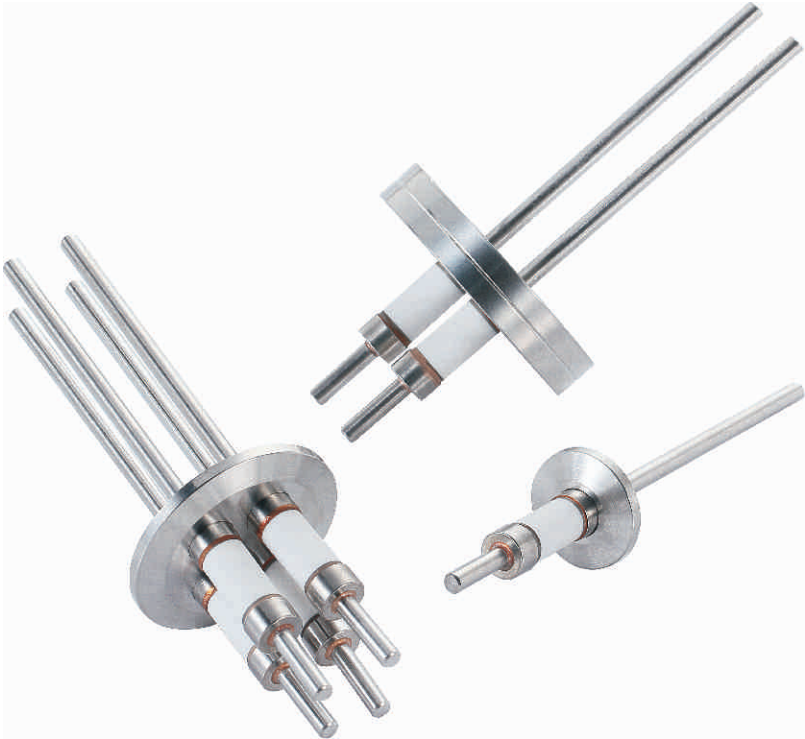
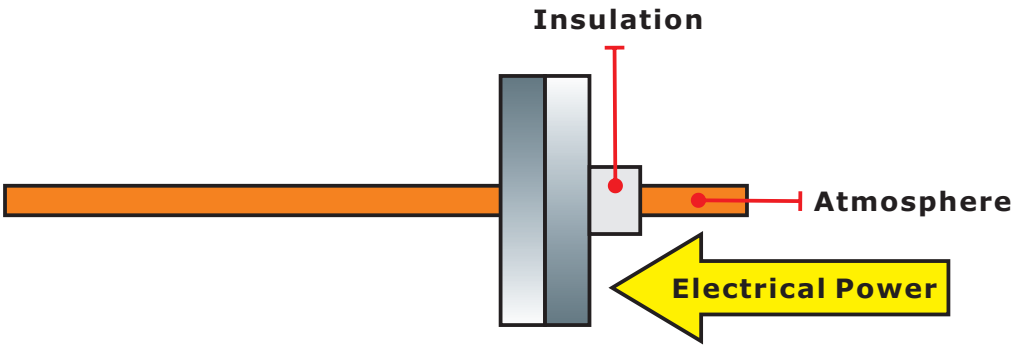
The sealing technology is bonding the ceramic based material and metal alloy.
Ceramic is excellent insulation material applied in vacuum electrical power feedthrough.

For different requirement on the voltage and current, we offer metal alloys such as:

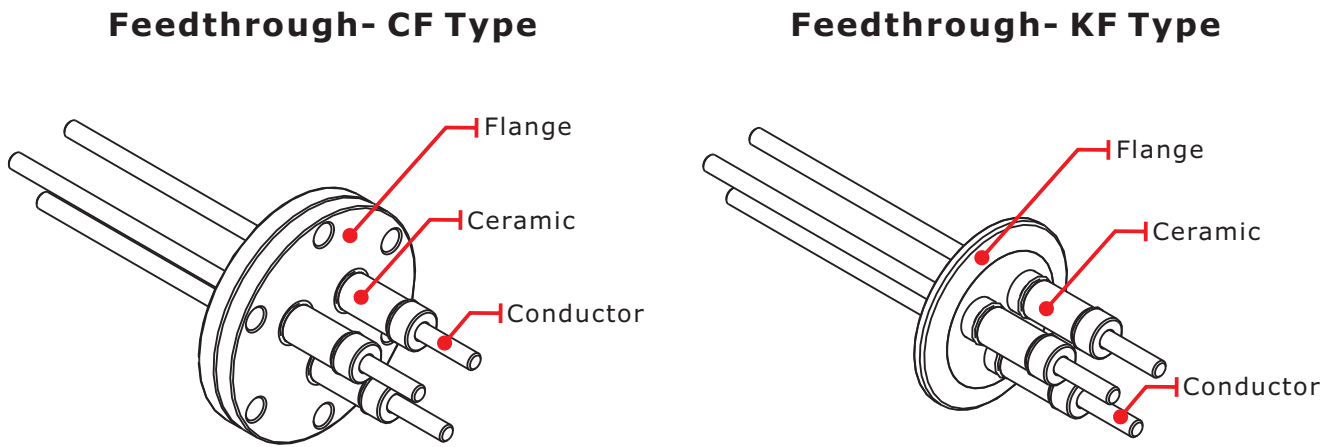
- Stainless steel
- Copper
- Nickle

System
Components

Product's Application



Key Product Parts

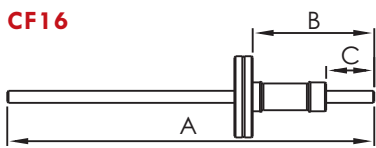


Technical Data for Feedthrough

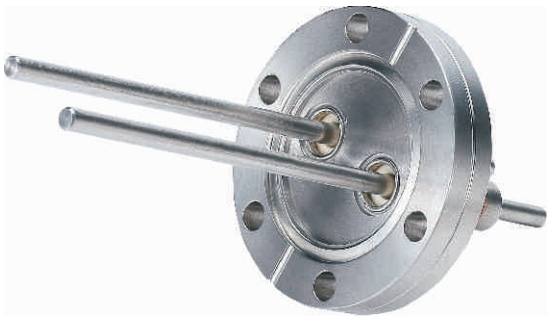
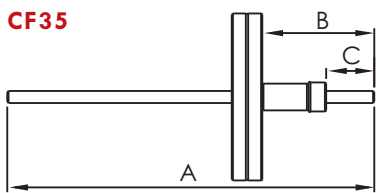
Conductor	SS304	OFHC
Voltage (V)	5000	5000
Current (A)	7	180
Baseplate	SS304	SS304
Insulation	Alumina ceramic	Alumina ceramic
Operate pressure range	760 Torr ~ 1x10 ⁻⁸ Torr 1,000 mbar~1.33x10 ⁻⁸ mbar 100 kPa~ 1.13x10 ⁻⁹ kPa	760 Torr ~ 1x10 ⁻⁸ Torr 1,000 mbar~1.33x10 ⁻⁸ mbar 100 kPa~ 1.13x10 ⁻⁹ kPa
Temperature rang	-100°C(-148°F) to 500°C(932°F)	-100°C(-148°F) to 500°C(932°F)
Bake temperature	500°C(932°F)	500°C(932°F)

Product Order Information

CF16



CF35



System Components

Figure 1

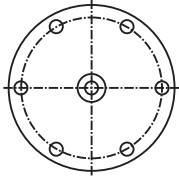


Figure 2

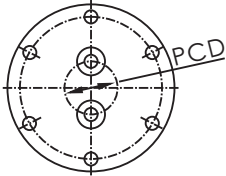


Figure 3

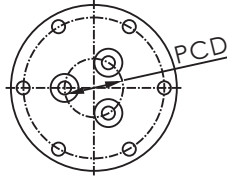
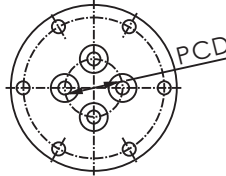


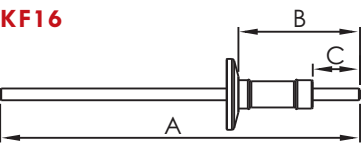
Figure 4



Feedthrough - CF Type

Part Number- OFHC	Part Number- SS	Flange Size	Figure	A	B	C	PCD
FT-CF-133-1-OFHC	FT-CF-133-1-SS	CF16	1	152	51	20	N/A
FT-CF-275-1-OFHC	FT-CF-275-1-SS	CF35	1	152	47	20	N/A
FT-CF-275-2-OFHC	FT-CF-275-2-SS	CF35	2	152	47	20	22
FT-CF-275-3-OFHC	FT-CF-275-3-SS	CF35	3	152	47	20	24
FT-CF-275-4-OFHC	FT-CF-275-4-SS	CF35	4	152	47	20	24

KF16



KF40

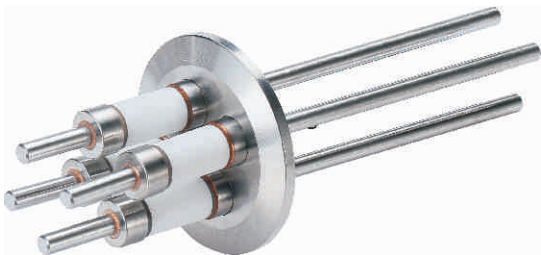
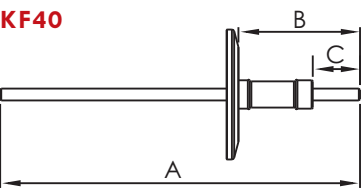


Figure 1

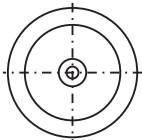


Figure 2

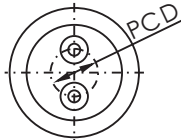


Figure 3

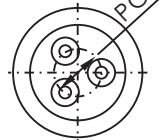
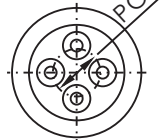


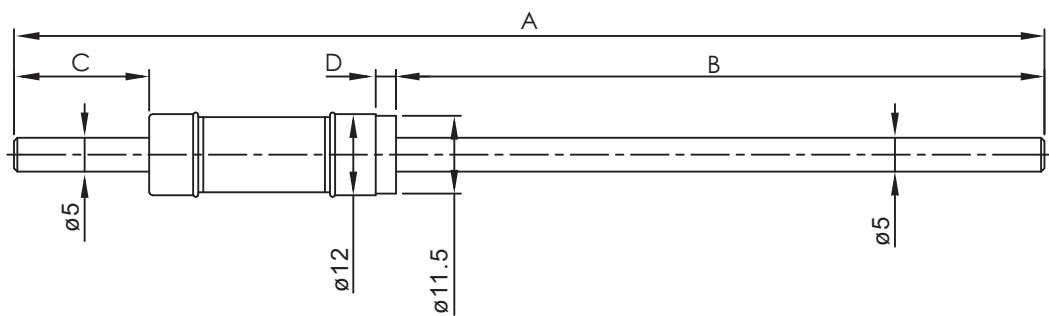
Figure 4



Feedthrough - KF Type

Part Number- OFHC	Part Number- SS	Flange Size	Figure	A	B	C	PCD
FT-KF-16-1-OFHC	FT-KF-16-1-SS	KF16	1	152	52	20	N/A
FT-KF-40-1-OFHC	FT-KF-40-1-SS	KF40	1	152	52	20	N/A
FT-KF-40-2-OFHC	FT-KF-40-2-SS	KF40	2	152	52	20	20
FT-KF-40-3-OFHC	FT-KF-40-3-SS	KF40	3	152	52	20	20
FT-KF-40-4-OFHC	FT-KF-40-4-SS	KF40	4	152	52	20	22

Product Order Information



System
Components

Feedthrough-Single Pin

Part Number- OFHC	Part Number- SS	A	B	C	D
FT-SP-OFHC	FT-SP-SS	152	96	20	3

Product Information

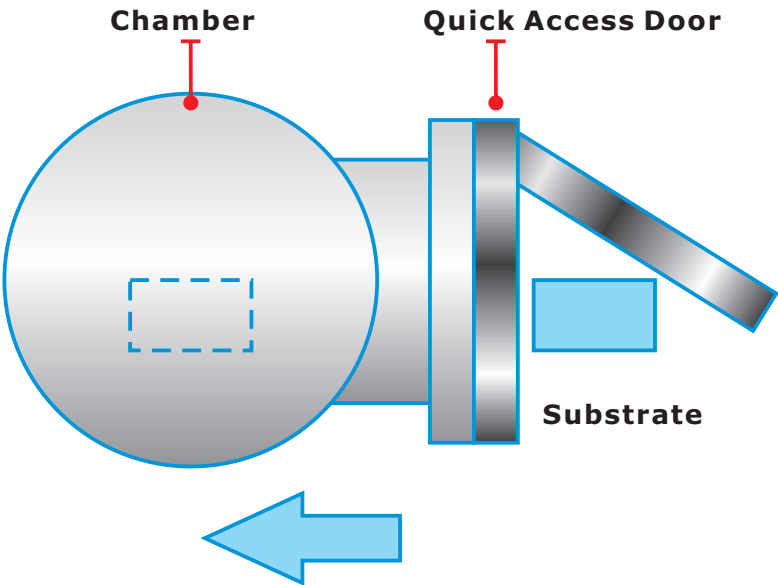
Vacuum Quick Access Doors are designed to gain immediate access to load locks and chambers to load and unload substrates. **AdvanTorr** offers two styles including a blank door only or a door with integrated viewport to allow for viewing access. Optional high-grade SS316L material is available where higher purity with a low outgassing rate is required.

Product Features

System
Components

- Available in a range of flange sizes with and without integrated viewport.
- SS304L material as standard with option for higher-grade SS316L.
- Precision hinged door with reliable FKM O-ring seal.
- CF port mounts.
- Can be installed in any position.

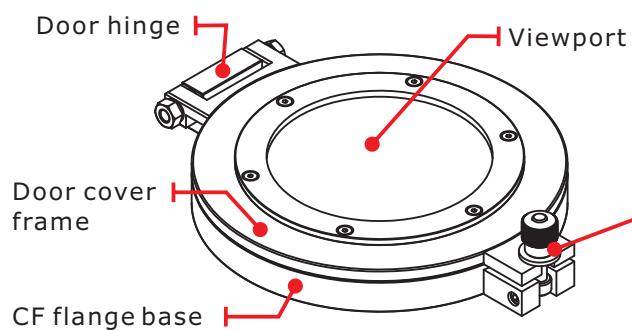
Product Application



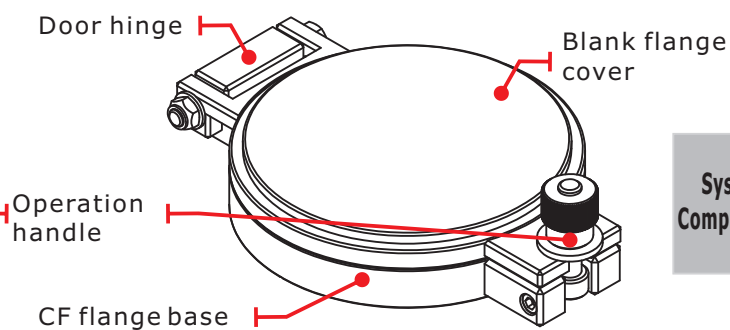
Substrate can transfer from atmosphere to vacuum chamber via quick access door

Key Product Parts

Viewport type



Blank flange type



System
Components

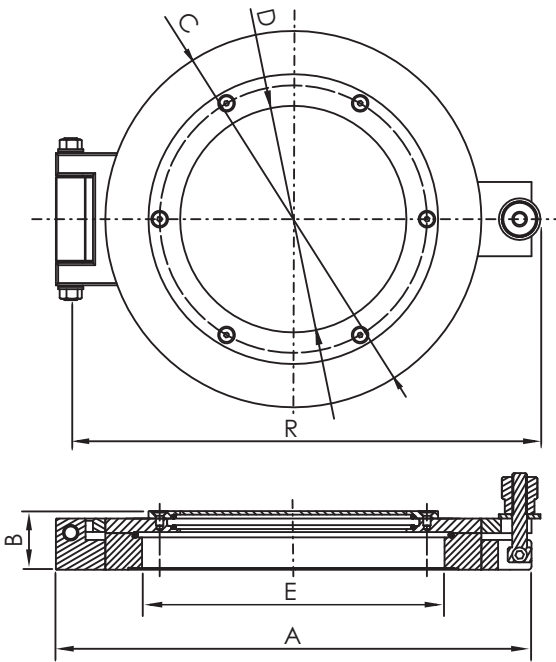
Technical Data for Quick Access Doors

Door seal	FKM
Mounting seal	OFHC gasket
Operate pressure range	760 Torr ~ 1×10^{-8} Torr 1,000 mbar ~ 1.33×10^{-8} mbar 100 kPa ~ 1.13×10^{-9} kPa
Leak rate	1×10^{-9} Torr l/s, He 1.33×10^{-9} mbar l/s, He 1.13×10^{-10} kPa l/s, He
Temperature range	-20°C (-4°F) ~ 150°C (302°F)
Bake temperature	100°C (212°F)
Body material	SS304L
Hinge material	Optional high-grade SS31 6L material
Viewport material	Glass (only with viewport version)
Mounting position	Any



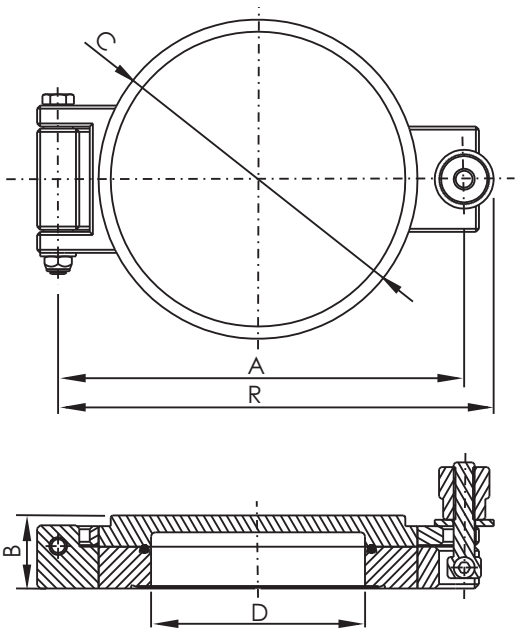
Product Order Information

System
Components



Quick Access Door - Viewport Type

Part Number	Flange Size	A	B	C	D	E
QDV-CF-450	CF4.5"	177	32	114	64	64
QDV-CF-600	CF6"	215	35	152	102	102
QDV-CF-800	CF8"	276	37	202	152	153
QDV-CF-1000	CF10"	326	39	253	152	204



Quick Access Door - Blank Flange Type

Part Number	Flange Size	A	B	C	D
QDB-CF-450	CF4.5"	177	32	114	64
QDB-CF-600	CF6"	217	35	152	102
QDB-CF-800	CF8"	276	37	202	153
QDB-CF-1000	CF10"	326	39	253	204

CF Flanges & Fittings



CF Flanges & Fittings

AdvanTorr offers Conflat flanges in a wide range of sizes from 1.33" to 16.5" in both rotatable and non-rotatable versions. All CF flanges are compatible with other manufacturers' standards and are available in SS304L material as standard, with an option for high-grade SS 316LN ESR.

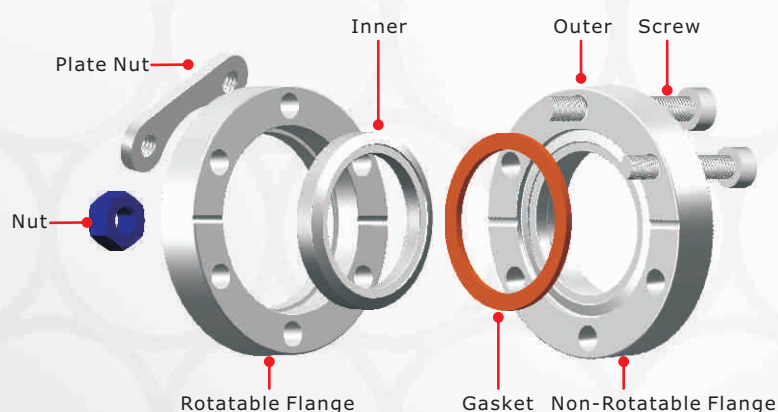
CF flanges utilize an OFHC (Oxygen Free High Conductivity) copper gasket for effective seal up to 1×10^{-10} Torr. Moreover, the copper gasket can sustain a temperature of up to 450°C, but reuse of copper gaskets is not recommended.

For transition from UHV to HV, **AdvanTorr** also offers a complete range of adaptors for CF flange to KF or ISO flange. Please refer to the Adaptor section.

For custom designed flanges, please contact your local representative or **AdvanTorr** direct.

Cleaning and Packaging

All products with weld joints are 100% helium leak tested to assure leak free operation prior to use. In addition, to ensure the cleanliness of **AdvanTorr** products, all parts are ultrasonically cleaned to UHV standards using de-ionized water and packaged in contamination free, class 10,000 clean room conditions. Each bag is affixed with a barcode label identifying the component's part number, heat number and batch number for full traceability.



STANDARD SPECIFICATION

Vacuum Rate:	Ultra High Vacuum
Material:	SS304L, SS316LN
Flange Sizes:	CF 1.33" ~ CF 16.5"
Tube Sizes:	1/2" ~ 14.0"
Vacuum Range:	760 Torr ~ 1×10^{-10} Torr for 304L 760 Torr ~ 1×10^{-12} Torr for 316LN
Gasket Material:	OFHC Copper or Silver Plated
Temperature Range:	-190°C ~ 450°C

CF

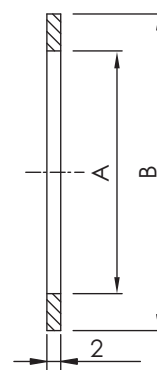
Rotatable CF flange – When components of several systems are used which may have different flange orientations, rotatable flanges are recommended.

Non-Rotatable CF Flanges – When mating orientation is of no concern, non-rotatable flanges are recommended and less expensive due to containing both sealing surface and bolt holes in one unit. Double-sided CF flanges are also available upon request.

-All dimensions are in millimeters unless otherwise specified.

OFHC COPPER GASKETS

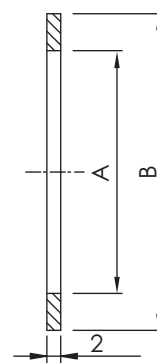
*Optional for 10 pcs in 1 pack



Part Number	Size	A	B
CF-CS-133	CF1.33"(DN16)	16.20	21.25
CF-CS-212	CF2.12"(DN25)	25.65	32.77
CF-CS-275	CF2.75"(DN35)	36.80	48.10
CF-CS-275-1	CF2.75"(DN40)	39.00	48.10
CF-CS-338	CF3.38"(DN50)	51.05	61.60
CF-CS-450	CF4.50"(DN63)	63.60	82.35
CF-CS-462	CF4.62"(DN80)	76.45	91.39
CF-CS-600	CF6.00"(DN100)	101.80	120.45
CF-CS-675	CF6.75"(DN130)	127.25	141.40
CF-CS-800	CF8.00"(DN160)	152.60	171.25
CF-CS-1000	CF10.00"(DN200)	203.40	222.05
CF-CS-1200	CF12.00"(DN250)	254.20	272.85
CF-CS-1325	CF13.25"(DN270)	274.00	294.34
CF-CS-1400	CF14.00"(DN300)	300.00	313.00
CF-CS-1650	CF16.50"(DN350)	356.50	376.60

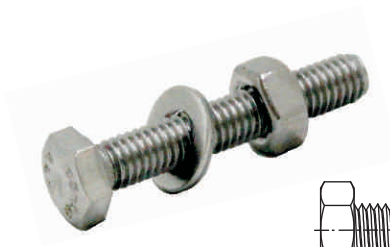
OFHC COPPER GASKETS, SILVER PLATED

*Optional for 10 pcs in 1 pack



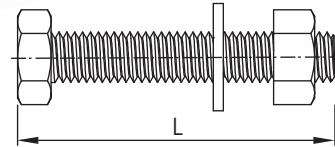
Part Number	Size	A	B
CF-CS-133-S	CF1.33"(DN16)	16.20	21.25
CF-CS-212-S	CF2.12"(DN25)	25.65	32.77
CF-CS-275-S	CF2.75"(DN35)	36.80	48.10
CF-CS-275-1-S	CF2.75"(DN40)	39.00	48.10
CF-CS-338-S	CF3.38"(DN50)	51.05	61.60
CF-CS-450-S	CF4.50"(DN63)	63.60	82.35
CF-CS-462-S	CF4.62"(DN80)	76.45	91.39
CF-CS-600-S	CF6.00"(DN100)	101.80	120.45
CF-CS-675-S	CF6.75"(DN130)	127.25	141.40
CF-CS-800-S	CF8.00"(DN160)	152.60	171.25
CF-CS-1000-S	CF10.00"(DN200)	203.40	222.05
CF-CS-1200-S	CF12.00"(DN250)	254.20	272.85
CF-CS-1325-S	CF13.25"(DN270)	274.00	294.34
CF-CS-1400-S	CF14.00"(DN300)	300.00	313.00
CF-CS-1650-S	CF16.50"(DN350)	356.50	376.60

CF Hardware & Seals



HEX HEAD BOLTS - METRIC THREAD

*Material: Stainless Steel
*Set: Bolts, Nuts & Washers

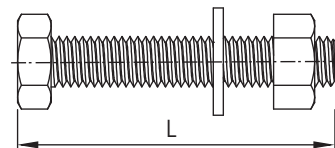


Part Number	Size	Thread	L	No. of Sets
CF-HB-133M	CF1.33"(DN16)	M4xP0.70	20	25
CF-HB-212M	CF2.12"(DN25)	M6xP1.00	35	25
CF-HB-275M	CF2.75"(DN40)	M6xP1.00	35	25
CF-HB-338M	CF3.38"(DN50)	M8xP1.25	45	25
CF-HB-450M	CF4.50"(DN63)	M8xP1.25	45	25
CF-HB-600M	CF6.00"(DN100)	M8xP1.25	50	25
CF-HB-800M	CF8.00"(DN160)	M8xP1.25	60	25
CF-HB-1000M	CF10.0"(DN200)	M8xP1.25	60	25

CF

HEX HEAD BOLTS - INCH THREAD

*Material: Stainless Steel
*Set: Bolts, Nuts & Washers



Part Number	Size	Thread	L	No. of Sets
CF-HB-133	CF1.33"(DN16)	8-32 UNC	19.1	25
CF-HB-212	CF2.12"(DN25)	1/4"-28UNF	31.8	25
CF-HB-275	CF2.75"(DN40)	1/4"-28UNF	31.8	25
CF-HB-338	CF3.38"(DN50)	5/16"-24UNF	44.5	25
CF-HB-450	CF4.50"(DN63)	5/16"-24UNF	50.8	25
CF-HB-600	CF6.00"(DN100)	5/16"-24UNF	57.2	25
CF-HB-800	CF8.00"(DN160)	5/16"-24UNF	57.2	25
CF-HB-1000	CF10.0"(DN200)	5/16"-24UNF	63.5	25

PLATE NUTS - METRIC THREAD

*Material: Stainless Steel



CF

Part Number	Size	Diagram	A	B	C	D	F
CF-PN-133M	CF1.33"(DN16)	A	20.30	7.62	13.46	3.20	M4xP0.7
CF-PN-275M	CF2.75"(DN40)	A	41.16	12.70	29.46	5.10	M6xP1.0
CF-PN-338M	CF3.38"(DN50)	B	44.45	12.70	27.69	5.30	M8xP1.25
CF-PN-450M	CF4.50"(DN63)	B	51.56	12.70	35.30	5.30	M8xP1.25
CF-PN-462M	CF4.62"(DN80)	B	45.80	12.70	31.60	5.30	M8xP1.25
CF-PN-600M	CF6.00"(DN100)	B	41.65	12.70	25.40	5.30	M8xP1.25
CF-PN-800M	CF8.00"(DN160)	B	44.45	12.70	28.45	5.30	M8xP1.25
CF-PN-1000M	CF10.00"(DN200)	B	44.45	12.70	30.23	5.30	M8xP1.25

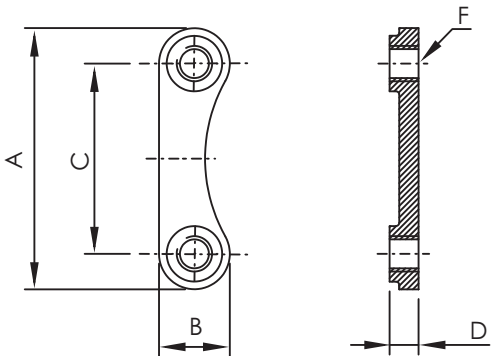


Diagram A

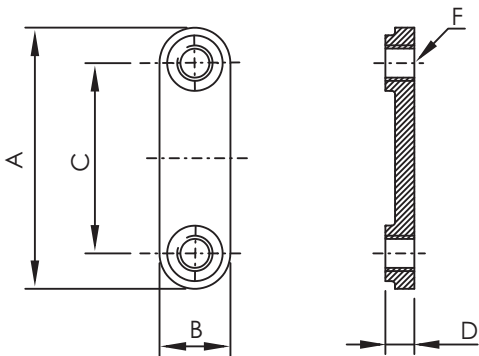


Diagram B

PLATE NUTS - INCH THREAD

*Material: Stainless Steel



CF

Part Number	Size	Diagram	A	B	C	D	F
CF-PN-133	CF1.33"(DN16)	A	20.30	7.62	13.46	3.20	8-32
CF-PN-275	CF2.75"(DN40)	A	42.16	12.70	29.46	5.10	1/4-28
CF-PN-338	CF3.38"(DN50)	B	44.45	12.70	27.69	5.30	5/16-24
CF-PN-450	CF4.50"(DN63)	B	51.56	12.70	35.30	5.30	5/16-24
CF-PN-462	CF4.62"(DN80)	B	45.80	12.70	31.60	5.30	5/16-24
CF-PN-600	CF6.00"(DN100)	B	41.65	12.70	25.40	5.30	5/16-24
CF-PN-800	CF8.00"(DN160)	B	44.45	12.70	28.45	5.30	5/16-24
CF-PN-1000	CF10.00"(DN200)	B	44.45	12.70	30.23	5.30	5/16-24

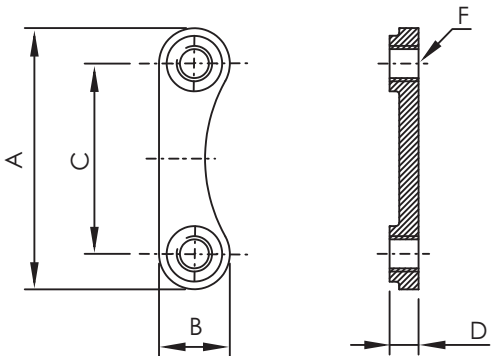


Diagram A

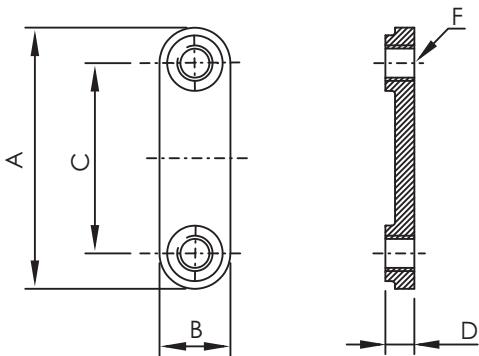


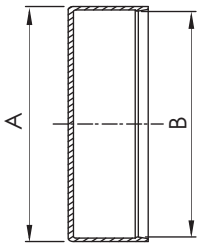
Diagram B



CF FLANGE PLASTIC CAP

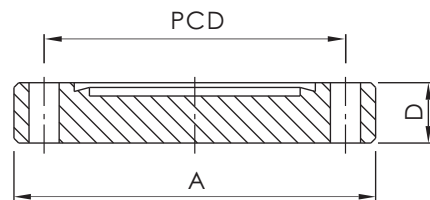
*Material: PE

Part Number	Size	A	B
CF-PC-133	CF1.33"(DN16)	36.20	34.20
CF-PC-212	CF2.12"(DN25)	56.40	54.00
CF-PC-275	CF2.75"(DN40)	72.10	70.10
CF-PC-338	CF3.38"(DN50)	88.50	85.90
CF-PC-450	CF4.50"(DN63)	118.30	113.50
CF-PC-462	CF4.62"(DN80)	120.50	117.60
CF-PC-600	CF6.00"(DN100)	156.40	151.60
CF-PC-675	CF6.75"(DN130)	173.80	171.60
CF-PC-800	CF8.00"(DN160)	206.00	202.00
CF-PC-1000	CF10.00"(DN200)	258.00	254.00
CF-PC-1200	CF12.00"(DN250)	309.00	304.60
CF-PC-1325	CF13.25"(DN270)	341.10	336.70
CF-PC-1400	CF14.00"(DN300)	360.10	355.70



CF

CF Flanges



CF BLANK FLANGE

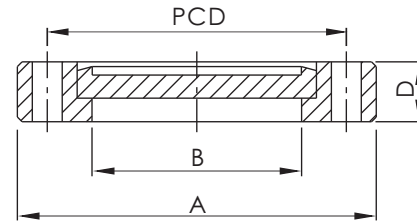
*Material: SS 304L

*Tapped and Through Holes

Part Number	Flange Size	A (mm)	D (mm)	PCD (mm)	Bolt Holes	Diameter (mm) / Thread Type
CF-BL-133	CF1.33"(DN16)	33.70	7.60	26.97	6	4.37
CF-BL-133T	CF1.33"(DN16)	33.70	7.60	26.97	6	8-32
CF-BL-133M	CF1.33"(DN16)	33.70	7.60	26.97	6	M4
CF-BL-212	CF2.12"(DN25)	53.80	11.90	41.28	4	6.73
CF-BL-212T	CF2.12"(DN25)	53.80	11.90	41.28	4	1/4-28
CF-BL-212M	CF2.12"(DN25)	53.80	11.90	41.28	4	M6
CF-BL-275	CF2.75"(DN40)	69.30	12.70	58.72	6	6.73
CF-BL-275T	CF2.75"(DN40)	69.30	12.70	58.72	6	1/4-28
CF-BL-275M	CF2.75"(DN40)	69.30	12.70	58.72	6	M6
CF-BL-338	CF3.38"(DN50)	85.30	16.00	72.39	8	8.43
CF-BL-338T	CF3.38"(DN50)	85.30	16.00	72.39	8	5/16-24
CF-BL-338M	CF3.38"(DN50)	85.30	16.00	72.39	8	M8
CF-BL-450	CF4.50"(DN63)	113.50	17.30	92.15	8	8.43
CF-BL-450T	CF4.50"(DN63)	113.50	17.30	92.15	8	5/16-24
CF-BL-450M	CF4.50"(DN63)	113.50	17.30	92.15	8	M8
CF-BL-462	CF4.62"(DN80)	117.00	19.10	102.36	10	8.43
CF-BL-462T	CF4.62"(DN80)	117.00	19.10	102.36	10	5/16-24
CF-BL-462M	CF4.62"(DN80)	117.00	19.10	102.36	10	M8
CF-BL-600	CF6.00"(DN100)	151.60	19.80	130.25	16	8.43
CF-BL-600T	CF6.00"(DN100)	151.60	19.80	130.25	16	5/16-24
CF-BL-600M	CF6.00"(DN100)	151.60	19.80	130.25	16	M8
CF-BL-675	CF6.75"(DN130)	170.69	21.30	151.61	18	8.43
CF-BL-675T	CF6.75"(DN130)	170.69	21.30	151.61	18	5/16-24
CF-BL-675M	CF6.75"(DN130)	170.69	21.30	151.61	18	M8
CF-BL-800	CF8.00"(DN160)	202.44	22.35	181.05	20	8.43
CF-BL-800T	CF8.00"(DN160)	202.44	22.35	181.05	20	5/16-24
CF-BL-800M	CF8.00"(DN160)	202.44	22.35	181.05	20	M8
CF-BL-1000	CF10.00"(DN200)	253.24	24.60	231.85	24	8.43
CF-BL-1000T	CF10.00"(DN200)	253.24	24.60	231.85	24	5/16-24
CF-BL-1000M	CF10.00"(DN200)	253.24	24.60	231.85	24	M8
CF-BL-1200	CF12.00"(DN250)	304.40	25.90	283.97	32	8.43
CF-BL-1200T	CF12.00"(DN250)	304.40	25.90	283.97	32	5/16-24
CF-BL-1200M	CF12.00"(DN250)	304.40	25.90	283.97	32	M8
CF-BL-1325	CF13.25"(DN270)	335.79	28.45	306.32	30	10.49
CF-BL-1325T	CF13.25"(DN270)	335.79	28.45	306.32	30	3/8-24
CF-BL-1325M	CF13.25"(DN270)	335.79	28.45	306.32	30	M10
CF-BL-1400	CF14.00"(DN300)	354.84	28.45	325.37	30	10.49
CF-BL-1400T	CF14.00"(DN300)	354.84	28.45	325.37	30	3/8-24
CF-BL-1400M	CF14.00"(DN300)	354.84	28.45	325.37	30	M10
CF-BL-1650	CF16.50"(DN350)	418.34	28.45	388.87	36	10.49
CF-BL-1650T	CF16.50"(DN350)	418.34	28.45	388.87	36	3/8-24
CF-BL-1650M	CF16.50"(DN350)	418.34	28.45	388.87	36	M10

*Note: SS 316LN Material Available on Request.

