





Registered Federal Government supplier

Our Strength

a) Design for manufacturing
b) Catalog wholesale
c) Contract mfg
d) Logistics
e) Cost reduction

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43651 S. GRIMMER BLVD, Fremont, CA | (510) 498-8518 | www.vacproducts.com | sales@vacproducts.com

Mission & Core Value

Mission Statement

We are an engineering-driven company of vacuum components.
Our manufacturing facilities are strategically situated across USA and Asia.
Our catalog carries complete line of items such that one can build a complete process equipment from it.
Fully automated procurement system allow us to provide highly competitive price.

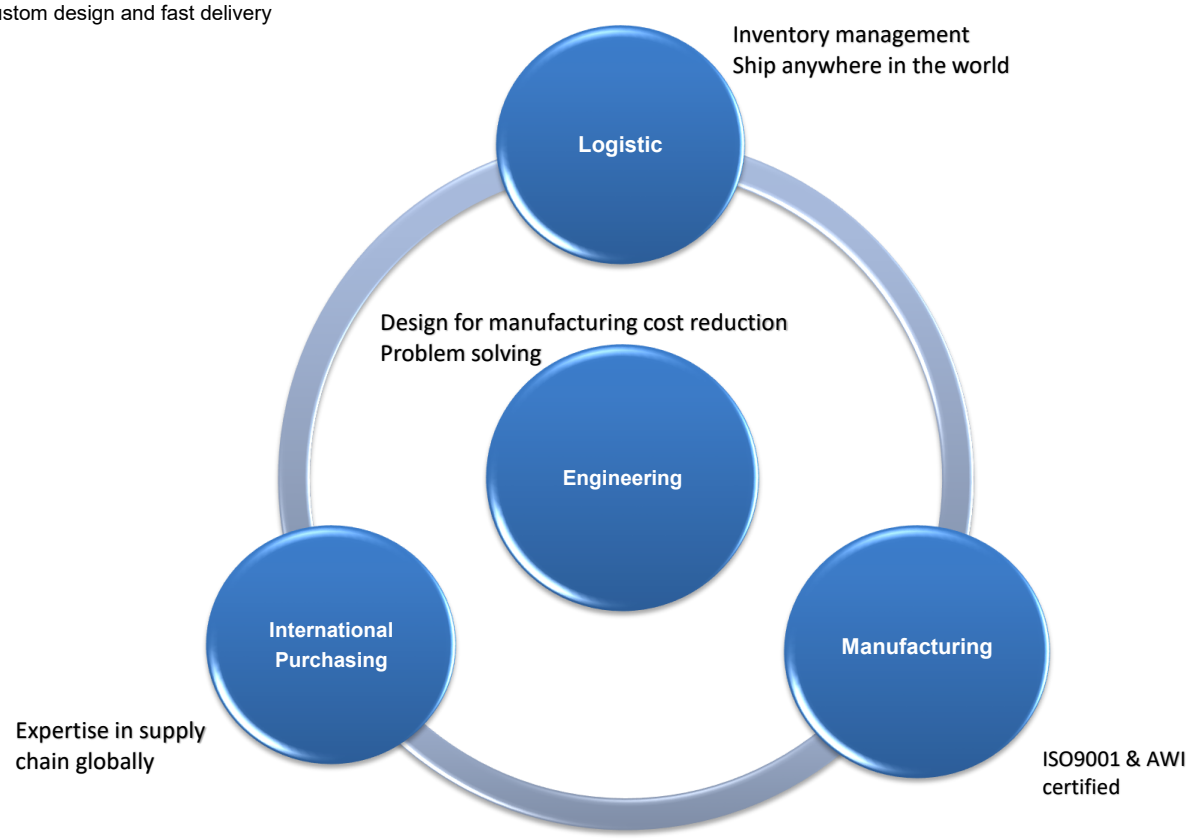
Every part is 100%
* Made to source-control dwg.
* Cleaned and leak checked.
* Material certified

Core Value

Head quarter located in northern California to serve Semiconductor, Industrial, R&D, and Life-science industries. We have expertise in the vacuum science applications.

We are an extension of your manufacturing and procurement. We provide cost reduction through design, manufaturing, consign inventory and on-time delivery. We handle your back-end so you can focus on your core business.

Our standard service includes:
* Inventory management and order status reporting
* Inventory consignment
* Problem solving
* Custom design and fast delivery



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Poppet Valve

AV Standard	AV-FO Low Particle	AV-B Block	AV-T Toggle	AV-M All Metal
				

Available in angle, Inline, Z-style. CF, KF, ISO flange. Size from 16 mm to 630 mm. Bellow sealed

Standard	For all vacuum application. Size from 16 mm to 630 mm. HV and UHV with bellows.
Low Particle	Bellow is encapsulated from process gases. Designed for upstream process (e.g. Loadlock).
Block	Standard & integrated with position indicator & solenoid; 6M cycle life.
Toggle	Quick action between open and close with a flip of finger. Detent in both positions. Locking optional.
All Metal	For ultra high vacuum up to 1x10-10 torr or extreme temperature.

Poppet Valve

Stainless and Aluminum Angle & Inline Valve

Our valves are uniquely designed for:

- Ø High conductance
- Ø Best value
- Ø KF, ISO, CF flange configuration
- Ø Size from 0.63" (16mm) to 24" (630mm)
- Ø Leak rate to 2x10-10 standard cc/sec, He

These valves are designed for 3 million cycles. It has the highest sealing force in the industry.

The valve body is made of 304 stainless steel. Welded bellows is made of AM350 for long life. The valve housing is machined and honed to micron precision so that O-Ring wear is minimized. This feature has a competitive advantage to conventional valve that uses tube housing which is neither round nor straight.

Pneumatic valves from 16mm to 50 mm are normally closed (spring close). Sizes above 50mm are double acting (air open / aor close). Optional "pneumatic lock" is available.

Options:

- ¨ Custom configuration
- ¨ Solenoid valve
- ¨ Reed position sensor
- ¨ Kalrez O-Ring
- ¨ Heating jacket

VPC Core Competencies

- Ø Application expertise
- Ø Strong engineering R&D
- Ø System level know-how

Specification:	
Vacuum range :	1 x 10^{-9} Torr
Leak test :	1 x 10^{-9} std cc/sec He
Bake temperature :	302°F (150°C)
MTTF (life) :	1.5 million cycle
Time from open-close :	<0.5 sec
Operating temperature :	68°F-194°F (20°-90°C)
Differential pressure :	15 psi
Position indicator :	24 VDC or 120 VAC
Operating pressure :	60 - 95 psi



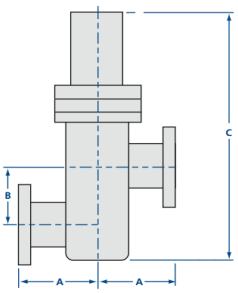
Poppet Valve

Standard Z Angle Valve

* Any flange configuration.
* Large conductance
* Cycle life of 1.5 million

Pneumatic Z Valve-KF Flange

Part No.	A (inch)	B (inch)	C (inch)
ZVP-KF16	2.15	1.12	N/A
ZVP-KF25	2.03	1.37	N/A
ZVP-KF40	2.40	1.88	N/A
ZVP-KF50	3.40	2.62	N/A



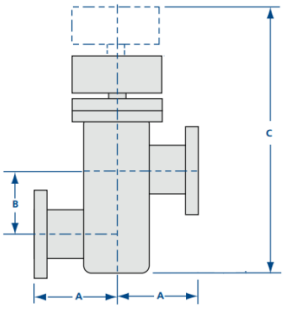
Pneumatic Z Valve-CF Flange

Part No.	A (inch)	B (inch)	C (inch)
ZVP-CF1.33-HV	2.50	1.12	N/A
ZVP-CF2.12-HV	2.05	1.37	N/A
ZVP-CF2.75-HV	2.46	1.88	N/A
ZVP-CF3.38-HV	3.48	2.62	N/A
ZVP-CF4.50-HV	3.38	3.12	N/A



Manual Z Valve-KF Flange

Part No.	A (inch)	B (inch)	C (inch)
ZVM-KF16	2.15	1.13	5.86
ZVM-KF25	2.03	1.37	6.11
ZVM-KF40	2.40	1.88	8.44
ZVM-KF50	3.40	2.62	10.61



Manual Z Valve-CF Flange

Part No.	A (inch)	B (inch)	C (inch)
ZVM-CF1.33-HV	2.50	1.13	5.86
ZVM-CF2.12-HV	2.05	1.37	6.11
ZVM-CF2.75-HV	2.46	1.88	8.44
ZVM-CF3.38-HV	3.62	2.84	10.61
ZVM-CF4.50-HV	3.38	3.92	N/A



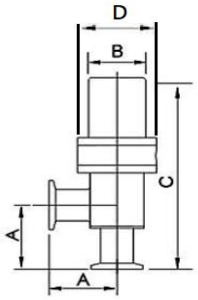
Poppet Valve

Standard KF Angle & Inline Valve

* Any flange configuration.
* Large conductance
* Cycle life of 1.5 million

Pneumatic Angle Valve-KF Flange

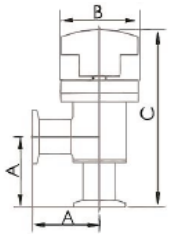
Part No.	A (inch)	B (inch)	C (inch)	D (inch)
AVP-KF16	2.15	1.69	6.79	2.24
AVP-KF25	2.03	1.69	6.54	2.24
AVP-KF40	2.40	2.17	8.29	2.98
AVP-KF50	3.40	2.56	9.80	3.48





Manual Angle Valve-KF Flange

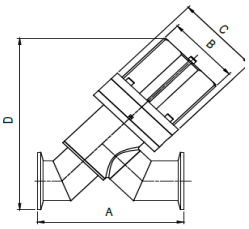
Part No.	A (inch)	B (inch)	C (inch)
AVM-KF16	2.15	2.24	5.41
AVM-KF25	2.05	2.24	5.13
AVM-KF40	2.56	2.98	6.45
AVM-KF50	3.00	3.48	8.15





Pneumatic In-Line Valve-KF Flange

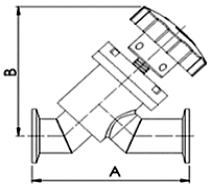
Part No.	A (inch)	B (inch)	C (inch)	D (inch)
IVP-KF16	4.02	2.03	2.39	5.20
IVP-KF25	4.21	2.03	2.39	5.28
IVP-KF40	5.12	2.56	3.01	6.46
IVP-KF50	7.01	2.62	3.33	8.78





Manual In-Line Valve-KF Flange

Part No.	A (inch)	B (inch)
IVM-KF16	4.00	3.89
IVM-KF25	4.20	3.89
IVM-KF40	5.12	4.89
IVM-KF50	7.01	6.19





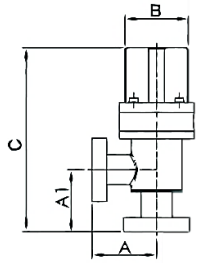
Poppet Valve

Standard CF Angle and Inline Valve - HV (High Vacuum)

* Any flange configuration.
* Large conductance
* Cycle life of 1.5 million
* Viton O-Ring @ bonnet

Pneumatic Angle Valve-CF Flange

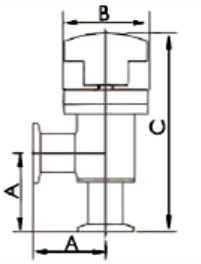
Part No.	A (inch)	B (inch)	C (inch)
AVP-CF1.33-HV	2.18	2.03	6.38
AVP-CF2.12-HV	2.07	2.03	6.14
AVP-CF2.75-HV	2.47	2.56	7.00
AVP-CF3.38-HV	3.08	2.62	9.44
AVP-CF4.50-HV	3.38	2.76	9.68
AVP-CF4.62-HV	3.63	3.25	11.28
AVP-CF6.00-HV	4.66	3.51	13.70
AVP-CF8.00-HV	5.68	5.51	17.66





Manual Angle Valve-CF Flange

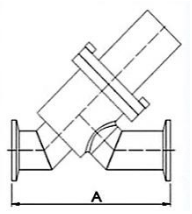
Part No.	A (inch)	B (inch)	C (inch)
AVM-CF1.33-HV	2.18	2.24	5.43
AVM-CF2.12-HV	2.07	2.39	5.24
AVM-CF2.75-HV	2.46	2.98	6.50
AVM-CF3.38-HV	3.62	3.48	8.00
AVM-CF4.50-HV	3.38	4.00	8.00





Pneumatic In-Line Valve-CF Flange

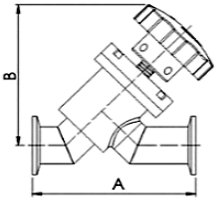
Part No.	A (inch)	B (inch)	C (inch)
IVP-CF1.33-HV	4.70	N/A	N/A
IVP-CF2.12-HV	4.24	N/A	N/A
IVP-CF2.75-HV	5.26	N/A	N/A
IVP-CF3.38-HV	7.00	N/A	N/A
IVP-CF4.50-HV	N/A	N/A	N/A





Manual In-Line Valve-CF Flange

Part No.	A (inch)	B (inch)
IVM-CF1.33-HV	4.70	3.92
IVM-CF2.12-HV	4.24	3.83
IVM-CF2.75-HV	5.24	4.83
IVM-CF3.38-HV	7.00	5.97
IVM-CF4.50-HV	7.30	6.72