CF Flanges



CF BLANK FLANGE, ROTATABLE

*Material: SS 304L

*Tapped and Through Holes

CF

Part Number	Flange Size	A (mm)	B (mm)	D (mm)	PCD (mm)	Bolt Holes	Diameter (mm) / Thread Type
CF-BL-133R	CF1.33" (DN1 6)	33.70	19.41	7.60	26.97	6	4.37
CF-BL-133RT	CF1.33" (DN1 6)	33.70	19.41	7.60	26.97	6	8-32
CF-BL-133RM	CF1.33" (DN1 6)	33.70	19.41	7.60	26.97	6	M4
CF-BL-212R	CF2.12" (DN2 5)	53.80	27.94	11.90	41.28	4	6.73
CF-BL-212RT	CF2.12" (DN2 5)	53.80	27.94	11.90	41.28	4	1/4-28
CF-BL-212RM	CF2.12" (DN2 5)	53.80	27.94	11.90	41.28	4	M6
CF-BL-275R	CF2.75" (DN4 0)	69.30	48.31	12.70	58.72	6	6.73
CF-BL-275RT	CF2.75" (DN4 0)	69.30	48.31	12.70	58.72	6	1/4-28
CF-BL-275RM	CF2.75" (DN4 0)	69.30	48.31	12.70	58.72	6	M6
CF-BL-338R	CF3.38" (DN5 0)	85.30	54.50	17.40	72.39	8	8.43
CF-BL-338RT	CF3.38" (DN5 0)	85.30	54.50	17.40	72.39	8	5/16-24
CF-BL-338RM	CF3.38" (DN5 0)	85.30	54.50	17.40	72.39	8	M8
CF-BL-450R	CF4.50" (DN6 3)	113.50	72.39	19.10	92.15	8	8.43
CF-BL-450RT	CF4.50" (DN6 3)	113.50	72.39	19.10	92.15	8	5/16-24
CF-BL-450RM	CF4.50" (DN6 3)	113.50	72.39	19.10	92.15	8	M8
CF-BL-462R	CF4.62" (DN8 0)	117.00	79.71	20.60	102.36	10	8.43
CF-BL-462RT	CF4.62" (DN8 0)	117.00	79.71	20.60	102.36	10	5/16-24
CF-BL-462RM	CF4.62" (DN8 0)	117.00	79.71	20.60	102.36	10	M8
CF-BL-600R	CF6.00" (DN1 00)	151.60	106.17	21.30	130.25	16	8.43
CF-BL-600RT	CF6.00" (DN1 00)	151.60	106.17	21.30	130.25	16	5/16-24
CF-BL-600RM	CF6.00" (DN1 00)	151.60	106.17	21.30	130.25	16	M8
CF-BL-675R	CF6.75" (DN1 30)	170.69	129.50	21.30	151.61	18	8.43
CF-BL-675RT	CF6.75" (DN1 30)	170.69	129.50	21.30	151.61	18	5/16-24
CF-BL-675RM	CF6.75" (DN1 30)	170.69	129.50	21.30	151.61	18	M8
CF-BL-800R	CF8.00" (DN1 60)	202.44	155.70	23.90	181.05	20	8.43
CF-BL-800RT	CF8.00" (DN1 60)	202.44	155.70	23.90	181.05	20	5/16-24
CF-BL-800RM	CF8.00" (DN1 60)	202.44	155.70	23.90	181.05	20	M8
CF-BL-1000R	CF10.00" (DN2 00)	253.24	208.28	24.60	231.85	24	8.43
CF-BL-1000RT	CF10.00" (DN2 00)	253.24	208.28	24.60	231.85	24	5/16-24
CF-BL-1000RM	CF10.00" (DN2 00)	253.24	208.28	24.60	231.85	24	M8
CF-BL-1200R	CF12.00" (DN2 50)	304.04	256.03	25.90	283.97	32	8.43
CF-BL-1200RT	CF12.00" (DN2 50)	304.04	256.03	25.90	283.97	32	5/16-24
CF-BL-1200RM	CF12.00" (DN2 50)	304.04	256.03	25.90	283.97	32	M8
CF-BL-1325R	CF13.25" (DN2 70)	335.79	276.30	28.45	306.32	30	10.49
CF-BL-1325RT	CF13.25" (DN2 70)	335.79	276.30	28.45	306.32	30	3/8-24
CF-BL-1325RM	CF13.25" (DN2 70)	335.79	276.30	28.45	306.32	30	M10
CF-BL-1400R	CF14.00" (DN3 00)	354.84	305.82	28.45	325.37	30	10.49
CF-BL-1400RT	CF14.00" (DN3 00)	354.84	305.82	28.45	325.37	30	3/8-24
CF-BL-1400RM	CF14.00" (DN3 00)	354.84	305.82	28.45	325.37	30	M10
CF-BL-1650R	CF16.50" (DN3 50)	418.34	359.61	28.45	388.87	36	10.49
CF-BL-1650RT	CF16.50" (DN3 50)	418.34	359.61	28.45	388.87	36	3/8-24
CF-BL-1650RM	CF16.50" (Dn350)	418.34	359.61	28.45	388.87	36	M10

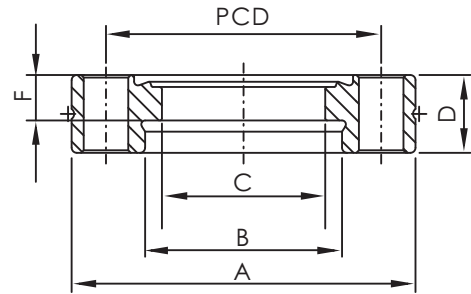
*Note: SS 316LN Material Available on Request.

CF Flanges

CF BORED FLANGES

*Material: SS 304L

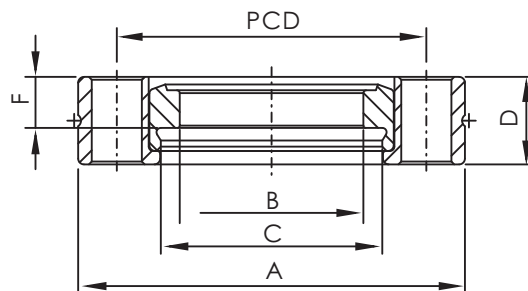
* Tapped and Through Holes



Part Number	Size	A (mm)	B (mm)	C (mm)	D (mm)	F (mm)	PCD (mm)	Bolt Holes	Diameter (mm) / Thread Type
CF-BF-133x038	CF1.33"(DN16)	33.70	9.65	-	7.60	-	26.97	6	4.37
CF-BF-133x038T	CF1.33"(DN16)	33.70	9.65	-	7.60	-	26.97	6	8-32
CF-BF-133x038M	CF1.33"(DN16)	33.70	9.65	-	7.60	-	26.97	6	M4
CF-BF-133x050	CF1.33"(DN16)	33.70	12.83	-	7.60	-	26.97	6	4.37
CF-BF-133x050T	CF1.33"(DN16)	33.70	12.83	-	7.60	-	26.97	6	8-32
CF-BF-133x050M	CF1.33"(DN16)	33.70	12.83	-	7.60	-	26.97	6	M4
CF-BF-133x075	CF1.33"(DN16)	33.70	19.30	16.00	7.60	4.45	26.97	6	4.37
CF-BF-133x075T	CF1.33"(DN16)	33.70	19.30	16.00	7.60	4.45	26.97	6	8-32
CF-BF-133x075M	CF1.33"(DN16)	33.70	19.30	16.00	7.60	4.45	26.97	6	M4
CF-BF-212x100	CF2.12"(DN25)	53.80	25.65	23.90	11.90	4.32	41.28	4	6.73
CF-BF-212x100T	CF2.12"(DN25)	53.80	25.65	23.90	11.90	4.32	41.28	4	1/4-28
CF-BF-212x100M	CF2.12"(DN25)	53.80	25.65	23.90	11.90	4.32	41.28	4	M6
CF-BF-275x075	CF2.75"(DN40)	69.30	19.30	16.00	12.70	5.31	58.72	6	6.73
CF-BF-275x075T	CF2.75"(DN40)	69.30	19.30	16.00	12.70	5.31	58.72	6	1/4-28
CF-BF-275x075M	CF2.75"(DN40)	69.30	19.30	16.00	12.70	5.31	58.72	6	M6
CF-BF-275x100	CF2.75"(DN40)	69.30	25.65	22.10	12.70	5.31	58.72	6	6.73
CF-BF-275x100T	CF2.75"(DN40)	69.30	25.65	22.10	12.70	5.31	58.72	6	1/4-28
CF-BF-275x100M	CF2.75"(DN40)	69.30	25.65	22.10	12.70	5.31	58.72	6	M6
CF-BF-275x150	CF2.75"(DN40)	69.30	38.35	36.60	12.70	5.31	58.72	6	6.73
CF-BF-275x150T	CF2.75"(DN40)	69.30	38.35	36.60	12.70	5.31	58.72	6	1/4-28
CF-BF-275x150M	CF2.75"(DN40)	69.30	38.35	36.60	12.70	5.31	58.72	6	M6
CF-BF-275x175	CF2.75"(DN40)	69.30	44.70	41.20	12.70	5.31	58.72	6	6.73
CF-BF-275x175T	CF2.75"(DN40)	69.30	44.70	41.20	12.70	5.31	58.72	6	1/4-28
CF-BF-275x175M	CF2.75"(DN40)	69.30	44.70	41.20	12.70	5.31	58.72	6	M6
CF-BF-338x200	CF3.38"(DN50)	85.30	51.05	49.30	17.40	5.72	72.39	8	8.43
CF-BF-338x200T	CF3.38"(DN50)	85.30	51.05	49.30	17.40	5.72	72.39	8	5/16-24
CF-BF-338x200M	CF3.38"(DN50)	85.30	51.05	49.30	17.40	5.72	72.39	8	M8
CF-BF-450x250	CF4.50"(DN63)	113.50	63.75	62.00	17.40	9.53	92.15	8	8.43
CF-BF-450x250T	CF4.50"(DN63)	113.50	63.75	62.00	17.40	9.53	92.15	8	5/16-24
CF-BF-450x250M	CF4.50"(DN63)	113.50	63.75	62.00	17.40	9.53	92.15	8	M8
CF-BF-462x300	CF4.62"(DN80)	117.00	76.45	74.70	20.60	9.60	102.36	10	8.43
CF-BF-462x300T	CF4.62"(DN80)	117.00	76.45	74.70	20.60	9.60	102.36	10	5/16-24
CF-BF-462x300M	CF4.62"(DN80)	117.00	76.45	74.70	20.60	9.60	102.36	10	M8
CF-BF-600x400	CF6.00"(DN100)	151.60	101.85	99.60	19.80	11.10	130.25	16	8.43
CF-BF-600x400T	CF6.00"(DN100)	151.60	101.85	99.60	19.80	11.10	130.25	16	5/16-24
CF-BF-600x400M	CF6.00"(DN100)	151.60	101.85	99.60	19.80	11.10	130.25	16	M8
CF-BF-675x500	CF6.75"(DN130)	170.69	127.25	123.83	21.34	11.68	151.61	18	8.43
CF-BF-675x500T	CF6.75"(DN130)	170.69	127.25	123.83	21.34	11.68	151.61	18	5/16-24
CF-BF-675x500M	CF6.75"(DN130)	170.69	127.25	123.83	21.34	11.68	151.61	18	M8
CF-BF-800x600	CF8.00"(DN160)	202.44	152.91	150.40	22.35	12.70	181.05	20	8.43
CF-BF-800x600T	CF8.00"(DN160)	202.44	152.91	150.40	22.35	12.70	181.05	20	5/16-24
CF-BF-800x600M	CF8.00"(DN160)	202.44	152.91	150.40	22.35	12.70	181.05	20	M8
CF-BF-1000x800	CF10.00"(DN200)	253.24	203.71	200.40	24.64	12.70	231.85	24	8.43
CF-BF-1000x800T	CF10.00"(DN200)	253.24	203.71	200.40	24.64	12.70	231.85	24	5/16-24
CF-BF-1000x800M	CF10.00"(DN200)	253.24	203.71	200.40	24.64	12.70	231.85	24	M8
CF-BF-1200x1000	CF12.00"(DN250)	304.04	254.51	250.95	25.90	12.70	283.97	32	8.43
CF-BF-1200x1000T	CF12.00"(DN250)	304.04	254.51	250.95	25.90	12.70	283.97	32	5/16-24
CF-BF-1200x1000M	CF12.00"(DN250)	304.04	254.51	250.95	25.90	12.70	283.97	32	M8
CF-BF-1325x1000	CF13.25"(DN270)	335.79	254.51	250.95	28.45	12.70	306.32	30	10.49
CF-BF-1325x1000T	CF13.25"(DN270)	335.79	254.51	250.95	28.45	12.70	306.32	30	3/8-24
CF-BF-1325x1000M	CF13.25"(DN270)	335.79	254.51	250.95	28.45	12.70	306.32	30	M10
CF-BF-1400x1200	CF14.00"(DN300)	354.84	305.31	301.75	28.45	12.70	325.37	30	10.49
CF-BF-1400x1200T	CF14.00"(DN300)	354.84	305.31	301.75	28.45	12.70	325.37	30	3/8-24
CF-BF-1400x1200M	CF14.00"(DN300)	354.84	305.31	301.75	28.45	12.70	325.37	30	M10
CF-BF-1650x1400	CF16.50"(DN350)	418.34	356.11	352.00	28.45	12.70	388.87	36	10.49
CF-BF-1650x1400T	CF16.50"(DN350)	418.34	356.11	352.00	28.45	12.70	388.87	36	3/8-24
CF-BF-1650x1400M	CF16.50"(DN350)	418.34	356.11	352.00	28.45	12.70	388.87	36	M10

*Note: SS 316LN Material Available on Request.

CF Flanges



CF BORED FLANGES, ROTATABLE

*Material: SS 304L

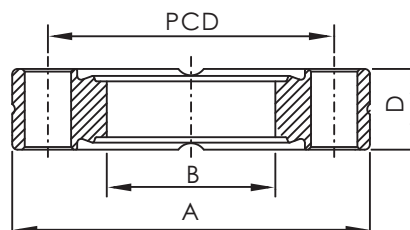
*Tapped and Through Holes

CF

Part Number	Size	A (mm)	B (mm)	C (mm)	D (mm)	F (mm)	PCD (mm)	Bolt Holes	Diameter (mm) / Thread Type
CF-BF-133x050R	CF1.33"(DN16)	33.70	12.83	12.83	7.60	-	26.97	6	4.37
CF-BF-133x050RT	CF1.33"(DN16)	33.70	12.83	12.83	7.60	-	26.97	6	8-32
CF-BF-133x050RM	CF1.33"(DN16)	33.70	12.83	12.83	7.60	-	26.97	6	M4
CF-BF-133x075R	CF1.33"(DN16)	33.70	16.00	19.30	7.60	4.44	26.97	6	4.37
CF-BF-133x075RT	CF1.33"(DN16)	33.70	16.00	19.30	7.60	4.44	26.97	6	8-32
CF-BF-133x075RM	CF1.33"(DN16)	33.70	16.00	19.30	7.60	4.44	26.97	6	M4
CF-BF-212x100R	CF2.12"(DN25)	53.80	23.90	25.91	11.90	4.32	41.28	4	6.73
CF-BF-212x100RT	CF2.12"(DN25)	53.80	23.90	25.91	11.90	4.32	41.28	4	1/4-28
CF-BF-212x100RM	CF2.12"(DN25)	53.80	23.90	25.91	11.90	4.32	41.28	4	M6
CF-BF-275x075R	CF2.75"(DN40)	69.30	16.00	19.30	12.70	5.31	58.72	6	6.73
CF-BF-275x075RT	CF2.75"(DN40)	69.30	16.00	19.30	12.70	5.31	58.72	6	1/4-28
CF-BF-275x075RM	CF2.75"(DN40)	69.30	16.00	19.30	12.70	5.31	58.72	6	M6
CF-BF-275x150R	CF2.75"(DN40)	69.30	36.60	38.61	12.70	5.31	58.72	6	6.73
CF-BF-275x150RT	CF2.75"(DN40)	69.30	36.60	38.61	12.70	5.31	58.72	6	1/4-28
CF-BF-275x150RM	CF2.75"(DN40)	69.30	36.60	38.61	12.70	5.31	58.72	6	M6
CF-BF-338x200R	CF3.38"(DN50)	85.30	49.30	51.31	17.40	5.71	72.39	8	8.43
CF-BF-338x200RT	CF3.38"(DN50)	85.30	49.30	51.31	17.40	5.71	72.39	8	5/16-24
CF-BF-338x200RM	CF3.38"(DN50)	85.30	49.30	51.31	17.40	5.71	72.39	8	M8
CF-BF-450x250R	CF4.50"(DN63)	113.50	62.00	64.01	19.10	9.52	92.15	8	8.43
CF-BF-450x250RT	CF4.50"(DN63)	113.50	62.00	64.01	19.10	9.52	92.15	8	5/16-24
CF-BF-450x250RM	CF4.50"(DN63)	113.50	62.00	64.01	19.10	9.52	92.15	8	M8
CF-BF-462x300R	CF4.62"(DN80)	117.00	74.70	76.71	20.60	9.52	102.36	10	8.43
CF-BF-462x300RT	CF4.62"(DN80)	117.00	74.70	76.71	20.60	9.52	102.36	10	5/16-24
CF-BF-462x300RM	CF4.62"(DN80)	117.00	74.70	76.71	20.60	9.52	102.36	10	M8
CF-BF-600x400R	CF6.00"(DN100)	151.60	99.60	102.11	21.30	11.10	130.25	16	8.43
CF-BF-600x400RT	CF6.00"(DN100)	151.60	99.60	102.11	21.30	11.10	130.25	16	5/16-24
CF-BF-600x400RM	CF6.00"(DN100)	151.60	99.60	102.11	21.30	11.10	130.25	16	M8
CF-BF-675x500R	CF6.75"(DN130)	170.69	125.00	127.51	21.30	11.68	151.61	18	8.43
CF-BF-675x500RT	CF6.75"(DN130)	170.69	125.00	127.51	21.30	11.68	151.61	18	5/16-24
CF-BF-675x500RM	CF6.75"(DN130)	170.69	125.00	127.51	21.30	11.68	151.61	18	M8
CF-BF-800x600R	CF8.00"(DN160)	202.44	150.40	152.91	23.90	12.70	181.05	20	8.43
CF-BF-800x600RT	CF8.00"(DN160)	202.44	150.40	152.91	23.90	12.70	181.05	20	5/16-24
CF-BF-800x600RM	CF8.00"(DN160)	202.44	150.40	152.91	23.90	12.70	181.05	20	M8
CF-BF-1000x800R	CF10.00"(DN200)	253.24	200.40	203.71	24.60	12.70	231.85	24	8.43
CF-BF-1000x800RT	CF10.00"(DN200)	253.24	200.40	203.71	24.60	12.70	231.85	24	5/16-24
CF-BF-1000x800RM	CF10.00"(DN200)	253.24	200.40	203.71	24.60	12.70	231.85	24	M8
CF-BF-1200x1000R	CF12.00"(DN250)	304.04	250.95	254.51	25.90	12.70	283.97	32	8.43
CF-BF-1200x1000RT	CF12.00"(DN250)	304.04	250.95	254.51	25.90	12.70	283.97	32	5/16-24
CF-BF-1200x1000RM	CF12.00"(DN250)	304.04	250.95	254.51	25.90	12.70	283.97	32	M8
CF-BF-1325x1000R	CF13.25"(DN270)	335.79	250.95	254.51	28.45	12.70	306.32	30	10.49
CF-BF-1325x1000RT	CF13.25"(DN270)	335.79	250.95	254.51	28.45	12.70	306.32	30	3/8-24
CF-BF-1325x1000RM	CF13.25"(DN270)	335.79	250.95	254.51	28.45	12.70	306.32	30	M10
CF-BF-1400x1200R	CF14.00"(DN300)	354.84	301.75	305.31	28.45	12.70	325.37	30	10.49
CF-BF-1400x1200RT	CF14.00"(DN300)	354.84	301.75	305.31	28.45	12.70	325.37	30	3/8-24
CF-BF-1400x1200RM	CF14.00"(DN300)	354.84	301.75	305.31	28.45	12.70	325.37	30	M10
CF-BF-1650x1400R	CF16.50"(DN350)	418.34	352.55	356.11	28.45	12.70	388.87	36	10.49
CF-BF-1650x1400RT	CF16.50"(DN350)	418.34	352.55	356.11	28.45	12.70	388.87	36	3/8-24
CF-BF-1650x1400RM	CF16.50"(DN350)	418.34	352.55	356.11	28.45	12.70	388.87	36	M10

*Note: SS 316LN Material Available on Request.

CF Flanges



CF DOUBLE FACE FLANGES

*Material: SS 304L

*Through Holes

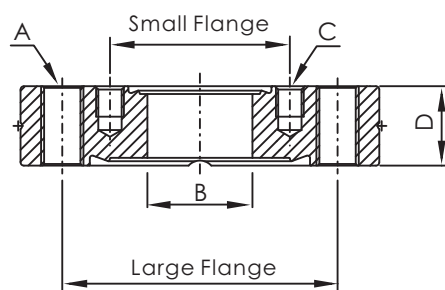
Part Number	Flange Size	A (mm)	B (mm)	D (mm)	PCD (mm)	Bolt Holes	Diameter (mm) / Thread Type
CF-DF-133	CF1.33" (DN16)	33.70	-	7.60	26.97	6	4.37
CF-DF-133x075	CF1.33" (DN16)	33.70	15.88	7.60	26.97	6	4.37
CF-DF-212	CF2.12" (DN25)	53.80	-	11.90	41.28	4	6.73
CF-DF-212x100	CF2.12" (DN25)	53.80	25.65	11.90	41.28	4	6.73
CF-DF-275	CF2.75" (DN40)	69.30	-	12.70	58.72	6	6.73
CF-DF-275x150	CF2.75" (DN40)	69.30	38.35	12.70	58.72	6	6.73
CF-DF-338	CF3.38" (DN50)	85.30	-	16.00	72.39	8	8.43
CF-DF-338x200	CF3.38" (DN50)	85.30	51.05	16.00	72.39	8	8.43
CF-DF-450	CF4.50" (DN63)	113.50	-	17.40	92.15	8	8.43
CF-DF-450x250	CF4.50" (DN63)	113.50	63.75	17.40	92.15	8	8.43
CF-DF-462	CF4.62" (DN80)	117.00	-	19.10	102.36	10	8.43
CF-DF-462x300	CF4.62" (DN80)	117.00	79.71	19.10	102.36	10	8.43
CF-DF-600	CF6.00" (DN100)	151.60	-	19.80	130.25	16	8.43
CF-DF-600x400	CF6.00" (DN100)	151.60	101.85	19.80	130.25	16	8.43
CF-DF-675	CF6.75" (DN130)	170.69	-	21.34	151.61	18	8.43
CF-DF-675x500	CF6.75" (DN130)	170.69	127.25	21.34	151.61	18	8.43
CF-DF-800	CF8.00" (DN160)	202.44	-	22.35	181.05	20	8.43
CF-DF-800x600	CF8.00" (DN160)	202.44	152.65	22.35	181.05	20	8.43
CF-DF-1000	CF10.00" (DN200)	253.24	-	24.60	231.85	24	8.43
CF-DF-1000x800	CF10.00" (DN200)	253.24	203.45	24.60	231.85	24	8.43
CF-DF-1325	CF13.25" (DN270)	335.79	-	28.45	306.32	30	10.49
CF-DF-1325x1000	CF13.25" (DN270)	335.79	254.50	28.45	306.32	30	10.49

*Note: SS 316LN Material available on Request.

CF Flanges

CF ZERO LENGTH REDUCERS- INCH THREAD

*Material: SS 304L



The last digit of part number means optional thread types shown as follows.

T: Both Small Flange and Large Flange are Inch Tapped holes.

Z: Small Flange(Inch tapped holes)+Large Flange(Thru holes)

CF

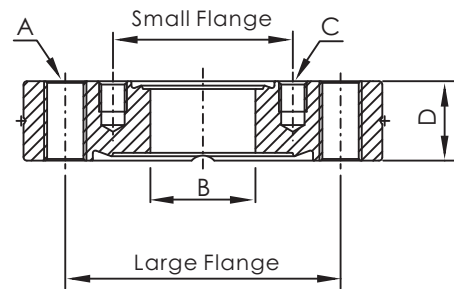
Part Number	Large Flange	Small Flange	A	B (mm)	C	D (mm)
CF-ZL-212x133T	CF2.12"	CF1.33"	1/4-28	15.75	8-32	11.90
CF-ZL-212x133Z	CF2.12"	CF1.33"	6.73	15.75	8-32	11.90
CF-ZL-275x133Z	CF2.75"	CF1.33"	6.73	15.75	8-32	12.70
CF-ZL-275x212T	CF2.75"	CF2.12"	1/4-28	25.40	1/4-28	12.70
CF-ZL-275x212Z	CF2.75"	CF2.12"	6.73	25.40	1/4-28	12.70
CF-ZL-338x133Z	CF3.38"	CF1.33"	8.43	15.75	8-32	16.00
CF-ZL-338x212T	CF3.38"	CF2.12"	5/16-24	25.40	1/4-28	16.00
CF-ZL-338x212Z	CF3.38"	CF2.12"	8.43	25.40	1/4-28	16.00
CF-ZL-338x275T	CF3.38"	CF2.75"	5/16-24	38.10	1/4-28	16.00
CF-ZL-338x275Z	CF3.38"	CF2.75"	8.43	38.10	1/4-28	16.00
CF-ZL-450x133Z	CF4.50"	CF1.33"	8.43	15.75	8-32	17.40
CF-ZL-450x212Z	CF4.50"	CF2.12"	8.43	25.40	1/4-28	17.40
CF-ZL-450x275Z	CF4.50"	CF2.75"	8.43	38.10	1/4-28	17.40
CF-ZL-450x338T	CF4.50"	CF3.38"	5/16-24	50.80	5/16-24	17.40
CF-ZL-450x338Z	CF4.50"	CF3.38"	8.43	50.80	5/16-24	17.40
CF-ZL-462x133Z	CF4.62"	CF1.33"	8.43	15.75	8-32	19.10
CF-ZL-462x212Z	CF4.62"	CF2.12"	8.43	25.40	1/4-28	19.10
CF-ZL-462x275Z	CF4.62"	CF2.75"	8.43	38.10	1/4-28	19.10
CF-ZL-462x338Z	CF4.62"	CF3.38"	8.43	50.80	5/16-24	19.10
CF-ZL-600x133Z	CF6.00"	CF1.33"	8.43	15.75	8-32	19.80
CF-ZL-600x212Z	CF6.00"	CF2.12"	8.43	25.40	1/4-28	19.80
CF-ZL-600x275Z	CF6.00"	CF2.75"	8.43	38.10	1/4-28	19.80
CF-ZL-600x338Z	CF6.00"	CF3.38"	8.43	50.80	5/16-24	19.80
CF-ZL-600x450Z	CF6.00"	CF4.50"	8.43	63.50	5/16-24	19.80
CF-ZL-600x462Z	CF6.00"	CF4.62"	8.43	76.20	5/16-24	19.80
CF-ZL-675x275Z	CF6.75"	CF2.75"	8.43	38.10	1/4-28	21.34
CF-ZL-675x450Z	CF6.75"	CF4.50"	8.43	63.50	5/16-24	21.34
CF-ZL-800x133Z	CF8.00"	CF1.33"	8.43	15.75	8-32	22.35
CF-ZL-800x275Z	CF8.00"	CF2.75"	8.43	38.10	1/4-28	22.35
CF-ZL-800x450Z	CF8.00"	CF4.50"	8.43	63.50	5/16-24	22.35
CF-ZL-800x600Z	CF8.00"	CF6.00"	8.43	101.60	5/16-24	22.35
CF-ZL-1000x133Z	CF10.00"	CF1.33"	8.43	15.75	8-32	24.60
CF-ZL-1000x275Z	CF10.00"	CF2.75"	8.43	38.10	1/4-28	24.60
CF-ZL-1000x450Z	CF10.00"	CF4.50"	8.43	63.50	5/16-24	24.60
CF-ZL-1000x600Z	CF10.00"	CF6.00"	8.43	101.60	5/16-24	24.60
CF-ZL-1000x800Z	CF10.00"	CF8.00"	8.43	152.40	5/16-24	24.60
CF-ZL-1325x133Z	CF13.25"	CF1.33"	10.49	15.75	8-32	28.45
CF-ZL-1325x275Z	CF13.25"	CF2.75"	10.49	38.10	1/4-28	28.45
CF-ZL-1325x450Z	CF13.25"	CF4.50"	10.49	63.50	5/16-24	28.45
CF-ZL-1325x600Z	CF13.25"	CF6.00"	10.49	101.60	5/16-24	28.45
CF-ZL-1325x800Z	CF13.25"	CF8.00"	10.49	152.40	5/16-24	28.45
CF-ZL-1325x1000Z	CF13.25"	CF10.00"	10.49	203.20	5/16-24	28.45

*Note: SS 316LN Material Available on Request.

CF Flanges

CF ZERO LENGTH REDUCERS- METRIC THREAD

*Material: SS 304L



The last digit of part number means optional thread types shown as follows.

M: Both Small Flange and Large Flange are Metric Tapped holes.

Y: Small Flange(Metric tapped holes)+Large Flange(Thru holes)

Part Number	Large Flange	Small Flange	A	B (mm)	C	D (mm)
CF-ZL-212x133M	CF2.12"	CF1.33"	M6	15.75	M4	11.90
CF-ZL-212x133Y	CF2.12"	CF1.33"	6.73	15.75	M4	11.90
CF-ZL-275x133Y	CF2.75"	CF1.33"	6.73	15.75	M4	12.70
CF-ZL-275x212M	CF2.75"	CF2.12"	M6	25.40	M6	12.70
CF-ZL-275x212Y	CF2.75"	CF2.12"	6.73	25.40	M6	12.70
CF-ZL-338x133Y	CF3.38"	CF1.33"	8.43	15.75	M4	16.00
CF-ZL-338x212M	CF3.38"	CF2.12"	M8	25.40	M6	16.00
CF-ZL-338x212Y	CF3.38"	CF2.12"	8.43	25.40	M6	16.00
CF-ZL-338x275M	CF3.38"	CF2.75"	M8	38.10	M6	16.00
CF-ZL-338x275Y	CF3.38"	CF2.75"	8.43	38.10	M6	16.00
CF-ZL-450x133Y	CF4.50"	CF1.33"	8.43	15.75	M4	17.40
CF-ZL-450x212Y	CF4.50"	CF2.12"	8.43	25.40	M6	17.40
CF-ZL-450x275Y	CF4.50"	CF2.75"	8.43	38.10	M6	17.40
CF-ZL-450x338M	CF4.50"	CF3.38"	M8	50.80	M8	17.40
CF-ZL-450x338Y	CF4.50"	CF3.38"	8.43	50.80	M8	17.40
CF-ZL-462x133Y	CF4.62"	CF1.33"	8.43	15.75	M4	19.10
CF-ZL-462x212Y	CF4.62"	CF2.12"	8.43	25.40	M6	19.10
CF-ZL-462x275Y	CF4.62"	CF2.75"	8.43	38.10	M6	19.10
CF-ZL-462x338Y	CF4.62"	CF3.38"	8.43	50.80	M8	19.10
CF-ZL-600x133Y	CF6.00"	CF1.33"	8.43	15.75	M4	19.80
CF-ZL-600x212Y	CF6.00"	CF2.12"	8.43	25.40	M6	19.80
CF-ZL-600x275Y	CF6.00"	CF2.75"	8.43	38.10	M6	19.80
CF-ZL-600x338Y	CF6.00"	CF3.38"	8.43	50.80	M8	19.80
CF-ZL-600x450Y	CF6.00"	CF4.50"	8.43	63.50	M8	19.80
CF-ZL-600x462Y	CF6.00"	CF4.62"	8.43	76.20	M8	19.80
CF-ZL-675x275Y	CF6.75"	CF2.75"	8.43	38.10	M6	21.34
CF-ZL-675x450Y	CF6.75"	CF4.50"	8.43	63.50	M8	21.34
CF-ZL-800x133Y	CF8.00"	CF1.33"	8.43	15.75	M4	22.35
CF-ZL-800x275Y	CF8.00"	CF2.75"	8.43	38.10	M6	22.35
CF-ZL-800x450Y	CF8.00"	CF4.50"	8.43	63.50	M8	22.35
CF-ZL-800x600Y	CF8.00"	CF6.00"	8.43	101.60	M8	22.35
CF-ZL-1000x133Y	CF10.00"	CF1.33"	8.43	15.75	M4	24.60
CF-ZL-1000x275Y	CF10.00"	CF2.75"	8.43	38.10	M6	24.60
CF-ZL-1000x450Y	CF10.00"	CF4.50"	8.43	63.50	M8	24.60
CF-ZL-1000x600Y	CF10.00"	CF6.00"	8.43	101.60	M8	24.60
CF-ZL-1000x800Y	CF10.00"	CF8.00"	8.43	152.40	M8	24.60
CF-ZL-1325x133Y	CF13.25"	CF1.33"	10.49	15.75	M4	28.45
CF-ZL-1325x275Y	CF13.25"	CF2.75"	10.49	38.10	M6	28.45
CF-ZL-1325x450Y	CF13.25"	CF4.50"	10.49	63.50	M8	28.45
CF-ZL-1325x600Y	CF13.25"	CF6.00"	10.49	101.60	M8	28.45
CF-ZL-1325x800Y	CF13.25"	CF8.00"	10.49	152.40	M8	28.45
CF-ZL-1325x1000Y	CF13.25"	CF10.00"	10.49	203.20	M8	28.45

*Note: SS 316LN Material Available on Request.