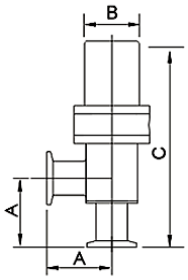
Poppet Valve

Standard CF Angle and Inline Valve - UHV (Ultra High Vacuum)

* Any flange configuration.
* Large conductance
* Cycle life of 1.5 million
* Cu gasket @ Bonnet

Pneumatic Angle Valve-CF Flange

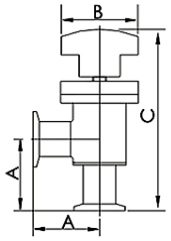
Part No.	A (inch)	B (inch)	C (inch)
AVP-CF1.33-UHV	2.18	2.03	6.38
AVP-CF2.12-UHV	2.07	2.03	6.14
AVP-CF2.75-UHV	2.47	2.56	7.00
AVP-CF3.38-UHV	3.08	2.62	9.44
AVP-CF4.50-UHV	3.38	2.76	9.68
AVP-CF4.62-UHV	3.63	3.25	11.28
AVP-CF6.00-UHV	4.66	3.51	13.70
AVP-CF8.00-UHV	6.50	9.97	18.47





Manual Angle Valve-CF Flange

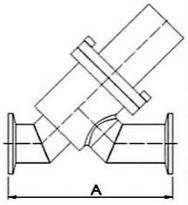
Part No.	A (inch)	B (inch)	C (inch)
AVM-CF1.33-UHV	2.18	2.36	5.47
AVM-CF2.12-UHV	2.07	2.36	5.22
AVM-CF2.75-UHV	2.62	2.36	6.50
AVM-CF3.38-UHV	3.08	2.36	7.85
AVM-CF4.50-UHV	3.38	2.36	8.15





Pneumatic In-Line Valve-CF Flange

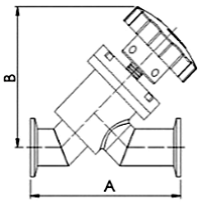
Part No.	A (inch)	B (inch)	C (inch)
IVP-CF1.33-UHV	4.70	N/A	N/A
IVP-CF2.12-UHV	4.24	N/A	N/A
IVP-CF2.75-UHV	5.24	N/A	N/A
IVP-CF3.38-UHV	7.15	N/A	N/A
IVP-CF4.50-UHV	N/A	N/A	N/A





Manual In-Line Valve-CF Flange

Part No.	A (inch)	B (inch)	C (inch)
IVM-CF1.33-UHV	4.70	3.93	N/A
IVM-CF2.12-UHV	4.24	3.83	N/A
IVM-CF2.75-UHV	5.24	4.88	N/A
IVM-CF3.38-UHV	7.00	5.97	N/A
IVM-CF4.50-UHV	N/A	N/A	N/A



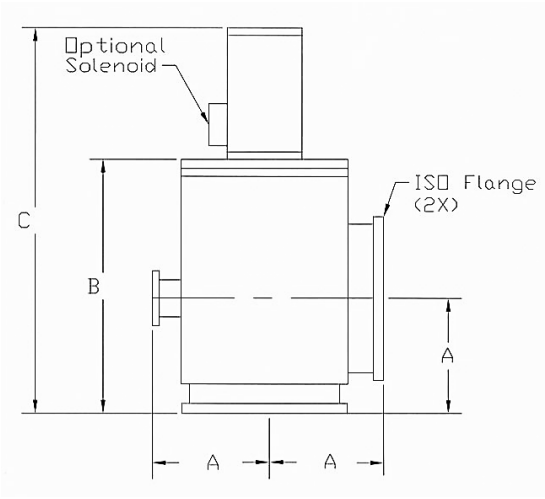


Poppet Valve

Standard ISO Stainless Steel Angle Valve

Sizes from ISO63 to ISO630





Angle Valve Features:

Valve body and poppet material: 304L
Electropolished interior surface finish
Rotatable ISO flange on 200mm and up
Magnetic position indicator included on 200 mm and up
Edge welded bellow with 90% full conductance
Viton O-Ring

Specification :

Leak rate	$1x10^{-9}$ atm cc/sec He
Vacuum rating	$1x10^{-9}$ Torr
Bake temperature	248°F (120°C)
Operating temperature	68°F - 194°F (20°C - 90°C)
Mounting position	Any
Air pressure required	60 -- 95 psig
Cycle life	100K cycles

Manual

Part No	A (inch)	B (inch)	C (inch)	Mtg. hole	B.C.	Side port
AVM-ISO63	3.47	3.15	10.98	4x-9	----	
AVM-ISO80	3.86	3.15	11.61	8x-9	----	
AVM-ISO100	4.25	3.94	13.01	8x-9	----	

Pneumatic

Part No	A (inch)	B (inch)	C (inch)	Mtg. hole	B.C.	Side port
AVP-ISO63	3.25	2.76	9.55	4x-9	----	----
AVP-ISO80	3.50	3.25	11.15	8x-9	----	----
AVP-ISO100	4.47	3.51	13.53	8x-9	----	----
AVP-ISO160	6.25	5.51	18.23	8x-11	----	DN40
AVP-ISO200	8.27	14.57	23.31	12x-11	10.24	DN50
AVP-ISO250	10.39	18.46	28.50	12x-11	12.20	DN63
AVP-ISO320	9.84	19.45	32.99	12x-14	15.55	DN 80
AVP-ISO400	12.99	24.57	40.94	12x-14	18.90	DN100
AVP-ISO500	14.17	29.13	39.53	16x-14	22.83	DN125
AVP-ISO630	17.72	33.86	52.36	20x-14	28.35	DN160

Poppet Valve

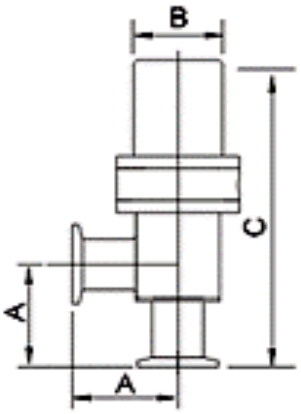
Low Particle Valve

Low Particle (LP) poppet valve was field tested and proven to improve yield in a harsh or corossive environment such as Etch or CVD processes. The entire mechanisms are shielded and completely cleared from gas flow, thus creating a very clean environment. Can be installed upstream of the chamber if necessary. Sizes available in 1.0", 1.5" and 2.0". To specify a **LP** style, add -LP at the end of part number. Example: AVP-KF25-**LP.**

Pneumatic stainless poppet valve -- Low Particle



Specification:	
Vacuum range	1 x 10^{-9} Torr
Leak test	1 x 10^{-9} std cc/sec He
Bake temperature	248°F (120°C)
MTTF (life)	1.5 million cycle
Time from open-close	<0.5 sec
Operating temperature	68°F - 194°F (20° - 90° C)
Differential pressure	15 psi
Position indicator	24 VDC or 120 VAC
Operating pressure	60 - 95 psi



Part No	A (inch)	B (inch)	C (inch)
AVP-KF25-LP	2.06	2.03	6.2
AVP-KF40-LP	2.40	2.56	7.83
AVP-KF50-LP	2.75	2.01	10.4

Poppet Valve

Standard Block Valve

* One piece, compact design
* Low particle, formed bellows assembly
* Right angle or inline configuration

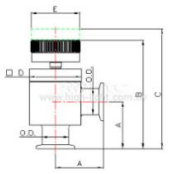
Body is machined from a single piece 6061-T6 aluminum billet.
There is no seam; virtual leak is eliminated and flow path is extremely smooth.
Aluminum has high fluorine resistance and excellent thermal conductivity,
a great choice for CVD application.
Aluminum's transparency to X-Ray makes it suitable for high energy research.

Solenoid is an optional item, in 24 VDC or 120 VAC.

Manual Alum. Block Valve

Part No.	A (inch)	B (inch)	C (inch)	OD (inch)
AVM-KF16-ALNC	1.57	4.06	4.21	0.79
AVM-KF25-ALNC	1.97	4.33	4.53	1.10
AVM-KF40-ALNC	2.56	5.83	6.18	1.77

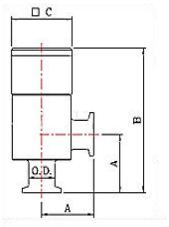




Pneumatic Alum. Block Valve

Part No.	A (inch)	B (inch)	C (inch)	OD (inch)
AVP-KF16-ALNC	1.57	3.90	1.83	0.79
AVP-KF25-ALNC	1.97	4.13	2.18	1.10
AVP-KF40-ALNC	2.36	5.79	2.77	1.77



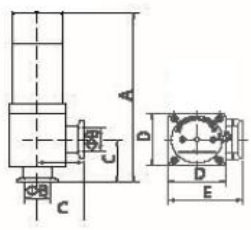


Electrically actuated, KF Flange, Aluminum Body

Electrically actuated valve is ussed where compressed air is not available such as in a Lab.
Aluminum body does not affect the electro-magnetic field, thus provides a smooth motion.

Part No.	A (inch)	B (inch)	C (inch)	D (inch)	E(inch)
AVE-KF16	6.48	0.63	1.50	1.89	2.46
AVE-KF25	7.48	0.98	1.77	2.20	2.89
AVE-KF40	8.54	1.57	2.17	2.83	3.60
AVE-KF50	9.57	1.97	2.28	3.07	3.84





Poppet Valve

Integrated Block Valve

* 6.5 million cycle life
* Operation temperature: 482°F (250°C)
* Right angle or inline configuration

Body machined from a solid block to create robust structure.
Long life allows for high frequency operation.
High fluorine resistance and excellent thermal conductivity,
CVD, ALD, Etch, and battery production application
Transparency to X-Ray makes it suitable for high energy research.
Position indicator, solenoid, and actuator are integrated

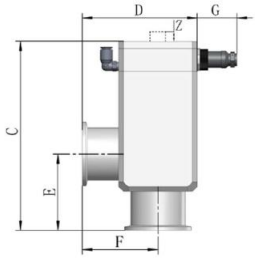
Solenoid: 24 VDC or 120 VAC

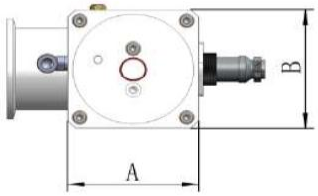
Chemraz or Kalrez O-Rings are available.

Angle Block Valve

Part Number	Port Size	A (inch)	B (inch)	C (inch)	D (inch)	E&F (inch)	G (inch)	Z (inch)
AVP-KF50-24-PI-B	KF50	3.07	3.07	7.44	4.29	2.76	1.27	0.39
AVP-KF40-24-PI-B	KF40	2.56	2.56	6.36	3.84	2.56	1.27	0.39
AVP-KF25-24-PI-B	KF25	2.05	2.05	5.37	3.07	1.97	1.27	0.31
AVP-KF16-24-PI-B	KF16	1.65	1.65	4.45	2.40	1.57	1.27	0.16
AVP-KF10-24-PI-B	KF10	1.65	1.65	4.29	2.40	1.18	1.27	0.16



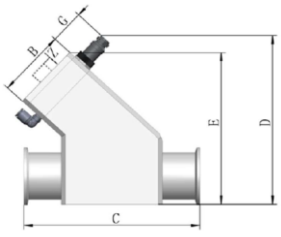


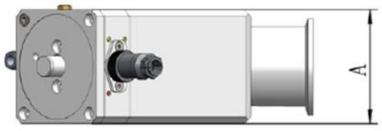


Inline Block Valve

Part Number	Port Size	A (inch)	B (inch)	C (inch)	D (inch)	E (inch)	G (inch)
IVP-KF50-24-PI-B	KF50	3.07	3.07	7.01	7.80	7.32	1.27
IVP-KF40-24-PI-B	KF40	2.56	2.56	5.12	6.40	5.83	1.27
IVP-KF25-24-PI-B	KF25	2.05	2.05	3.94	5.35	4.80	1.27
IVP-KF16-24-PI-B	KF16	1.65	1.65	3.15	4.49	4.09	1.27
IVP-KF10-24-PI-B	KF10	1.65	1.65	3.15	4.49	4.09	1.27







Poppet Valve

Toggle Valve

Quick action, open or close the valve with a flick of a finger. The handle position also gives a clear indication whether the valve is open or close. Used where frequent on/off is required, such as in leak checking. Detent in both direction. Mechanical lock is available.

Specification

Angle and line versions avaiable
Manual operated
1 million cycles
Vacuum Range 1x10^-7 Torr
Helium Leak Rate: < 1x10-9 mbar l/s
Temperature 248°F(120°C)

Features & Benefit

Easy to use
Form bellow sealed
Small footprint
Visualize open/close position

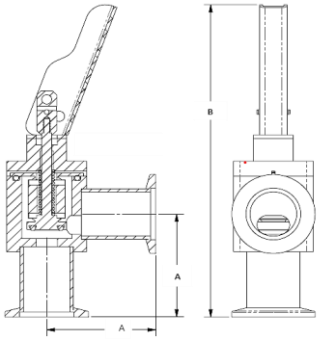
Manual

KF Angle valve

Part No.	A	B
AVM-KF16-T	2.05	6.21
AVM-KF25-T	2.05	6.21
AVM-KF40-T	2.55	8.74
AVM-KF50-T	3.05	9.40

** Dimension subject to change without notice





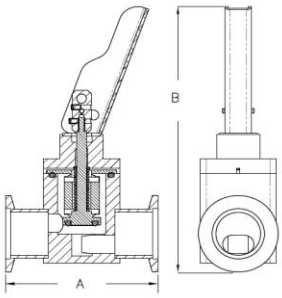
Manual

KF Inline valve

Part No.	A	B
IVM-KF16-T	3.00	5.43
IVM-KF25-T	3.00	5.43
IVM-KF40-T	5.55	8.18
IVM-KF50-T	5.11	8.18

** Dimension subject to change without notice





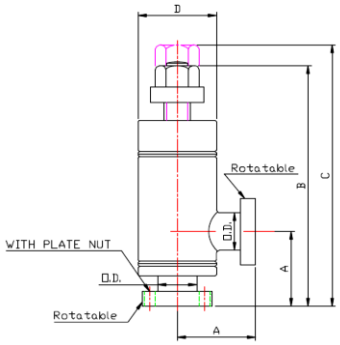
Poppet Valve

All-Metal Valve

All Metal Valve uses oxygen-free copper gasket as dynamic seal to press against a conical knife edge on the opposing part, thus forming an all metal seal

Copper gasket has a life of few hundred uses. Gasket replacement is easily done by a screw driver





Specification:

Model		CF1.33	CF2.75	CF4.50
Bakeability	Open		752°F(400 °C)	
	Closed		572°F(300 °C)	
Pressure Range			Below 10^{-10} torr	
Leak Rate			10^{-10} mbar. l/sec	
Material	Body		SUS304 & SUS316	
	Bellows		SUS316	
	Seal		OFHC Copper	
Closure	First	120 ~ 150kg-cm	200 ~ 300kg-cm	200 ~ 300kg-cm
Torque	Max	250 kg-cm	600 kg-cm	900 kg-cm
Port		CF1.33	CF2.75	CF4.50
Gasket Life			Above 50 times	
Spare Parts			Poppet seal gasket : 1 pc	

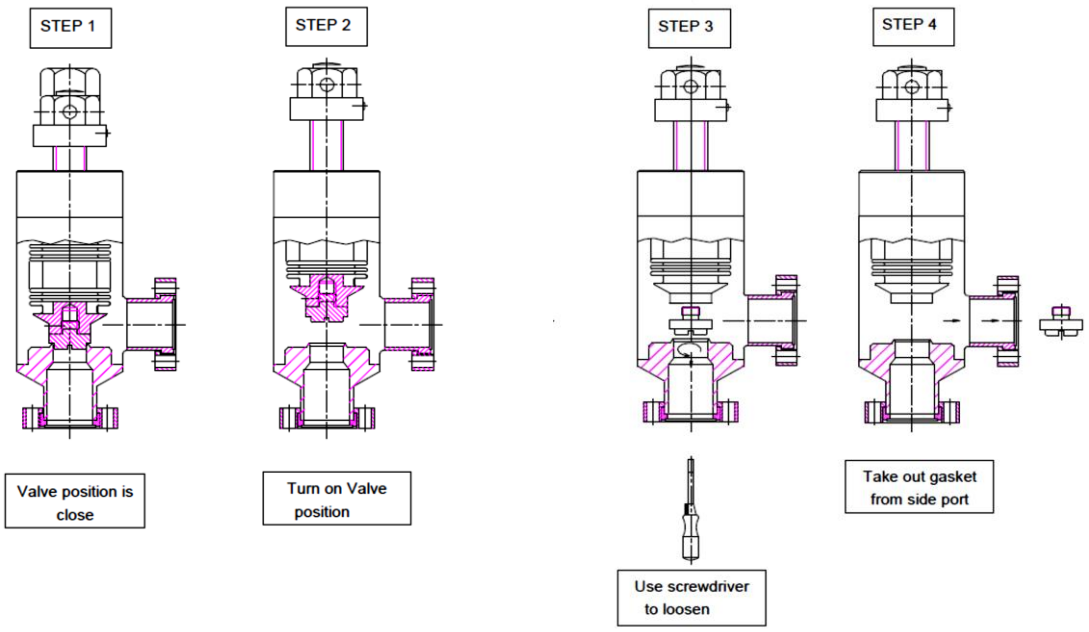
Part No	OD	A	B	C	D
AVP-CF1.33-UHV-AM	0.75	1.50	4.77	5.16	1.50
AVP-CF2.75-UHV-AM	1.50	2.46	6.69	7.36	2.13
AVP-CF4.5-UHV-AM	2.50	4.13	10.47	11.57	3.00

Poppet Valve

Feature and Notice:

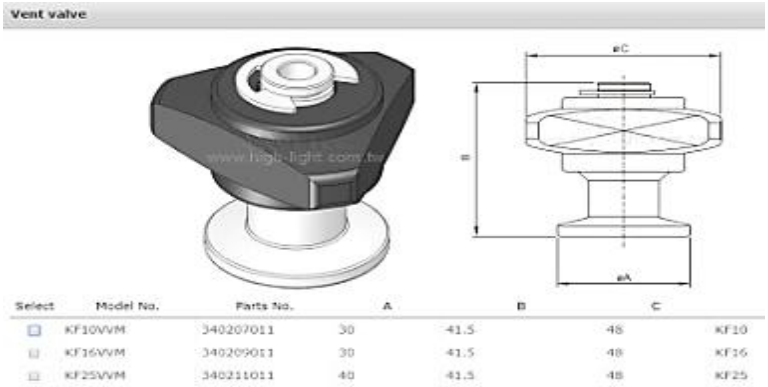
1 Bake temperature : 752°F/400°C (open), 572°F/300°C (close)
2 The Cu gasket is easily replaced by a screw driver; removable from side port
3 All stainless steel construction.
4 Bellows stem seal.
5 3/4", 1-1/2" and 2-1/2" port sizes.
6 A calibrated dial for closure is provided on the top of the valve body,
but the max. torque should not exceed 250 kg-cm (CF1.33),
600 kg-cm (CF2.75), and 900 kg-cm (CF4.5)
7 Must lubricate the drive shaft after maximum high temperature bake
8 Properly lubricate the drive shaft to prevent wearing the thread.
9 Orientation : Any position.

Metal Gasket unload steps:



Poppet Valve

Vent Valve



Select	Model No.	Parts No.	A	B	C	
☐	KF10VVM	340207011	30	41.5	48	KF10
☐	KF16VVM	340209011	30	41.5	48	KF16
☐	KF25VVM	340211011	40	41.5	48	KF25

Features

Manually operated. Vent system to ambient air
Indicator for pressure balance

Technical Data

Flange size	KF10
Vent time (50 L)	14 sec.
Presure range	1x10-8 torr to 760 torr
Leak rate	1x10-9 torr8l/sec
Valve body	SUS 304
Washer	Teflon
O-Ring	Viton
Screw cap	Aluminum

Custom Valve

VPC core strength is custom design and manufacture. When you need a custom valve, our engineering will work with you from design to production.

Give us a call or email us to sales2@vacproducts.com .
An engineer will reach out to you to discuss your requirement within 24 hours.

We can be reached at (510) 498-8518 Monday - Friday from 9:00 am - 6:00 pm PST.

Gate Valve

GV Standard	GV-S Semiconductor	GV-H Harsh	GVA Aluminum	TGV-M Toggle
				

Standard	HV. Economical. For general vacuum such as industrial coating. Size ISO63 to 320 mm.
Semiconductor	HV and UHV. For ultra clean environment sush as semiconductor industry. Size KF25 to 320 mm.
Harsh	HV. Robust with no moving components. Used in corrosive environment or extreme temperature. Lockout-tagout optional.
Aluminum	Better vacuum than stainless steel. Transparant to radiation.
Mini	Quick action. Economical. Small footpring. For sample transfer. Size KF25 to KF50.

Gate Valve

Standard Industrial Grade

Stainless Steel

* Any flange configuration.
* Cycle life of 100,000
* Larger sizes up to 3000 mm available
* Customization available for special projects

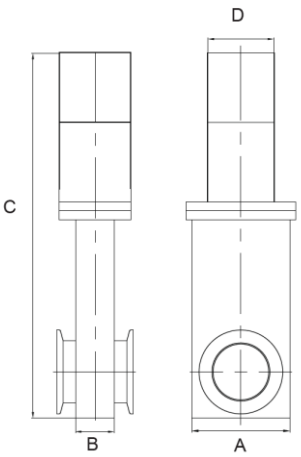
Specification:	
Vacuum range:	$1x10^{-9}$ Torr
Leak test:	$1x10^{-9}$ atm cc/sec of He
Bake temperature:	302°F (150° C)
Life:	100,000 Cycle
Time from open-close:	< 1.5 sec
Operating temperature:	up to 212°F/100°C
Position Indicator:	28 VDC or 115 VAC



GVP GVM

Pneumatic - KF / ISO Flange

Part No.	A (inch)	B (inch)	C (inch)	D (inch)	Port Size (ID)
GVP-KF25-24-PI	2.44	1.34	11.18	2.52	1.0"
GVP-KF40-24-PI	2.99	1.34	12.40	2.52	1.5"
GVP-KF50-24-PI	3.47	1.34	12.81	2.52	2.0"
GVP-ISO63F-24-PI	4.33	1.34	14.39	2.83	2.5"
GVP-ISO80F-24-PI	5.12	1.42	17.60	3.31	3.0"
GVP-ISO100F-24-PI	5.67	1.57	24.21	2.95	4.0"
GVP-ISO160F-24-PI	7.91	1.77	30.37	2.95	6.0"
GVP-ISO200F-24-PI	10.16	1.85	35.33	3.74	8.0"
GVP-ISO250F-24-PI	12.20	2.15	37.28	4.61	10.0"
GVP-ISO300F-24-PI	16.73	3.07	52.32	4.53	12.0"

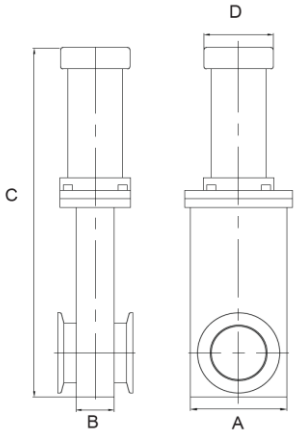


* Also available in ISO-K, CF HV

* Solenoid, Position Indicator included with pneumatic gate valve

Manual - KF / ISO Flange

Part No.	A (inch)	B (inch)	C (inch)	D (inch)	Port Size (ID)
GVM-KF25	2.44	1.34	10.94	2.48	1.0"
GVM-KF40	2.99	1.34	12.30	2.48	1.5"
GVM-KF50	3.47	1.34	12.85	2.48	2.0"
GVM-ISO63F	4.33	1.34	14.88	3.94	2.5"
GVM-ISO80F	5.12	1.42	18.17	3.94	3.0"
GVM-ISO100F	5.67	1.57	19.69	3.94	4.0"
GVM-ISO160F	7.91	1.77	25.69	3.94	6.0"
GVM-ISO200F	10.16	1.85	30.06	3.94	8.0"
GVM-ISO250F	12.20	2.15	37.70	4.92	10.0"
GVM-ISO300F	16.73	3.07	46.91	4.92	12.0"



* Also available in ISO-K, CF HV

Gate Valve

Semiconductor Grade

Stainless Steel

* Low particle by ceramic ball bearing
* Cycle life of 250,000
* Kalrez O-Ring available
* Easy maintenance
* Customization available for special projects

Specification:

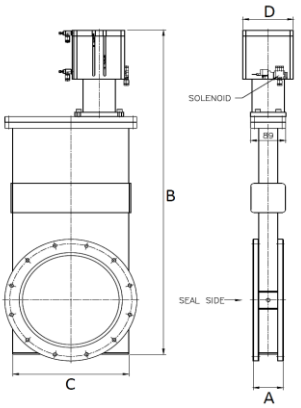
Vacuum range:	$1x10^{-9}$ Torr
Leak test:	$1x10^{-9}$ atm cc/sec of He
Bake temperature:	302°F (150°C)
Life:	100,000 Cycle
Time from open-close:	< 1.5 sec
Operating temperature:	up to 212°F(100°C)
Position Indicator:	28 VDC or 115 VAC



GVPS GVMS

Pneumatic

Part No.	A (inch)	B (inch)	C (inch)	D (inch)	Port Size (ID)
GVPS-CF2.75-HV-24-PI	2.06	10.12	2.74	2.28	1.5"
GVPS-CF3.38-HV-24-PI	2.85	13.17	3.92	2.68	2.0"
GVPS-CF4.50-HV-24-PI	2.66	13.17	3.92	2.68	2.5"
GVPS-CF4.62-HV-24-PI	2.52	19.27	5.51	2.68	3.0"
GVPS-CF6.00-HV-24-PI	3.15	19.27	5.83	2.52	4.0"
GVPS-CF8.00-HV-24-PI	3.39	23.48	7.48	3.03	6.0"
GVPS-CF10.00-HV-24-PI	3.39	29.25	9.41	3.70	8.0"
GVPS-CF12.00-HV-24-PI	4.09	35.55	11.57	4.88	10.0"
GVPS-CF14.00-HV-24-PI	4.16	41.97	14.49	5.51	12.0"
GVPS-CF16.00-HV-24-PI	4.55	47.56	16.77	6.26	14.0"