CF FIFittings

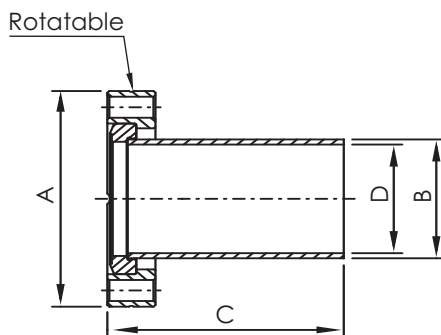


Figure 1

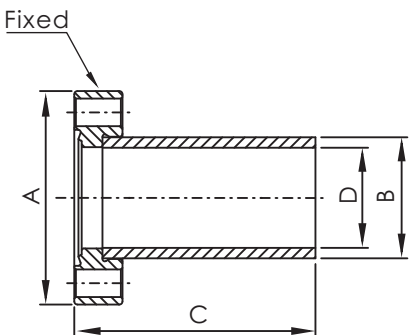


Figure 2

CF FLANGE HALF NIPPLES

*Material: SS 304L
*Tube Finish: Bead Blast

CF

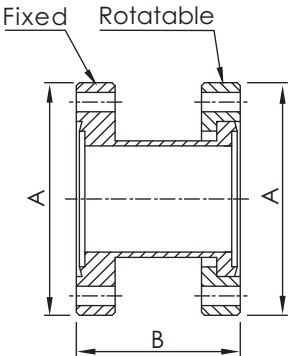
Part Number	Size	Figure	A	B	C	D
CF-HN-133	CF1.33"(DN16)	2	1.33"	19.05	38.10	15.75
CF-HN-133R	CF1.33"(DN16)	1	1.33"	19.05	38.10	15.75
CF-HN-212	CF2.12"(DN25)	2	2.12"	25.40	52.07	22.10
CF-HN-275	CF2.75"(DN40)	2	2.75"	38.10	62.48	34.80
CF-HN-275R	CF2.75"(DN40)	1	2.75"	38.10	62.70	34.80
CF-HN-338	CF3.38"(DN50)	2	3.38"	50.80	81.79	47.50
CF-HN-450	CF4.50"(DN63)	2	4.50"	63.50	85.85	60.20
CF-HN-450R	CF4.50"(DN63)	1	4.50"	63.50	104.80	60.20
CF-HN-462	CF4.62"(DN80)	2	4.62"	76.20	89.66	72.90
CF-HN-600	CF6.00"(DN100)	2	6.00"	101.60	109.73	97.40
CF-HN-600R	CF6.00"(DN100)	1	6.00"	101.60	134.90	97.40
CF-HN-675	CF6.75"(DN130)	2	6.75"	127.00	109.70	122.80
CF-HN-800	CF8.00"(DN160)	2	8.00"	152.40	139.70	148.20
CF-HN-800R	CF8.00"(DN160)	1	8.00"	152.40	166.70	148.20
CF-HN-1000	CF10.00"(DN200)	2	10.00"	203.20	203.20	197.20
CF-HN-1000R	CF10.00"(DN200)	1	10.00"	203.20	203.20	199.00

CF FLANGE FULL NIPPLES

*Material: SS 304L
*Tube Finish: Bead Blast

Part Number	Flange Size	A	B
CF-FN-133	CF1.33"(DN16)	1.33"	76.20
CF-FN-212	CF2.12"(DN25)	2.12"	104.14
CF-FN-275	CF2.75"(DN40)	2.75"	124.97
CF-FN-338	CF3.38"(DN50)	3.38"	163.58
CF-FN-450	CF4.50"(DN63)	4.50"	171.70
CF-FN-462	CF4.62"(DN80)	4.62"	179.32
CF-FN-600	CF6.00"(DN100)	6.00"	219.46
CF-FN-675	CF6.75"(DN130)	6.75"	214.90
CF-FN-800	CF8.00"(DN160)	8.00"	200.00
CF-FN-1000	CF10.00"(DN200)	10.00"	406.40

*Note: SS 316LN (SS 316L Tube+ SS 316LN Flange) Material Available on Request.
*Note: Polished and Electro- Polished Tube Finishes Available on Request.



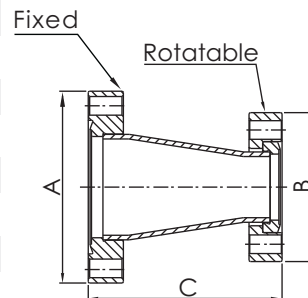
CF CONICAL REDUCING NIPPLES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	B	C
CF-CRN-212x133	CF2.12"(DN25)/CF1.33"(DN16)	2.12"	1.33"	51.90
CF-CRN-275x133	CF2.75"(DN40)/CF1.33"(DN16)	2.75"	1.33"	78.30
CF-CRN-275x212	CF2.75"(DN40)/CF2.12"(DN25)	2.75"	2.12"	69.90
CF-CRN-338x212	CF3.38"(DN50)/CF2.12"(DN25)	3.38"	2.12"	70.30
CF-CRN-338x275	CF3.38"(DN50)/CF2.75"(DN40)	3.38"	2.75"	71.30
CF-CRN-450x275	CF4.50"(DN63)/CF2.75"(DN40)	4.50"	2.75"	75.20
CF-CRN-450x338	CF4.50"(DN63)/CF3.38"(DN50)	4.50"	3.38"	75.60
CF-CRN-462x275	CF4.62"(DN80)/CF2.75"(DN40)	4.62"	2.75"	104.50
CF-CRN-462x338	CF4.62"(DN80)/CF3.38"(DN50)	4.62"	3.38"	104.90
CF-CRN-462x450	CF4.62"(DN80)/CF4.50"(DN63)	4.62"	4.50"	108.70
CF-CRN-600x338	CF6.00"(DN100)/CF3.38"(DN50)	6.00"	3.38"	108.90
CF-CRN-600x450	CF6.00"(DN100)/CF4.50"(DN63)	6.00"	4.50"	112.70
CF-CRN-600x462	CF6.00"(DN100)/CF4.62"(DN80)	6.00"	4.62"	110.30



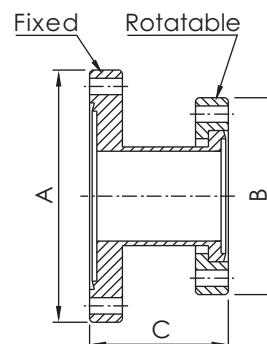
CF STRAIGHT REDUCING NIPPLES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	B	C
CF-SRN-275x133	CF2.75"(DN40)/CF1.33"(DN16)	2.75"	1.33"	45.00
CF-SRN-450x133	CF4.50"(DN63)/CF1.33"(DN16)	4.50"	1.33"	70.00
CF-SRN-450x275	CF4.50"(DN63)/CF2.75"(DN40)	4.50"	2.75"	75.00
CF-SRN-600x275	CF6.00"(DN100)/CF2.75"(DN40)	6.00"	2.75"	127.00
CF-SRN-600x450	CF6.00"(DN100)/CF4.50"(DN63)	6.00"	4.50"	95.00
CF-SRN-800x275	CF8.00"(DN160)/CF2.75"(DN40)	8.00"	2.75"	127.00
CF-SRN-800x450	CF8.00"(DN160)/CF4.50"(DN63)	8.00"	4.50"	127.00
CF-SRN-800x600	CF8.00"(DN160)/CF6.00"(DN100)	8.00"	6.00"	127.00
CF-SRN-1000x275	CF10.00"(DN200)/CF2.75"(DN40)	10.00"	2.75"	127.00
CF-SRN-1000x450	CF10.00"(DN200)/CF4.50"(DN63)	10.00"	4.50"	127.00
CF-SRN-1000x600	CF10.00"(DN200)/CF6.00"(DN100)	10.00"	6.00"	127.00
CF-SRN-1000x800	CF10.00"(DN200)/CF8.00"(DN160)	10.00"	8.00"	127.00



*Note: SS 316LN (SS 316L Tube+ SS 316LN Flange) Material Available on Request.

*Note: Polished and Electro- Polished Tube Finishes Available on Request.

CF Fittings

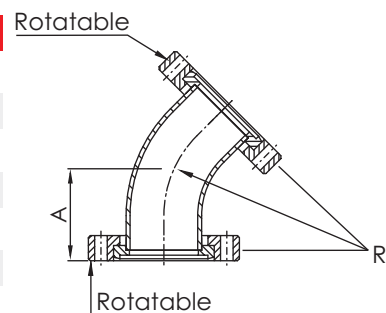
CF 45° ELBOWS

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	R
CF-45EL-133	CF1.33"(DN16)	23.80	25.40
CF-45EL-212	CF2.12"(DN25)	28.90	38.10
CF-45EL-275	CF2.75"(DN40)	44.20	57.20
CF-45EL-338	CF3.38"(DN50)	52.50	76.20
CF-45EL-450	CF4.50"(DN63)	85.60	95.30
CF-45EL-462	CF4.62"(DN80)	100.60	114.30
CF-45EL-600	CF6.00"(DN100)	132.50	152.40



CF

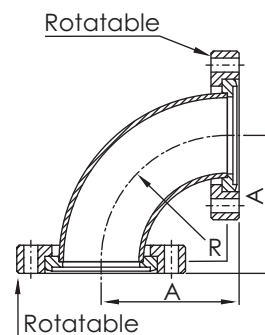
CF 90° ELBOWS

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	R
CF-90EL-133	CF1.33"(DN16)	38.10	28.60
CF-90EL-212	CF2.12"(DN25)	42.40	38.10
CF-90EL-275	CF2.75"(DN40)	62.50	57.15
CF-90EL-338	CF3.38"(DN50)	81.80	76.20
CF-90EL-450	CF4.50"(DN63)	104.60	95.25
CF-90EL-462	CF4.62"(DN80)	121.40	114.30
CF-90EL-600	CF6.00"(DN100)	163.60	152.40



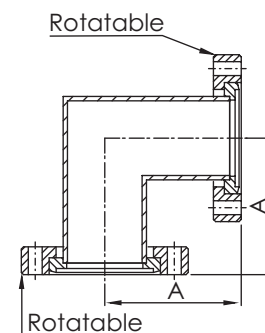
CF 90° MITERED ELBOWS

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A
CF-90MEL-133	CF1.33"(DN16)	38.10
CF-90MEL-212	CF2.12"(DN25)	52.00
CF-90MEL-275	CF2.75"(DN40)	62.50
CF-90MEL-338	CF3.38"(DN50)	81.80
CF-90MEL-450	CF4.50"(DN63)	85.90
CF-90MEL-462	CF4.62"(DN80)	89.70
CF-90MEL-600	CF6.00"(DN100)	109.70



*Note: SS 316LN (SS 316L Tube+ SS 316LN Flange) Material Available on Request.

*Note: Polished and Electro- Polished Tube Finishes Available on Request.

CF Fittings

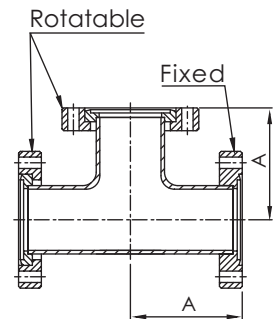
CF EQUAL TEES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A
CF-ET-133	CF1.33"(DN16)	38.10
CF-ET-212	CF2.12"(DN25)	52.05
CF-ET-275	CF2.75"(DN40)	62.50
CF-ET-338	CF3.38"(DN50)	81.80
CF-ET-450	CF4.50"(DN63)	85.85
CF-ET-450-1	CF4.50"(DN63)	104.65
CF-ET-462	CF4.62"(DN80)	89.70
CF-ET-600	CF6.00"(DN100)	109.70
CF-ET-600-1	CF6.00"(DN100)	134.88



CF

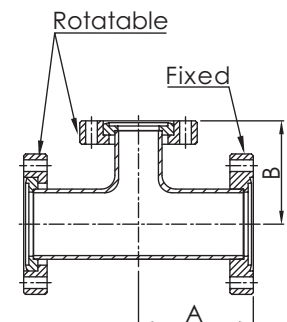
CF REDUCING TEES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	B
CF-RT-275x133	CF2.75"(DN40)/CF1.33"(DN16)	62.50	47.50
CF-RT-275x212	CF2.75"(DN40)/CF2.12"(DN25)	62.50	58.20
CF-RT-338x133	CF3.38"(DN50)/CF1.33"(DN16)	81.80	54.10
CF-RT-338x275	CF3.38"(DN50)/CF2.75"(DN40)	81.80	68.80
CF-RT-450x275	CF4.50"(DN63)/CF2.75"(DN40)	85.90	75.20
CF-RT-450x338	CF4.50"(DN63)/CF3.38"(DN50)	85.90	88.40
CF-RT-462x338	CF4.62"(DN80)/CF3.38"(DN50)	89.70	94.70
CF-RT-462x450	CF4.62"(DN80)/CF4.50"(DN63)	89.70	92.20
CF-RT-600x275	CF6.00"(DN100)/CF2.75"(DN40)	109.70	94.20
CF-RT-600x338	CF6.00"(DN100)/CF3.38"(DN50)	109.70	107.40
CF-RT-600x450	CF6.00"(DN100)/CF4.50"(DN63)	109.70	104.90
CF-RT-600x462	CF6.00"(DN100)/CF4.62"(DN80)	109.70	102.40



*Note: SS 316LN (SS 316L Tube+ SS 316LN Flange) Material Available on Request.

*Note: Polished and Electro- Polished Tube Finishes Available on Request.

CF Fittings

CF

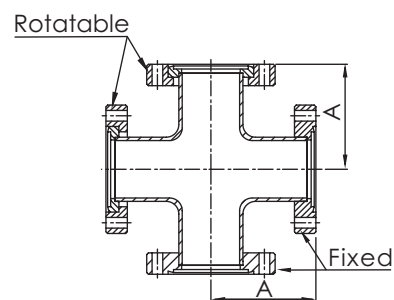


CF 4-WAY CROSSES

*Material: SS 304L

*Tube Finish: Bead Blast

Part Number	Flange Size	A
CF-4C-133	CF1.33"(DN16)	38.10
CF-4C-212	CF2.12"(DN25)	52.00
CF-4C-275	CF2.75"(DN40)	62.50
CF-4C-338	CF3.38"(DN50)	81.80
CF-4C-450	CF4.50"(DN63)	85.90
CF-4C-462	CF4.62"(DN80)	89.70
CF-4C-600	CF6.00"(DN100)	109.70

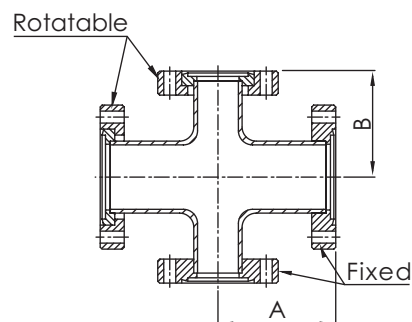


CF 4-WAY REDUCING CROSSES

*Material: SS 304L

*Tube Finish: Bead Blast

Part Number	Flange Size	A	B
CF-4RC-275x133	CF2.75"(DN40)/CF1.33"(DN16)	62.50	47.50
CF-4RC-275x212	CF2.75"(DN40)/CF2.12"(DN25)	62.50	58.20
CF-4RC-338x133	CF3.38"(DN50)/CF1.33"(DN16)	81.80	54.10
CF-4RC-338x275	CF3.38"(DN50)/CF2.75"(DN40)	81.80	68.80
CF-4RC-450x275	CF4.50"(DN63)/CF2.75"(DN40)	85.90	75.20
CF-4RC-450x338	CF4.50"(DN63)/CF3.38"(DN50)	85.90	88.40
CF-4RC-462x338	CF4.62"(DN80)/CF3.38"(DN50)	89.70	94.70
CF-4RC-462x450	CF4.62"(DN80)/CF4.50"(DN63)	89.70	92.20
CF-4RC-600x275	CF6.00"(DN100)/CF2.75"(DN40)	109.70	94.20
CF-4RC-600x338	CF6.00"(DN100)/CF3.38"(DN50)	109.70	107.40
CF-4RC-600x450	CF6.00"(DN100)/CF4.50"(DN63)	109.70	104.90
CF-4RC-600x462	CF6.00"(DN100)/CF4.62"(DN80)	109.70	104.90



*Note: SS 316LN (SS 316L Tube+ SS 316LN Flange) Material Available on Request.

*Note: Polished and Electro- Polished Tube Finishes Available on Request.

CF Fittings

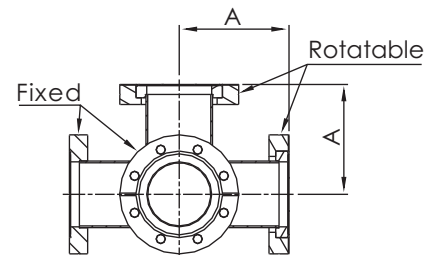
CF 5-WAY CROSSES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A
CF-5C-133	CF1.33"(DN16)	38.10
CF-5C-212	CF2.12"(DN25)	52.00
CF-5C-275	CF2.75"(DN40)	62.50
CF-5C-338	CF3.38"(DN50)	81.80
CF-5C-450	CF4.50"(DN63)	85.90
CF-5C-462	CF4.62"(DN80)	92.20
CF-5C-600	CF6.00"(DN100)	134.90



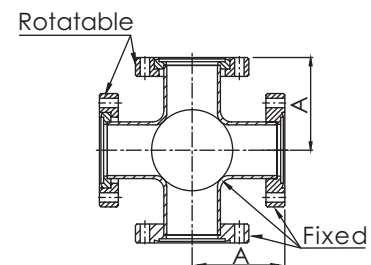
CF 6-WAY CROSSES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A
CF-6C-133	CF1.33"(DN16)	38.10
CF-6C-212	CF2.12"(DN25)	52.07
CF-6C-275	CF2.75"(DN40)	62.48
CF-6C-338	CF3.38"(DN50)	81.79
CF-6C-450	CF4.50"(DN63)	85.85
CF-6C-462	CF4.62"(DN80)	92.20
CF-6C-600	CF6.00"(DN100)	134.90



*Note: SS 316LN (SS 316L Tube+ SS 316LN Flange) Material Available on Request.

*Note: Polished and Electro- Polished Tube Finishes Available on Request.

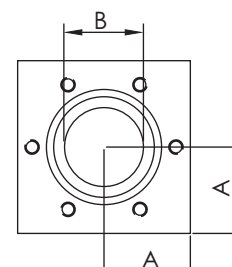
CF 6-WAY CUBES

*Material: SS 304L



Part Number	Flange Size	A	B	Diameter (mm) / Thread Type
CF-6CU-133T	CF1.33"(DN16)	17.00	15.75	8-32
CF-6CU-133M	CF1.33"(DN16)	17.00	15.75	M4
CF-6CU-275T	CF2.75"(DN40)	35.05	38.10	1/4-28
CF-6CU-275M	CF2.75"(DN40)	35.05	38.10	M6
CF-6CU-338T	CF3.38"(DN50)	42.50	50.80	5/16-24
CF-6CU-338M	CF3.38"(DN50)	42.50	50.80	M8
CF-6CU-450T	CF4.50"(DN63)	56.75	63.50	5/16-24
CF-6CU-450M	CF4.50"(DN63)	56.75	63.50	M8
CF-6CU-600T	CF6.00"(DN100)	75.80	101.60	5/16-24
CF-6CU-600M	CF6.00"(DN100)	75.80	101.60	M8

*Note: SS 316LN Material Available on Request.





**KF / DN Flanges &
Fittings**

KF Flanges & Fittings

AdvanTorr Clamp flanges are designed in accordance with the International Standards Organization (ISO) specifications and are 100% compatible with other manufacturers' KF- ISO flange design. Standard materials include stainless steel (SS 304L and SS 316L) and Aluminum is also available upon request. KF flanges are a convenient solution for quick assembly and disassembly of vacuum components and flange connections are available in a range of tube sizes from 1/2" to 2.0".

KF flanges utilize an aluminum clamp with a single wing nut allowing frequent assembly and disassembly without the need for any tools. The 15 degree taper surface of the flange allows uniform pressure for compressing an O-ring held in place by a centering ring. The vacuum seal can be applied up to 1×10^{-8} Torr and baked to 200°C. However, sustained baking above 200°C may result in deterioration of the elastomer seal. **AdvanTorr** provides a broad range of KF adaptors for connecting to different types of flanges so please refer to the Adaptor section in this catalogue.

Cleaning and Packaging

All products with weld joints are 100% helium leak tested to assure leak free operation prior to use. In addition, to ensure the cleanliness of **AdvanTorr** products, all parts are ultrasonically cleaned to HV standards using de-ionized water and packaged in contamination free, class 10,000 clean room conditions. Each bag is affixed with a barcode label identifying the component's part number, heat number and batch number for full traceability.

STANDARD SPECIFICATION

Vacuum Rate:

High Vacuum

Material:

SS 304L, SS 316L and Aluminum

Flange Sizes:

KF10~KF50

Tube Sizes:

1/2"~2.0"

Surface Finish: Bead-blast and polished

Vacuum Range:

760 Torr ~ 1×10^{-8} Torr

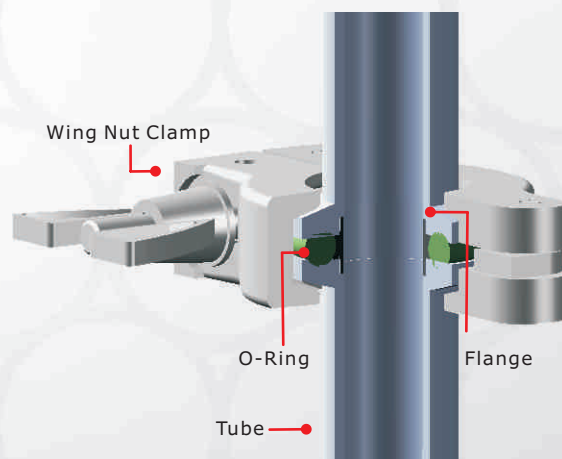
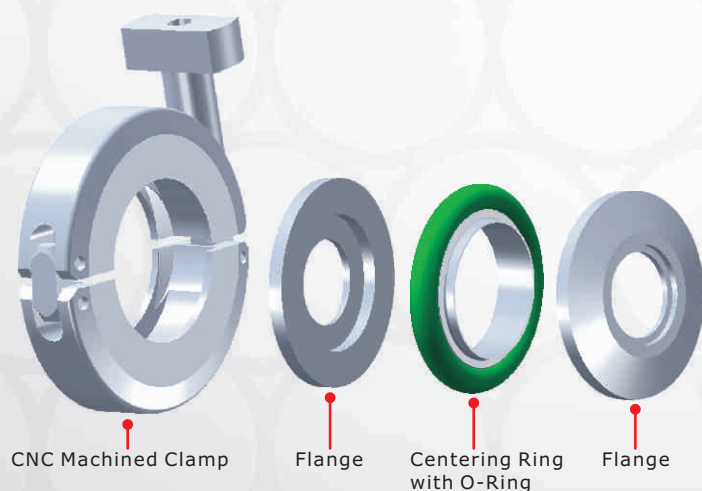
Seal Material:

FKM, FFKM

Temperature Range:

$\leq 200^{\circ}\text{C}$ (150°C sustained)

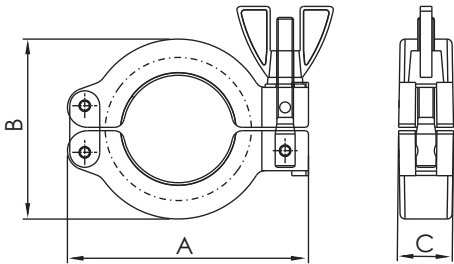
**K F
DN**



-All dimensions are in millimeters unless otherwise specified.

KF WING-NUT CLAMPS TYPE 1

*Die-Casting Aluminum Clamp

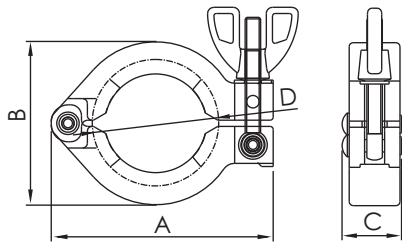


Part Number	Size	A	B	C
KF-WC1-16	KF10/16	62.00	42.00	16.50
KF-WC1-25	KF25	72.00	53.50	16.50
KF-WC1-40	KF40	89.50	69.50	16.50
KF-WC1-50	KF50	113.00	90.00	20.00

KF
DN

KF WING-NUT CLAMPS TYPE 2

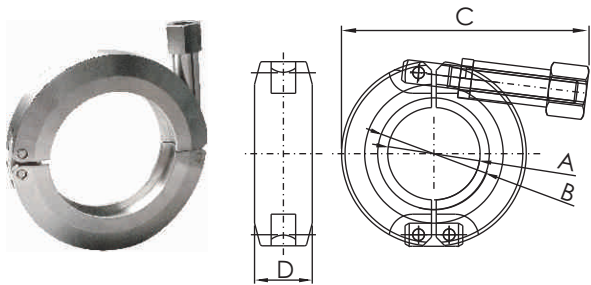
*Die-Casting Aluminum Clamp



Part Number	Size	A	B	C	D
KF-WC2-16	KF10/16	62.70	41.40	19.30	32.60
KF-WC2-25	KF25	72.00	53.10	19.30	42.00
KF-WC2-40	KF40	90.00	70.20	19.30	58.80
KF-WC2-50	KF50	113.40	93.40	22.80	79.60

KF CNC SS304 CLAMPS

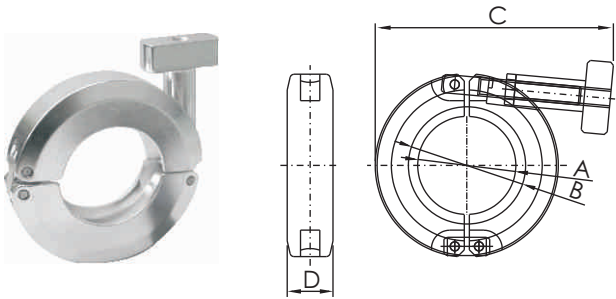
*CNC Machined Clamp Manufactured from SS304 for Extra Rigid Strength and Durability.
*Integral Latching Mechanism can Prevent Unintentional Opening.



Part Number	Size	A	B	C	D
KF-CC-16	KF10/16	25.40	30.80	68.00	15.90
KF-CC-25	KF25	34.12	40.94	80.63	15.90
KF-CC-40	KF40	49.40	55.70	87.20	15.90
KF-CC-50	KF50	69.00	75.60	109.30	15.90

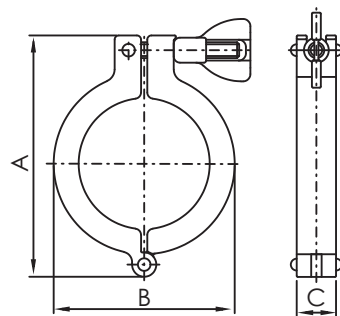
KF CNC ALUMINUM CLAMPS

*CNC Machined Clamp Manufactured from Aluminum Solid Bar for Extra Rigid Strength and Durability.
*3 Times Tensile Strength than Die-Casting Clamps.
*Integral Latching Mechanism can Prevent Unintentional Opening.



Part Number	Size	A	B	C	D	Max Pressure
KF-CC-16-AL	KF10/16	25.40	30.80	70.20	15.90	300 PSI
KF-CC-25-AL	KF25	34.12	40.94	82.66	15.90	270 PSI
KF-CC-40-AL	KF40	49.40	55.70	90.80	15.90	250 PSI
KF-CC-50-AL	KF50	69.00	75.60	113.00	15.90	-

K F
DN

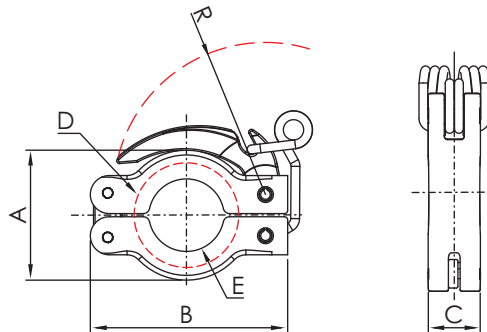


KF NW CLAMPS

*Clamp Material: SS304

Part Number	Size	A	B	C
KF-WC1-16-04	KF10/16	59.5	33.5	16.0
KF-WC1-25-04	KF25	73.0	48.0	16.0
KF-WC1-40-04	KF40	89.0	63.0	16.0
KF-WC1-50-04	KF50	112.5	80.0	20.0

KF
DN



KF QUICK CLAMPS

*Clamp Material: Aluminum

Part Number	Size	A	B	C	D	E	R
KF-QC-16	KF10/16	41.00	62.30	16.50	16.50	11.94	48.00
KF-QC-25	KF25	54.00	72.40	16.50	22.00	16.64	56.00
KF-QC-40	KF40	69.00	89.70	16.50	29.00	24.26	72.37

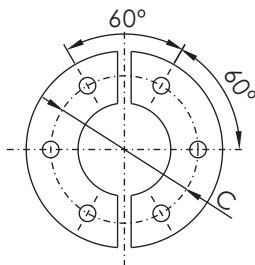


Figure 1

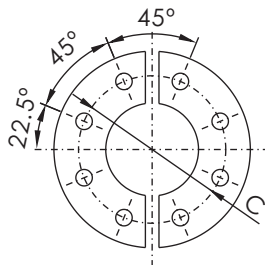
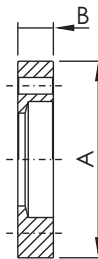


Figure 2



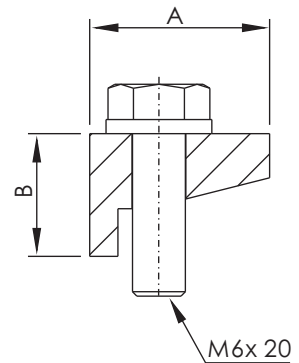
KF BULKHEAD (Clamps) SETS

*Clamp Material: Aluminum

Part Number	Size	Figure	A	B	C	Bolt Hole Size	No of Bolt Holes	Bolt Size
KF-BCS-16	KF10/16	1	50.80	9.20	38.10	4.30	6	10-32UNF-15.9L
KF-BCS-25	KF25	1	60.30	9.90	48.00	5.30	6	10-32UNF-15.9L
KF-BCS-40	KF40	1	74.60	9.30	62.00	5.30	6	10-32UNF-15.9L
KF-BCS-50	KF50	2	95.20	10.30	82.55	5.30	8	10-32UNF-15.9L

KF WALL CLAMPS

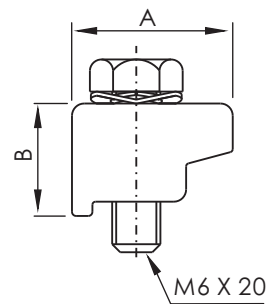
*Material: Aluminum



Part Number	Size	A	B
KF-WC2-1650	KF16~KF50	20.40	13.90

KF WALL CLAMPS with BOLTS

*Die-Casting Aluminum Clamp

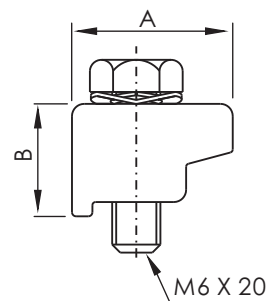


Part Number	Size	A	B
KF-WC1-1650	KF16~KF50	20.00	15.00

KF SINGLE CLAW CLAMP KIT

*Material: SS 304

*4pcs in 1 pack



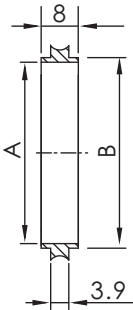
Part Number	Size	A	B
KF-SC-1650	KF16~KF50	20.00	14.00

KF CENTERING RINGS

*Material: SS 304 / Aluminum

Part Number (SS304)	Part Number (Aluminum)	Size	A	B
KF-CR-10	KF-CR-10-AL	KF10	10.00	12.00
KF-CR-16	KF-CR-16-AL	KF16	16.00	17.00
KF-CR-25	KF-CR-25-AL	KF25	25.00	26.00
KF-CR-40	KF-CR-40-AL	KF40	40.00	41.00
KF-CR-50	KF-CR-50-AL	KF50	50.00	52.00

*Note: SS 316L Material Available on Request.

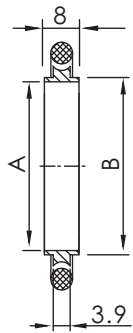


KF CENTERING RINGS with O-RINGS

* Centering Ring Material: SS 304

* O-Ring Material: FKM / NBR

Part Number (FKM)	Part Number (NBR)	Size	A	B
KF-CRO-10	KF-CRO-10-NB	KF10	10.00	12.00
KF-CRO-16	KF-CRO-16-NB	KF16	16.00	17.00
KF-CRO-25	KF-CRO-25-NB	KF25	25.00	26.00
KF-CRO-40	KF-CRO-40-NB	KF40	40.00	41.00
KF-CRO-50	KF-CRO-50-NB	KF50	50.00	52.00

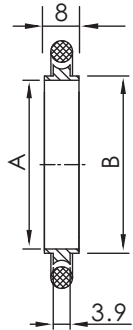


KF CENTERING RINGS with O-RINGS, ALUMINUM

* Centering Ring Material: Aluminum

* O-Ring Material: FKM / NBR

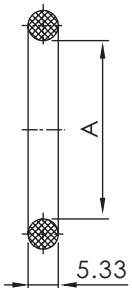
Part Number(FKM)	Part Number (NBR)	Size	A	B
KF-CRO-10-AL	KF-CRO-10-AL-NB	KF10	10.00	12.00
KF-CRO-16-AL	KF-CRO-16-AL-NB	KF16	16.00	17.00
KF-CRO-25-AL	KF-CRO-25-AL-NB	KF25	25.00	26.00
KF-CRO-40-AL	KF-CRO-40-AL-NB	KF40	40.00	41.00
KF-CRO-50-AL	KF-CRO-50-AL-NB	KF50	50.00	52.00



KF REPLACEMENT O-RINGS

*Material: FKM / NBR

Part Number (FKM)	Part Number (NBR)	Size	A
KF-RO-10	KF-RO-10-NB	KF 10	15.24
KF-RO-16	KF-RO-16-NB	KF 16	18.42
KF-RO-25	KF-RO-25-NB	KF 25	27.94
KF-RO-40	KF-RO-40-NB	KF 40	40.64
KF-RO-50	KF-RO-50-NB	KF 50	53.34

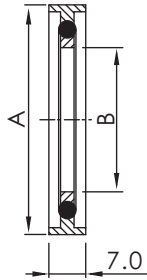


*Note: FFKM O-Ring Material Available on Request.

KF Hardware & Seals

KF CENTERING RINGS with O-RINGS & SPACERS

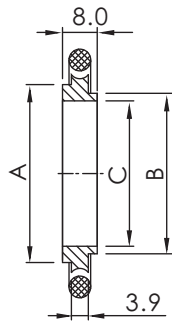
- *Centering Ring Material: SS 304
- *O-Ring Material: FKM
- *Spacer Material: Aluminum



Part Number	Size	A	B
KF-CROS-16	KF16	32.50	16.00
KF-CROS-25	KF25	42.50	25.00
KF-CROS-40	KF40	57.50	40.00
KF-CROS-50	KF50	77.50	50.00

KF ADAPTIVE CENTERING RINGS with O-RINGS

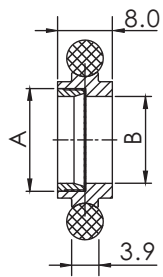
- *Centering Ring Material: SS 304
- *O-Ring Material: FKM



Part Number	Size	A	B	C
KF-CROA-1016	KF10/16	17.00	12.00	10.00
KF-CROA-2025	KF20/25	26.00	22.00	20.00
KF-CROA-3240	KF32/40	41.00	34.00	32.00

KF SCREENED CENTERING RINGS with O-RINGS

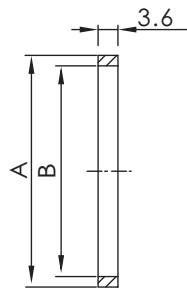
- *Centering Ring Material: SS 304
- *O-Ring Material: FKM
- *70 Mesh Screen
- *Screen Material: SS 304



Part Number	Size	A	B
KF-CROSC-16	KF16	15.00	12.70
KF-CROSC-25	KF25	23.80	21.80
KF-CROSC-40	KF40	38.80	36.80
KF-CROSC-50	KF50	50.00	47.75

KF OVER PRESSURE RINGS

- *Material: SS 304



Part Number	Size	A	B
KF-OR-10	KF 10	31.80	27.70
KF-OR-16	KF 16	31.80	29.90
KF-OR-25	KF 25	41.90	39.10
KF-OR-40	KF 40	57.20	54.50
KF-OR-50	KF 50	69.90	67.60

*Note: FFKM O-Ring Material Available on Request.

K F
DN

KF Flanges

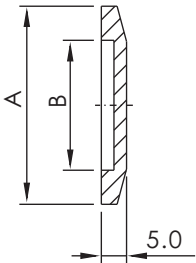


KF BLANK FLANGES (WITHOUT BOSS)

*Material: SS 304L/ Aluminum

Part Number (SS 304L)	Part Number (Aluminum)	Flange Size	A	B
KF-BL1-10	KF-BL1-10-AL	KF10	29.97	12.27
KF-BL1-16	KF-BL1-16-AL	KF16	29.97	17.27
KF-BL1-25	KF-BL1-25-AL	KF25	39.88	26.16
KF-BL1-40	KF-BL1-40-AL	KF40	54.86	41.15
KF-BL1-50	KF-BL1-50-AL	KF50	74.93	52.32

*Note: SS 316L Material Available on Request.



KF
DN

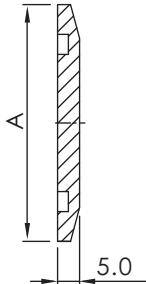


KF BLANK FLANGES (WITH BOSS)

*Material: SS 304L/ Aluminum

Part Number (SS 304L)	Part Number (Aluminum)	Flange Size	A
KF-BL2-10	KF-BL2-10-AL	KF10	30.00
KF-BL2-16	KF-BL2-16-AL	KF16	30.00
KF-BL2-25	KF-BL2-25-AL	KF25	40.00
KF-BL2-40	KF-BL2-40-AL	KF40	55.00
KF-BL2-50	KF-BL2-50-AL	KF50	75.00

*Note: SS 316L Material Available on Request.



KF Flanges

KF BORED FLANGES

*Material: SS 304L



Part Number	Size	Figure	A	B	C	D	E
KF-BF-10x038	KF10- $\frac{3}{8}$ "	1	30.00	12.20	-	9.65	5.10
KF-BF-16x025	KF16- $\frac{1}{4}$ "	1	30.00	17.20	-	6.50	5.10
KF-BF-16x038	KF16- $\frac{3}{8}$ "	1	30.00	17.20	-	9.65	5.10
KF-BF-16x050	KF16- $\frac{1}{2}$ "	2	30.00	17.20	10.16	12.95	5.10
KF-BF-16x075	KF16- $\frac{3}{4}$ "	2	30.00	17.20	16.51	19.30	4.40
KF-BF-25x025	KF25- $\frac{1}{4}$ "	1	40.00	26.20	-	6.50	5.10
KF-BF-25x038	KF25- $\frac{3}{8}$ "	1	40.00	26.20	-	9.65	5.10
KF-BF-25x050	KF25- $\frac{1}{2}$ "	2	40.00	26.20	10.16	12.95	5.10
KF-BF-25x075	KF25- $\frac{3}{4}$ "	2	40.00	26.20	16.51	19.30	5.10
KF-BF-25x100	KF25-1"	2	40.00	26.20	22.88	25.65	4.90
KF-BF-40x025	KF40- $\frac{1}{4}$ "	1	55.00	41.20	-	6.50	5.10
KF-BF-40x038	KF40- $\frac{3}{8}$ "	1	55.00	41.20	-	9.65	5.10
KF-BF-40x050	KF40- $\frac{1}{2}$ "	2	55.00	41.20	10.16	12.95	5.10
KF-BF-40x075	KF40- $\frac{3}{4}$ "	2	55.00	41.20	16.51	19.30	5.10
KF-BF-40x100	KF40-1"	2	55.00	41.20	22.88	25.65	5.10
KF-BF-40x150	KF40-1 $\frac{1}{2}$ "	2	55.00	41.20	35.58	38.35	5.10
KF-BF-50x025	KF50- $\frac{1}{4}$ "	1	75.00	52.20	-	6.50	5.10
KF-BF-50x038	KF50- $\frac{3}{8}$ "	1	75.00	52.20	-	9.65	5.10
KF-BF-50x050	KF50- $\frac{1}{2}$ "	2	75.00	52.20	10.16	12.95	5.10
KF-BF-50x075	KF50- $\frac{3}{4}$ "	2	75.00	52.20	16.51	19.30	5.10
KF-BF-50x100	KF50-1"	2	75.00	52.20	22.88	25.65	5.10
KF-BF-50x150	KF50-1 $\frac{1}{2}$ "	2	75.00	52.20	35.58	38.35	5.10
KF-BF-50x200	KF50-2"	2	75.00	52.20	48.26	51.05	5.10

*Note: SS 316L or Aluminum Material Available on Request.

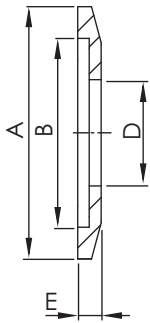


Figure 1

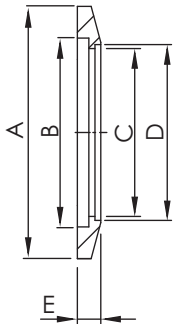


Figure 2

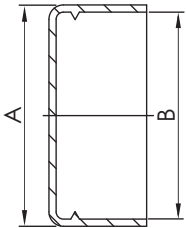
**K F
DN**

KF FLANGE PLASTIC CAP

*Material: PE



Part Number	Size	A	B
KF-PC-16	KF10/ 16	32.00	30.00
KF-PC-25	KF25	42.00	40.00
KF-PC-40	KF40	57.00	55.00
KF-PC-50	KF50	77.00	75.00



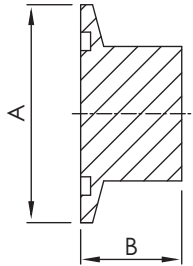
KF Flanges

KF UNBORED STUB FLANGES

*Material: SS 304L



Part Number	Size	A	B
KF-UF-10	KF 10-0.56"L	30.00	14.20
KF-UF-16	KF 16-0.56"L	30.00	14.20
KF-UF-16-1	KF 16-0.75"L	30.00	19.10
KF-UF-25	KF 25-0.47"L	40.00	11.90
KF-UF-25-1	KF 25-0.75"L	40.00	19.10
KF-UF-40	KF 40-0.50"L	55.00	12.70
KF-UF-40-1	KF 40-1.00"L	55.00	25.40
KF-UF-50	KF 50-0.62"L	75.00	15.70
KF-UF-50-1	KF 50-1.00"L	75.00	25.40

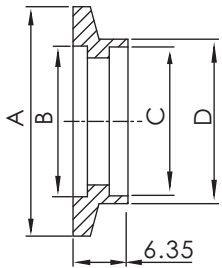


KF SOCKET WELD FLANGES, SHORT

*Material: SS 304L



Part Number	Flange Size	A	B	C	D
KF-SWS-10	KF10	30.00	12.20	12.90	16.00
KF-SWS-16	KF16	30.00	17.20	19.30	22.40
KF-SWS-25	KF25	40.00	26.20	25.70	28.80
KF-SWS-40	KF40	55.00	41.20	38.40	41.50
KF-SWS-50	KF50	75.00	52.20	51.10	54.20

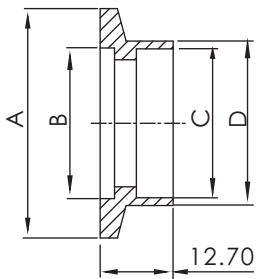


KF SOCKET WELD FLANGES, LONG

*Material: SS 304L



Part Number	Flange Size	A	B	C	D
KF-SWL-10	KF10	30.00	12.20	13.00	15.50
KF-SWL-16	KF16	30.00	17.20	19.30	22.20
KF-SWL-25	KF25	40.00	26.20	25.90	28.60
KF-SWL-40	KF40	55.00	41.20	38.60	44.50
KF-SWL-50	KF50	75.00	52.20	51.30	57.20

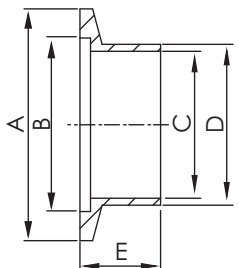


KF BUTT WELD STUB FLANGES, SHORT

*Material: SS 304L



Part Number	Flange Size	A	B	C	D	E
KF-BWS-10	KF10	30.00	12.20	9.40	12.70	12.70
KF-BWS-16	KF16	30.00	17.20	15.70	19.10	12.70
KF-BWS-25	KF25	40.00	26.20	22.10	25.40	12.70
KF-BWS-40	KF40	55.00	41.20	34.80	38.10	19.10
KF-BWS-50	KF50	75.00	52.40	47.50	50.80	19.10



*Note: SS 316L or Aluminum Material Available on Request.

**K F
DN**

KF Fittings



KF BUTT WELD STUB FLANGES, LONG

*Material: SS 304L

Part Number	Flange Size	A	B	C	D
KF-BWL-10	KF10	30.00	12.20	9.40	12.70
KF-BWL-1016	K10/16	30.00	17.20	9.40	12.70
KF-BWL-16	KF16	30.00	17.20	15.75	19.05
KF-BWL-25	KF25	40.00	26.20	22.10	25.40
KF-BWL-40	KF40	55.00	41.20	34.90	38.10
KF-BWL-50	KF50	75.00	52.20	47.60	50.80

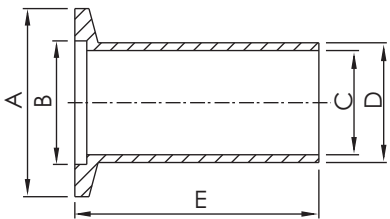
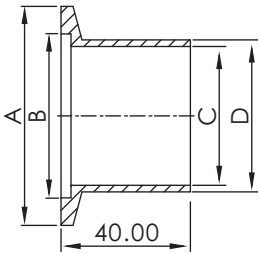


Figure 1
Machined

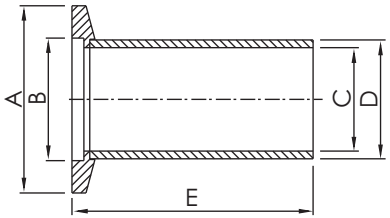


Figure 2
Welded

KF HALF NIPPLES

*Material: SS 304L

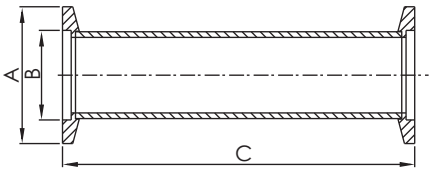
Part Number	Flange Size	Figure	A	B	C	D	E
KF-HN-10	KF 10	1	30.00	12.20	9.40	12.70	31.75
KF-HN-16	KF 16	1	30.00	17.20	15.80	19.10	29.21
KF-HN-16-1	KF 16	1	30.00	17.20	15.80	19.10	38.10
KF-HN-25	KF 25	2	40.00	26.20	22.10	25.40	51.56
KF-HN-25-1	KF 25	1	40.00	26.20	22.10	25.40	51.80
KF-HN-40	KF40	2	55.00	41.20	34.80	38.10	60.96
KF-HN-40-1	KF40	2	55.00	41.20	34.80	38.10	62.50
KF-HN-50	KF50	2	75.00	52.20	47.50	50.80	80.01
KF-HN-50-1	KF50	2	75.00	52.20	47.50	50.80	81.50

*Note: SS 316L or Aluminum Material Available on Request.

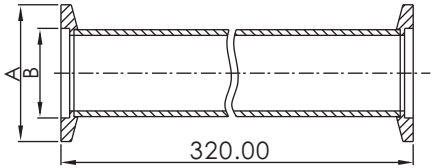


KF FULL NIPPLES

*Material: SS 304L
*Tube Finish: Bead Blast



Part Number	Flange Size	A	B	C
KF-FN-10	KF10	30.00	12.20	63.50
KF-FN-16	KF16	30.00	17.20	58.40
KF-FN-25	KF25	40.00	26.20	103.10
KF-FN-40	KF40	55.00	41.20	121.90
KF-FN-50	KF50	75.00	52.20	160.00



KF FULL NIPPLES, LONG

*Material: SS 304L
*Tube Finish: Bead Blast

Part Number	Flange Size	A	B
KF-FNL-16	KF16	30.00	17.20
KF-FNL-25	KF25	40.00	26.20
KF-FNL-40	KF40	55.00	41.20
KF-FNL-50	KF50	75.00	52.20

*Note: SS 316L Material Available on Request.
*Note: Polished and Electro- Polished Tube Finishes Available on Request.

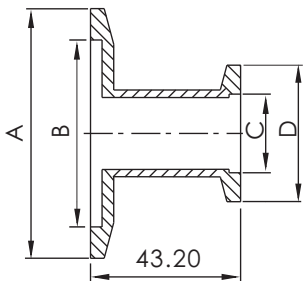
KF Fittings



KF STRAIGHT REDUCING NIPPLES

*Material: SS 304L

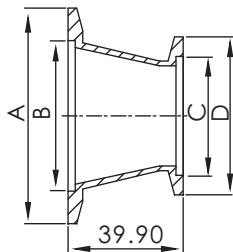
Part Number	Flange Size	A	B	C	D
KF-SRN-25x16	KF25/KF16	40.00	26.20	17.20	30.00
KF-SRN-40x16	KF40/KF16	55.00	41.20	17.20	30.00
KF-SRN-40x25	KF40/KF25	55.00	41.20	26.20	40.00
KF-SRN-50x16	KF50/KF16	75.00	52.20	17.20	30.00
KF-SRN-50x25	KF50/KF25	75.00	52.20	26.20	40.00
KF-SRN-50x40	KF50/KF40	75.00	52.20	41.20	55.00



KF CONICAL REDUCING NIPPLES

*Material: SS 304L

Part Number	Flange Size	A	B	C	D
KF-CRN-25x16	KF25/KF16	40.00	26.20	17.20	30.00
KF-CRN-40x16	KF40/KF16	55.00	41.20	17.20	30.00
KF-CRN-40x25	KF40/KF25	55.00	41.20	26.20	40.00
KF-CRN-50x16	KF50/KF16	75.00	52.20	17.20	30.00
KF-CRN-50x25	KF50/KF25	75.00	52.20	26.20	40.00
KF-CRN-50x40	KF50/KF40	75.00	52.20	41.20	55.00



K F
DN

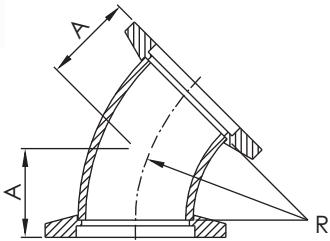
*Note: SS 316L or Aluminum Material Available on Request.

*Note: Polished and Electro- Polished Tube Finishes Available on Request.

KF Fittings

KF 45° ELBOWS

*Material: SS 304L
*Tube Finish: Bead Blast

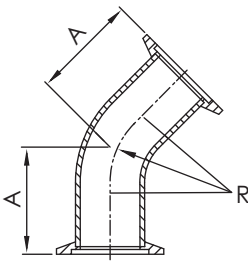


Part Number	Flange Size	A	R
KF-45EL-16	KF16	15.65	28.60
KF-45EL-25	KF25	19.58	38.10
KF-45EL-40	KF40	27.47	57.20
KF-45EL-50	KF50	35.36	76.20

KF
DN

KF 45° ELBOWS with TANGENTS

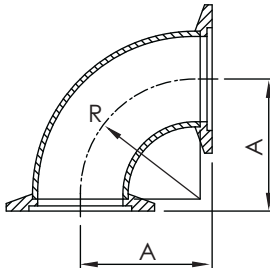
*Material: SS 304L
*Tube Finish: Bead Blast



Part Number	Flange Size	A	R
KF-45ELT-16	KF16	23.10	28.60
KF-45ELT-25	KF25	28.45	38.10
KF-45ELT-25-1	KF25	33.88	38.10
KF-45ELT-40	KF40	42.67	57.20
KF-45ELT-40-1	KF40	45.10	57.20
KF-45ELT-50	KF50	50.55	76.20
KF-45ELT-50-1	KF50	62.50	76.20

KF 90° ELBOWS

*Material: SS 304L
*Tube Finish: Bead Blast



Part Number	Flange Size	A	R
KF-90EL-10	KF10	31.80	19.10
KF-90EL-16	KF16	29.20	28.60
KF-90EL-25	KF25	41.90	38.10
KF-90EL-40	KF40	61.00	57.15
KF-90EL-50	KF50	80.00	76.20

*Note: SS 316L Material Available on Request.
*Note: Polished and Electro- Polished Tube Finishes Available on Request.

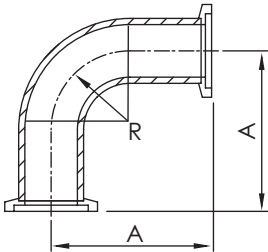
KF Fittings

KF 90° ELBOWS with TANGENTS

*Material: SS 304L
*Tube Finish: Bead Blast



Part Number	Flange Size	A	R
KF-90ELT-16	KF16	68.58	28.60
KF-90ELT-16-1	KF16	40.00	28.60
KF-90ELT-25	KF25	92.46	38.10
KF-90ELT-25-1	KF25	50.00	38.10
KF-90ELT-40	KF40	130.05	57.15
KF-90ELT-40-1	KF40	65.00	57.15
KF-90ELT-50	KF50	139.95	76.20

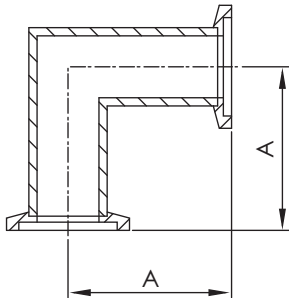


KF 90° MITERED ELBOWS

*Material: SS 304L
*Tube Finish: Bead Blast



Part Number	Flange Size	A
KF-MEL-16	KF16	29.21
KF-MEL-16-1	KF16	40.00
KF-MEL-25	KF25	50.00
KF-MEL-25-1	KF25	51.56
KF-MEL-40	KF40	60.96
KF-MEL-40-1	KF40	65.00
KF-MEL-50	KF50	69.84
KF-MEL-50-1	Kf50	80.01



K F
DN

*Note: SS 316L Material Available on Request.
*Note: Polished and Electro- Polished Tube Finishes Available on Request.

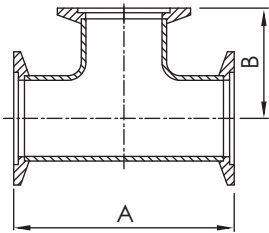
KF Fittings

KF EQUAL TEES

*Material: SS 304L
*Tube Finish: Bead Blast



Part Number	Flange Size	A	B
KF-ET-10	KF10	63.50	31.75
KF-ET-16	KF16	58.40	29.20
KF-ET-16-1	KF16	80.00	40.00
KF-ET-25	KF25	100.00	50.00
KF-ET-25-1	KF25	102.80	51.40
KF-ET-40	KF40	122.00	61.00
KF-ET-40-1	KF40	130.00	65.00
KF-ET-50	KF50	140.00	70.00
KF-ET-50-1	KF50	160.00	80.00



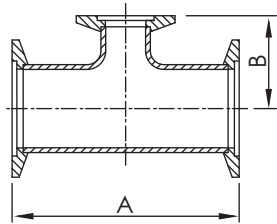
KF
DN

KF REDUCING TEES

*Material: SS 304L
*Tube Finish: Bead Blast



Part Number	Flange Size	A	B
KF-RT-25x16	KF25/KF16	100.00	27.80
KF-RT-25x16-1	KF25/KF16	100.00	43.20
KF-RT-25x16-2	KF25/KF16	103.10	32.25
KF-RT-40x16	KF40/KF16	121.90	38.85
KF-RT-40x16-1	KF40/KF16	130.00	34.00
KF-RT-40x16-2	KF40/KF16	130.00	49.50
KF-RT-40x25	KF40/KF25	121.90	57.91
KF-RT-40x25-1	KF40/KF25	130.00	56.40
KF-RT-50x16	KF50/KF16	140.00	40.10
KF-RT-50x16-1	KF50/KF16	140.00	55.90
KF-RT-50x16-2	KF50/KF16	160.00	45.20
KF-RT-50x25	KF50/KF25	140.00	62.70
KF-RT-50x40	KF50/KF40	140.00	71.40
KF-RT-50x40-1	KF50/KF40	160.00	67.31



*Note: SS 316L Material Available on Request.
*Note: Polished and Electro- Polished Tube Finishes Available on Request.

KF Fittings

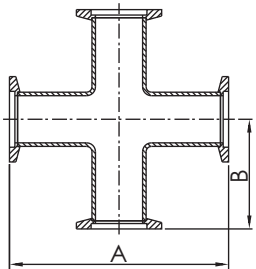
KF 4-WAY CROSSES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	B
KF-4C-10	KF10	63.50	31.75
KF-4C-16	KF16	58.40	29.20
KF-4C-16-1	KF16	80.00	40.00
KF-4C-25	KF25	100.00	50.00
KF-4C-25-1	KF25	102.80	51.40
KF-4C-40	KF40	122.00	61.00
KF-4C-40-1	KF40	130.00	65.00
KF-4C-50	KF50	140.00	70.00
KF-4C-50-1	KF50	160.00	80.00



**K F
DN**

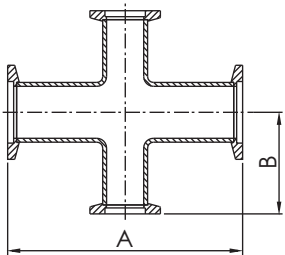
KF REDUCING 4-WAY CROSSES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	B
KF-4RC-25x16	KF25/KF16	100.00	43.20
KF-4RC-25x16-1	KF25/KF16	103.12	32.26
KF-4RC-40x16	KF40/KF16	121.92	38.86
KF-4RC-40x16-1	KF40/KF16	130.00	49.50
KF-4RC-40x25	KF40/KF25	121.92	57.91
KF-4RC-40x25-1	KF40/KF25	130.00	56.40
KF-4RC-50x16	KF50/KF16	140.00	55.90
KF-4RC-50x16-1	KF50/KF16	160.02	45.21
KF-4RC-50x25	KF50/KF25	140.00	62.70
KF-4RC-50x40	KF50/KF40	140.00	71.40
KF-4RC-50x40-1	KF50/KF40	160.02	67.31



*Note: SS 316L Material Available on Request.

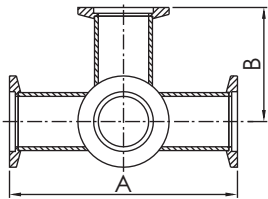
*Note: Polished and Electro- Polished Tube Finishes Available on Request.



KF 5-WAY CROSSES

*Material: SS 304L
*Tube Finish: Bead Blast

Part Number	Flange Size	A	B
KF-5C-16	KF16	80.00	40.00
KF-5C-25	KF25	100.00	50.00
KF-5C-40	KF40	130.00	65.00
KF-5C-50	KF50	140.00	70.00



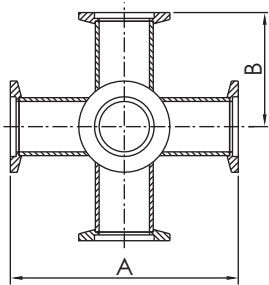
KF
DN



KF 6-WAY CROSSES

*Material: SS 304L
*Tube Finish: Bead Blast

Part Number	Flange Size	A	B
KF-6C-16	KF16	80.00	40.00
KF-6C-25	KF25	100.00	50.00
KF-6C-40	KF40	130.00	65.00
KF-6C-50	KF50	140.00	70.00

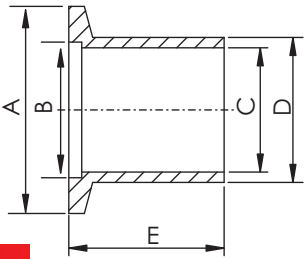


*Note: SS 316L Material Available on Request.
*Note: Polished and Electro- Polished Tube Finishes Available on Request.

DN Fittings

DN BUTT WELD STUBS, LENGTH 26MM

*Material: SS 304L



Part Number	Flange Size	A	B	C	D	E
DN-BW26-10	DN10	30.00	12.20	10.00	14.00	26.00
DN-BW26-16	DN16	30.00	17.20	16.00	20.00	26.00
DN-BW26-20	DN20	40.00	22.20	21.00	25.00	26.00
DN-BW26-25	DN25	40.00	26.20	24.00	28.00	26.00
DN-BW26-32	DN32	55.00	34.20	34.00	38.00	26.00
DN-BW26-40	DN40	55.00	41.20	40.50	44.50	26.00
DN-BW26-50	DN50	75.00	52.20	50.60	57.00	26.00

DN BUTT WELD STUBS, LENGTH 30MM

*Material: SS 304L

Part Number	Flange Size	A	B	C	D	E
DN-BW30-10	DN10	30.00	12.20	10.00	14.00	30.00
DN-BW30-16	DN16	30.00	17.20	16.00	20.00	30.00
DN-BW30-25	DN25	40.00	26.20	24.00	28.00	30.00
DN-BW30-40	DN40	55.00	41.20	40.50	44.50	30.00
DN-BW30-50	DN50	75.00	52.20	50.60	57.00	30.00

DN BUTT WELD STUBS, LENGTH 55MM

*Material: SS 304L

Part Number	Flange Size	A	B	C	D	E
DN-BW55-10	DN10	30.00	12.20	10.00	14.00	55.00
DN-BW55-16	DN16	30.00	17.20	16.00	20.00	55.00
DN-BW55-25	DN25	40.00	26.20	24.00	28.00	55.00
DN-BW55-40	DN40	55.00	41.20	40.50	44.50	55.00
DN-BW55-50	DN50	75.00	52.20	50.60	57.00	55.00

DN BUTT WELD STUBS, LENGTH 70MM

*Material: SS 304L

Part Number	Flange Size	A	B	C	D	E
DN-BW70-10	DN10	30.00	12.20	10.00	14.00	70.00
DN-BW70-16	DN16	30.00	17.20	16.00	20.00	70.00
DN-BW70-25	DN25	40.00	26.20	24.00	28.00	70.00
DN-BW70-40	DN40	55.00	41.20	40.50	44.50	70.00
DN-BW70-50	DN50	75.00	52.20	50.60	57.00	70.00

*Note: SS 316L Material Available on Request.

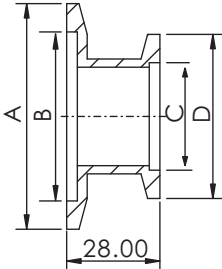
DN Fittings



DN STRAIGHT REDUCING NIPPLES, SHORT

*Material: SS 304L

Part Number	Flange Size	A	B	C	D
DN-SRNS-16x10	DN16/DN10	30.00	17.20	12.20	30.00
DN-SRNS-25x10	DN25/DN10	40.00	26.20	12.20	30.00
DN-SRNS-25x16	DN25/DN16	40.00	26.20	17.20	30.00
DN-SRNS-40x10	DN40/DN10	55.00	41.20	12.20	30.00
DN-SRNS-40x16	DN40/DN16	55.00	41.20	17.20	30.00
DN-SRNS-40x25	DN40/DN25	55.00	41.20	26.20	40.00
DN-SRNS-50x16	DN50/DN16	75.00	52.20	17.20	30.00
DN-SRNS-50x25	DN50/DN25	75.00	52.20	26.20	40.00
DN-SRNS-50x40	DN50/DN40	75.00	52.20	41.20	55.00



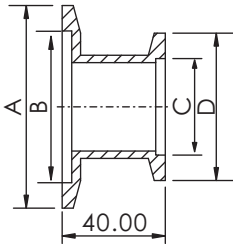
K F
DN



DN STRAIGHT REDUCING NIPPLES, LONG

*Material: SS 304L

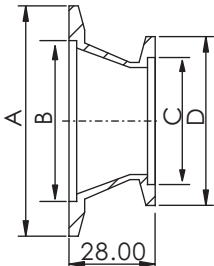
Part Number	Flange Size	A	B	C	D
DN-SRNL-25x16	DN25/DN16	40.00	26.20	17.20	30.00
DN-SRNL-40x16	DN40/DN16	55.00	41.20	17.20	30.00
DN-SRNL-40x25	DN40/DN25	55.00	41.20	26.20	40.00
DN-SRNL-50x16	DN50/DN16	75.00	52.20	17.20	30.00
DN-SRNL-50x25	DN50/DN25	75.00	52.20	26.20	40.00
DN-SRNL-50x40	DN50/DN40	75.00	52.20	41.20	55.00



DN CONICAL REDUCING NIPPLES

*Material: SS 304L

Part Number	Flange Size	A	B	C	D
DN-CRN-25x16	DN25/DN16	40.00	26.20	17.20	30.00
DN-CRN-40x16	DN40/DN16	55.00	41.20	17.20	30.00
DN-CRN-40x25	DN40/DN25	55.00	41.20	26.20	40.00
DN-CRN-50x16	DN50/DN16	75.00	52.40	17.20	30.00
DN-CRN-50x25	DN50/DN25	75.00	52.40	26.20	40.00
DN-CRN-50x40	DN50/DN40	75.00	52.40	41.20	55.00

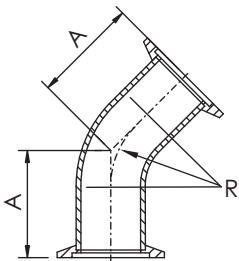


*Note: SS 316L Material Available on Request.

DN Fittings

DN 45° ELBOWS WITH TANGENTS

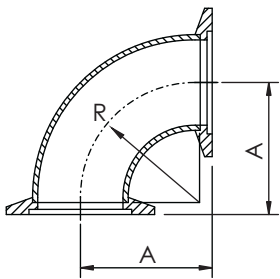
*Material: SS 304L
*Tube Finish: Bead Blast



Part Number	Flange Size	A	R	Tube Size
DN-45ELT-10	DN10	30.00	26.50	14.0 X 2.0mmt
DN-45ELT-16	DN16	26.00	37.00	20.0 X 1.5mmt
DN-45ELT-25	DN25	32.00	42.00	28.0 X 1.5mmt
DN-45ELT-40	DN40	40.00	62.00	44.5 X 2.0mmt
DN-45ELT-50	DN50	51.00	66.50	54.0 X 2.0mmt

DN 90° ELBOWS

*Material: SS 304L
*Tube Finish: Bead Blast



Part Number	Flange Size	A	R	Tube Size
DN-90EL-10	DN10	30.00	26.50	14.0 x 2.0mmt
DN-90EL-16	DN16	40.00	37.00	20.0 x 1.5mmt
DN-90EL-25	DN25	50.00	42.00	28.0 x 1.5mmt
DN-90EL-40	DN40	65.00	62.00	44.5 x 2.0mmt
DN-90EL-50	DN50	70.00	66.50	54.0 x 2.0mmt

*Note: SS 316L Material Available on Request.
*Note: Polished and Electro- Polished Tube Finishes Available on Request.

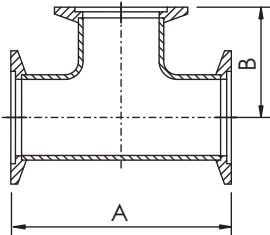
DN Fittings

DN EQUAL TEES

*Material: SS 304L
 *Tube Finish: Bead Blast



Part Number	Flange Size	A	B	Tube Size
DN-ET-10	DN10	60.00	30.00	14.0 x 2.0mmt
DN-ET-16	DN16	80.00	40.00	20.0 x 1.5mmt
DN-ET-25	DN25	100.00	50.00	28.0 x 1.5mmt
DN-ET-40	DN40	130.00	65.00	44.5 x 2.0mmt
DN-ET-50	DN50	140.00	70.00	54.0 x 2.0mmt
DN-ET-57	DN57	140.00	70.00	57.0 x 3.0mmt



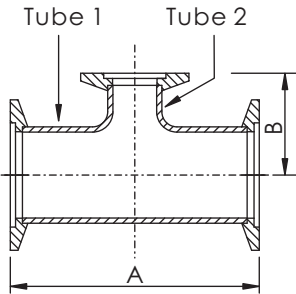
K F
DN

DN REDUCING TEES

*Material: SS 304L
 *Tube Finish: Bead Blast



Part Number	Flange Size	A	B	Tube 1	Tube 2
DN-RT-25x10	DN25/DN10	100.00	40.00	28.0 x 1.5mmt	14.0 x 2.0mmt
DN-RT-25x16	DN25/DN16	100.00	40.00	28.0 x 1.5mmt	20.0 x 1.5mmt
DN-RT-40x16	DN40/DN16	130.00	40.00	44.5 x 2.0mmt	20.0 x 1.5mmt
DN-RT-40x25	DN40/DN25	130.00	50.00	44.5 x 2.0mmt	28.0 x 1.5mmt
DN-RT-50x16	DN50/DN16	140.00	50.00	20.0 x 1.5mmt	20.0 x 1.5mmt
DN-RT-50x25	DN50/DN25	140.00	65.00	54.0 x 2.0mmt	28.0 x 1.5mmt
DN-RT-50x40	DN50/DN40	140.00	65.00	54.2 x 2.0mmt	44.5 x 2.0mmt
DN-RT-57x16	DN57/DN16	140.00	50.00	57.0 x 3.0mmt	20.0 x 1.5mmt
DN-RT-57x25	DN57/DN25	140.00	65.00	57.0 x 3.0mmt	28.0 x 1.5mmt
DN-RT-57x40	DN57/DN40	140.00	65.00	57.0 x 3.0mmt	44.5 x 2.0mmt



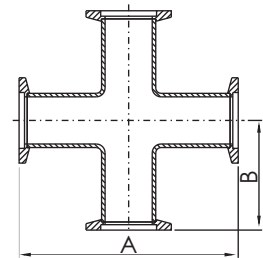
Note: SS 316L Material Available on Request.
 Note: Polished and Electro- Polished Tube Finishes Available on Request.