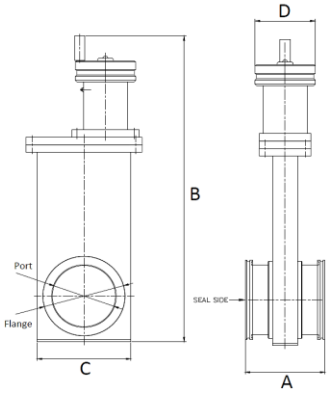


* Also available in UHV (CF), JIS, ASA, KF, and ISO flange

* Solenoid, Position Indicator included with pneumatic gate valve

Manual

Part No.	A (inch)	B (inch)	C (inch)	D (inch)	Port Size (ID)
GVMS-CF2.75-HV	2.06	10.58	2.74	2.56	1.5"
GVMS-CF3.38-HV	2.85	13.06	3.92	2.52	2.0"
GVMS-CF4.50-HV	2.66	13.06	3.92	2.52	2.5"
GVMS-CF4.62-HV	2.52	19.27	5.51	2.68	3.0"
GVMS-CF6.00-HV	3.15	19.71	5.83	3.74	4.0"
GVMS-CF8.00-HV	3.39	23.00	7.48	3.74	6.0"
GVMS-CF10.00-HV	3.39	28.41	9.41	3.90	8.0"
GVMS-CF12.00-HV	4.09	34.28	11.57	4.33	10.0"



* Also available in UHV (CF), JIS, ASA, KF, and ISO flange

Gate Valve

Semiconductor Grade - Sheild Gate Valve

Benefits and Features:

- Less than 1mm gap between valve body and blocker
- Prevents in flow gas(powder) into inside of valve body
- Applications: Pump isolation, High level of process by product in the gas stream



Specification:

GATE SEAL TYPE	SHIELD GATE VALVE
Operation	Manual / Pneumatic
Flange Size (ID)	2.5" ~ 10"
Flange Type	ISO, JIS, ASA, CF
Feedthrough	Welded Bellows
Gate Seal	Viton O-Ring / Kalrez O-Ring / EPDM
Bonnet Seal	Viton O-Ring
Response Time	≤ 2 sec
Operate Pressure Range	2.5" ~ 6": 1×10^{-10} mbar to 1400 mbar
	8" ~ 10": 1×10^{-10} mbar to 1200 mbar
Differential pressure at opening	≤ 30 mbar
Differential pressure on the gate	2.5" ~ 6": ≤ 1400 mbar / 8" ~ 10" ≤ 1200 mbar
Leak rate	< 1×10^{-10} mbar ℓ/sec
Cycles until first service	200,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 60 °C
Bake Temperature	≤ 150 °C
Materials	Body (Stainless Steel 304) /
	Actuator (Al 6061 Anodizing)
Mounting Position	Any
Operating Pressure (N2)	4 ~ 7 bar

Gate Valve

Semiconductor Grade - 3rd (Multi) Position Gate Valve

Benefits and Features:

- 3 Position Function
  - Valve Open, Valve Close, 3rd POSITION
- Equipment can read valve state through connect to 9 Pin D-Sub of the valve
- Manual and Pneumatic valve combination
- Applications: Any other process that requires pressure control



Specification:

GATE SEAL TYPE	3rd(MULTI) POSITION GATE VALVE
Operation	Pneumatic
Flange Size (ID)	2.5" ~ 12"
Flange Type	ISO, JIS, ASA, CF
Feedthrough	Welded Bellows
Gate Seal	Viton O-Ring / Kalrez O-Ring / EPDM
Bonnet Seal	Viton O-Ring
Response Time	≤ 2 sec
Operate Pressure Range	2.5" ~ 6": 1×10^{-10} mbar to 1400 mbar
	8" ~ 12": 1×10^{-10} mbar to 1200 mbar
Differential pressure at opening	≤ 30 mbar
Differential pressure on the gate	2.5" ~ 6": ≤ 1400 mbar / 8" ~ 12" ≤ 1200 mbar
Leak rate	< 1×10^{-10} mbar ℓ/sec
Cycles until first service	200,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 60 °C
Bake Temperature	≤ 150 °C
Materials	Body (Stainless Steel 304) /
	Actuator (Al 6061 Anodizing)
Mounting Position	Any
Operating Pressure (N2)	4 ~ 7 bar

Gate Valve

Semiconductor Grade - Heating Gate Valve

Benefits and Features:

- Heating Function using Jacket or Heater inserted
- Heating Controller
- Applications: Process with by products such as powder, gas





Specification:

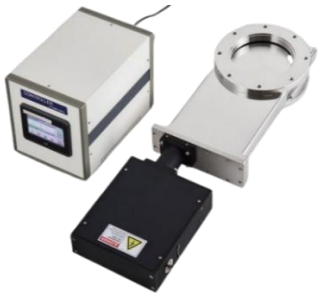
GATE SEAL TYPE	HEATING GATE VALVE
Operation	Manual / Pneumatic
Flange Size (ID)	1.5" ~ 12"
Flange Type	ISO, JIS, ASA, CF
Feedthrough	Welded Bellows
Gate Seal	Viton O-Ring / Kalrez O-Ring / EPDM
Bonnet Seal	Viton O-Ring
Response Time	≤ 2 sec
Operate Pressure Range	1.5" ~ 6": 1×10^{-10} mbar to 1400 mbar
	8" ~ 12": 1×10^{-10} mbar to 1200 mbar
Differential pressure at opening	≤ 30 mbar
Differential pressure on the gate	1.5" ~ 6": ≤ 1400 mbar / 8" ~ 12" ≤ 1200 mbar
Leak rate	< 1×10^{-10} mbar ℓ/sec
Cycles until first service	200,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 80 °C
Bake Temperature	≤ 200 °C
Materials	Body (Stainless Steel 304) /
	Actuator (Al 6061 Anodizing)
Mounting Position	Any
Operating Pressure (N2)	4 ~ 7 bar

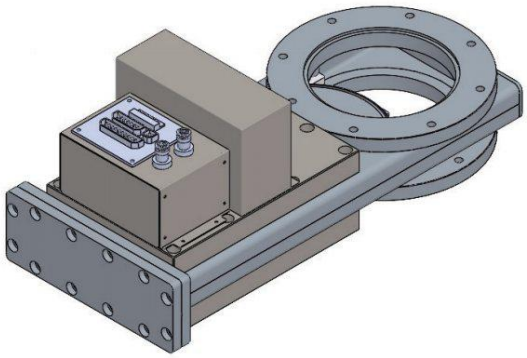
Gate Valve

Semiconductor Grade - Gate Valve Control System

Benefits and Features:

- Body Material: Stainless Steel
- Compact Design
- Integrated pressure controller with stepper motor
- Applications: Any other process that requires pressure control and isolation





Specification:

GATE SEAL TYPE	GATE VALVE CONTROL SYSTEM	
Materials Body	STS304	
Materials Mechanism	STS304, STS420	
Materials Gate Sealing	FKM(VITON)	
Flange Size (ID)	1.5" ~ 10"	
Feedthrough	Rotary Feedthrough	
Actuator	Stepper Motor	
He Leak Rate	1×10^{-9} mbar ℓ/sec	
Pressure Range	1×10^{-8} mbar to 1.4 bar	
Differential pressure on the gate	≤ 1.4 bar	
Differential pressure at opening	≤ 30 mbar	
Cycles until first service	Pressure Control	1,000,000
	Open/Close	200,000
Temperature	Body	≤ 150 °C
	Controller	≤ 35 °C
Installation Direction	Any	
Interface	RS232, RS485, Devicenet, Profibus, EtherCat	

Gate Valve

Semiconductor Grade - Transfer Valve(I-Motion)

Benefits and Features:

- Body Material: Aluminum or Stainless Steel
- Compact Design
- Easy Maintenance using Repair Parts Kit
- Applications: Transfer and process chamber isolation in semiconductor systems for less than 450mm wafers



Specification:

GATE SEAL TYPE	TRANSFER VALVE(I-MOTION)
Operation	Pneumatic
Flange Size (ID)	32 × 222 / 46 × 236 / 50 × 336 / 56 × 500
Feedthrough	Welded Bellows
Gate Seal	Viton O-Ring / Vulcanized Seal
Bonnet Seal	Viton O-Ring
Response Time	≤ 2 sec
Operate Pressure Range	1×10^{-8} mbar to 1200 mbar
Differential pressure at opening	≤ 30 mbar
Differential pressure on the gate	≤ 1200 mbar
Leak rate	Stainless: < 1×10^{-9} mbar ℓ/sec Aluminum: < 1×10^{-5} mbar ℓ/sec
Cycles until first service	≥ 1,000,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 80 °C
Bake Temperature	≤ 200 °C
Materials	Stainless Steel 304, AL6061 Anodizing
Mounting Position	Any
Operating Pressure (N2)	4 ~ 7 bar

Gate Valve

Semiconductor Grade - Transfer Valve(L-Motion)

Benefits and Features:

- Body Material: Aluminum or Stainless Steel
- Compact Design
- Easy Maintenance using Repair Parts Kit
- Applications: Transfer and process chamber isolation in semiconductor systems for less than 450mm wafers



Specification:

GATE SEAL TYPE	TRANSFER VALVE(L-MOTION)
Operation	Pneumatic
Flange Size (ID)	32 × 222 / 46 × 236 / 50 × 336 / 56 × 500
Feedthrough	Welded Bellows
Gate Seal	Viton O-Ring / Vulcanized Seal
Bonnet Seal	Viton O-Ring
Response Time	≤ 2 sec
Operate Pressure Range	1×10^{-8} mbar to 1200 mbar
Differential pressure at opening	≤ 30 mbar
Differential pressure on the gate	≤ 1200 mbar
Leak rate	Stainless: < 1×10^{-9} mbar ℓ/sec Aluminum: < 1×10^{-5} mbar ℓ/sec
Cycles until first service	≥ 1,000,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 80 °C
Bake Temperature	≤ 200 °C
Materials	Stainless Steel 304, AL6061 Anodizing
Mounting Position	Any
Operating Pressure (N2)	4 ~ 7 bar

Gate Valve

Semiconductor Grade - Customized Large Transfer Valv

Benefits and Features:

- Customized Order Made
- Applications : Large coating systems



Specification:

GATE SEAL TYPE	CUSTOMIZED LARGE TRASFER VALVE
Operation	Pneumatic
Flange Size (ID)	80 × 500 / 100 × 400 / 200 × 1800 / 650 × 1050, etc
Flange Type	Customized
Feedthrough	Welded Bellows / O-Ring Seal
Gate Seal	Viton O-Ring / Kalrez O-Ring
Bonnet Seal	Viton O-Ring
Response Time	≤ 2 sec
Operate Pressure Range	1×10^{-8} mbar to 1000 mbar
Differential pressure at opening	≤ 30 mbar
Differential pressure on the gate	≤ 1000 mbar
Leak rate	$< 5\times10^{-9}$ mbar ℓ/sec
Cycles until first service	10,000 ~ 200,000
Temperature for Valve Body	≤ 200 °C
Temperature for Actuator	≤ 60 °C
Bake Temperature	≤ 150 °C
Materials	Stainless Steel 304, A5083 ~ A7075
Mounting Position	Any
Operating Pressure (N2)	6 ~ 8 bar

Gate Valve

Harsh Environment

Benefits and Features:



* **Robust & Reliable**
  - No bearings or linkages
  - No hard impact, thus runs smooth
  - No vibration
  - Low particle generation
* **Low Maintenance**
  - One single plate actuated by an air cylinder
  - Simple to assemble or disassemble

* **Available sizes:** DN50, DN80, DN100, DN160

Application: LED, Abatement or any harsh environment

Specification:	
Pressure range:	1x10-9 mbar
Leak rate:	1x10-9 mbar, l/s
Different pressure:	7 bar
Operating temperature:	120 C
Pneumatic pressure:	60-80 psi
Solenoid:	24 vdc or 120 vac
Mounting position:	Any
Cycle life:	50000

Gate Valve

Aluminum

Our aluminum gate valves are machined from solid blocks, resulting in better rigidity and strength. These high-quality valves are ideal for various industrial applications where reliability and performance are critical.

Feature:

* Chlorine resistant
* Lower H2 outgassing
* Low particle by ceramic ball mechanism
* Cycle life of 250,000
* Easy maintenance and repair
* Customization available for special projects

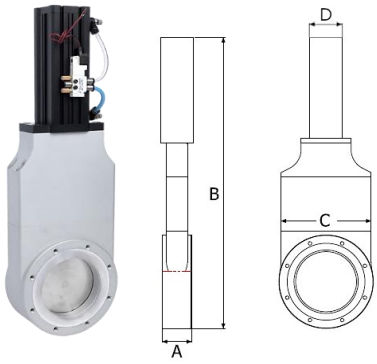
Specification:

Vacuum range	$8x10^{-8}$ Torr
Leak test	$1x10^{-9}$ atm cc/sec of He
Bake temperature	150° C
Life	250,000 Cycle
Time from open-close	< 1.5 sec
Operating temperature	up to 100° C
Position Indicator	28 VDC, or 115VAC
Air pressure	82 psig
Differential pressure at opening	< 30 mbar
Body & mechanism material	6061-T6 AL
Shaft material	DN40-80AL/DN100-500 304SS
Carriage	6061-T6 AL /Peek

Peumatic Aluminum Gate Valve - KF / ISO Flange

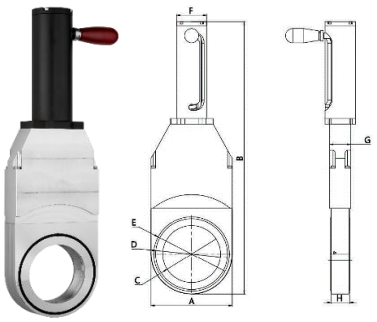
Part No.	A (inch)	B (inch)	C (inch)	D (inch)	Port Size (ID)
GVAPS-KF40-24-PI	2.36	11.54	2.52	2.52	1.5"
GVAPS-KF50-24-PI	2.24	11.50	3.27	2.24	2.0"
GVAPS-ISO63F-24-PI	2.36	17.54	4.61	2.52	2.5"
GVAPS-ISO80F-24-PI	2.36	22.07	6.50	2.52	3.0"
GVAPS-ISO100F-24-PI	2.76	29.63	8.46	3.03	4.0"
GVAPS-ISO160F-24-PI	2.76	34.84	10.43	3.03	6.0"
GVAPS-ISO200F-24-PI	3.23	41.42	12.40	3.70	8.0"

* Solenoid, Position Indicator included with pneumatic gate valve



Manual Aluminum Gate Valve - KF / ISO Flange

Part No.	A (inch)	B (inch)	C (inch)	D (inch)	Port Size (ID)
GVAPS-KF40-24-PI	2.36	11.54	2.52	2.52	1.5"
GVAPS-KF50-24-PI	2.24	11.50	3.27	2.24	2.0"
GVAPS-ISO63F-24-PI	2.36	17.54	4.61	2.52	2.5"
GVAPS-ISO80F-24-PI	2.36	22.07	6.50	2.52	3.0"
GVAPS-ISO100F-24-PI	2.76	29.63	8.46	3.03	4.0"



Gate Valve

Mini

A substitude for gate valve at a fraction of the cost. This valve has very few parts with only one axis motion, thus extremely robust. Available in manual and electrical version. The electrical version is a throttling valve with unlimited positions to control the flow. Ideal application for loadlock chamber to avoid turbulance.

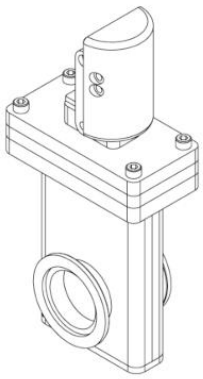
The Manual Mini Gate Valve works with handle locking mechanism which was to provide reliable gate sealing without any friction. The locking mechanism locks the gate in the closed position.

Features & Benefit

Reliable, robust
secure locking in closed position on both gate sides
Actuator solenoid available in AC or DC
Reliable performance
Extended maintenance free cycle

Specification

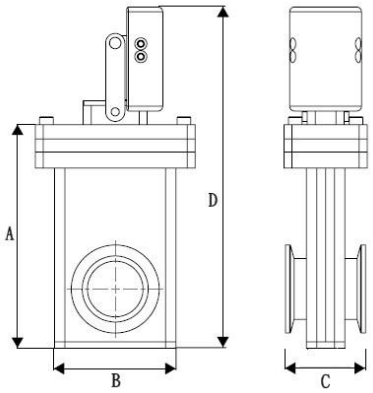
Temperature: 150°C
250,000 cycles
Vacuum Range: 1x10-7 Torr
Helium Leak Rate: < 1x10-9 mbar l/s
With standard Viton O-ring
**Higher temperature version available*

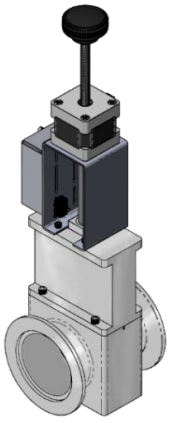


Manual Valve

Mini Gate Valve Manual

Size	A	B	C	D
KF16	3.32	1.87	2.76	6.50
KF25	3.32	1.87	2.76	6.50
KF40	5.51	2.99	1.97	9.17
KF50	5.22	2.95	3.15	8.40





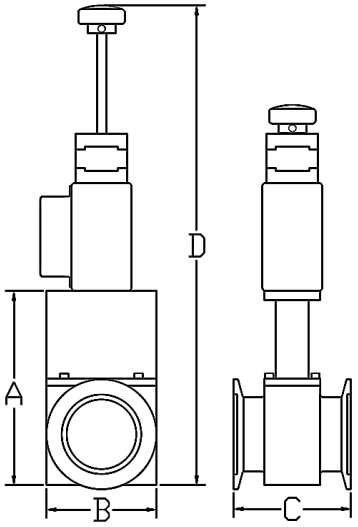
Electrical Valve

2-Phase Linear motor, 3.3V / 1A

Throttleing with unlimited positions

Mini Gate Valve Electrical

Size	A	B	C	D
KF16	3.32	1.87	2.76	10.49
KF25	3.32	1.87	2.76	10.49
KF40	5.22	2.95	3.15	12.39
KF50	5.22	2.95	3.15	12.39



Ball Valve

BV Standard	BV-M Machined	Custom Ball Valve
		

Standard Casting body. PTFE sealed. Vacuum to 1x10-8 torr. Pressure to 200 psi.

Machined Machined body. PTFE sealed. Vacuum to 1x10-8 torr. Used in high pressure, temperature, cryogenics and corrosive environment.

Custom Make to print.

Ball Valve

*** 3 Piece Structure Ball Valve ***

Stainless Steel Ball Valve

Application :

Ball Valve is ideal for isolating reactor, trap and scrubber on thin-film coating tool for harsh and corrosive environment. Commonly used on MOCVD & CVD equipment; down stream from process chamber or mechanical pump.

Ball Valve has less wetted surface than Poppet Valve. Wiping action of the Teflon across the ball reduces particulate buildup, making this valve robust in particulate rich effluent streams.

Body, stem, ball and end caps are made of 316L stainless steel. Fluoroelastomers are used to seal the stem from atmosphere. PTFE (Teflon) seals around the ball to isolate processes. Blow-out proof stem, full bore with internal surface of Ra < 0.4 give the valve extended life.

Features :

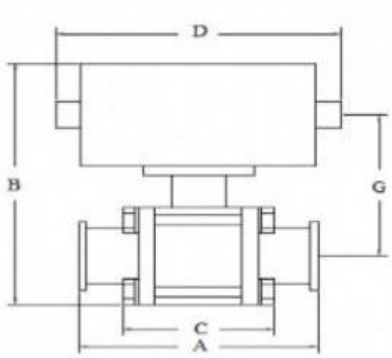
- Vacuum rating of $1x10^{-8}$ torr
- Bakeable to 150°C (200°C intermittent)
- Manufactured from 316L stainless steel
- Particulate resistant ball/seat design lengthens mean time to repair
- High conductance; straight through flow
- Service valve without removal from the system
- "Fail Safe" air-to-open, spring-to-close available
- 80-120 psig operating air pressure
- Leak Rate : 1×10^{-8} atm-cc/sec
- Available connection : Tube end, KF, ISO

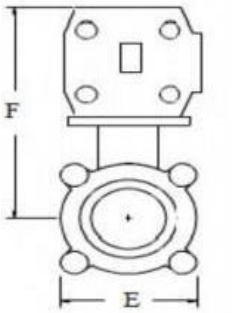
Ball Valve

Standard Ball Valve

Single Acting







Pneumatic Ball Valve, Single Acting (Fail safe)

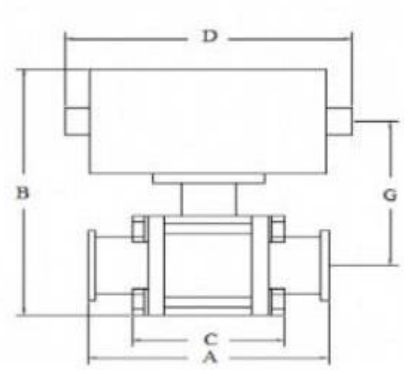
Part Number	A	B	D	E	F	G	Ball size	Condutance (L/Sec)	ISO - 5211	Port Size
BVP-S-KF10	3.50 (89)	4.43 (112)	5.33 (135)	1.80 (46)	3.51 (89)	2.60 (66)	0.38	3	F03	1/2"
BVP-S-KF16	3.50 (89)	4.43 (112)	5.33 (135)	1.80 (46)	3.51 (89)	2.60 (66)	0.56	5	F03	3/4"
BVP-S-KF25	4.70 (119)	5.80 (147)	6.10 (155)	2.22 (56)	4.70 (119)	3.40 (86)	0.81	13	F04	1"
BVP-S-KF40	5.80 (147)	7.40 (187)	7.20 (182)	3.00 (76)	5.90 (150)	4.40 (101)	1.25	35	F05	1-1/2"
BVP-S-KF50	7.20 (182)	8.00 (203)	7.20 (182)	3.50 (89)	6.15 (156)	4.55 (115)	1.50	57	F05	2"
BVP-S-ISO63	7.76 (197)	9.50 (241)	12.00 (305)	5.00 (127)	9.00 (228)	6.20 (157)	2.00	180	F07	2-1/2"
BVP-S-ISO80	9.01 (229)	15.50 (394)	12.00 (305)	6.40 (163)	12.30 (312)	7.76 (197)	2.50	260	F07	3"
BVP-S-ISO100	9.57 (243)	17.10 (434)	12.00 (305)	8.10 (206)	13.00 (330)	10.10 (257)	3.27	490	F10	4"

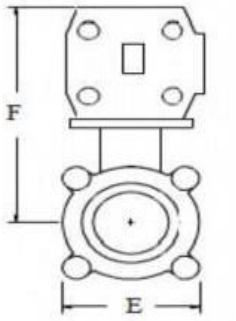
Ball Valve

Standard Ball Valve

Double Acting







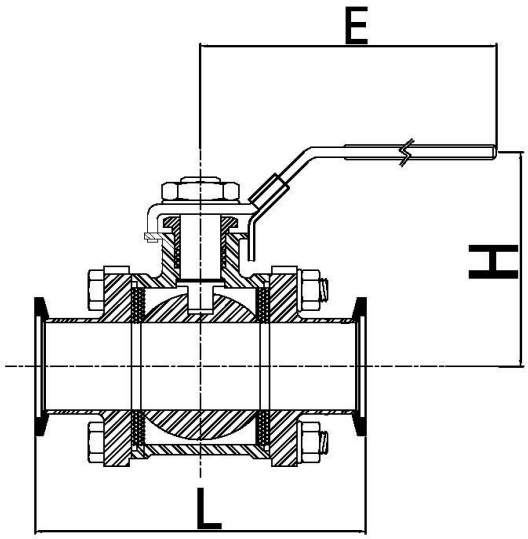
Pneumatic Ball Valve, Double Acting

Part Number	A	B	D	E	F	G	Ball Size	Condutance (L/Sec)	ISO - 5211	Port Size
BVP-D-KF10	3.50 (89)	4.43 (112)	5.33 (135)	1.80 (46)	3.51 (89)	2.60 (66)	0.38	3	F03	1/2"
BVP-D-KF16	3.50 (89)	4.43 (112)	5.33 (135)	1.80 (46)	3.51 (89)	2.60 (66)	0.56	5	F03	3/4"
BVP-D-KF25	4.70 (119)	5.80 (147)	6.10 (155)	2.22 (56)	4.70 (119)	3.40 (86)	0.81	13	F04	1"
BVP-D-KF40	5.80 (147)	7.40 (187)	7.20 (182)	3.00 (76)	5.90 (150)	4.40 (101)	1.25	35	F05	1-1/2"
BVP-D-KF50	7.20 (182)	8.00 (203)	7.20 (182)	3.50 (89)	6.15 (156)	4.55 (115)	1.50	57	F05	2"
BVP-D-ISO63	7.76 (197)	9.50 (241)	12.00 (305)	5.00 (127)	9.00 (228)	6.20 (157)	2.00	180	F07	2-1/2"
BVP-D-ISO80	9.01 (229)	15.50 (394)	12.00 (305)	6.40 (163)	12.30 (312)	7.76 (197)	2.50	260	F07	3"
BVP-D-ISO100	9.57 (243)	17.10 (434)	12.00 (305)	8.10 (206)	13.00 (330)	10.10 (257)	3.27	490	F10	4"

Ball Valve

Standard Ball Valve





Manual Ball Valve

Part No#	Tube I.D.	Tube O.D.	L	H	E	Torque (in/lb)	Port Size
BVM-KF10	0.37 (9.50)	0.50 (12.7)	3.62 (92)	2.05 (52)	4.17 (106)	40.00	1/2"
BVM-KF16	0.63 (15.9)	0.75 (19.1)	3.62 (92)	2.17 (55)	4.17 (106)	64.00	3/4"
BVM-KF25	0.87 (22.2)	1.00 (25.4)	4.21 (107)	2.76 (70)	5.31 (135)	130.00	1"
BVM-KF40	1.38 (35.0)	1.50 (38.2)	5.12 (130)	3.50 (89)	7.17 (182)	195.00	1-1/2"
BVM-KF50	1.87 (47.6)	2.00 (50.8)	5.94 (151)	3.90 (99)	7.17 (182)	250.00	2"
BVM-ISO63	2.37 (60.3)	2.50 (63.4)	7.76 (197)	5.00 (127)	12.20 (310)	512.00	2-1/2"
BVM-ISO80	2.87 (73.0)	3.00 (76.2)	9.01 (229)	5.31 (135)	12.30 (310)	685.00	3"
BVM-ISO100	3.83 (97.4)	4.00 (101.6)	9.57 (243)	6.50 (165)	15.75 (400)	996.00	4"