DN Fittings

DN 4-WAY CROSSES

*Material: SS 304L

*Tube Finish: Bead Blast

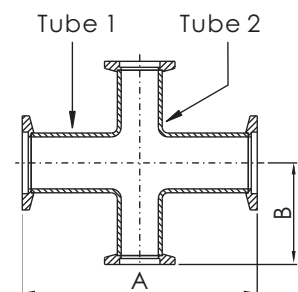


Part Number	Flange Size	A	B	Tube Size
DN-4C-10	DN10	60.00	30.00	14.0 x 2.0mmt
DN-4C-16	DN16	80.00	40.00	20.0 x 1.5mmt
DN-4C-25	DN25	100.00	50.00	28.0 x 1.5mmt
DN-4C-40	DN40	130.00	65.00	44.5 x 2.0mmt
DN-4C-50	DN50	140.00	70.00	54.0 x 2.0mmt
DN-4C-57	DN57	140.00	70.00	57.0 x 3.0mmt

DN REDUCING 4-WAY CROSSES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	B	Tube 1	Tube 2
DN-4RC-25x10	DN25/DN10	100.00	40.00	28.0 x 1.5mmt	14.0 x 2.0mmt
DN-4RC-25x16	DN25/DN16	100.00	40.00	28.0 x 1.5mmt	20.0 x 1.5mmt
DN-4RC-40x10	DN40/DN10	130.00	40.00	44.5 x 2.0mmt	14.0 x 2.0mmt
DN-4RC-40x16	DN40/DN16	130.00	40.00	44.5 x 2.0mmt	20.0 x 1.5mmt
DN-4RC-40x25	DN40/DN25	130.00	50.00	44.5 x 2.0mmt	28.0 x 1.5mmt
DN-4RC-50x16	DN50/DN16	140.00	50.00	54.0 x 2.0mmt	20.0 x 1.5mmt
DN-4RC-50x25	DN50/DN25	140.00	50.00	54.0 x 2.0mmt	28.0 x 1.5mmt
DN-4RC-50x40	DN50/DN40	140.00	65.00	54.0 x 2.0mmt	44.5 x 2.0mmt
DN-4RC-57x16	DN57/DN16	140.00	50.00	57.0 x 3.0mmt	20.0 x 1.5mmt
DN-4RC-57x25	DN57/DN25	140.00	50.00	57.0 x 3.0mmt	28.0 x 1.5mmt
DN-4RC-57x40	DN57/DN40	140.00	65.00	57.0 x 3.0mmt	44.5 x 2.0mmt

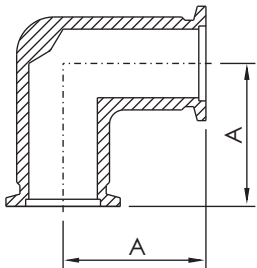
*Note: SS 316L Material Available on Request.

*Note: Polished and Electro- Polished Tube Finishes Available on Request.

DN Machined Fittings

DN 90°ELBOW, MACHINED

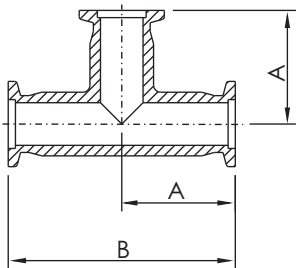
*Material: Aluminum



Part Number	Flange Size	A
DN-90ELMA-16-AL	DN16	40.00
DN-90ELMA-25-AL	DN25	50.00
DN-90ELMA-40-AL	DN40	65.00

DN EQUAL TEES, MACHINED

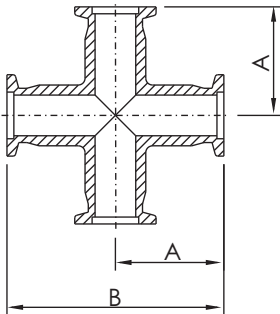
*Material: Aluminum



Part Number	Flange Size	A	B
DN-ETMA-16-AL	DN16	40.00	80.00
DN-ETMA-25-AL	DN25	50.00	100.00
DN-ETMA-40-AL	DN40	65.00	130.00

DN 4-WAY CROSSES, MACHINED

*Material: Aluminum



Part Number	Flange Size	A	B
DN-4CMA-16-AL	DN16	40.00	80.00
DN-4CMA-25-AL	DN25	50.00	100.00
DN-4CMA-40-AL	DN40	65.00	130.00

K F
DN

ISO & NW Flanges & Fittings



ISO Flanges & Fittings

AdvanTorr ISO flanges are designed to fit tubes sizes with an OD above 2 inches and comply with the International Standards Organization specifications so are 100% compatible with other manufacturers' flange design. There are two types of flange assemblies, claw clamp type and bolt flange type and both utilize an O-ring which is held in place by a centering ring to achieve a vacuum seal up to 1×10^{-8} Torr.

The bolt type flanges are assembled by using a set of bolts to fix the position of the mating flanges, whereas the claw clamp flanges use double claw clamps to hold two flanges together. In addition, the use of the claw clamps means that mating flanges can be connected together in any orientation. A wide range of adaptors for connection to CF or KF flanges can be found in the Adaptor section.

STANDARD SPECIFICATION

Vacuum Rate:

High Vacuum

Material:

SS 304L, SS 316L or Aluminum

Flange Sizes:

ISO63~ISO630

Tube Sizes:

2.5" ~ 26.0"
Surface Finish: Bead-blast and Polished.

Vacuum Range:

760 Torr ~ 1×10^{-8} Torr

Gasket Material:

FKM, FFKM

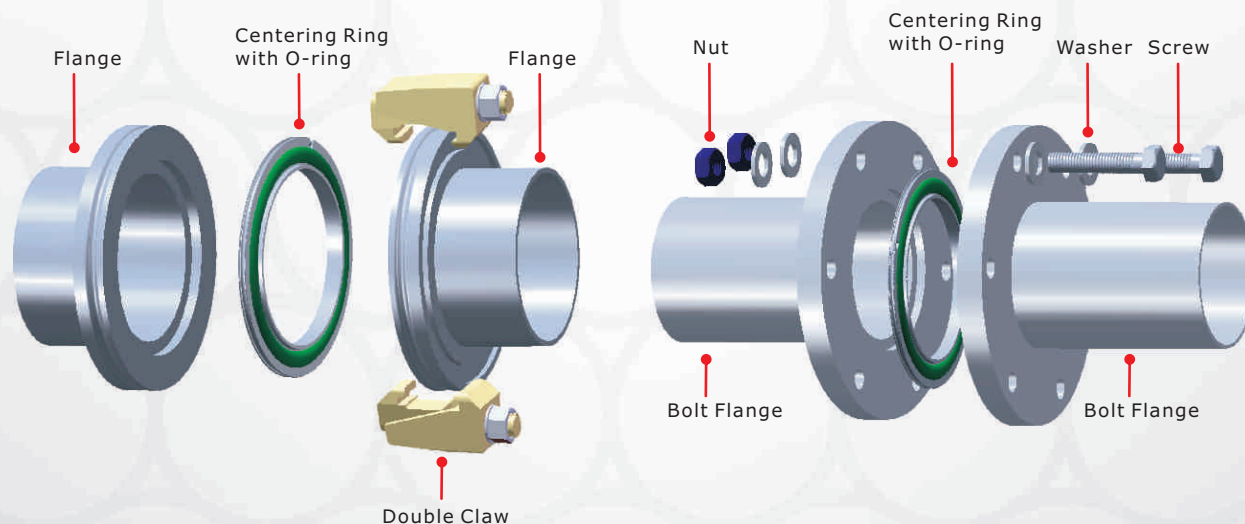
Temperature Range:

$\leq 200^{\circ}\text{C}$ (150°C sustained)

**ISO
NW**

Cleaning and Packaging

All products with weld joints are 100% helium leak tested to assure leak free operation prior to use. In addition, to ensure the cleanliness of **AdvanTorr** products, all parts are ultrasonically cleaned to HV standards using de-ionized water and packaged in contamination free, class 10,000 clean room conditions. Each bag is affixed with a barcode label identifying the component's part number, heat number and batch number for full traceability.



Clamp Type Flange Assembly

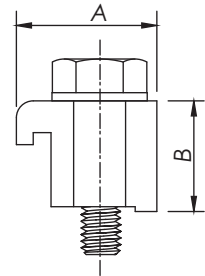
Bolt Type Flange Assembly

-All dimensions are in millimeters unless otherwise specified.

ISO-K SINGLE CLAW

*Material: SS 304

*Bolt Thread: Metric

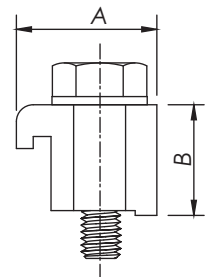


Part Number	Size	A	B	Thread Size
ISOK-SC-63100M	ISO63-ISO100	24.10	22.50	M8 x 35L
ISOK-SC-160250M	ISO160-ISO250	29.20	23.00	M10 x 35L
ISOK-SC-320500M	ISO320-ISO500	30.00	30.00	M12 x 50L
ISOK-SC-630M	ISO630	37.00	41.50	M12 x 50L

ISO-K SINGLE CLAW

*Material: Aluminum

*Bolt Thread: Metric or Inch size

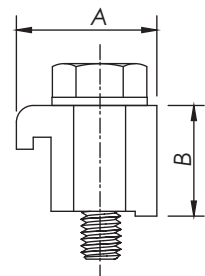


Part Number	Size	A	B	Thread Size
ISOK-SC-63100M-AL	ISO63-ISO100	24.10	22.50	M8 x 35L
ISOK-SC-63100-AL	ISO63-ISO100	24.10	22.50	5/16-18x38L
ISOK-SC-160250M-AL	ISO160-ISO250	27.50	23.50	M10 x 35L
ISOK-SC-160250-AL	ISO160-ISO250	27.50	23.50	5/16-18x38L
ISOK-SC-320500M-AL	ISO320-ISO500	30.00	30.00	M12x50L
ISOK-SC-320500-AL	ISO320-ISO500	30.00	30.00	7/16-14x50L

ISO-K SINGLE CLAW

*Bolt Thread: Metric

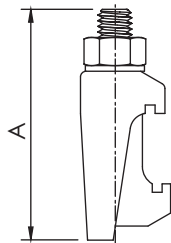
*Material: Zinc Plated Steel



Part Number	Size	A	B	Thread Size
ISOK-SC-63100M-ZP	ISO63-ISO100	24.10	22.50	M8 x 35L
ISOK-SC-160250M-ZP	ISO160-ISO250	27.50	23.50	M10 x 35L
ISOK-SC-320500M-ZP	ISO320-ISO500	30.00	30.00	M12 x 50L

ISO-K DOUBLE CLAW

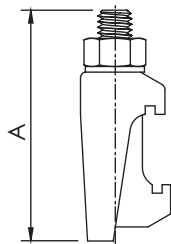
*Material: SS 304



Part Number	Size	A	Bolt Size
ISOK-DC-63250M	ISO63-ISO250	60.00	M10
ISOK-DC-320500M	ISO320-ISO500	76.50	M12

ISO-K DOUBLE CLAW

*Material: Zinc Plated Steel

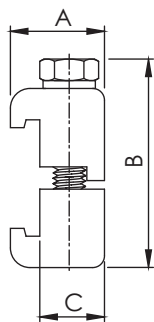


Part Number	Size	A	Bolt Size
ISOK-DC-63250M-ZP	ISO63-ISO250	60.00	M10
ISOK-DC-320500M-ZP	ISO320-ISO500	76.50	M12

ISO-K DOUBLE CLAW

*Material: Aluminum

*Bolt Thread: Metric or Inch size



Part Number	Size	A	B	C	Thread Size
ISOK-DC-63100M-AL	ISO63-ISO100	24.00	50.00	16.50	M8x45L
ISOK-DC-63100-AL	ISO63-ISO100	24.00	50.00	16.50	5/16-18x45L
ISOK-DC-160250M-AL	ISO160-ISO250	27.50	51.60	20.00	M10x45L
ISOK-DC-160250-AL	ISO160-ISO250	27.50	51.60	20.00	5/16-18x45L
ISOK-DC-320500M-AL	ISO320-ISO500	34.00	65.00	26.07	M12x60L

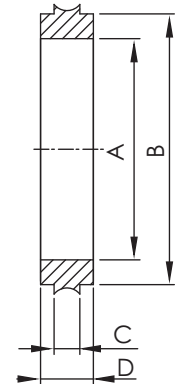
ISO Hardware & Seals

ISO CENTERING RINGS

*Material: SS 304 / Aluminum



Part Number (SS 304)	Part Number (Aluminum)	Size	A	B	C	D
ISO-CR-63	ISO-CR-63-AL	ISO63	68.00	70.00	3.90	8
ISO-CR-80	ISO-CR-80-AL	ISO80	81.00	83.00	3.90	8
ISO-CR-100	ISO-CR-100-AL	ISO100	100.00	102.00	3.90	8
ISO-CR-160	ISO-CR-160-AL	ISO160	151.00	153.00	3.90	8
ISO-CR-200	ISO-CR-200-AL	ISO200	210.00	213.00	3.90	8
ISO-CR-250	ISO-CR-250-AL	ISO250	256.00	261.00	3.90	8
ISO-CR-320	ISO-CR-320-AL	ISO320	311.15	316.48	5.50	14
ISO-CR-400	ISO-CR-400-AL	ISO400	392.93	398.02	5.50	14



*Note: SS 316L Material Available on Request.

ISO
NW

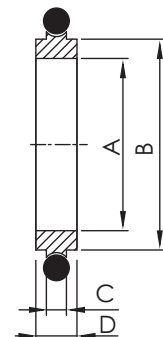
ISO CENTERING RINGS with O-RINGS

*Centering Ring Material: SS 304

*O-Ring Material: FKM / NBR



Part Number (FKM)	Part Number (NBR)	Size	A	B	C	D
ISO-CRO-63	ISO-CRO-63-NB	ISO63	68.00	70.00	3.90	8
ISO-CRO-80	ISO-CRO-80-NB	ISO80	81.00	83.00	3.90	8
ISO-CRO-100	ISO-CRO-100-NB	ISO100	100.00	102.00	3.90	8
ISO-CRO-160	ISO-CRO-160-NB	ISO160	151.00	153.00	3.90	8
ISO-CRO-200	ISO-CRO-200-NB	ISO200	210.00	213.00	3.90	8
ISO-CRO-250	ISO-CRO-250-NB	ISO250	256.00	261.00	3.90	8
ISO-CRO-320	ISO-CRO-320-NB	ISO320	311.15	316.48	5.50	14
ISO-CRO-400	ISO-CRO-400-NB	ISO400	392.93	398.02	5.50	14



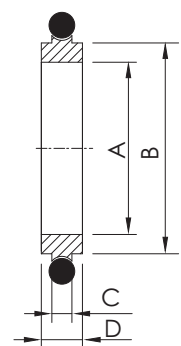
ISO CENTERING RINGS with O-RINGS, ALUMINUM

*Centering Ring Material: Aluminum

*O-Ring Material: FKM / NBR



Part Number (FKM)	Part Number (NBR)	Size	A	B	C	D
ISO-CRO-63-AL	ISO-CRO-63-AL-NB	ISO63	68.00	70.00	3.90	8
ISO-CRO-80-AL	ISO-CRO-80-AL-NB	ISO80	81.00	83.00	3.90	8
ISO-CRO-100-AL	ISO-CRO-100-AL-NB	ISO100	100.00	102.00	3.90	8
ISO-CRO-160-AL	ISO-CRO-160-AL-NB	ISO160	151.00	153.00	3.90	8
ISO-CRO-200-AL	ISO-CRO-200-AL-NB	ISO200	210.00	213.00	3.90	8
ISO-CRO-250-AL	ISO-CRO-250-AL-NB	ISO250	256.00	261.00	3.90	8
ISO-CRO-320-AL	ISO-CRO-320-AL-NB	ISO320	311.15	316.48	5.50	14
ISO-CRO-400-AL	ISO-CRO-400-AL-NB	ISO400	392.93	398.02	5.50	14

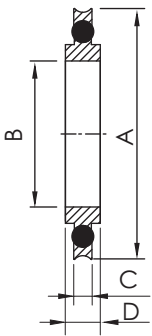


ISO CENTERING RINGS with O-RINGS and SPACERS

*Centering Ring Material: SS 304/ Aluminum
*O-Ring Material: FKM
*Spacer Material: Aluminum



Part Number (SS 304)	Part Number (Aluminum)	Size	A	B	C	D
ISO-CROS-63	ISO-CROS-63-AL	ISO63	94.00	68.00	3.90	8
ISO-CROS-80	ISO-CROS-80-AL	ISO80	109.00	81.00	3.90	8
ISO-CROS-100	ISO-CROS-100-AL	ISO100	128.00	100.00	3.90	8
ISO-CROS-160	ISO-CROS-160-AL	ISO160	179.00	151.00	3.90	8
ISO-CROS-200	ISO-CROS-200-AL	ISO200	239.00	210.00	3.90	8
ISO-CROS-250	ISO-CROS-250-AL	ISO250	287.00	256.00	3.90	8
ISO-CROS-320	ISO-CROS-320-AL	ISO320	346.33	311.15	5.50	14
ISO-CROS-400	ISO-CROS-400-AL	ISO400	428.80	392.93	5.50	14



*Note: SS 316L or Aluminum Material Available on Request.
*Note: FFKM O-Ring Material Available on Request.

ISO SCREENED CENTERING RINGS with O-RINGS

*Centering Ring Material: SS 304
*70 Mesh Screen
*Screen Material: SS 304



Part Number	Size	A	B
ISO-CROSC-63	ISO63	69.60	62.00
ISO-CROSC-80	ISO80	82.60	72.90
ISO-CROSC-100	ISO100	102.00	92.00
ISO-CROSC-160	ISO160	153.00	139.70



ISO Hardware & Seals

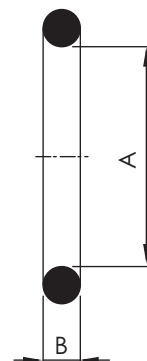
ISO REPLACEMENT O-RINGS

*Material: FKM / NBR



Part Number(FKM)	Part Number(NBR)	Size	A	B
ISO-RO-63	ISO-RO-63-NB	ISO63	72.39	5.33
ISO-RO-80	ISO-RO-80-NB	ISO80	85.09	5.33
ISO-RO-100	ISO-RO-100-NB	ISO100	104.14	5.33
ISO-RO-160	ISO-RO-160-NB	ISO160	151.77	5.33
ISO-RO-200	ISO-RO-200-NB	ISO200	215.27	5.33
ISO-RO-250	ISO-RO-250-NB	ISO250	266.07	5.33
ISO-RO-320	ISO-RO-320-NB	ISO320	316.87	6.99
ISO-RO-400	ISO-RO-400-NB	ISO400	393.07	6.99

*Note: FFKM O-Ring Material Available on Request.

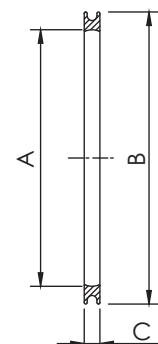


ISO SPACER RINGS

*Material: Aluminum



Part Number	Size	A	B	C
ISO-OR-63	ISO63	85.40	92.60	3.75
ISO-OR-80	ISO80	98.70	107.80	3.75
ISO-OR-100	ISO100	116.40	125.60	3.75
ISO-OR-160	ISO160	167.80	177.00	3.75
ISO-OR-200	ISO200	227.80	237.00	3.75
ISO-OR-250	ISO250	275.40	284.60	3.75
ISO-OR-320	ISO320	335.50	344.00	5.59
ISO-OR-400	ISO400	420.30	428.80	5.59

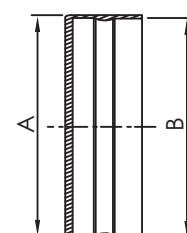


ISO-K FLANGE PLASTIC CAP

*Material: PE



Part Number	Size	A	B
ISOK-PC-63	ISO63	97.8	95.0
ISOK-PC-80	ISO80	113.0	110.0
ISOK-PC-100	ISO100	133.0	130.0
ISOK-PC-160	ISO160	183.0	180.0
ISOK-PC-200	ISO200	242.0	240.0
ISOK-PC-250	ISO250	293.4	290.0
ISOK-PC-320	ISO320	373.9	370.5
ISOK-PC-400	ISO400	454.2	450.8
ISOK-PC-500	ISO500	553.9	550.5



ISO
NW

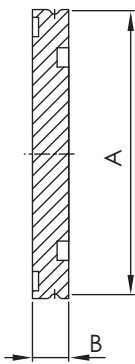
ISO Flanges

ISO-K BLANK FLANGES

*Material: SS 304L



Part Number	Size	A	B
ISOK-BL-63	ISO63	95.00	11.90
ISOK-BL-80	ISO80	110.00	11.90
ISOK-BL-100	ISO100	130.00	11.90
ISOK-BL-160	ISO160	180.00	11.90
ISOK-BL-200	ISO200	240.00	12.00
ISOK-BL-250	ISO250	290.00	12.00
ISOK-BL-320	ISO320	370.00	17.00
ISOK-BL-400	ISO400	450.09	17.00
ISOK-BL-500	ISO500	549.91	17.00
ISOK-BL-630	ISO630	690.12	22.10

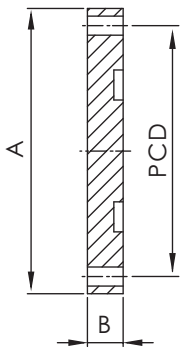


ISO-F BLANK FLANGES

*Material: SS 304L



Part Number	Size	A	B	Bolt Holes	PCD
ISOF-BL-63	ISO63	130.00	11.90	4	110.00
ISOF-BL-80	ISO80	145.00	11.90	8	125.00
ISOF-BL-100	ISO100	165.00	11.90	8	145.00
ISOF-BL-160	ISO160	225.00	16.00	8	200.00
ISOF-BL-200	ISO200	285.00	16.00	12	260.00
ISOF-BL-250	ISO250	335.00	16.00	12	310.00
ISOF-BL-320	ISO320	425.00	20.00	12	395.00
ISOF-BL-400	ISO400	510.03	20.07	16	480.06
ISOF-BL-500	ISO500	610.11	20.07	16	579.88
ISOF-BL-630	ISO630	750.06	23.88	20	720.09



*Note: SS 316L or Aluminum Material Available on Request.

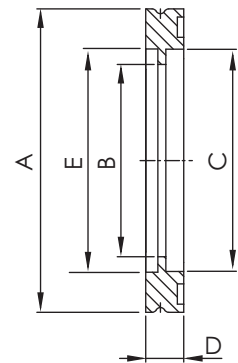
ISO
NW

ISO Flanges

ISO-K BORED FLANGES

*Material: SS 304L

Part Number	Size	Nominal Tube OD	A	B	C	D	E
ISOK-BF-63	ISO63	2.5"	95.00	60.20	63.80	11.90	70.10
ISOK-BF-80	ISO80	3"	110.00	72.90	76.50	11.90	83.00
ISOK-BF-100	ISO100	4"	130.00	98.30	101.90	11.90	102.70
ISOK-BF-160	ISO160	6"	180.00	149.10	152.90	11.90	153.00
ISOK-BF-200	ISO200	8"	240.00	197.10	203.70	11.90	213.20
ISOK-BF-250	ISO250	10"	290.00	247.70	254.50	11.90	261.00
ISOK-BF-320	ISO320	12"	370.00	296.82	305.56	17.02	318.01
ISOK-BF-320-1	ISO320	12.75"	370.00	318.00	324.40	17.00	318.00
ISOK-BF-400	ISO400	16"	450.09	396.75	406.91	17.02	400.00
ISOK-BF-500	ISO500	20"	549.91	498.35	508.51	17.02	500.99
ISOK-BF-630	ISO630	24"	690.12	604.77	610.11	22.10	651.00

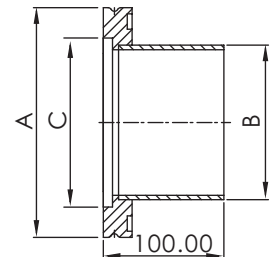


ISO-K HALF NIPPLES

*Material: SS 304L

*Tube Finish: Bead Blast

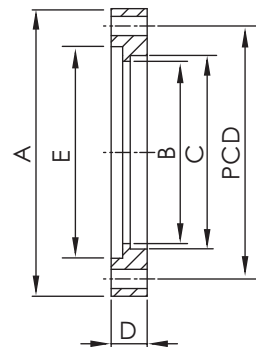
Part Number	Flange Size	A	B	C
ISOK-HN-63	ISO63	95.00	63.50	70.00
ISOK-HN-80	ISO80	110.00	76.20	83.00
ISOK-HN-100	ISO100	130.00	101.60	102.00
ISOK-HN-160	ISO160	180.00	152.40	153.00
ISOK-HN-200	ISO200	240.00	203.20	213.00
ISOK-HN-250	ISO250	290.00	254.00	261.00
ISOK-HN-320	ISO320	370.00	324.00	318.00



ISO-F BORED FLANGES

*Material: SS 304L

Part Number	Size	A	B	C	D	E	PCD
ISOF-BF-63	ISO63	130.00	61.90	63.80	11.90	70.00	110.00
ISOF-BF-80	ISO80	145.00	74.60	76.50	11.90	83.00	125.00
ISOF-BF-100	ISO100	165.10	99.30	101.92	11.90	102.00	145.00
ISOF-BF-160	ISO160	225.00	149.20	152.90	16.00	153.00	200.00
ISOF-BF-200	ISO200	285.00	200.00	203.70	16.00	213.00	260.00
ISOF-BF-250	ISO250	335.00	250.80	254.50	16.00	261.00	310.00
ISOF-BF-320	ISO320	425.00	318.00	324.40	20.00	318.00	395.00
ISOF-BF-400	ISO400	510.03	396.75	406.91	20.07	400.00	480.06
ISOF-BF-500	ISO500	610.11	498.35	508.51	20.07	500.99	579.88
ISOF-BF-630	ISO630	750.06	604.77	610.11	23.88	610.10	720.09

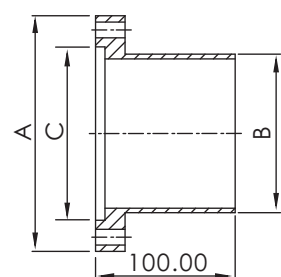


ISO-F HALF NIPPLES

*Material: SS 304L

*Tube Finish: Bead Blast

Part Number	Flange Size	A	B	C
ISOF-HN-63	ISO63	130.00	63.50	70.00
ISOF-HN-80	ISO80	145.00	76.20	83.00
ISOF-HN-100	ISO100	165.10	101.60	102.00
ISOF-HN-160	ISO160	225.00	152.40	153.00
ISOF-HN-200	ISO200	285.00	203.20	213.00
ISOF-HN-250	ISO250	335.00	254.00	261.00
ISOF-HN-320	ISO320	425.00	324.00	318.00



*Note: SS 316L or Aluminum Material Available on Request.

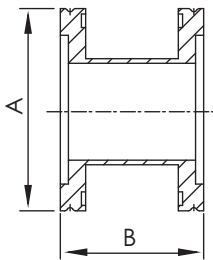
ISO-K FULL NIPPLES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	B
ISOK-FN-63	ISO63	ISO63	165.10
ISOK-FN-63-1	ISO63	ISO63	175.80
ISOK-FN-80	ISO80	ISO80	196.10
ISOK-FN-80-1	ISO80	ISO80	177.80
ISOK-FN-100	ISO100	ISO100	209.80
ISOK-FN-100-1	ISO100	ISO100	215.90
ISOK-FN-160	ISO160	ISO160	273.30
ISOK-FN-160-1	ISO160	ISO160	275.80



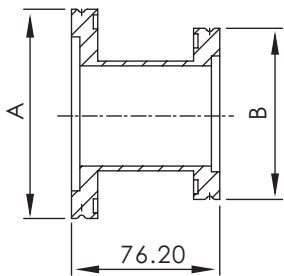
ISO-K STRAIGHT REDUCING NIPPLES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	B
ISOK-SRN-80x63	ISO80x63	ISO80	ISO63
ISOK-SRN-100x63	ISO100x63	ISO100	ISO63
ISOK-SRN-100x80	ISO100x80	ISO100	ISO80
ISOK-SRN-160x63	ISO160x63	ISO160	ISO63
ISOK-SRN-160x80	ISO160x80	ISO160	ISO80
ISOK-SRN-160x100	ISO160x100	ISO160	ISO100



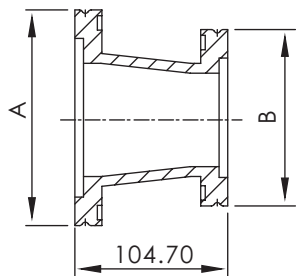
ISO-K CONICAL REDUCING NIPPLES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	B
ISOK-CRN-80x63	ISO80x63	ISO80	ISO63
ISOK-CRN-100x63	ISO100x63	ISO100	ISO63
ISOK-CRN-100x80	ISO100x80	ISO100	ISO80

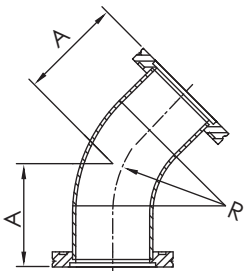


*Note: SS 316L Material Available on Request.

*Note: Polished and Electro- Polished Tube Finishes Available on Request.

ISO-K 45° ELBOWS

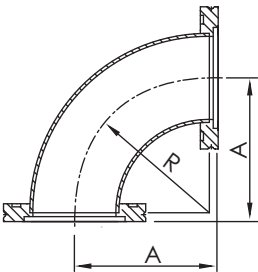
*Material: SS 304L
*Tube Finish: Bead Blast



Part Number	Flange Size	A	R
ISOK-45EL-63	ISO63	82.30	95.25
ISOK-45EL-80	ISO80	100.00	114.30
ISOK-45EL-100	ISO100	128.50	152.40

ISO-K 90° ELBOWS

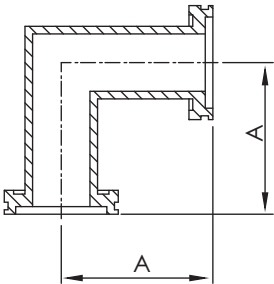
*Material: SS 304L
*Tube Finish: Bead Blast



Part Number	Flange Size	A	R
ISOK-90EL-63	ISO63	101.60	95.25
ISOK-90EL-80	ISO80	120.60	114.30
ISOK-90EL-100	ISO100	158.70	152.40

ISO-K 90° MITERED ELBOWS

*Material: SS 304L
*Tube Finish: Bead Blast



Part Number	Flange Size	A
ISOK-90MEL-63	ISO63	82.60
ISOK-90MEL-63-1	ISO63	87.93
ISOK-90MEL-80	ISO80	88.90
ISOK-90MEL-80-1	ISO80	108.00
ISOK-90MEL-100	ISO100	104.90
ISOK-90MEL-100-1	ISO100	108.00
ISOK-90MEL-160	ISO160	138.00
ISOK-90MEL-160-1	ISO160	160.20

*Note: SS 316L Material Available on Request.
*Note: Polished and Electro- Polished Tube Finishes Available on Request.

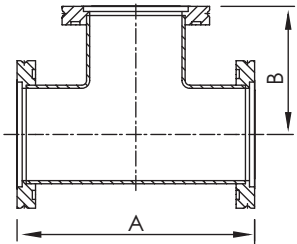
ISO-K EQUAL TEES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	B
ISOK-ET-63	ISO63	165.00	82.50
ISOK-ET-63-1	ISO63	176.00	88.00
ISOK-ET-80	ISO80	177.80	88.90
ISOK-ET-80-1	ISO80	196.00	98.00
ISOK-ET-100	ISO100	209.40	104.70
ISOK-ET-100-1	ISO100	216.00	108.00
ISOK-ET-160	ISO160	266.60	133.30



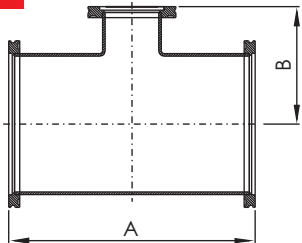
ISO-K REDUCING TEES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	B
ISOK-RT-80x63	ISO80/ISO63	177.70	88.90
ISOK-RT-100x63	ISO100/ISO63	209.70	101.60
ISOK-RT-100x80	ISO100/ISO80	209.70	101.60
ISOK-RT-160x63	ISO160/ISO63	266.60	126.90
ISOK-RT-160x80	ISO160/ISO80	266.60	126.90
ISOK-RT-160x100	ISO160/ISO100	266.60	130.30



*Note: SS 316L Material Available on Request.

*Note: Polished and Electro- Polished Tube Finishes Available on Request.

ISO Fittings

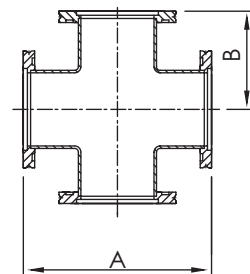
ISO-K 4-WAY CROSSES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	B
ISOK-4C-63	ISO63	165.00	82.50
ISOK-4C-80	ISO80	177.80	88.90
ISOK-4C-80-1	ISO80	196.00	98.00
ISOK-4C-100	ISO100	209.40	104.70
ISOK-4C-100-1	ISO100	216.00	108.00
ISOK-4C-160	ISO160	266.60	133.30



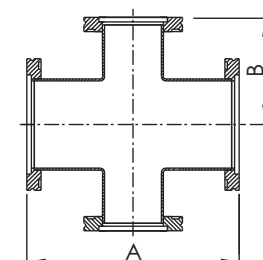
ISO-K 4-WAY REDUCING CROSSES

*Material: SS 304L

*Tube Finish: Bead Blast



Part Number	Flange Size	A	B
ISOK-4RC-80x63	ISO80/ISO63	177.70	88.85
ISOK-4RC-100x63	ISO100/ISO63	209.70	101.55
ISOK-4RC-100x80	ISO100/ISO80	209.70	101.55
ISOK-4RC-160x63	ISO160/ISO63	266.60	126.95
ISOK-4RC-160x80	ISO160/ISO80	266.60	126.95
ISOK-4RC-160x100	ISO160/ISO100	266.60	130.25



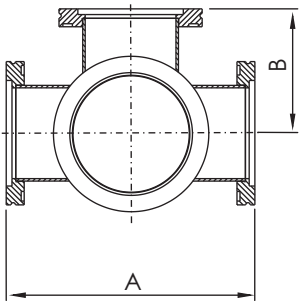
*Note: SS 316L Material Available on Request.

*Note: Polished and Electro- Polished Tube Finishes Available on Request.

ISO
NW

ISO-K 5-WAY CROSSES

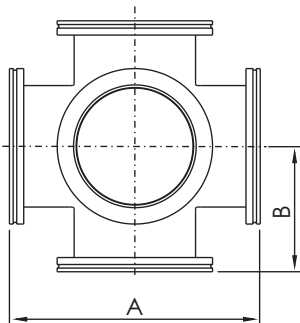
*Material: SS 304L
*Tube Finish: Bead Blast



Part Number	Flange Size	A	B
ISOK-5C-63	ISO63	165.00	82.50
ISOK-5C-80	ISO80	177.80	88.90
ISOK-5C-100	ISO100	209.80	104.90
ISOK-5C-160	ISO160	266.60	133.30

ISO-K 6-WAY CROSSES

*Material: SS 304L
*Tube Finish: Bead Blast



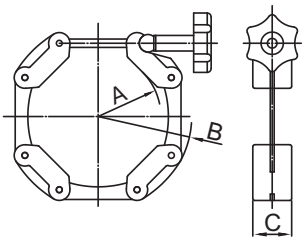
Part Number	Flange Size	A	B
ISOK-6C-63	ISO63	165.00	82.50
ISOK-6C-80	ISO80	177.80	88.90
ISOK-6C-100	ISO100	209.80	104.90
ISOK-6C-160	ISO160	266.60	133.30

*Note: SS 316L Material Available on Request.
*Note: Polished and Electro- Polished Tube Finishes Available on Request.

NW Hardware & Seals

NW CHAIN CLAMPS TYPE 1

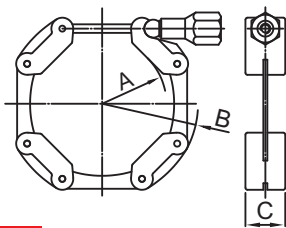
*Body Material: Aluminum
*Bolt Material: Plastic



Part Number	Size	A	B	C
NW-CC1-16	NW16	22.00	56.00	20.50
NW-CC1-25	NW25	32.00	66.00	20.50
NW-CC1-40	NW40	46.00	80.00	20.50
NW-CC1-50	NW50	69.00	100.00	20.50
NW-CC1-63	NW63	78.00	112.00	20.50

NW CHAIN CLAMPS TYPE 2

*Body Material: Aluminum
*Bolt Material: SS 304

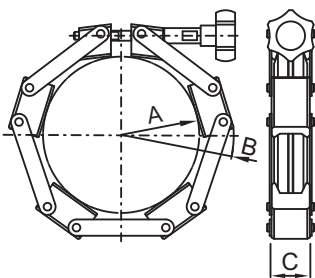


Part Number	Size	A	B	C
NW-CC2-16	NW16	22.00	56.00	20.50
NW-CC2-25	NW25	32.00	66.00	20.50
NW-CC2-40	NW40	46.00	80.00	20.50
NW-CC2-50	NW50	69.00	100.00	20.50
NW-CC2-63	NW63	78.00	112.00	20.50

ISO
NW

NW CHAIN CLAMPS TYPE 1

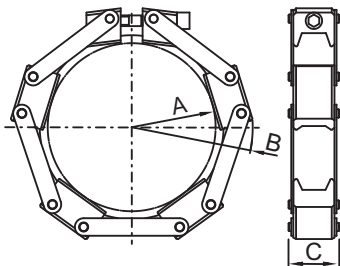
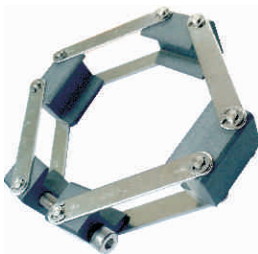
*Body Material: Aluminum
*Bolt Material: Plastic



Part Number	Size	A	B	C
NW-CC1-80	NW80	117.10	153.00	30.00
NW-CC1-100	NW100	136.50	171.68	30.00
NW-CC1-160	NW160	197.90	231.70	30.00

NW CHAIN CLAMPS TYPE 2

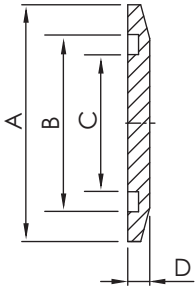
*Body Material: Aluminum
*Bolt Material: SS 304



Part Number	Size	A	B	C
NW-CC2-80	NW80	100.00	165.00	38.00
NW-CC2-100	NW100	122.00	185.00	38.00
NW-CC2-160	NW160	174.00	235.00	38.00

NW BLANK FLANGES

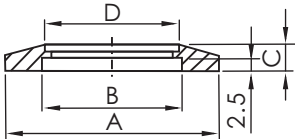
*Material: SS 304L



Part Number	Flange Size	A	B	C	D
NW-BL-63	NW63	87.00	70.20	64.00	5.00
NW-BL-80	NW80	114.00	83.00	73.00	11.00
NW-BL-100	NW100	134.00	102.00	92.00	11.00
NW-BL-160	NW160	190.00	153.20	143.00	11.00

NW BORED FLANGES

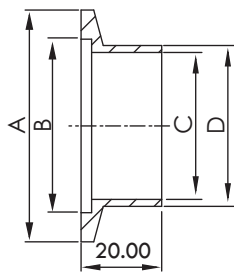
*Material: SS 304



Part Number	Flange Size	A	B	C	D
NW-BF-63	NW 63	87.00	70.00	5.00	63.70
NW-BF-80	NW 80	114.00	83.00	11.00	76.40
NW-BF-100	NW 100	134.00	102.00	11.00	101.80
NW-BF-160	NW 160	190.00	153.00	11.00	152.90

NW BUTT WELD FLANGES

*Material: SS 304L



Part Number	Flange Size	A	B	C	D	Tube Size
NW-BWF-80	NW80	114.00	83.10	83.10	89.10	80A 10S
NW-BWF-80-1	NW80	114.00	83.10	84.90	89.10	80A 5S
NW-BWF-100	NW100	134.00	102.20	108.30	114.30	100A 10S
NW-BWF-100-1	NW100	134.00	102.20	110.10	114.30	100A 5S
NW-BWF-160	NW160	190.00	153.20	158.40	165.20	150A 10S
NW-BWF-160-1	NW160	190.00	153.20	159.60	165.20	150A 5S

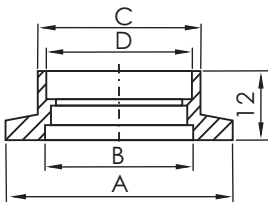


Figure 1

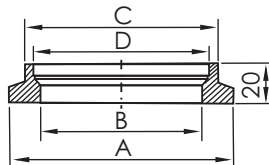
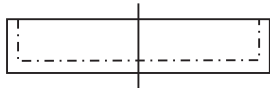


Figure 2

NW SOCKET WELD FLANGES

*Material: SS 304

Part Number	Flange Size	A	B	C	D	Figure
NW-SWF-63	NW 63	87.00	70.00	67.50	63.70	1
NW-SWF-80	NW 80	114.00	83.00	98.00	89.50	2
NW-SWF-100	NW 100	134.00	102.00	118.00	114.50	2
NW-SWF-160	NW 160	190.00	153.00	174.00	165.50	2



NW FLANGE PLASTIC CAP

*Material: PE

Part Number	Flange Size
NW-PC-63	NW 63
NW-PC-80	NW 80
NW-PC-100	NW 100

ISO
NW

Adaptors



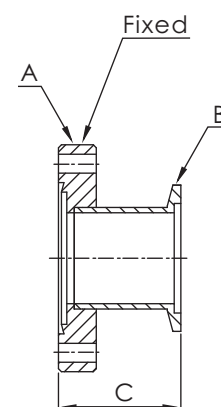
Adaptors

KF to CF FLANGE ADAPTORS

*Material: SS 304L



Part Number	Flange Size	A	B	C
AD-KF10xCF133	KF10/CF1.33(DN16)	CF1.33	KF 10	44.50
AD-KF16xCF133	KF16/CF1.33(DN16)	CF1.33	KF 16	44.50
AD-KF16xCF275	KF16/CF2.75(DN40)	CF2.75	KF 16	45.20
AD-KF25xCF212	KF25/CF2.12(DN25)	CF2.12	KF 25	44.50
AD-KF25xCF275	KF25/CF2.75(DN40)	CF2.75	KF 25	45.20
AD-KF40xCF275	KF40/CF2.75(DN40)	CF2.75	KF 40	45.20
AD-KF40xCF338	KF40/CF3.38(DN50)	CF3.38	KF 40	45.70
AD-KF50xCF133	KF50/CF1.33(DN16)	CF1.33	KF 50	49.50
AD-KF50xCF275	KF50/CF2.75(DN40)	CF2.75	KF 50	49.50
AD-KF50xCF338	KF50/CF3.38(DN50)	CF3.38	KF 50	45.70
AD-KF50xCF450	KF50/CF4.50(DN63)	CF4.50	KF 50	49.50

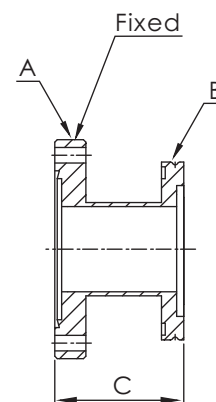


ISO to CF FLANGE ADAPTORS

*Material: SS 304L



Part Number	Flange Size	A	B	C
AD-ISO63xCF450	ISO63/CF4.50(DN63)	CF4.50	ISO63	110.00
AD-ISO80xCF462	ISO80/CF4.62(DN80)	CF4.62	ISO80	110.00
AD-ISO80xCF600	ISO80/CF6.00(DN100)	CF6.00	ISO80	110.00
AD-ISO100xCF600	ISO100/CF6.00(DN100)	CF6.00	ISO100	111.00
AD-ISO160xCF800	ISO160/CF8.00(DN160)	CF8.00	ISO160	113.00
AD-ISO200xCF1000	ISO200/CF10.00(DN200)	CF10.00	ISO200	113.00

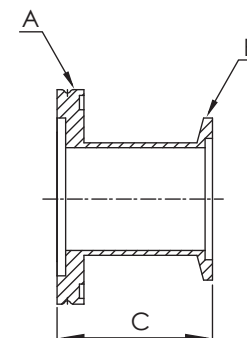


ISO to KF FLANGE ADAPTORS

*Material: SS 304L



Part Number	Flange Size	A	B	C
AD-ISO63xKF25	ISO63/KF25	ISO63	KF25	46.50
AD-ISO63xKF40	ISO63/KF40	ISO63	KF40	46.30
AD-ISO63xKF50	ISO63/KF50	ISO63	KF50	46.30
AD-ISO80xKF40	ISO80/KF40	ISO80	KF40	46.30
AD-ISO80xKF50	ISO80/KF50	ISO80	KF50	46.30
AD-ISO100xKF40	ISO100/KF40	ISO100	KF40	46.30
AD-ISO100xKF50	ISO100/KF50	ISO100	KF50	46.30



*Note: SS 316L Material Available on Request.

*Note: Polished and Electro- Polished Tube Finishes Available on Request.

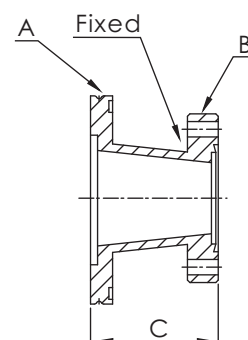
Adaptors

ISO to CF FLANGE CONICAL ADAPTORS

*Material: SS 304L



Part Number	Flange Size	A	B	C
ADC-ISO63xCF275	ISO63/CF2.75(DN40)	ISO63	CF2.75	71.90
ADC-ISO63xCF338	ISO63/CF3.38(DN50)	ISO63	CF3.38	72.30
ADC-ISO63xCF462	ISO63/CF4.62(DN80)	ISO63	CF4.62	108.00
ADC-ISO63xCF600	ISO63/CF6.00(DN100)	ISO63	CF6.00	109.50
ADC-ISO80xCF275	ISO80/CF2.75(DN40)	ISO80	CF2.75	103.70
ADC-ISO80xCF338	ISO80/CF3.38(DN50)	ISO80	CF3.38	104.10
ADC-ISO80xCF450	ISO80/CF4.50(DN63)	ISO80	CF4.50	107.90
ADC-ISO80xCF600	ISO80/CF6.00(DN100)	ISO80	CF6.00	109.50
ADC-ISO100xCF338	ISO100/CF3.38(DN50)	ISO100	CF3.38	104.10
ADC-ISO100xCF450	ISO100/CF4.50(DN63)	ISO100	CF4.50	107.90
ADC-ISO100xCF462	ISO100/CF4.62(DN80)	ISO100	CF4.62	108.00



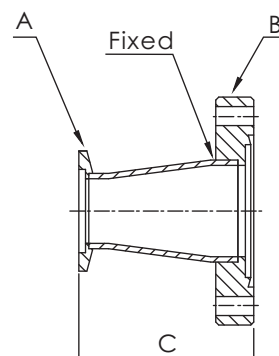
AD

KF to CF FLANGE CONICAL ADAPTORS

*Material: SS 304L



Part Number	Flange Size	A	B	C
ADC-KF16XCF212	KF16/CF2.12(DN25)	KF 16	CF 2.12	42.90
ADC-KF16XCF275	KF16/CF2.75(DN40)	KF 16	CF 2.75	69.30
ADC-KF25XCF133	KF25/CF1.33(DN16)	KF 25	CF 1.33	43.15
ADC-KF25XCF275	KF25/CF2.75(DN40)	KF 25	CF 2.75	69.30
ADC-KF25XCF338	KF25/CF3.38(DN50)	KF25	CF 3.38	69.90
ADC-KF40XCF133	KF40/CF1.33(DN16)	KF 40	CF 1.33	68.55
ADC-KF40XCF212	KF40/CF2.12(DN25)	KF 40	CF 2.12	68.30
ADC-KF40XCF338	KF40/CF3.38(DN50)	KF 40	CF 3.38	69.90
ADC-KF40XCF450	KF40/CF4.50(DN63)	KF 40	CF 4.50	73.70
ADC-KF40XCF462	KF40/CF4.62(DN80)	KF 40	CF 4.62	103.10
ADC-KF50XCF212	KF50/CF2.12(DN25)	KF 50	CF 2.12	68.30
ADC-KF50XCF275	KF50/CF2.75(DN40)	KF 50	CF 2.75	69.30
ADC-KF50XCF450	KF50/CF4.50(DN63)	KF 50	CF 4.50	73.70
ADC-KF50XCF462	KF50/CF4.62(DN80)	KF 50	CF 4.62	103.10
ADC-KF50XCF600	KF50/CF6.00(DN100)	KF 50	CF 6.00	106.90



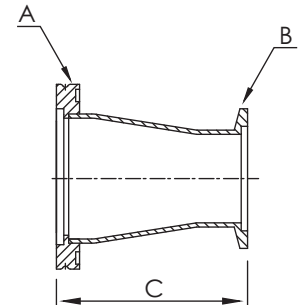
*Note: SS 316L Material Available on Request.

*Note: Polished and Electro- Polished Tube Finishes Available on Request.

Adaptors

ISO to KF FLANGE CONICAL ADAPTORS

*Material: SS 304L



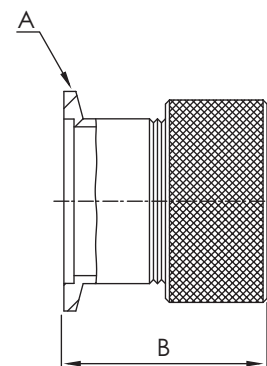
Part Number	Flange Size	A	B	C
ADC-ISO63xKF40	ISO63/KF40	ISO63	KF40	70.40
ADC-ISO63xKF50	ISO63/KF50	ISO63	KF50	70.40
ADC-ISO80xKF40	ISO80/KF40	ISO80	KF40	102.20
ADC-ISO80xKF50	ISO80/KF50	ISO80	KF50	102.20
ADC-ISO100xKF50	ISO100/KF50	ISO100	KF50	102.20

KF FLANGES to QUICK COUPLINGS with VITON O-RINGS

*Material: SS 304L



Part Number	Size	Tube Size	A	B
AD-QC-KF10x050	KF10-½"	½"	KF10	38.10
AD-QC-KF16x025	KF16-¼"	¼"	KF16	35.60
AD-QC-KF16x050	KF16-½"	½"	KF16	38.10
AD-QC-KF16x075	KF16-¾"	¾"	KF16	45.70
AD-QC-KF25x050	KF25-½"	½"	KF25	38.10
AD-QC-KF25x062	KF25-⅝"	⅝"	KF25	43.20
AD-QC-KF25x075	KF25-¾"	¾"	KF25	45.70
AD-QC-KF25x100	KF25-1"	1"	KF25	50.80
AD-QC-KF25x112	KF25-1⅛"	1⅛"	KF25	50.80
AD-QC-KF40x050	KF40-½"	½"	KF40	37.60
AD-QC-KF40x075	KF40-¾"	¾"	KF40	45.70
AD-QC-KF40x100	KF40-1"	1"	KF40	50.80
AD-QC-KF40x112	KF40-1⅛"	1⅛"	KF40	50.80
AD-QC-KF40x125	KF40-1¼"	1¼"	KF40	50.80
AD-QC-KF40x138	KF40-1⅜"	1⅜"	KF40	53.30
AD-QC-KF40x150	KF40-1½"	1½"	KF40	61.00
AD-QC-KF50x050	KF50-½"	½"	KF50	38.10
AD-QC-KF50x075	KF50-¾"	¾"	KF50	45.70
AD-QC-KF50x100	KF50-1"	1"	KF50	50.80
AD-QC-KF50x112	KF50-1⅛"	1⅛"	KF50	50.80
AD-QC-KF50x150	KF50-1½"	1½"	KF50	61.00
AD-QC-KF50x200	KF50-2"	2"	KF50	61.00



AD

Adaptors

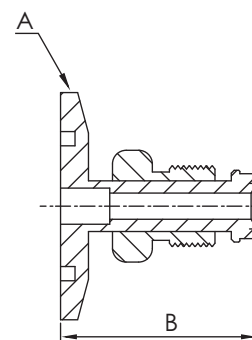
KF FLANGES to MALE VCRS

* KF Flange Material: SS 304L

* Gland Material: SS 316L



Part Number	Size	A	B
AD-VCRM-KF16x025	KF16x $\frac{1}{4}$ "	KF16	37.10
AD-VCRM-KF16x038	KF16x $\frac{3}{8}$ "	KF16	41.90
AD-VCRM-KF16x050	KF16x $\frac{1}{2}$ "	KF16	41.90
AD-VCRM-KF25x025	KF25x $\frac{1}{4}$ "	KF25	37.10
AD-VCRM-KF25x038	KF25x $\frac{3}{8}$ "	KF25	41.90
AD-VCRM-KF25x050	KF25x $\frac{1}{2}$ "	KF25	41.90
AD-VCRM-KF25x075	KF25x $\frac{3}{4}$ "	KF25	55.40
AD-VCRM-KF40x025	KF40x $\frac{1}{4}$ "	KF40	37.10
AD-VCRM-KF40x038	KF40x $\frac{3}{8}$ "	KF40	41.90
AD-VCRM-KF40x050	KF40x $\frac{1}{2}$ "	KF40	41.90
AD-VCRM-KF40x075	KF40x $\frac{3}{4}$ "	KF40	55.40
AD-VCRM-KF50x025	KF50x $\frac{1}{4}$ "	KF50	37.10
AD-VCRM-KF50x038	KF50x $\frac{3}{8}$ "	KF50	41.90
AD-VCRM-KF50x050	KF50x $\frac{1}{2}$ "	KF50	41.90
AD-VCRM-KF50x075	KF50x $\frac{3}{4}$ "	KF50	55.40



AD

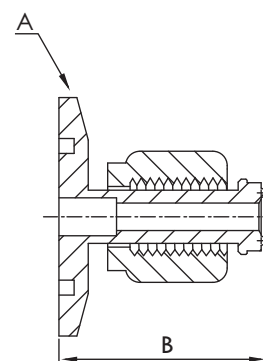
KF FLANGES to FEMALE VCRS

* KF Flange Material: SS 304L

* Gland Material: SS 316L

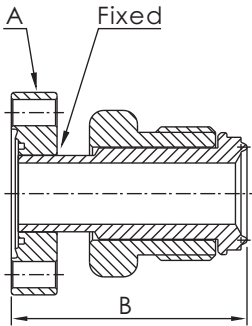


Part Number	Size	A	B
AD-VCRF-KF16x025	KF16- $\frac{1}{4}$ "	KF16	37.10
AD-VCRF-KF16x038	KF16- $\frac{3}{8}$ "	KF16	41.90
AD-VCRF-KF16x050	KF16- $\frac{1}{2}$ "	KF16	41.90
AD-VCRF-KF25x025	KF25- $\frac{1}{4}$ "	KF25	37.10
AD-VCRF-KF25x038	KF25- $\frac{3}{8}$ "	KF25	41.90
AD-VCRF-KF25x050	KF25- $\frac{1}{2}$ "	KF25	41.90
AD-VCRF-KF25x075	KF25- $\frac{3}{4}$ "	KF25	55.40
AD-VCRF-KF40x025	KF40- $\frac{1}{4}$ "	KF40	37.10
AD-VCRF-KF40x038	KF40- $\frac{3}{8}$ "	KF40	41.90
AD-VCRF-KF40x050	KF40- $\frac{1}{2}$ "	KF40	41.90
AD-VCRF-KF40x075	KF40- $\frac{3}{4}$ "	KF40	55.40
AD-VCRF-KF50x025	KF50- $\frac{1}{4}$ "	KF50	37.10
AD-VCRF-KF50x038	KF50- $\frac{3}{8}$ "	KF50	41.90
AD-VCRF-KF50x050	KF50- $\frac{1}{2}$ "	KF50	41.90
AD-VCRF-KF50x075	KF50- $\frac{3}{4}$ "	KF50	55.40



CF FLANGES to MALE VCRS

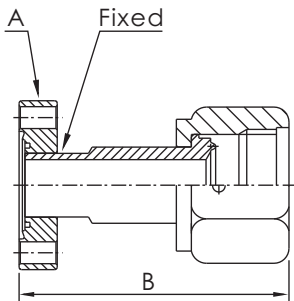
* CF Flange Material: SS 304L
* VCR Material: SS 316L



Part Number	Size	A	B
AD-VCRM-CF133x025	CF1.33"(DN16)x¼"	CF1.33	36.30
AD-VCRM-CF133x038	CF1.33"(DN16)x⅜"	CF1.33	39.27
AD-VCRM-CF133x050	CF1.33"(DN16)x½"	CF1.33	39.27
AD-VCRM-CF275x025	CF2.75"(DN40)x¼"	CF2.75	38.61
AD-VCRM-CF275x038	CF2.75"(DN40)x⅜"	CF2.75	43.41
AD-VCRM-CF275x050	CF2.75"(DN40)x½"	CF2.75	43.41

CF FLANGES to FEMALE VCRS

* CF Flange Material: SS 304L
* VCR Material: SS 316L



Part Number	Size	A	B
AD-VCRF-CF133x025	CF1.33"(DN16)x¼"	CF1.33	36.30
AD-VCRF-CF133x038	CF1.33"(DN16)x⅜"	CF1.33	39.27
AD-VCRF-CF133x050	CF1.33"(DN16)x½"	CF1.33	39.27
AD-VCRF-CF275x025	CF2.75"(DN40)x¼"	CF2.75	38.61
AD-VCRF-CF275x038	CF2.75"(DN40)x⅜"	CF2.75	43.41
AD-VCRF-CF275x050	CF2.75"(DN40)x½"	CF2.75	43.41

Adaptors

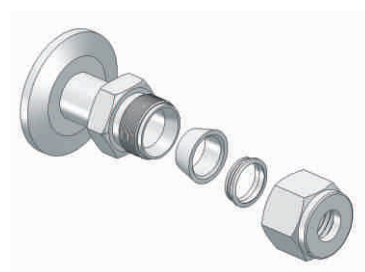
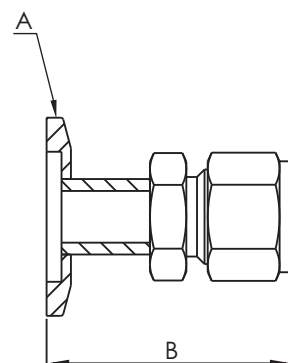
KF FLANGES to TWO-FERRULE FITTINGS

* KF Flange Material: SS 304L

* Two-Ferrule Fitting Material: SS 316



Part Number	Size	A	B
AD-SWG-KF10x025	KF10- $\frac{1}{4}$ "	30.00	33.30
AD-SWG-KF16x025	KF16- $\frac{1}{4}$ "	30.00	39.40
AD-SWG-KF16x038	KF16- $\frac{3}{8}$ "	30.00	41.40
AD-SWG-KF16x050	KF16- $\frac{1}{2}$ "	30.00	50.00
AD-SWG-KF25x025	KF25- $\frac{1}{4}$ "	40.00	39.40
AD-SWG-KF25x038	KF25- $\frac{3}{8}$ "	40.00	41.40
AD-SWG-KF25x050	KF25- $\frac{1}{2}$ "	40.00	50.00
AD-SWG-KF25x075	KF25- $\frac{3}{4}$ "	40.00	52.80
AD-SWG-KF25x100	KF25-1"	40.00	65.70
AD-SWG-KF40x025	KF40- $\frac{1}{4}$ "	55.00	39.40
AD-SWG-KF40x038	KF40- $\frac{3}{8}$ "	55.00	41.40
AD-SWG-KF40x050	KF40- $\frac{1}{2}$ "	55.00	50.00
AD-SWG-KF40x075	KF40- $\frac{3}{4}$ "	55.00	52.80
AD-SWG-KF40x100	KF40-1"	55.00	65.70
AD-SWG-KF50x025	KF50- $\frac{1}{4}$ "	75.00	39.40
AD-SWG-KF50x038	KF50- $\frac{3}{8}$ "	75.00	41.40
AD-SWG-KF50x050	KF50- $\frac{1}{2}$ "	75.00	50.00
AD-SWG-KF50x075	KF50- $\frac{3}{4}$ "	75.00	52.80
AD-SWG-KF50x100	KF50-1"	75.00	65.70



AD

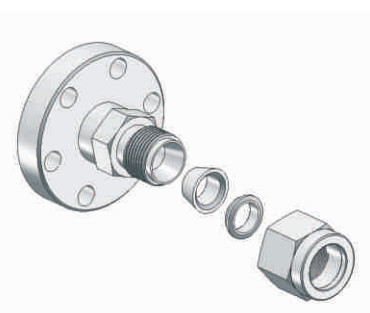
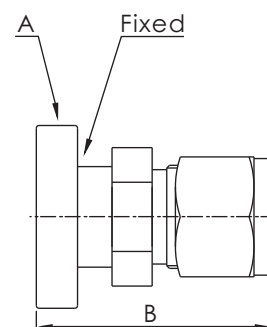
CF FLANGES to TWO-FERRULE FITTINGS

* CF Flange Material: SS 304L

* Two-Ferrule Fitting Material: SS 316



Part Number	Size	A	B
AD-SWG-CF133x025	CF1.33"(DN16)- $\frac{1}{4}$ "	CF1.33	34.80
AD-SWG-CF133x038	CF1.33"(DN16)- $\frac{3}{8}$ "	CF1.33	42.05
AD-SWG-CF133x050	CF1.33"(DN16)- $\frac{1}{2}$ "	CF1.33	43.18
AD-SWG-CF275x025	CF2.75"(DN40)- $\frac{1}{4}$ "	CF2.75	38.81
AD-SWG-CF275x038	CF2.75"(DN40)- $\frac{3}{8}$ "	CF2.75	42.91
AD-SWG-CF275x050	CF2.75"(DN40)- $\frac{1}{2}$ "	CF2.75	46.41
AD-SWG-CF275x075	CF2.75"(DN40)- $\frac{3}{4}$ "	CF2.75	55.81
AD-SWG-CF275x100	CF2.75"(DN40)-1"	CF2.75	67.51



Adaptors

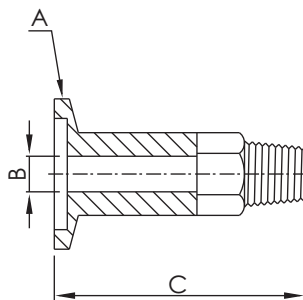


Figure 1

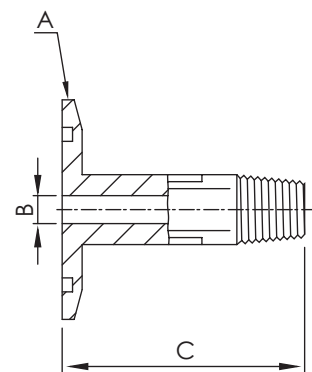


Figure 2

KF FLANGES to MALE NPT ADAPTORS

*Material: SS 304L

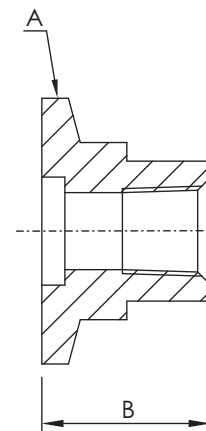
Part Number	Size	A	B	C	Figure
AD-NPTM-KF16x012	KF16- $\frac{1}{8}$ " NPT	KF16	4.70	40.00	1
AD-NPTM-KF16x025	KF16- $\frac{1}{4}$ " NPT	KF16	7.10	50.00	1
AD-NPTM-KF25x012	KF25- $\frac{1}{8}$ " NPT	KF25	4.70	40.00	2
AD-NPTM-KF25x025	KF25- $\frac{1}{4}$ " NPT	KF25	7.10	50.00	2
AD-NPTM-KF25x050	KF25- $\frac{1}{2}$ " NPT	KF25	11.90	75.00	2
AD-NPTM-KF25x075	KF25- $\frac{3}{4}$ " NPT	KF25	15.90	75.00	2
AD-NPTM-KF40x025	KF40- $\frac{1}{4}$ " NPT	KF40	7.10	50.00	2
AD-NPTM-KF40x050	KF40- $\frac{1}{2}$ " NPT	KF40	11.90	75.00	2
AD-NPTM-KF40x075	KF40- $\frac{3}{4}$ " NPT	KF40	15.90	75.00	2
AD-NPTM-KF50x025	KF50- $\frac{1}{4}$ " NPT	KF50	7.10	50.00	2
AD-NPTM-KF50x050	KF50- $\frac{1}{2}$ " NPT	KF50	11.90	75.00	2
AD-NPTM-KF50x075	KF50- $\frac{3}{4}$ " NPT	KF50	15.90	75.00	2

KF FLANGES to FEMALE NPT ADAPTORS

*Material: SS 304L



Part Number	Size	A	B
AD-NPTF-KF10x012	KF10- $\frac{1}{8}$ " NPT	KF10	19.10
AD-NPTF-KF10x025	KF10- $\frac{1}{4}$ " NPT	KF10	19.10
AD-NPTF-KF16x012	KF16- $\frac{1}{8}$ " NPT	KF16	19.10
AD-NPTF-KF16x025	KF16- $\frac{1}{4}$ " NPT	KF16	19.10
AD-NPTF-KF25x012	KF25- $\frac{1}{8}$ " NPT	KF25	19.10
AD-NPTF-KF25x025	KF25- $\frac{1}{4}$ " NPT	KF25	19.10
AD-NPTF-KF25x038	KF25- $\frac{3}{8}$ " NPT	KF25	19.10
AD-NPTF-KF25x050	KF25- $\frac{1}{2}$ " NPT	KF25	25.40
AD-NPTF-KF40x012	KF40- $\frac{1}{8}$ " NPT	KF40	25.40
AD-NPTF-KF40x025	KF40- $\frac{1}{4}$ " NPT	KF40	25.40
AD-NPTF-KF40x050	KF40- $\frac{1}{2}$ " NPT	KF40	25.40
AD-NPTF-KF40x075	KF40- $\frac{3}{4}$ " NPT	KF40	25.40
AD-NPTF-KF50x012	KF50- $\frac{1}{8}$ " NPT	KF50	25.40
AD-NPTF-KF50x025	KF50- $\frac{1}{4}$ " NPT	KF50	25.40
AD-NPTF-KF50x050	KF50- $\frac{1}{2}$ " NPT	KF50	25.40
AD-NPTF-KF50x075	KF50- $\frac{3}{4}$ " NPT	KF50	25.40

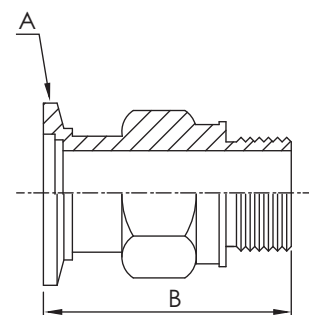


Adaptors



KF FLANGES to WELCH PUMP ADAPTORS

*Material: SS 304L



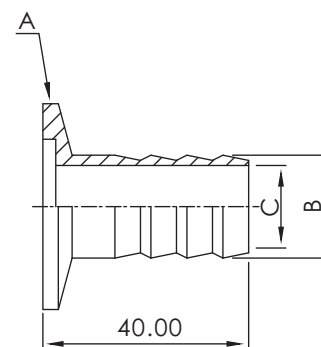
Part Number	Size	A	B
AD-WP-KF16x062	KF16-WP1	KF16	45.00
AD-WP-KF16x075	KF16-WP2	KF16	65.00
AD-WP-KF25x100	KF25-WP1	KF25	70.10
AD-WP-KF40x150	KF40-WP1	KF40	65.00
AD-WP-KF40x175	KF40-WP2	KF40	65.30

AD



KF FLANGES to HOSE NOZZLES

*Material: SS 304L

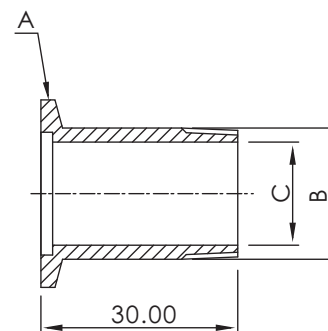


Part Number	Size	A	B	C
AD-HS-KF10x008M	KF10-8mm	KF10	8.00	4.00
AD-HS-KF10x012M	KF10-12mm	KF10	12.00	8.00
AD-HS-KF16x008M	KF16-8mm	KF16	8.00	4.00
AD-HS-KF16x012M	KF16-12mm	KF16	12.00	8.00
AD-HS-KF25x008M	KF25-8mm	KF25	8.00	4.00
AD-HS-KF25x012M	KF25-12mm	KF25	12.00	8.00
AD-HS-KF25x016M	KF25-16mm	KF25	16.00	12.00
AD-HS-KF25x020M	KF25-20mm	KF25	20.00	16.00
AD-HS-KF40x012M	KF40-12mm	KF40	12.00	8.00
AD-HS-KF40x016M	KF40-16mm	KF40	16.00	12.00
AD-HS-KF40x020M	KF40-20mm	KF40	20.00	16.00
AD-HS-KF40x025M	KF40-25mm	KF40	25.00	20.00
AD-HS-KF50x025M	KF50-25mm	KF50	25.00	20.00

Adaptors

DN FLANGES to BSPT ADAPTORS

*Material: SS 304L



Part Number	Size	A	B	C	BSPT
AD-BSPT-DN10x025	DN10- $\frac{1}{4}$ "	DN10	13.16	9.00	$\frac{1}{4}$ "x19BSPT
AD-BSPT-DN10x038	DN10- $\frac{3}{8}$ "	DN10	16.66	10.00	$\frac{3}{8}$ "x19BSPT
AD-BSPT-DN16x050	DN16- $\frac{1}{2}$ "	DN16	20.96	16.00	$\frac{1}{2}$ "x14BSPT
AD-BSPT-DN25x038	DN25- $\frac{3}{8}$ "	DN25	16.66	10.00	$\frac{3}{8}$ "x19BSPT
AD-BSPT-DN25x075	DN25- $\frac{3}{4}$ "	DN25	26.44	20.00	$\frac{3}{4}$ "x14BSPT
AD-BSPT-DN25x100	DN25-1"	DN25	33.25	24.00	1"x11BSPT
AD-BSPT-DN40x125	DN40-1 $\frac{1}{4}$ "	DN40	41.91	35.00	1 $\frac{1}{4}$ "x11BSPT
AD-BSPT-DN40x150	DN40-1 $\frac{1}{2}$ "	DN40	47.80	41.00	1 $\frac{1}{2}$ "x11BSPT
AD-BSPT-DN50x200	DN50-2"	DN50	59.61	51.00	2"x11BSPT

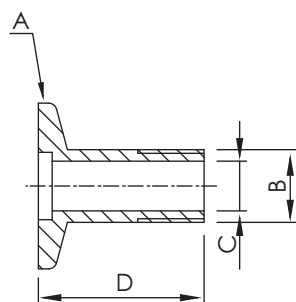


Figure 1

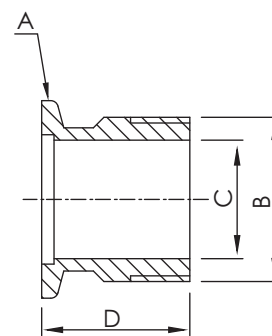


Figure 2

DN FLANGES to BSP ADAPTORS

*Material: SS 304L

Part Number	Size	Figure	A	B	C	D	BSP
AD-BSP-DN10x025	DN10- $\frac{1}{4}$ "	1	DN10	13.16	9.00	30.00	$\frac{1}{4}$ "x19BSP
AD-BSP-DN10x038	DN10- $\frac{3}{8}$ "	1	DN10	16.66	10.00	30.00	$\frac{3}{8}$ "x19BSP
AD-BSP-DN16x025	DN16- $\frac{1}{4}$ "	1	DN16	13.16	9.00	30.00	$\frac{1}{4}$ "x19BSP
AD-BSP-DN16x050	DN16- $\frac{1}{2}$ "	1	DN16	20.96	16.00	30.00	$\frac{1}{2}$ "x14BSP
AD-BSP-DN25x050	DN25- $\frac{1}{2}$ "	1	DN25	20.96	16.00	30.00	$\frac{1}{2}$ "x14BSP
AD-BSP-DN25x075	DN25- $\frac{3}{4}$ "	1	DN25	26.44	20.00	30.00	$\frac{3}{4}$ "x14BSP
AD-BSP-DN25x100	DN25-1"	2	DN25	33.25	24.00	30.00	1"x11BSP
AD-BSP-DN40x025	DN40- $\frac{1}{4}$ "	1	DN40	13.16	9.00	30.00	$\frac{1}{4}$ "x19BSP
AD-BSP-DN40x050	DN40- $\frac{1}{2}$ "	1	DN40	20.96	16.00	30.00	$\frac{1}{2}$ "x14BSP
AD-BSP-DN40x125	DN40-1 $\frac{1}{4}$ "	1	DN40	41.91	35.00	30.00	1 $\frac{1}{4}$ "x11BSP
AD-BSP-DN40x150	DN40-1 $\frac{1}{2}$ "	2	DN40	47.80	41.00	30.00	1 $\frac{1}{2}$ "x11BSP
AD-BSP-DN50x200	DN50-2"	1	DN50	59.61	51.00	35.00	2"x11BSP

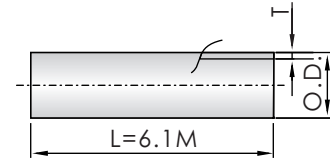
Butt Weld Fittings



Butt Weld Fittings

TUBE

*Surface Finish: MP / EP



Part Number (MP)	Part Number (EP)	Nominal Tube Size	Outside diameter at end	Wall thickness at end
		OD	OD	T
BW-TU-050-MP	BW-TU-050-EP	½"	12.70	1.24
BW-TU-075-MP	BW-TU-075-EP	¾"	19.05	1.65
BW-TU-100-MP	BW-TU-100-EP	1"	25.40	1.65
BW-TU-150-MP	BW-TU-150-EP	1½"	38.10	1.65
BW-TU-200-MP	BW-TU-200-EP	2"	50.80	1.65
BW-TU-250-MP	BW-TU-250-EP	2½"	63.50	1.65
BW-TU-300-MP	BW-TU-300-EP	3"	76.20	1.65
BW-TU-400-MP	BW-TU-400-EP	4"	101.60	2.11
BW-TU-600-MP	BW-TU-600-EP	6"	152.40	2.77

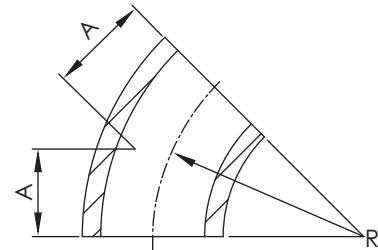
*Note: Other Lengths on Request.