Ball Valve

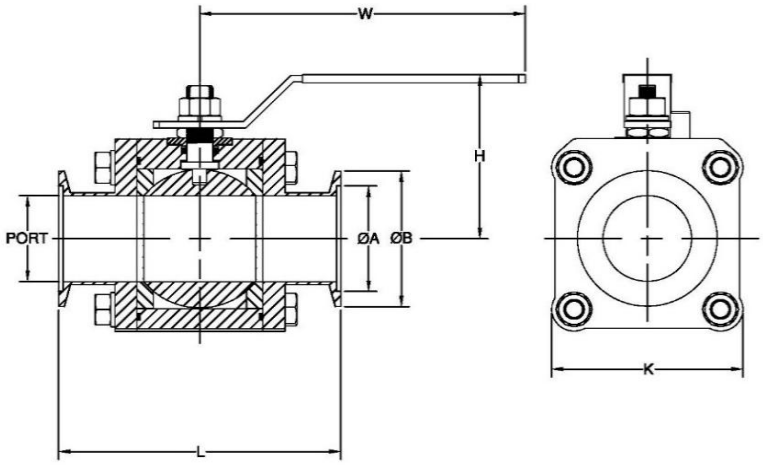
Machined Ball Valve

*** Op. temperature: -200 to 260℃ (-328 to 500 F)**

*** Tube End configuration available**

Machined from corrosive resistant 316L stainless steel. Fluoroelastomers are used to seal the stem and end caps while the PTFE seats cold flow around the ball to isolate the process when closed. Machined ball valves are used in high pressure, high temperature, cryogenic and corrosive enviroment. It is stronger and cleaner than cast valve. More suited for oil, gas and harsh vacuum application.

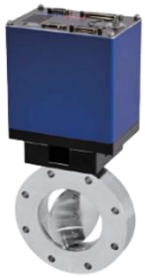




Manual Machined Ball Valve

Part Number	Nom.	A	B	L	H	W	K	Port Size
BVM-KF25-M	1"	1.03	1.57	3.92	2.99	6.54	2.40	0.87
BVM-KF40-M	1.5"	1.62	2.17	5.16	3.13	6.93	3.20	1.38
BVM-KF50-M	2"	2.06	2.95	6.31	4.78	7.56	4.10	1.87

Butterfly Valve

BFV Standard	Vari-Q Chevron	TBV Throttling
		

Standard	Flow and pressure control. Vacuum to 1x10-8 torr. Used to adjust flow rate. Self-wiping.
Chevron Vane	Low profile, high conductance, optimum pressure control. Size range 4" to 35".
Custom	Throttling pressure control. Plug-in compatible to VAT.

Butterfly Valve

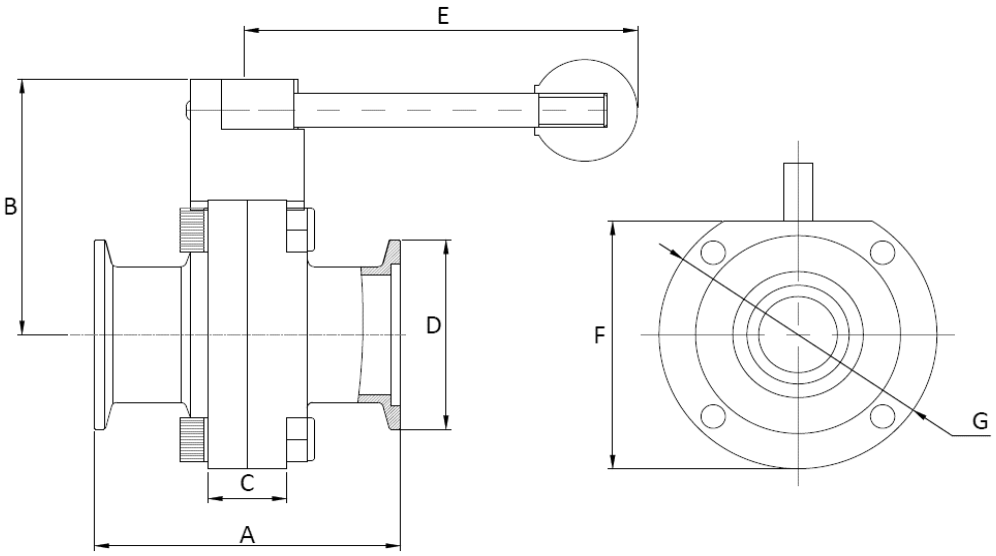
Standard Butterfly Valve

Quick action with a quarter turn to go from fully open to fully close with positive lock.
Butterfly valve functions both as shut-off and throttling for sizes from 3/4" to 2".
All wetted area are made of stainless steel. The knob is made of polymer.

Specification

* Vacuum range: 1x10-8 Torr
* Op. temperature: -55° C to 225° C





KF Flange Butterfly Valve

NOM. Size	ISO Ref	A	B	C	D	E	F	G
3/4"	KF16	2.87	2.64	0.87	1.18	4.61	2.83	3.07
1"	KF25	2.87	2.64	0.87	1.57	4.61	2.83	3.07
1-1/2"	KF40	3.38	2.64	0.87	2.17	4.61	2.83	3.07
2"	KF50	3.57	2.99	0.87	2.95	4.49	--	3.90

* Available in tube end

* Internal seating available in FKM, EPDM

Butterfly Valve

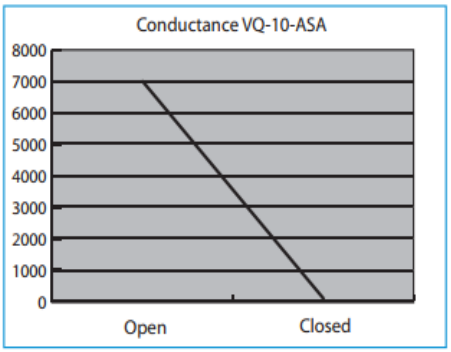
Vari-Q Throttling Valve

Vari-Q Throttling Valve Provide improved conductance control than butterfly valve. The vanes are counter-rotated providing optimal pressure control over wide range of operaton. In the open position, the low-profile vanes offer little restriction in the pumping path. Vari-Q valve is the industry's standard of choice for valve sizes from 4" to 35".

Feature & Benefit:

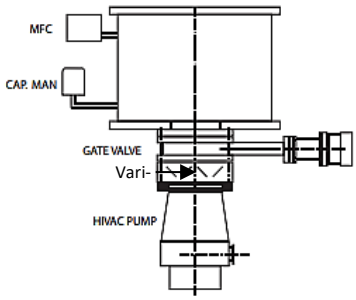
* Linear conductance control
* Highly repeatable
* Low profile
* Upstream or Downstream pressure control
* Corrosion Resistant
* Sizes from 4" to 35"
* Available in SST or Aluminum
* Available in RS232 or 1-10 V DC.
* Build-in diagnostics
* Manual override for set up and maintenance





Conductance (l/s)

Flange	Max	Min
6" ASA	2,450	20
10" ASA	6,900	40
16" ASA	16,200	100
20" ASA	22,000	150
32" ASA	51,200	270
35" ASA	61,700	300



Vari-Q valve can be supplied with integrated controller. These controller offer either digital or analog modes integrated into the process control system. The mounting configuration is integrated into pneumatic or servo drives at the valve body.

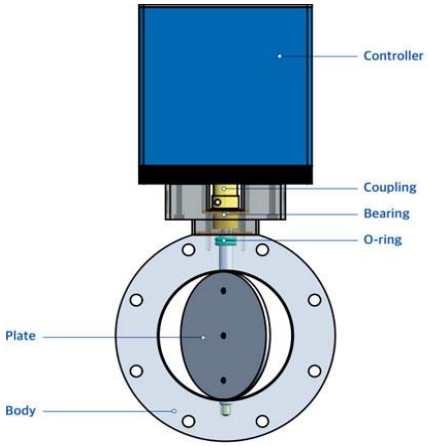
Butterfly Valve

Throttling Valve

Butterfly Throttling Valve is optimal for throttling downstream pressure control

Feature & Benefit:

* Perfect solution for the pressure control and isolation
* Plug-in Compatible with VAT
* Low particle generation
* Space and cost saving
* Any mounting position
* High temperature version available at 300ºC

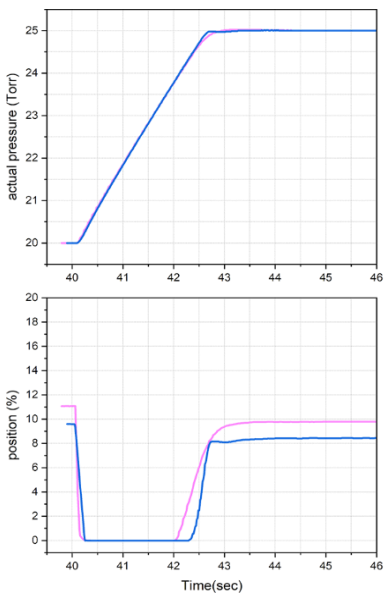


Specification:

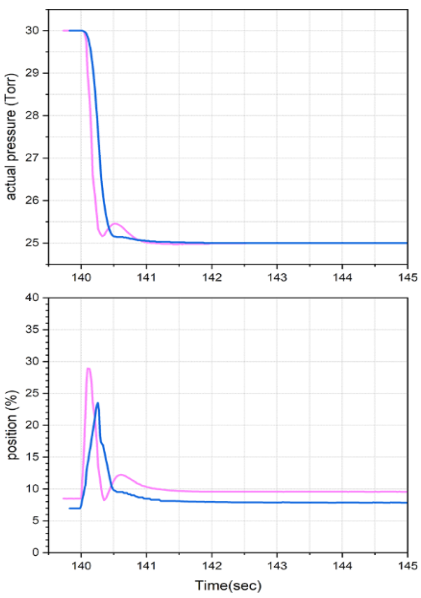
Vacuum range	1 x 10^-8 mbar to 1.2 bar
Leak test	1x 10^-9 mbar l/s
Operating temperature	+10℃ to +150℃
Life	2 million (Unheated and under clean condition)
Mounting Position	Any position ISO-KF needs support in horizontal position
Shaft Seal	Viton. Kalrez seal available
Power Input	+24 VDC (±10%) @ 0.5V pk-pk max.
Power consumptoin	80 W max
Sensor power supply	Input +24VDC/1500 mA max Output ± 15 VDC (±5%) / 667 mA max
Sensor input	0-10 VDC / Ri > 100kΩ ADC resolution - 0.16 mV Sampling time - 1 ms
Digital inputs	±24 VDC max
Digital outputs	70 VDC or 70 V peak max 0.5 ADC or 0.5 A peak max 10 W max
Ambient temperature	0 ℃ to +50 ℃ max. (<35 ℃ recommended)
Pressure control accuracy	5 mV or 0.1% of setpoint, whichever is greater
Position resolution	20000
Actuating time	Closing - 0.3 s typ. Opening - 0.3 s typ.

Butterfly Valve

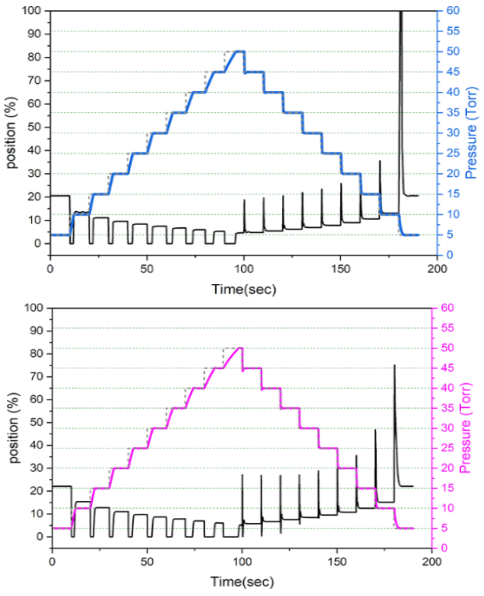
Blue VPC Pink Competitor



Pressure Up



Pressure Down



Control Response

KF Flange Throttling Butterfly Valve

Nom. I.D.	Port Size	A (inch)	B (inch)	C (inch)	D (inch)	Conductance	Min. Controllable Conductance	Max. Differential Pressure
1.5"	KF40	80.0	89.2	54.9	41.3	80 l/s	0.25 l/s	1,000 mbar
2.0"	KF50	90.0	95.5	74.9	52.3	150 l/s	0.30 l/s	1,000 mbar

ISO Flange Throttling Butterfly Valve

Nom. I.D.	Port Size	A (inch)	B (inch)	C (inch)	D (inch)	Conductance	Min. Controllable Conductance	Max. Differential Pressure
2.5"	ISO63	130	100	70	63	360 l/s	0.45 l/s	1,000 mbar
3.0"	ISO80	145	108	83	80	850 l/s	0.65 l/s	1,000 mbar
4.0"	ISO100	165	119	102	100	1,400 l/s	0.85 l/s	800 mbar
6.0"	ISO160	225	150	153	150	3,800 l/s	1.70 l/s	300 mbar
8.0"	ISO200	285	180	213	200	7,800 l/s	2.80 l/s	150 mbar
10.0"	ISO250	335	206	261	250	15,000 l/s	5.00 l/s	100 mbar

KF Flange & Component

* KF flange is suitable for applications requring rapid and frequent assembly and disassembly.
  KF flange is often referred to as NW flange.

* KF flange is available for tube size from 1/2" to 2". For larger tube size, ISO flange is used.

* KF flange can be adapted to CF, ISO flange, pipe thread, or VCR fitting (through adapter).
  Please refer to our catalog under "adapter".

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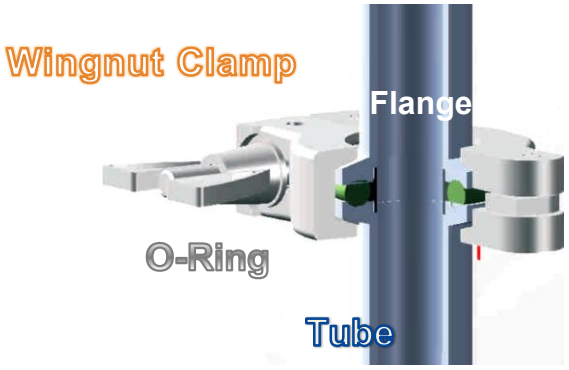
Vacuum Products Corp is not affiliated with Swagelok



Standard Specification

Application:	High vacuum
Materials:	304, 316L or Almuminum
Flanges Sizes:	KF10 ~ KF50
Tube Sizes:	1/2" ~2.0"
Vacuum Range :	760 Torr ~ $1x10^{-9}$ Torr
Gasket Materials :	Viton, Buna-N or Silicon

**** All Dimensions are in millimeters unless otherwise specified.**

**** Quantity Discount is available**

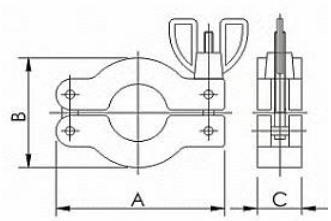
KF Flange & Component

KF Wing-Nut Clamp

Material : Aluminum

Part No.	A (Inch)	B (Inch)	C (INCH)
KF16-CL	2.45	1.61	0.65
KF25-CL	2.85	2.13	0.65
KF40-CL	3.53	2.72	0.65
KF50-CL	4.49	3.54	0.85



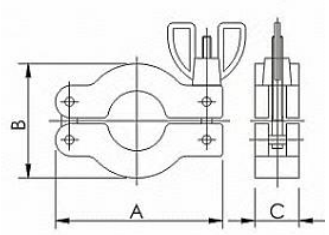


KF Wing-Nut Clamp

Material : SS304

Part No.	A (Inch)	B (Inch)	C (INCH)
KF16-CL-304	2.45	1.61	0.65
KF25-CL-304	2.85	2.13	0.65
KF40-CL-304	3.53	2.72	0.65
KF50-CL-304	4.49	3.54	0.85



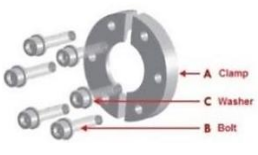


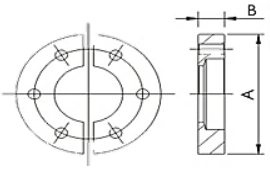
KF Bulkhead Clamp SET

Material : Aluminum

Part No.	A (Inch)	B (Inch)	Bolt Hole Size	# of Bolt Hole	Bolt Circle
KF16-BHC	2.00	0.36	0.21	6	1.50
KF25-BHC	2.37	0.39	0.21	6	1.89
KF40-BHC	2.94	0.37	0.21	6	2.44
KF50-BHC	3.75	0.41	0.21	8	3.25

** 10-32 threaded bolt





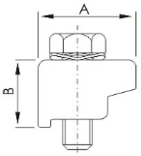
KF Flange & Component

Single Claw Clamp

Material : Aluminum

Part No.	A (Inch)	B (Inch)
KF10/50-SCP	0.79	0.55





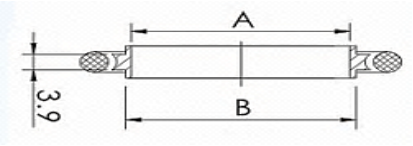
KF Centering Ring w/O-Ring

Material : 304SS

O-Ring : Viton O-Ring : Buna

Part No.	Part No.	A (Inch)	B (Inch)
KF10-CR	KF10-CR-B	0.39	0.47
KF16-CR	KF16-CR-B	0.63	0.67
KF25-CR	KF25-CR-B	0.98	1.02
KF40-CR	KF40-CR-B	1.57	1.61
KF50-CR	KF50-CR-B	1.97	2.05





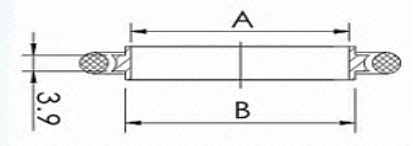
KF Centering Ring w/O-Ring

Material : Aluminum

O-Ring: Viton O-Ring : Buna

Part No.	Part No.	A (Inch)	B (Inch)
KF10-CRA	KF10-CRA-B	0.39	0.47
KF16-CRA	KF16-CRA-B	0.63	0.67
KF25-CRA	KF25-CRA-B	0.98	1.02
KF40-CRA	KF40-CRA-B	1.57	1.61
KF50-CRA	KF50-CRA-B	1.97	2.05





KF Flange & Component

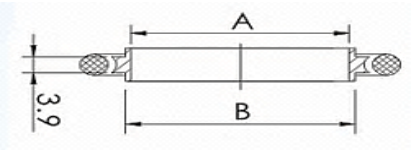
KF Centering Ring w/O-Ring

Material : 316L

O-Ring: Viton O-Ring : Buna

Part No.	Part No.	A (Inch)	B (Inch)
KF10-CR-316	KF10-CR-316-B	0.39	0.47
KF16-CR-316	KF16-CR-316-B	0.63	0.67
KF25-CR-316	KF25-CR-316-B	0.98	1.02
KF40-CR-316	KF40-CR-316-B	1.57	1.61
KF50-CR-316	KF50-CR-316-B	1.97	2.05





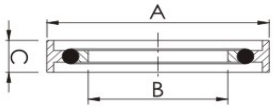
KF Centering Ring w/Retainer Ring

Centering Ring Material : 304SS Retainer Material : Aluminum

O-Ring : Viton

Part No.	A (Inch)	B (Inch)	C (Inch)
KF16-CR-R	1.28	0.63	0.28
KF25-CR-R	1.67	0.98	0.28
KF40-CR-R	2.26	1.57	0.28
KF50-CR-R	3.05	1.97	0.28





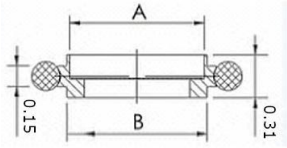
KF Screened Centering Ring w/O-Ring

Material : 304SS , O-Ring : Viton

70 Mesh Screen

Part No.	A (Inch)	B (Inch)
KF10-CRM	0.39	0.47
KF16-CRM	0.63	0.67
KF25-CRM	0.98	1.02
KF40-CRM	1.57	1.61
KF50-CRM	1.97	2.05





KF Flange & Component

KF Adaptive Centering Rings

Material : 304SS O-ring: Viton

Part No.	A (Inch)	B (Inch)	C (Inch)
KF16/10-CR	0.67	0.47	0.39
KF25/20-CR	1.02	0.87	0.83
KF40/32-CR	1.61	1.34	1.26





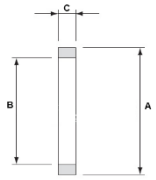
KF Overpressure Ring w/Centering Ring

Material : 304SS

Only Overpressure Ring With Centering Ring

Part No.	Part No.	A (Inch)	B (Inch)	C (Inch)
KF16-CR-OPR-NO	KF16-CR-OPR	1.25	1.19	0.15
KF25-CR-OPR-NO	KF25-CR-OPR	1.59	1.53	0.15
KF40-CR-OPR-NO	KF40-CR-OPR	2.25	2.13	0.15
KF50-CR-OPR-NO	KF50-CR-OPR	2.75	2.62	0.15



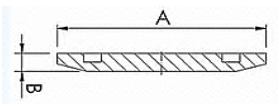


KF Blank Flange

Material : 304SS Material : 316L Material : Aluminum

Part No.	Part No.	Part No.	A (Inch)	B (Inch)
KF10-CF	KF10-CF-316	KF10-CF-A	1.18	0.20
KF16-CF	KF16-CF-316	KF16-CF-A	1.18	0.20
KF25-CF	KF25-CF-316	KF25-CF-A	1.57	0.20
KF40-CF	KF40-CF-316	KF40-CF-A	2.17	0.20
KF50-CF	KF50-CF-316	KF50-CF-A	2.95	0.20





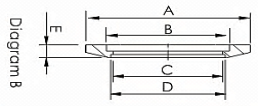
KF Flange & Component

KF Bored Weld Flange

Material : 304SS Material : 316L Material : Aluminum THK: 0.2"

Part No.	Part No.	Part No.	A(Inch)	B(Inch)	C(Inch)	D(Inch)
KF10-0.38-BF	KF10-0.38-BF-316	KF10-0.38-BF-A	1.18	0.5	0.32	0.39
KF10-0.5-BF	KF10-0.5-BF-316	KF10-0.5-BF-A	1.18	0.5	0.45	0.51
KF16-0.25-BF	KF16-0.25-BF-316	KF16-0.25-BF-A	1.18	0.68	0.20	0.26
KF16-0.38-BF	KF16-0.38-BF-316	KF16-0.38-BF-A	1.18	0.68	0.32	0.39
KF16-0.5-BF	KF16-0.5-BF-316	KF16-0.5-BF-A	1.18	0.68	0.45	0.51
KF16-0.75-BF	KF16-0.75-BF-316	KF16-0.75-BF-A	1.18	0.68	0.64	0.76
KF25-0.25-BF	KF25-0.25-BF-316	KF25-0.25-BF-A	1.57	1.03	0.20	0.26
KF25-0.38-BF	KF25-0.38-BF-316	KF25-0.38-BF-A	1.57	1.03	0.32	0.39
KF25-0.5-BF	KF25-0.5-BF-316	KF25-0.5-BF-A	1.57	1.03	0.45	0.51
KF25-0.75-BF	KF25-0.75-BF-316	KF25-0.75-BF-A	1.57	1.03	0.64	0.76
KF25-1.0-BF	KF25-1.0-BF-316	KF25-1.0-BF-A	1.57	1.03	0.94	1.01
KF40-0.25-BF	KF40-0.25-BF-316	KF40-0.25-BF-A	2.17	1.62	0.20	0.26
KF40-0.38-BF	KF40-0.38-BF-316	KF40-0.38-BF-A	2.17	1.62	0.32	0.39
KF40-0.5-BF	KF40-0.5-BF-316	KF40-0.5-BF-A	2.17	1.62	0.45	0.51
KF40-0.75-BF	KF40-0.75-BF-316	KF40-0.75-BF-A	2.17	1.62	0.64	0.76
KF40-1.0-BF	KF40-1.0-BF-316	KF40-1.0-BF-A	2.17	1.62	0.94	1.01
KF40-1.5-BF	KF40-1.5-BF-316	KF40-1.5-BF-A	2.17	1.62	1.44	1.51
KF50-0.75-BF	KF50-0.75-BF-316	KF50-0.75-BF-A	2.95	2.06	0.64	0.76
KF50-1.0-BF	KF50-1.0-BF-316	KF50-1.0-BF-A	2.95	2.06	0.94	1.01
KF50-1.5-BF	KF50-1.5-BF-316	KF50-1.5-BF-A	2.95	2.06	1.44	1.51
KF50-2.0-BF	KF50-2.0-BF-316	KF50-2.0-BF-A	2.95	2.06	1.94	2.01





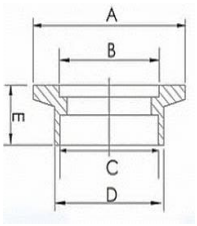
KF Flange & Component

KF Socket Weld Flange

Material : 304SS Material : 316L

Part No.	Part No.	A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)
KF10-SWx0.5	KF10-SWx0.5-316	1.18	0.48	0.51	0.61	0.50
KF16-SWx0.5	KF16-SWx0.5-316	1.18	0.68	0.76	0.87	0.50
KF25-SWx0.5	KF25-SWx0.5-316	1.57	1.03	1.02	1.13	0.50
KF40-SWx0.5	KF40-SWx0.5-316	2.17	1.62	1.52	1.75	0.50
KF50-SWx0.5	KF50-SWx0.5-316	2.95	2.06	2.02	2.25	0.50
KF25-SWx0.75	KF25-SWx0.75-316	1.57	1.03	1.02	1.13	0.75
KF40-SWx0.75	KF40-SWx0.75-316	2.17	1.62	1.52	1.75	0.75
KF50-SWx0.75	KF50-SWx0.75-316	2.95	2.06	2.02	2.25	0.75