WELD 45° ELBOWS

*Material: SS 304L



Part Number	Tube Size	Wall Thickness	A	R
BW-45EL-050	½"	1.65	7.95	19.10
BW-45EL-075	¾"	1.65	11.91	28.60
BW-45EL-100	1"	1.65	15.77	38.10
BW-45EL-150	1½"	1.65	23.67	57.15
BW-45EL-200	2"	1.65	31.57	76.20
BW-45EL-250	2½"	1.65	39.70	95.25
BW-45EL-300	3"	1.65	47.35	114.30
BW-45EL-400	4"	2.11	63.12	152.40



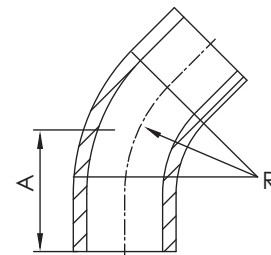
BW

WELD 45° ELBOWS with TANGENTS

*Material: SS 304L



Part Number	Tube Size	Wall Thickness	A	R
BW-45ELT-075	¾"	1.65	19.40	28.60
BW-45ELT-100	1"	1.65	30.18	38.10
BW-45ELT-150	1½"	1.65	41.28	57.15
BW-45ELT-200	2"	1.65	58.72	76.20
BW-45ELT-250	2½"	1.65	76.20	95.25
BW-45ELT-300	3"	1.65	93.70	114.30
BW-45ELT-400	4"	2.11	122.20	152.40



*Note: SS 316L Material Available on Request.

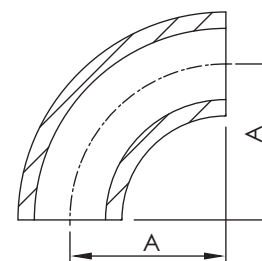
Butt Weld Fittings

WELD 90° ELBOWS

*Material: SS 304L



Part Number	Tube Size	Wall Thickness	A
BW-90EL-050	½"	1.65	19.10
BW-90EL-075	¾"	1.65	28.60
BW-90EL-100	1"	1.65	38.10
BW-90EL-150	1½"	1.65	57.15
BW-90EL-200	2"	1.65	76.20
BW-90EL-250	2½"	1.65	95.25
BW-90EL-300	3"	1.65	114.30
BW-90EL-400	4"	2.11	152.40

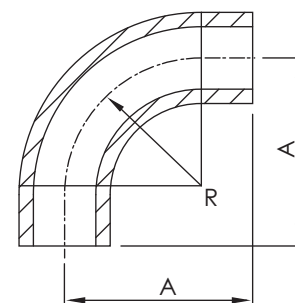


WELD 90° ELBOWS with TANGENTS

*Material: SS 304L



Part Number	Tube Size	Wall Thickness	A	R
BW-90ELT-075	¾"	0.89	36.07	25.40
BW-90ELT-075-1	¾"	1.65	64.78	28.60
BW-90ELT-100	1"	1.65	46.23	38.10
BW-90ELT-100-1	1"	1.65	52.40	38.10
BW-90ELT-150	1½"	1.65	61.21	57.15
BW-90ELT-150-1	1½"	1.65	74.60	57.15
BW-90ELT-200	2"	1.65	103.12	76.20
BW-90ELT-250	2½"	1.65	131.83	95.25
BW-90ELT-300	3"	1.65	160.30	114.30
BW-90ELT-400	4"	2.11	211.07	152.40



*Note: SS 316L Material Available on Request.

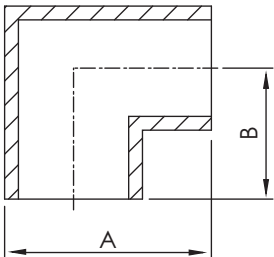
BW

Butt Weld Fittings



WELD 90° MITERED ELBOWS

*Material: SS 304L



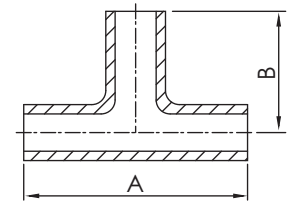
Part Number	Tube Size	Wall Thickness	A	B
BW-MEL-075	¾"	1.65	34.93	25.40
BW-MEL-075-1	¾"	1.65	45.08	35.56
BW-MEL-075-2	¾"	1.65	45.63	36.10
BW-MEL-100	1"	1.65	60.20	47.50
BW-MEL-100-1	1"	1.65	60.45	47.75
BW-MEL-100-2	1"	1.65	58.90	46.20
BW-MEL-150	1½"	1.65	76.20	57.15
BW-MEL-150-1	1½"	1.65	80.26	61.21
BW-MEL-200	2"	1.65	91.44	66.04
BW-MEL-200-1	2"	1.65	101.30	75.90
BW-MEL-200-2	2"	1.65	102.10	76.70
BW-MEL-200-3	2"	1.65	101.60	76.20
BW-MEL-250	2½"	1.65	107.95	76.20
BW-MEL-250-1	2½"	1.65	127.00	95.25
BW-MEL-250-2	2½"	1.65	108.05	76.30
BW-MEL-300	3"	1.65	120.65	82.55
BW-MEL-300-1	3"	1.65	113.50	75.40
BW-MEL-400	4"	2.11	149.35	98.55
BW-MEL-400-1	4"	2.11	174.50	123.70
BW-MEL-600	6"	2.11	230.12	153.92

*Note: SS 316L Material Available on Request.

Butt Weld Fittings

WELD EQUAL TEES

*Material: SS 304L

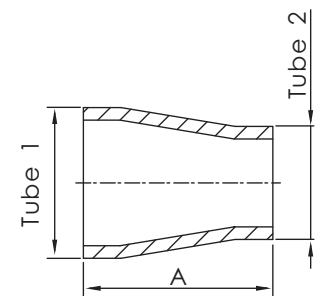


Part Number	Tube Size	Wall Thickness	A	B
BW-ET-050	½"	1.65	38.10	19.05
BW-ET-075	¾"	1.65	50.80	25.40
BW-ET-075-1	¾"	1.65	72.40	36.20
BW-ET-075-2	¾"	1.65	95.20	47.60
BW-ET-100	1"	1.65	91.40	45.70
BW-ET-100-1	1"	1.65	95.20	47.60
BW-ET-150	1½"	1.65	114.40	57.20
BW-ET-150-1	1½"	1.65	122.42	61.21
BW-ET-200	2"	1.65	132.58	66.29
BW-ET-200-1	2"	1.65	152.40	76.20
BW-ET-250	2½"	1.65	152.40	76.20
BW-ET-250-1	2½"	1.65	163.40	81.70
BW-ET-250-2	2½"	1.65	190.24	95.12
BW-ET-300	3"	1.65	165.20	82.60
BW-ET-300-1	3"	1.65	183.40	91.70
BW-ET-400	4"	2.11	196.80	98.40
BW-ET-400-1	4"	2.11	203.40	101.70
BW-ET-400-2	4"	2.11	247.56	123.78
BW-ET-600	6"	2.77	254.00	127.00
BW-ET-600-1	6"	2.11	307.80	153.90

BW

WELD CONICAL REDUCERS

*Material: SS 304L



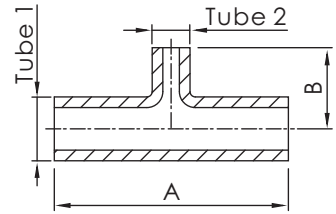
Part Number	Tube 1		Tube 2		A
	OD	T	OD	T	
BW-CRN-100x050	1"	1.65	½"	1.65	34.90
BW-CRN-100x075	1"	1.65	¾"	1.65	34.90
BW-CRN-150x050	1½"	1.65	½"	1.65	60.30
BW-CRN-150x075	1½"	1.65	¾"	1.65	60.30
BW-CRN-150x100	1½"	1.65	1"	1.65	60.30
BW-CRN-200x100	2"	1.65	1"	1.65	60.30
BW-CRN-200x150	2"	1.65	1½"	1.65	60.30
BW-CRN-250x150	2½"	1.65	1½"	1.65	60.30
BW-CRN-250x200	2½"	1.65	2"	1.65	60.30
BW-CRN-300x150	3"	1.65	1½"	1.65	92.10
BW-CRN-300x200	3"	1.65	2"	1.65	92.10
BW-CRN-300x250	3"	1.65	2½"	1.65	92.10
BW-CRN-400x150	4"	2.11	1½"	1.65	92.10
BW-CRN-400x200	4"	2.11	2"	1.65	92.10
BW-CRN-400x250	4"	2.11	2½"	1.65	92.10
BW-CRN-400x300	4"	2.11	3"	1.65	92.10

*Note: SS 316L Material Available on Request.

Butt Weld Fittings

WELD REDUCING TEES

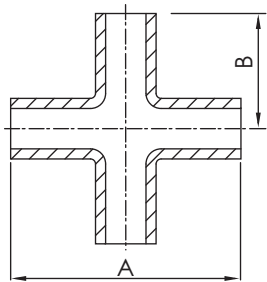
*Material: SS 304L



Part Number	Tube 1		Tube 2		A	B
	OD	T	OD	T		
BW-RT-100x050	1"	1.65	½"	1.65	95.50	25.40
BW-RT-100x075	1"	1.65	¾"	1.65	95.50	28.45
BW-RT-150x050	1½"	1.65	½"	1.65	114.30	31.75
BW-RT-150x075	1½"	1.65	¾"	1.65	114.30	35.05
BW-RT-150x075-1	1½"	1.65	¾"	0.89	114.30	35.05
BW-RT-150x100	1½"	1.65	1"	1.65	114.30	54.10
BW-RT-200x050	2"	1.65	1½"	1.65	152.40	38.10
BW-RT-200x075	2"	1.65	¾"	1.65	152.40	41.40
BW-RT-200x100	2"	1.65	1"	1.65	152.40	60.30
BW-RT-200x150	2"	1.65	1½"	1.65	152.40	63.50
BW-RT-250x150	2½"	1.65	1½"	1.65	152.40	69.85
BW-RT-250x200	2½"	1.65	2"	1.65	152.40	82.55
BW-RT-300x150	3"	1.65	1½"	1.65	165.10	76.20
BW-RT-300x200	3"	1.65	2"	1.65	165.10	88.90
BW-RT-300x250	3"	1.65	2½"	1.65	165.10	82.55
BW-RT-400x150	4"	2.11	1½"	1.65	197.10	88.90
BW-RT-400x200	4"	2.11	2"	1.65	197.10	101.60
BW-RT-400x250	4"	2.11	2½"	1.65	197.10	95.25
BW-RT-400x300	4"	2.11	3"	1.65	197.10	95.25
BW-RT-600x150	6"	2.11	1½"	1.65	254.00	114.30
BW-RT-600x200	6"	2.11	2"	1.65	254.00	127.00
BW-RT-600x250	6"	2.11	2½"	1.65	254.00	120.65
BW-RT-600x300	6"	2.11	3"	1.65	254.00	120.65
BW-RT-600x400	6"	2.11	4"	2.11	254.00	123.95

*Note: SS 316L Material Available on Request.

Butt Weld Fittings



WELD 4-WAY EQUAL CROSSES

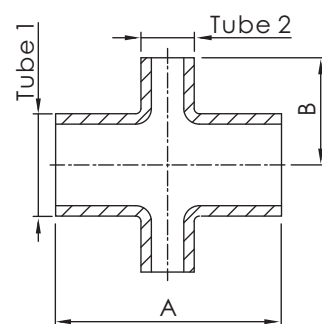
*Material: SS 304L

Part Number	Tube Size	Wall Thickness	A	B
BW-4C-050	½"	1.65	38.10	19.05
BW-4C-075	¾"	1.65	50.80	25.40
BW-4C-075-1	¾"	1.65	71.20	35.60
BW-4C-075-2	¾"	1.65	95.20	47.60
BW-4C-100	1"	1.65	95.20	47.60
BW-4C-100-1	1"	1.65	91.40	45.70
BW-4C-150	1½"	1.65	114.40	57.20
BW-4C-150-1	1½"	1.65	121.42	60.71
BW-4C-200	2"	1.65	152.40	76.20
BW-4C-200-1	2"	1.65	131.60	65.80
BW-4C-250	2½"	1.65	152.40	76.20
BW-4C-250-1	2½"	1.65	190.50	95.25
BW-4C-300	3"	1.65	160.28	80.14
BW-4C-300-1	3"	1.65	165.20	82.60
BW-4C-400	4"	2.11	196.80	98.40
BW-4C-400-1	4"	2.11	247.40	123.70
BW-4C-600	6"	2.77	254.00	127.00
BW-4C-600-1	6"	2.77	307.80	153.90

BW

*Note: SS 316L Material Available on Request.

Butt Weld Fittings



WELD 4-WAY REDUCING CROSSES

*Material: SS 304L

Part Number	Tube 1		Tube 2		A	B
	OD	T	OD	T		
BW-4RC-100x050	1"	1.65	½"	1.65	95.50	25.40
BW-4RC-100x075	1"	1.65	¾"	1.65	95.50	28.45
BW-4RC-150x050	1½"	1.65	½"	1.65	114.30	31.75
BW-4RC-150x075	1½"	1.65	¾"	1.65	114.30	35.05
BW-4RC-150x100	1½"	1.65	1"	1.65	114.30	54.10
BW-4RC-200x050	2"	1.65	½"	1.65	152.40	38.10
BW-4RC-200x075	2"	1.65	¾"	1.65	152.40	41.40
BW-4RC-200x100	2"	1.65	1"	1.65	152.40	60.45
BW-4RC-200x150	2"	1.65	1½"	1.65	152.40	63.50
BW-4RC-250x150	2½"	1.65	1½"	1.65	152.40	69.85
BW-4RC-250x200	2½"	1.65	2"	1.65	152.40	82.55
BW-4RC-300x150	3"	1.65	1½"	1.65	165.10	76.20
BW-4RC-300x200	3"	1.65	2"	1.65	165.10	88.90
BW-4RC-300x250	3"	1.65	2½"	1.65	165.10	82.55
BW-4RC-400x150	4"	2.11	1½"	1.65	197.10	88.90
BW-4RC-400x200	4"	2.11	2"	1.65	197.10	101.60
BW-4RC-400x250	4"	2.11	2½"	1.65	197.10	95.25
BW-4RC-400x300	4"	2.11	3"	1.65	197.10	95.25
BW-4RC-600x150	6"	2.11	1½"	1.65	254.00	114.30
BW-4RC-600x200	6"	2.11	2"	1.65	254.00	127.00
BW-4RC-600x250	6"	2.11	2½"	1.65	254.00	120.65
BW-4RC-600x300	6"	2.11	3"	1.65	254.00	120.65
BW-4RC-600x400	6"	2.11	4"	2.11	254.00	123.95

*Note: SS 316L Material Available on Request.

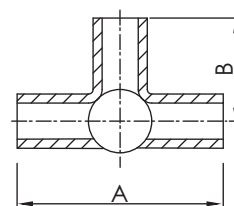
Butt Weld Fittings



WELD 5-WAY CROSSES

*Material: SS 304L

Part Number	Tube Size	Wall Thickness	A	B
BW-5C-075	¾"	1.65	50.80	25.40
BW-5C-075-1	¾"	1.65	67.30	33.65
BW-5C-100	1"	1.65	95.40	47.70
BW-5C-100-1	1"	1.65	91.40	45.70
BW-5C-150	1½"	1.65	114.40	57.20
BW-5C-200	2"	1.65	152.40	76.20
BW-5C-250	2½"	1.65	152.40	76.20
BW-5C-250-1	2½"	1.65	190.26	95.13
BW-5C-300	3"	1.65	165.20	82.60
BW-5C-400	4"	2.11	197.20	98.60
BW-5C-400-1	4"	2.11	247.40	123.70
BW-5C-600	6"	2.77	254.00	127.00
BW-5C-600-1	6"	2.77	307.80	153.90



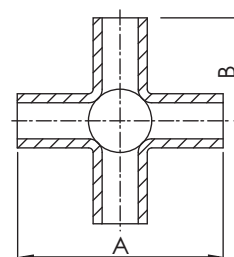
BW



WELD 6-WAY CROSSES

*Material: SS 304L

Part Number	Tube Size	Wall Thickness	A	B
BW-6C-075	¾"	1.65	50.80	25.40
BW-6C-075-1	¾"	1.65	67.30	33.65
BW-6C-100	1"	1.65	95.40	47.70
BW-6C-150	1½"	1.65	114.40	57.20
BW-6C-200	2"	1.65	152.40	76.20
BW-6C-250	2½"	1.65	152.40	76.20
BW-6C-250-1	2½"	1.65	190.26	95.13
BW-6C-300	3"	1.65	165.20	82.60
BW-6C-400	4"	2.11	197.20	98.60
BW-6C-400-1	4"	2.11	247.40	123.70
BW-6C-600	6"	2.77	254.00	127.00
BW-6C-600-1	6"	2.77	307.80	153.90



*Note: SS 316L Material Available on Request.



**Bellows &
Flexible Hoses**

Bellows & Flexible Hoses

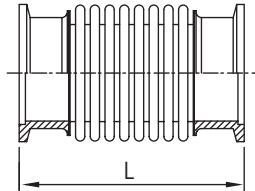
KF BELLOWS

*Material: SS 304

*Customized lengths available upon request.



Part Number	Flange Size	OD (mm)	ID (mm)	Wall Thickness (mm)	Pitch	L
MB-KF-16-100L	KF16	28.50	20.10	0.15	3.50	100
MB-KF-16-250L	KF16	28.50	20.10	0.15	3.50	250
MB-KF-16-500L	KF16	28.50	20.10	0.15	3.50	500
MB-KF-16-750L	KF16	28.50	20.10	0.15	3.50	750
MB-KF-16-1000L	KF16	28.50	20.10	0.15	3.50	1000
MB-KF-25-100L	KF25	36.00	25.10	0.15	4.30	100
MB-KF-25-250L	KF25	36.00	25.10	0.15	4.30	250
MB-KF-25-500L	KF25	36.00	25.10	0.15	4.30	500
MB-KF-25-750L	KF25	36.00	25.10	0.15	4.30	750
MB-KF-25-1000L	KF25	36.00	25.10	0.15	4.30	1000
MB-KF-40-100L	KF40	54.00	38.00	0.15	5.00	100
MB-KF-40-250L	KF40	54.00	38.00	0.15	5.00	250
MB-KF-40-500L	KF40	54.00	38.00	0.15	5.00	500
MB-KF-40-750L	KF40	54.00	38.00	0.15	5.00	750
MB-KF-40-1000L	KF40	54.00	38.00	0.15	5.00	1000
MB-KF-50-100L	KF50	68.00	50.10	0.15	6.00	100
MB-KF-50-250L	KF50	68.00	50.10	0.15	6.00	250
MB-KF-50-500L	KF50	68.00	50.10	0.15	6.00	500
MB-KF-50-750L	KF50	68.00	50.10	0.15	6.00	750
MB-KF-50-1000L	KF50	68.00	50.10	0.15	6.00	1000



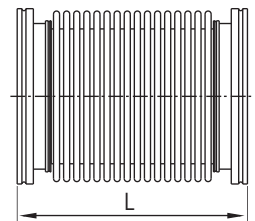
ISO-K BELLOWS

*Material: SS 304

*Customized lengths available upon request.



Part Number	Flange Size	OD (mm)	ID (mm)	Wall Thickness (mm)	Pitch	L
MB-ISOK-63-100L	ISO63	85.00	65.20	0.20	6.50	100
MB-ISOK-63-250L	ISO63	85.00	65.20	0.20	6.50	250
MB-ISOK-63-500L	ISO63	85.00	65.20	0.20	6.50	500
MB-ISOK-63-750L	ISO63	85.00	65.20	0.20	6.50	750
MB-ISOK-63-1000L	ISO63	85.00	65.20	0.20	6.50	1000
MB-ISOK-80-100L	ISO80	101.00	78.00	0.20	7.00	100
MB-ISOK-80-250L	ISO80	101.00	78.00	0.20	7.00	250
MB-ISOK-80-500L	ISO80	101.00	78.00	0.20	7.00	500
MB-ISOK-80-750L	ISO80	101.00	78.00	0.20	7.00	750
MB-ISOK-80-1000L	ISO80	101.00	78.00	0.20	7.00	1000
MB-ISOK-100-100L	ISO100	127.00	100.00	0.25	7.50	100
MB-ISOK-100-250L	ISO100	127.00	100.00	0.25	7.50	250
MB-ISOK-100-500L	ISO100	127.00	100.00	0.25	7.50	500
MB-ISOK-100-750L	ISO100	127.00	100.00	0.25	7.50	750
MB-ISOK-100-1000L	ISO100	127.00	100.00	0.25	7.50	1000
MB-ISOK-160-100L	ISO160	175.50	149.70	0.25	8.00	100
MB-ISOK-160-250L	ISO160	175.50	149.70	0.25	8.00	250
MB-ISOK-160-500L	ISO160	175.50	149.70	0.25	8.00	500
MB-ISOK-160-750L	ISO160	175.50	149.70	0.25	8.00	750
MB-ISOK-160-1000L	ISO160	175.50	149.70	0.25	8.00	1000



*Note: SS 316L Material Available on Request.

Bellows & Flexible Hoses

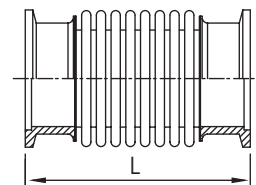
KF FLEXIBLE HOSES

*Material: SS 304

*Customized lengths available upon request.



Part Number	Flange Size	OD (mm)	ID (mm)	Wall Thickness (mm)	Pitch	L
MH-KF-16-250L	KF16	26.70	20.10	0.15	3.20	250
MH-KF-16-500L	KF16	26.70	20.10	0.15	3.20	500
MH-KF-16-1000L	KF16	26.70	20.10	0.15	3.20	1000
MH-KF-25-250L	KF25	33.00	25.10	0.15	4.20	250
MH-KF-25-500L	KF25	33.00	25.10	0.15	4.20	500
MH-KF-25-1000L	KF25	33.00	25.10	0.15	4.20	1000
MH-KF-40-250L	KF40	49.40	37.90	0.20	5.20	250
MH-KF-40-500L	KF40	49.40	37.90	0.20	5.20	500
MH-KF-40-1000L	KF40	49.40	37.90	0.20	5.20	1000
MH-KF-50-250L	KF50	62.70	50.00	0.20	5.50	250
MH-KF-50-500L	KF50	62.70	50.00	0.20	5.50	500
MH-KF-50-1000L	KF50	62.70	50.00	0.20	5.50	1000



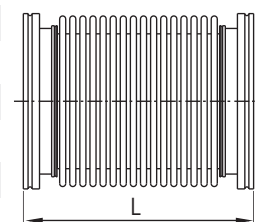
ISO-K FLEXIBLE HOSES

*Material: SS 304

*Customized lengths available upon request.



Part Number	Flange Size	OD (mm)	ID (mm)	Wall Thickness (mm)	Pitch	L
MH-ISOK-63-250L	ISO63	81.00	65.20	0.20	7.10	250
MH-ISOK-63-500L	ISO63	81.00	65.20	0.20	7.10	500
MH-ISOK-63-1000L	ISO63	81.00	65.20	0.20	7.10	1000
MH-ISOK-80-250L	ISO80	127.00	100.00	0.20	10.00	250
MH-ISOK-80-500L	ISO80	127.00	100.00	0.20	10.00	500
MH-ISOK-80-1000L	ISO80	127.00	100.00	0.20	10.00	1000
MH-ISOK-100-250L	ISO100	96.00	78.00	0.20	7.50	250
MH-ISOK-100-500L	ISO100	96.00	78.00	0.20	7.50	500
MH-ISOK-100-1000L	ISO100	96.00	78.00	0.20	7.50	1000
MH-ISOK-160-250L	ISO160	175.50	149.50	0.25	6.50	250
MH-ISOK-160-500L	ISO160	175.50	149.50	0.25	6.50	500
MH-ISOK-160-1000L	ISO160	175.50	149.50	0.25	6.50	1000



*Note: SS 316L Material Available on Request.

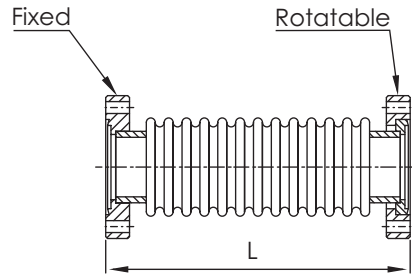
MB
MH

Bellows & Flexible Hoses

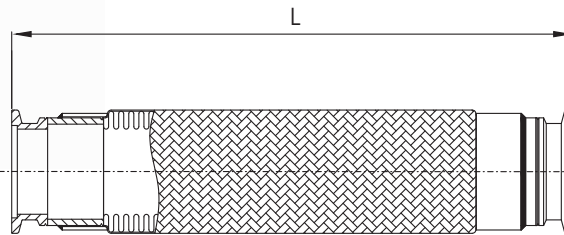
CF BELLOWS

*Material: SS 304

*Customized lengths available upon request.



Part Number	Flange Size	OD (mm)	ID (mm)	Wall Thickness (mm)	Pitch	L
MB-CF-133-082L	CF1.33"(DN16)	28.50	20.10	0.15	3.50	82
MB-CF-212-082L	CF2.12"(DN25)	36.00	25.10	0.15	4.30	82
MB-CF-275-082L	CF2.75"(DN40)	54.00	38.00	0.15	5.00	82
MB-CF-338-082L	CF3.38"(DN50)	68.00	50.10	0.15	6.00	82
MB-CF-450-178L	CF4.50"(DN63)	85.00	65.20	0.20	6.50	178
MB-CF-462-178L	CF4.62"(DN80)	101.00	78.00	0.20	7.00	178
MB-CF-600-178L	CF6.00"(DN100)	127.00	100.00	0.25	7.50	178
MB-CF-800-178L	CF8.00"(DN160)	175.50	149.70	0.25	8.00	178



MESH BELLOWS

*Material: SS 304

*Customized lengths available upon request.

Part Number	Flange Size	OD (mm)	ID (mm)	Wall Thickness (mm)	L
BB-KF-16-250L	KF16	30.50	20.00	0.25	250
BB-KF-16-500L	KF16	30.50	20.00	0.25	500
BB-KF-16-750L	KF16	30.50	20.00	0.25	750
BB-KF-16-1000L	KF16	30.50	20.00	0.25	1000
BB-KF-25-250L	KF25	37.50	25.00	0.25	250
BB-KF-25-500L	KF25	37.50	25.00	0.25	500
BB-KF-25-750L	KF25	37.50	25.00	0.25	750
BB-KF-25-1000L	KF25	37.50	25.00	0.25	1000
BB-KF-40-250L	KF40	55.50	37.50	0.25	250
BB-KF-40-500L	KF40	55.50	37.50	0.25	500
BB-KF-40-750L	KF40	55.50	37.50	0.25	750
BB-KF-40-1000L	KF40	55.50	37.50	0.25	1000
BB-KF-50-250L	KF50	67.50	49.80	0.25	250
BB-KF-50-500L	KF50	67.50	49.80	0.25	500
BB-KF-50-750L	KF50	67.50	49.80	0.25	750
BB-KF-50-1000L	KF50	67.50	49.80	0.25	1000

*Note: SS 316L Material Available on Request.

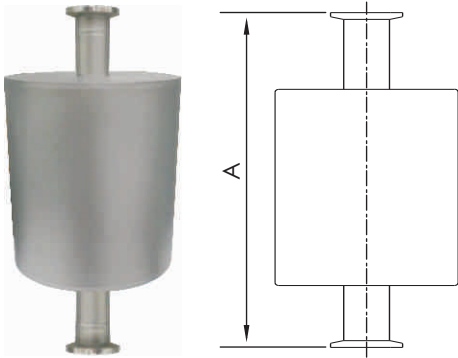


**Traps &
Vacuum Heating Jackets**

FORELINE TRAPS SEALED METAL TYPE

- *Filter Material: Copper Wool
- *Filter Type: Sealed Type
- *Surface Finish: Bead Blast
- *Body Material: SS 304L

Part Number	Flange Size	Body OD	A
FT-S-KF16	KF16	101.6	241.30
FT-S-KF25	KF25	101.6	224.54
FT-S-KF40	KF40	101.6	226.52
FT-S-KF50	KF50	101.6	227.33



Traps

TRAPS for Silicon Nitride LPCVD

In silicon nitride LPCVD process using DCS (SiCl_2H_2) and NH_3 , NH_4Cl is always formed as a by-product during the deposition process. It condenses into solid and deposits on any inner surface along the pumping line when its temperature is below its sublimation temperature as shown in the vapor pressure curve on the right. For most of silicon nitride LPCVD processes, this temperature is around 150°C for foreline (before the vacuum pump), and can be much higher ($>180^\circ\text{C}$) in exhaust line after vacuum pump due to higher partial pressure after compression inside the vacuum pump.

Due to the exponential relationship between the vapor pressure and temperature, the accumulation of solid NH_4Cl is very rapid on any cold spot along the pumping line as commonly observed in many deposition tools, this also poses a challenge for a trap as its entrance could be clogged quickly if the trap is not properly designed.

AdvanTorr Trap is optimized for both trapping capacity and efficiency by sending the deposition effectively into the trap body.

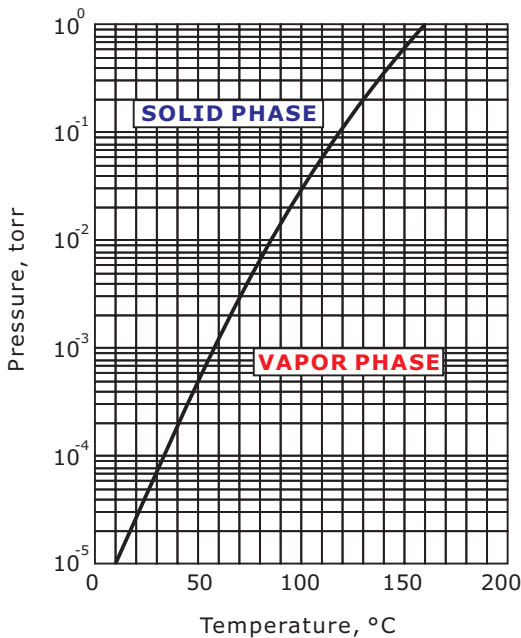
Cooling at the trap exit ensures high trapping efficiency and minimizes its impact on trapping capacity.

Trap with a high capacity and efficiency in pump foreline line can be very effective as it reduces the number of heaters used for pumping line, extends the pump life, and prolongs the time between PM of the tool, including scrubber.

Specifications:

- * Trapping capacity: $>5\text{kg}$
- * Trapping efficiency: $>99\%$
- * Conductance (L/sec): $60\times P(\text{mtorr})$, (note: conductance is a function of pressure in viscous flow regime)
- * Cooling water: $>0.3\text{L/min}$, optional if flow rate is low.
- * Cooling water temperature: $<20^\circ\text{C}$. Lower is better.
- * Weight: 10.8kg

VAPOR PRESSURE CURVE FOR NH_4Cl



Part Number	Flange Size	A	B	C	D	L
T-KF-100	KF100	150	134	373	410	822

Vacuum Heating Jackets

- **Reducing the particle-** Teflon coated fiberglass cover and liner.
- **Improving heater reliability-** Etch foil heating element.
- **Reducing surface temperature and saving energy-** Hybrid super thermal insulation/fiberglass wool.
- **Splitting design for easy installation-** Avoid bending and stress to extend the heater service life.

Molded for Vacuum Products

Check valve heater



Poppet valve heater



Chain clamp heater



Pipe clamp heater



Elbow heater



Straight heater



TR
HJ

Product Information

AdvanTorr offers a range of HV and UHV viewports used for process observation in the visible spectrum and for optical guidance. All viewports are manufactured to ISO 9001-2008 standards in contamination-free, class 10,000 clean room conditions, using the highest quality materials available.

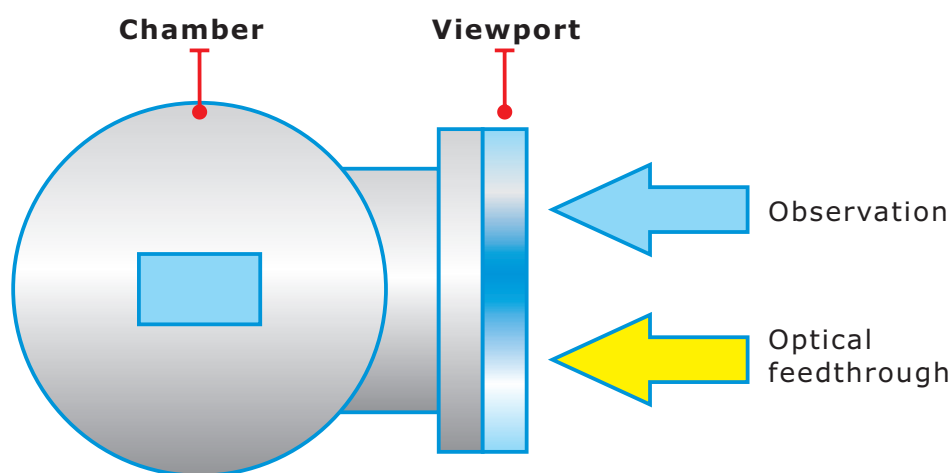
Most viewports within the range are of zero-length profile which not only provides an excellent angle of view, but do not protrude beyond the mounting flange making them less susceptible to damage.

System Components

Product Features

- Both HV and UHV viewports offered in a wide range of CF, KF & ISO flange sizes.
- Available optic material: Kodial (visible spectrum), Fused Silica (Infra-red), Sapphire (Ultra-violet).
- UHV viewports offered in SS304L material as standard with option for high-grade SS316LN.
- HV viewports sealed via O-ring, UHV viewports vacuum brazed for high-temperature operation.
- Custom designs available on request.

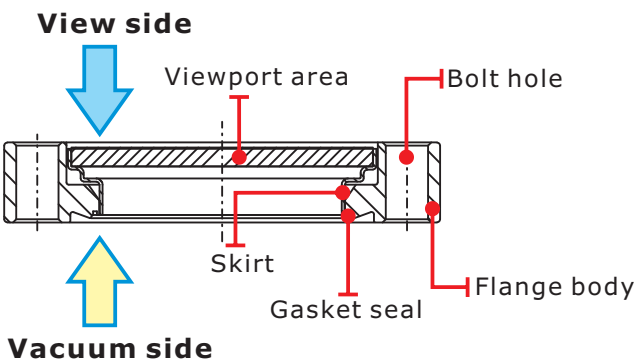
Product Application



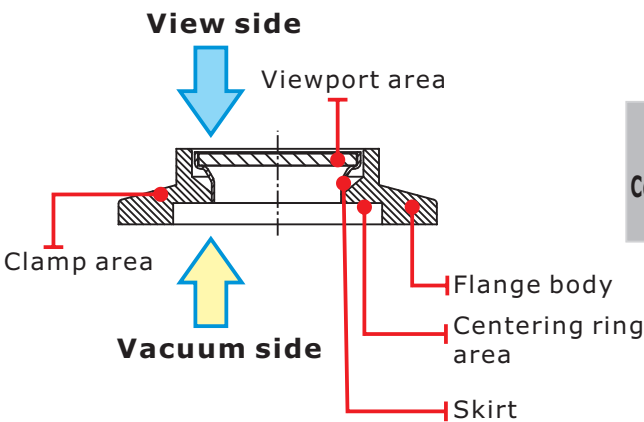
UHV Viewports

Key Product Parts

UHV Viewport

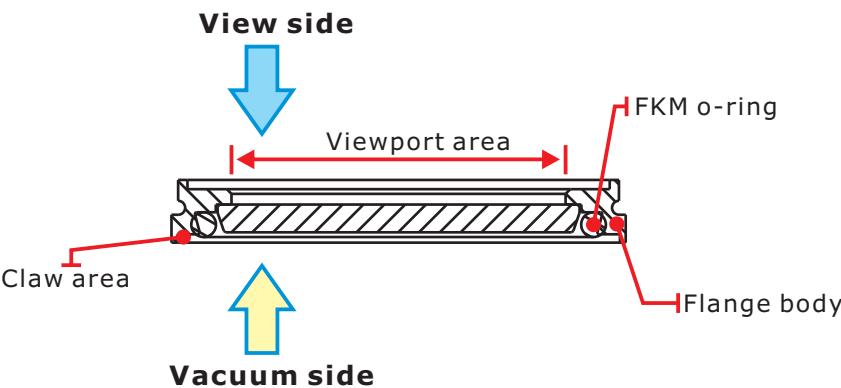


HV KF Viewport

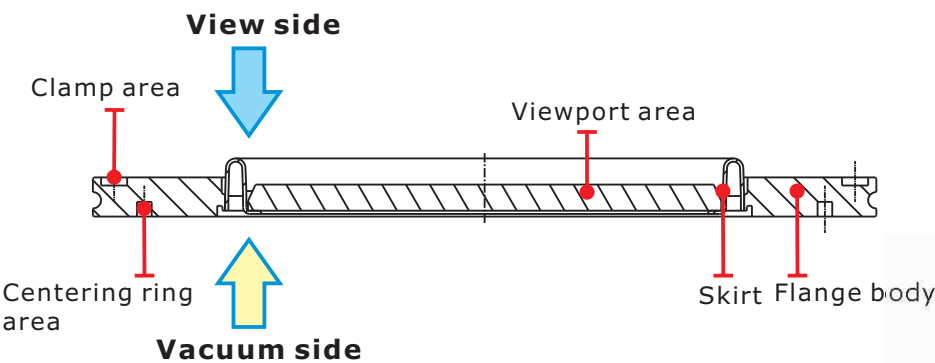


System Components

HV ISO-K Viewport Type I



HV ISO-K Viewport Type II



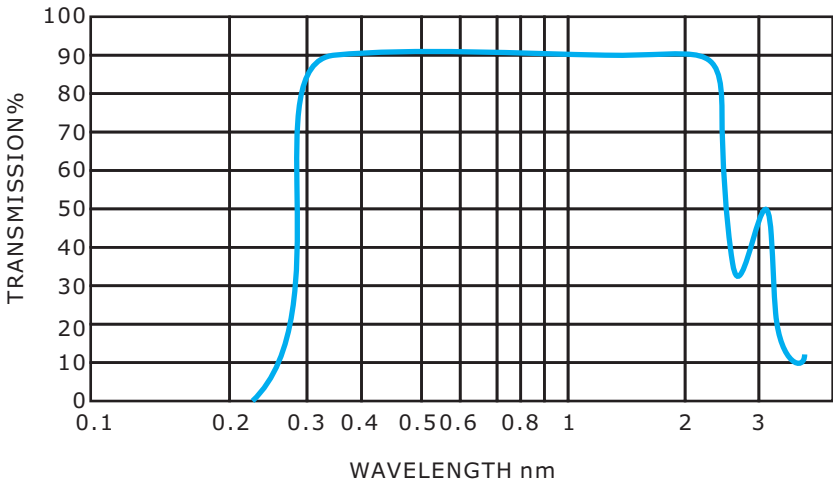
Technical Data

Technical Data for Viewport

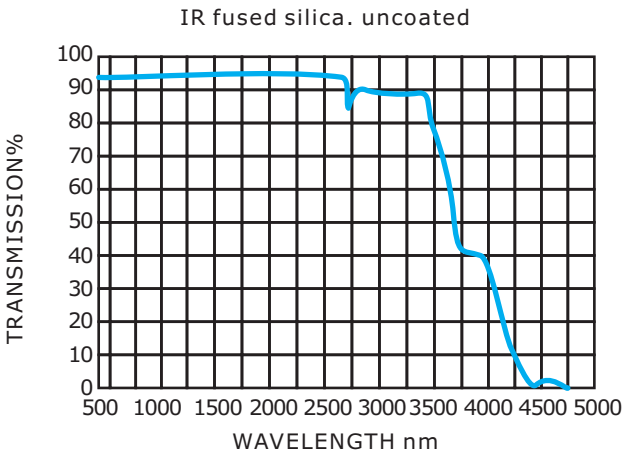
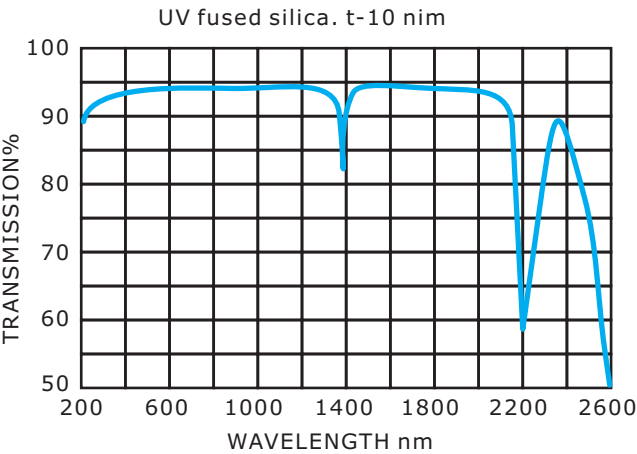
	UHV Kodial	UHV Fuse Silica
Viewport seal	Metal skirt	Fused
Mounting seal	OFHC gasket	OFHC gasket
Operate pressure range	760 Torr ~ 1x10 ⁻¹⁰ Torr 1,000 mbar~1.33x10 ⁻¹⁰ mbar 100 kPa~ 1.13x10 ⁻¹¹ kPa	760 Torr ~ 1x10 ⁻¹⁰ Torr 1,000 mbar~1.33x10 ⁻¹⁰ mbar 100 kPa~ 1.13x10 ⁻¹¹ kPa
Leak rate	1 x 10 ⁻¹⁰ Torr l/s, He 1.33x10 ⁻¹⁰ mbar l/s, He 1.13x10 ⁻¹¹ kPa l/s, He	1 x 10 ⁻¹⁰ Torr l/s, He 1.33x10 ⁻¹⁰ mbar l/s, He 1.13x10 ⁻¹¹ kPa l/s, He
Temperature range	-20°C (-4°F) ~ 350°C (662°F)	-20°C (-4°F) ~ 200°C (392°F)
Bake temperature	300°C (572°F)	150°C (302°F)
Maximum temperature change per minute	3°C (5.4°F)	3°C (5.4°F)
Body material	SS304L	SS304L
Viewport material	Kodial	Fused
Mounting position	Any	Any

System
Components

Transmission Curve
Kodial



Transmission Curve
Fused Silica

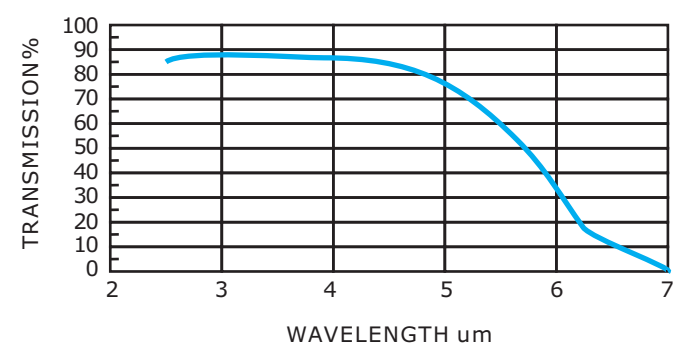
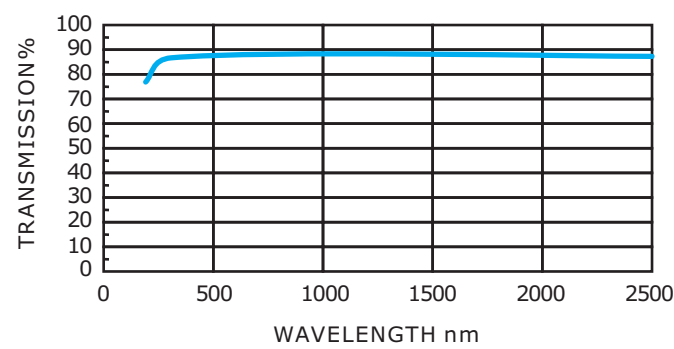


Technical Data

	UHV Sapphire	HV Kodial
Viewport seal	Metal skirt	Metal skirt / O-ring seal
Mounting seal	OFHC gasket	Centering ring
Operate pressure range	760 Torr ~ 1x10 ⁻¹⁰ Torr 1,000 mbar~1.33x10 ⁻¹⁰ mbar 100 kPa~ 1.13x10 ⁻¹¹ kPa	760 Torr ~ 1x10 ⁻⁸ Torr 1,000 mbar~1.33x10 ⁻⁸ mbar 100 kPa~ 1.13x10 ⁻⁹ kPa
Leak rate	1 x 10 ⁻¹⁰ Torr l/s, He 1.33x10 ⁻¹⁰ mbar l/s, He 1.13x10 ⁻¹¹ kPa l/s, He	1 x 10 ⁻⁹ Torr l/s, He 1.33x10 ⁻⁹ mbar l/s, He 1.13x10 ⁻¹⁰ kPa l/s, He
Temperature range	-20°C (-4°F) ~200°C (392°F)	-20°C (-4°F) ~ 200°C (392°F)
Bake temperature	150°C (302°F)	150°C (302°F)
Maximum temperature change per minute	3°C (5.4°F)	3°C (5.4°F)
Body material	SS304L	SS304L
Viewport material	Sapphire	Kodial
Mounting position	Any	Any

System Components

Transmission Curve
Sapphire



Product Order Information

◆ UHV Viewports

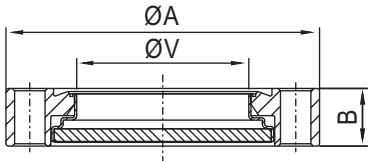


Figure 1

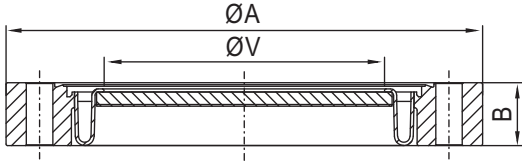


Figure 2

System
Components

UHV Kodial Viewports, CF Flanges, SS304L

Part Number	Flange Size	Figure	A	B	V
VP-KD-CF-133	CF1.33"	1	34	8	16
VP-KD-CF-275	CF2.75"	1	69	13	38
VP-KD-CF-450	CF4.5"	1	114	17	64
VP-KD-CF-600	CF6"	2	152	20	89
VP-KD-CF-800	CF8"	2	202	22	137
VP-KD-CF-1000	CF10"	2	253	25	137

UHV Kodial Viewports, CF Flanges, SS316LN

Part Number	Flange Size	Figure	A	B	V
VP-KD-CF-133-6LN	CF1.33"	1	34	8	16
VP-KD-CF-275-6LN	CF2.75"	1	69	13	38
VP-KD-CF-450-6LN	CF4.5"	1	114	17	64
VP-KD-CF-600-6LN	CF6"	2	152	20	89
VP-KD-CF-800-6LN	CF8"	2	202	22	137

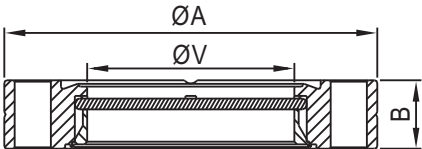


Figure 1

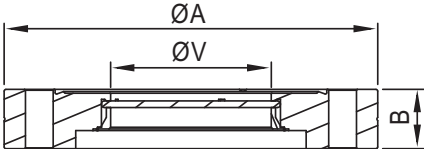


Figure 2

UHV Fused Silica Viewports, CF Flanges, SS304L

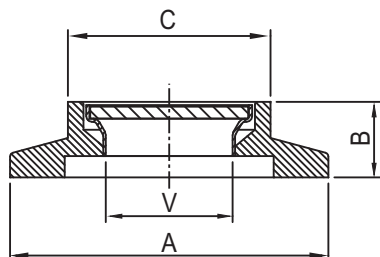
Part Number	Flange Size	Figure	A	B	V
VP-QZ-CF-133	CF16	1	34	12	16
VP-QZ-CF-275	CF40	1	69	13	38
VP-QZ-CF-450	CF63	1	114	18	73
VP-QZ-CF-600	CF100	1	152	20	110
VP-QZ-CF-800	CF160	1	202	22	110

UHV Sapphire Viewports, CF Flanges, SS304L

Part Number	Flange Size	Figure	A	B	V
VP-SH-CF-275	CF40	1	69	13	24
VP-SH-CF-275-1	CF40-1	1	69	13	39
VP-SH-CF-450	CF63	2	114	18	49
VP-SH-CF-450-1	CF63-1	1	114	18	73

Product Order Information

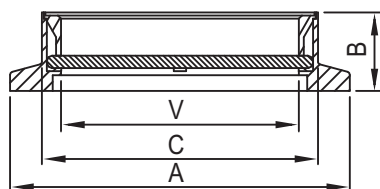
♦ HV KF Viewports



HV Kodial Viewports, KF Flanges, SS304L

Part Number	Flange Size	A	B	C	V
VP-KD-KF-25	KF25	40	9	25	16
VP-KD-KF-50	KF50	75	14	52	38

System
Components



HV Fused Silica Viewports, KF Flanges, SS304L

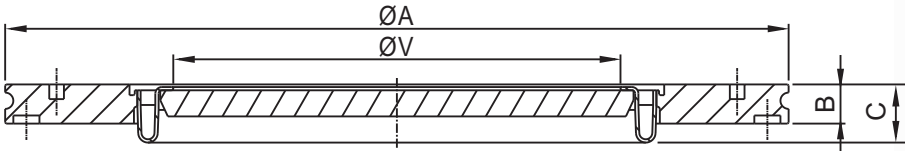
Part Number	Flange Size	A	B	V	C
VP-QZ-KF-25	KF25	40	13	24	29
VP-QZ-KF-40	KF40	55	13	39	45
VP-QZ-KF-50	KF50	75	13	49	57

HV Sapphire Viewports, KF Flanges, SS304L

Part Number	Flange Size	A	B	V	C
VP-SH-KF-25	KF25	40	13	24	29
VP-SH-KF-40	KF40	55	13	39	45
VP-SK-KF-50	KF50	75	13	49	57

Product Order Information

♦ Welding Sealed HV ISO-K Viewports

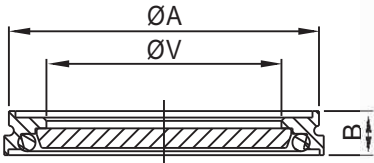


System
Components

ISO-K Welded Zero Length Viewports, SS304L

Part Number	Flange Size	A	B	C	V
VP-KD-ISOK-63	ISO-K 63	95	12	12	38
VP-KD-ISOK-100	ISO-K 100	130	12	15	64
VP-KD-ISOK-160	ISO-K 160	180	12	18	89
VP-KD-ISOK-200	ISO-K 200	240	12	18	137
VP-KD-ISOK-250	ISO-K 250	290	12	19	137

♦ O-ring Sealed HV ISO-K Viewports

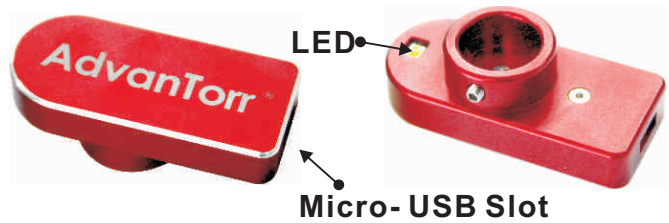
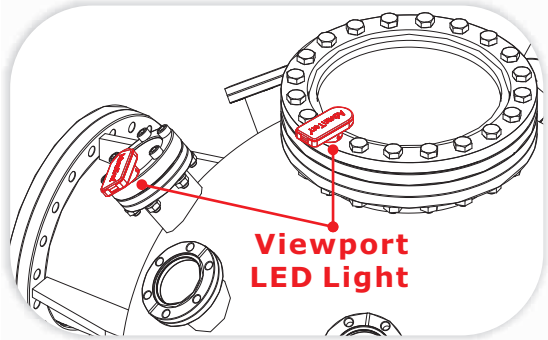


ISO-K O-ring Zero Length Viewports, SS304L

Part Number	Flange Size	A	B	V
VP-KD-ISOK-63-O	ISO-K 63	95	14	72
VP-KD-ISOK-100-O	ISO-K 100	130	16	104
VP-KD-ISOK-160-O	ISO-K 160	180	17	153

Product Order Information

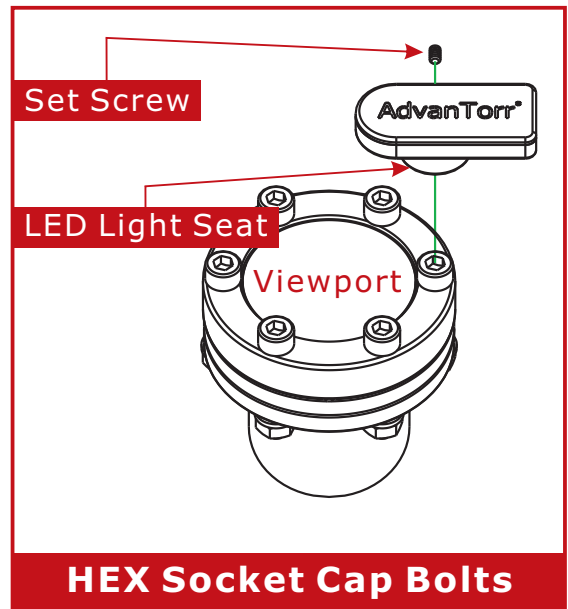
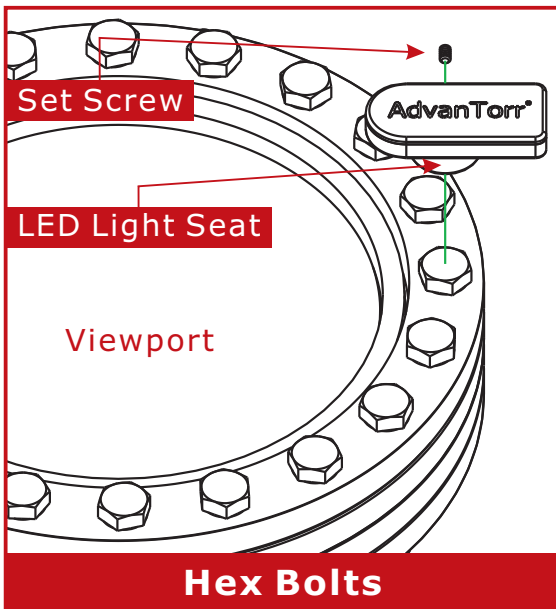
Viewport LED Light is designed for quick installation.
No software and complicated preparation for operation.
Just need one Micro-USB cable to operate.



System
Components

Features:

- Lightweight design with aluminum alloy body.
- Long life cycle.
- Easy installation



Product Specification:

Description	Specification
Input Power	5V +/-5%
Current of LED light	150mA +/-25%
Temperature of LED light	5,000K (4,745~5,310K)
Brightness of LED light	50~83 lm
Operating Temperature	-40~85°C
Storage Temperature	-40~100°C
Life Cycle	6,000 hrs (keep in below 55°C)

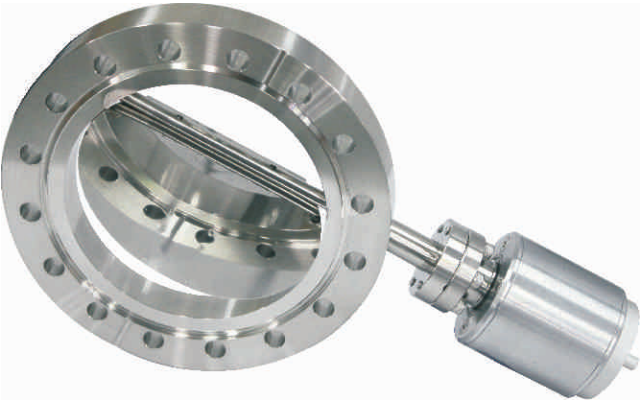
Product Information

Vacuum Viewport Shutters are used in both HV and UHV coating applications to protect the viewport from the deposition of materials. All shutters incorporate a double-sided flange so that they can be mounted in between the chamber and viewport which they are protecting. The swing mechanism, which is operated via a magnetic rotary drive, can 'swing' through 0° to 90° but can easily be locked at a set angle via a thumbscrew on the back of the drive. The viewport shutter can also easily be cleaned by bead-blasting the shutter plate.

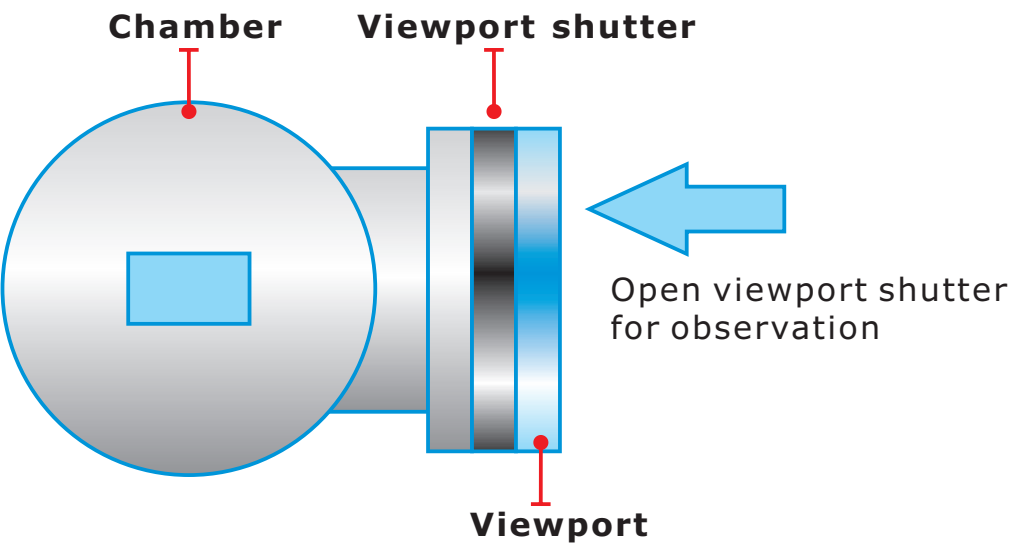
System
Components

Product Features

- Range of CF flange sizes from 2.75" to 10" OD.
- Double-sided flange mount.
- UHV grade rotary drive with thumbscrew for discrete angle positioning.
- Bakeable to 250°C.
- Wide range observation area.
- Easy installation in any orientation.

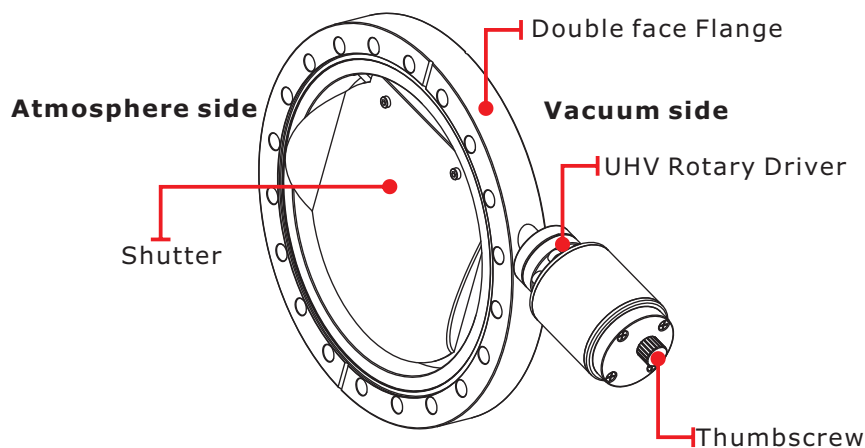


Product Application



Viewport shutter is mounted in between the chamber and viewport

Key Product Parts



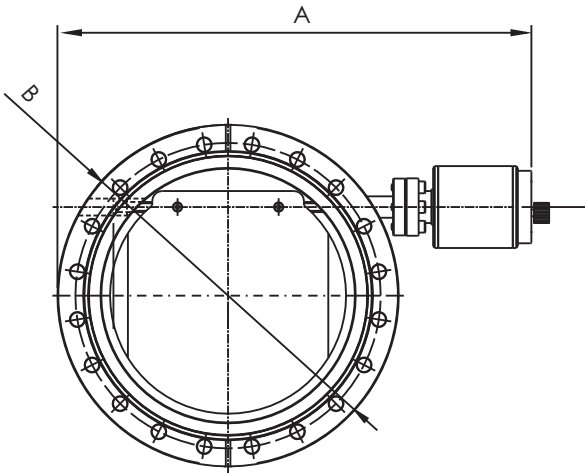
System
Components

Technical Data for Quick Access Doors

Shutter	Stainless steel
Mounting seal	OFHC gasket (both sides)
Operate pressure range	760 Torr ~ 1×10^{-10} Torr 1,000 mbar ~ 1.33×10^{-10} mbar 100 kPa ~ 1.13×10^{-11} kPa
Leak rate	1×10^{-10} Torr l/s, He 1.33×10^{-10} mbar l/s, He 1.13×10^{-11} kPa l/s, He
Temperature range	0°C (32°F) ~ 200°C (392°F)
Bake temperature	250°C (482°F)
Body material	SS304L
Feedthrough	UHV Rotary Drive
Mounting position	Any

Product Order Information

System
Components



UHV Viewport Shutters, CF Flange, SS304L

Part Number	Flange Size	A	B
VPS-CF-275	CF2.75"	152	69
VPS-CF-450	CF4.5"	197	114
VPS-CF-600	CF6"	235	152
VPS-CF-800	CF8"	285	202
VPS-CF-1000	CF10"	323	253

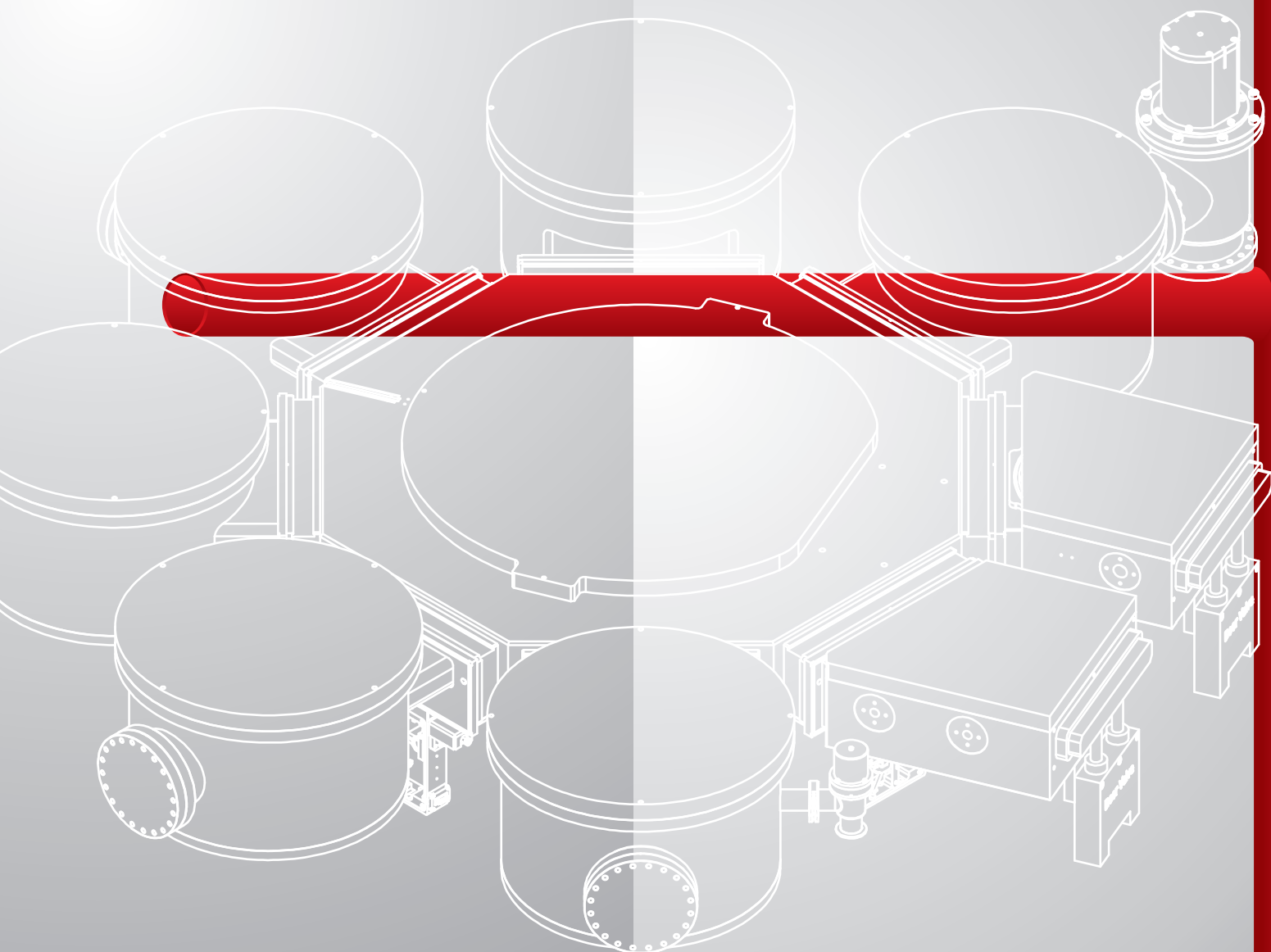


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