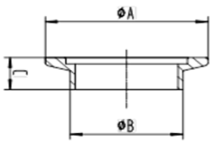


KF Weld Stub Flange, Short

Material : 304SS Material : 316L

Part No.	Part No.	A (Inch)	B (Inch)	C (Inch)
KF10-WSSx0.5	KF10-WSSx0.5-316	1.18	0.50	0.50
KF16-WSSx0.5	KF16-WSSx0.5-16	1.18	0.75	0.50
KF16-WSSx0.75	KF16-WSSx0.75-316	1.18	0.75	0.75
KF25-WSSx0.5	KF25-WSSx0.5-316	1.57	1.00	0.50
KF40-WSSx0.75	KF40-WSSx0.75-316	2.17	1.50	0.75
KF50-WSSx0.75	KF50-WSSx0.75-316	2.95	2.00	0.75





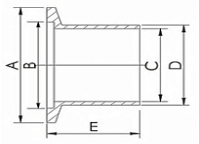
KF Flange & Component

KF Weld Stub Flange, Long

Material : 304SS Material : 316L Material : Aluminum

Part No.	Part No.	Part No.	A (Inch)	B (Inch)	C (Inch)	D (Inch)
KF10-WSLx1.58	KF10-WSLx1.58-316	KF10-WSLx1.58-A	1.18	0.48	0.37	0.50
KF16-WSLx1.58	KF16-WSLx1.58-316	KF16-WSLx1.58-A	1.18	0.68	0.62	0.75
KF25-WSLx1.58	KF25-WSLx1.58-316	KF25-WSLx1.58-A	1.57	1.03	0.87	1.00
KF40-WSLx1.58	KF40-WSLx1.58-316	KF40-WSLx1.58-A	2.17	1.62	1.37	1.50
KF50-WSLx1.58	KF50-WSLx1.58-316	KF50-WSLx1.58-A	2.95	2.06	1.87	2.00

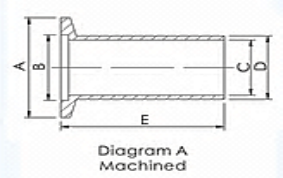


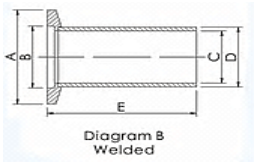


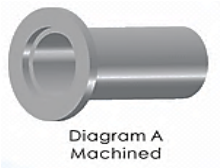
KF Half Nipple

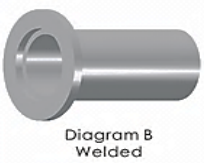
Material : 304SS

Part No.	Diagram	A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)
KF10-HNx1.25	A	1.18	0.48	0.37	0.50	1.25
KF16-HNx1.15	A	1.18	0.68	0.62	0.75	1.15
KF25-HNx2.03	B	1.57	1.03	0.87	1.00	2.03
KF25-HNx12.6	B	1.57	1.03	0.87	1.00	12.60
KF40-HNx2.40	B	2.17	1.62	1.37	1.50	2.40
KF50-HNx3.15	B	2.95	2.06	1.87	2.00	3.15









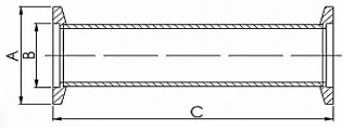
KF Flange & Component

KF full Nipple

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)
KF10-FNx2.50	1.18	0.48	2.50
KF16-FNx2.30	1.18	0.68	2.30
KF16-FNx12.6	1.18	0.68	12.60
KF25-FNx4.00	1.57	1.03	4.06
KF25-FNx12.6	1.57	1.03	12.60
KF40-FNx4.80	2.17	1.62	4.80
KF40-FNx12.6	2.17	1.62	12.60
KF50-FNx6.30	2.95	2.06	6.30
KF50-FNx12.6	2.95	2.06	12.60



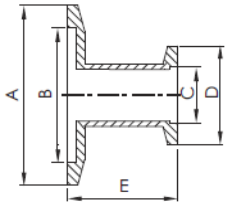


KF Straight Reducer

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)
KF25/16-R	1.57	1.03	0.68	1.18	1.70
KF40/16-R	2.17	1.62	0.68	1.18	1.70
KF40/25-R	2.17	1.62	1.03	1.57	1.70
KF50/16-R	2.95	2.06	0.68	1.18	1.70
KF50/25-R	2.95	2.06	1.03	1.57	1.70
KF50/40-R	2.95	2.06	1.62	2.17	1.70





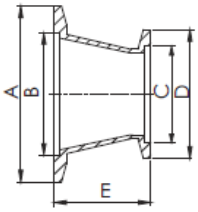
KF Flange & Component

KF Conical Reducer

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)	D (Inch)	E (Inch)
KF25/16-RC	1.57	1.03	0.68	1.18	1.57
KF40/16-RC	2.17	1.62	0.68	1.18	1.57
KF40/25-RC	2.17	1.62	1.03	1.57	1.57
KF50/16-RC	2.95	2.06	0.68	1.18	1.57
KF50/25-RC	2.95	2.06	1.03	1.57	1.57
KF50/40-RC	2.95	2.06	1.62	2.17	1.57



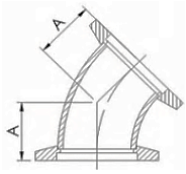


KF 45° Elbow

Material : 304SS

Part No.	A (Inch)
KF16-E45	0.62
KF25-E45	0.77
KF40-E45	1.08
KF50-E45	1.39



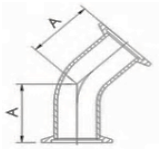


KF 45° Elbow With Tangent

Material : 304SS

Part No.	A (Inch)
KF16-E45T	0.91
KF25-E45T	1.33
KF40-E45T	1.78
KF50-E45T	2.46





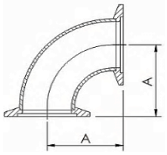
KF Flange & Component

KF 90° & DN 90° Elbow

Material : 304SS

Part No.	Part No.	A (Inch)	TUBE SIZE
KF16-E90	KF16-E90-316	1.15	
KF25-E90	KF25-E90-316	1.65	
KF40-E90	KF40-E90-316	2.40	
KF50-E90	KF50-E90-316	3.15	
DN16-E90		1.57	20.0 x 1.5mmt
DN25-E90		1.97	28.0 x 1.5mmt



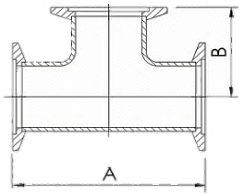


KF & DN Equal Tee

Material : 304SS

Part No.	A (Inch)	B (Inch)	TUBE SIZE
KF10-T	2.50	1.25	
KF16-T	2.30	1.15	
KF25-T	4.05	2.02	
KF40-T	4.80	2.40	
KF50-T	6.3	3.15	
DN16-T	3.15	1.57	20.0 x 1.5mmt
DN25-T	3.94	1.97	28.0 x 1.5mmt
DN40-T	5.12	2.56	44.5 x 2.0mmt





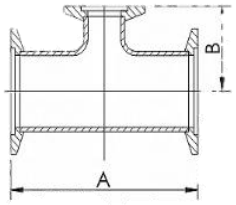
KF Flange & Component

KF Reducing Tee

Material : 304SS

Part No.	A (Inch)	B (Inch)
KF25/16-TR	4.06	1.27
KF40/16-TR	4.80	1.53
KF40/25-TR	4.80	2.28
KF50/16-TR	6.30	1.78
KF50/40-TR	6.30	2.65



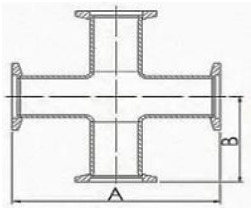


KF 4-Way Cross

Material : 304SS

Part No.	A (Inch)	B (Inch)
KF10-4X	2.50	1.25
KF16-4X	2.30	1.15
KF25-4X	4.05	2.02
KF40-4X	4.80	2.40
KF50-4X	6.30	3.15





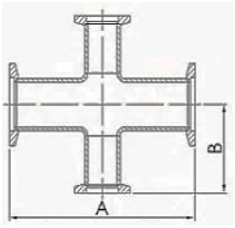
KF Flange & Component

KF 4-Way Cross , Reducing

Material : SS304

Part No.	A (Inch)	B (Inch)
KF25/16-4X	2.50	1.25
KF40/16-4X	4.80	1.53
KF40/25-4X	4.80	2.28
KF50/16-4X	6.30	1.78
KF50/40-4X	6.30	3.15



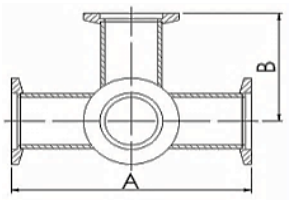


KF 5-Way Cross

Material : SS304

Part No.	A (Inch)	B (Inch)
KF16-5X	3.14	1.57
KF25-5X	3.94	1.97
KF40-5X	5.12	2.56
KF50-5X	5.52	2.76





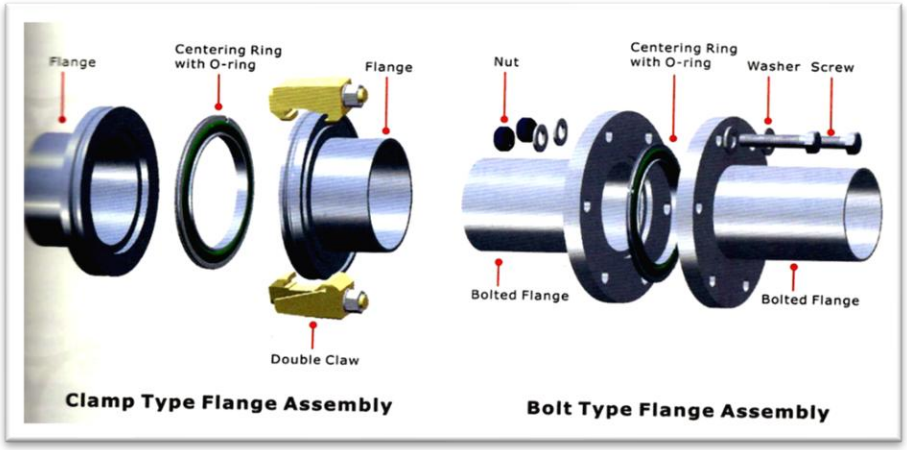
ISO Flange & Fitting

ISO flange comes in KF (Kwik flange) and LF(large flange). KF's primary method of fastening is using claw clamps while LF flange is fastened by using bolts. Claw clamp comes in single claw and double claw.

Bolt pattern to fasten clamp flange using **single** claw clamp is the same as the pattern on LF flange, except the former is tapped and the latter is through hole.

Picture below shows an example of KF style and LF style mounting method.

ISO flange is available in sizes from 2.5" to 20" tube. Center ring is available in Alum. or 304 stainless steel, bakable to 150 C. These flanges can operate in high vacuum environment in the 1x10-8 Torr range.



Standard Specification

Application:	High vacuum
Materials:	304SS, 316L or Aluminum
Flanges Sizes:	ISO63 ~ ISO320
Vacuum Range:	761 Torr ~ $1x10^{-8}$Torr
Gasket Materials :	Viton, Buna-N or Silicon

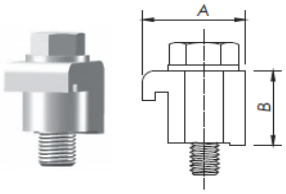
** All Dimensions are in millimeters unless otherwise specified.

ISO Flange & Fitting

Claw Clamp, Single

Material : Aluminum

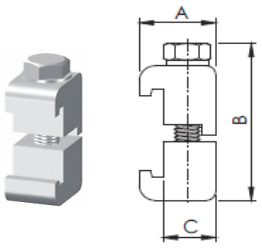
Part No.	A (Inch)	B (Inch)	Thread Size
ISO63/100-SCP-M	0.95	0.89	M8X35L
ISO160/250-SCP-M	1.15	0.91	M10X35L
ISO320/500-SCP-M	1.18	1.18	M12X40L



Claw Clamp, Double

Material : Aluminum

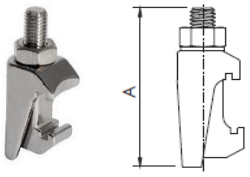
Part No.	A (Inch)	B (Inch)	C (Inch)	Thread Size
ISO63/100-DCP-M	0.95	1.98	0.62	M8X45L
ISO160/250-DCP-M	1.10	2.05	0.80	M10X45L
ISO320/500-DCP-M	1.34	2.56	1.03	M12X55L



Claw Clamp, Double

Material : 304SS

Part No.	A (Inch)	Thread Size
ISO63/250-DCP-M-SS	2.36	M10
ISO320/500-DCP-M-SS	3.01	M12

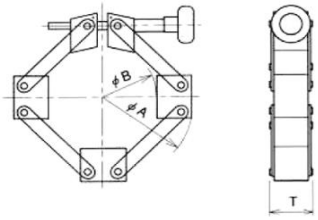


Chain Clamp Taper Flanges, Aluminum

Material : Aluminum and 304SS

Part No.	A (Inch)	B (Inch)	T (Inch)	MAX Temp.
ISO80-CC	6.50	3.94	1.46	150°C
ISO100-CC	7.28	4.80	1.46	150°C
ISO160-CC	9.25	6.85	1.46	150°C
ISO200-CC	11.81	9.41	1.46	150°C
ISO250-CC	13.78	11.34	1.46	150°C



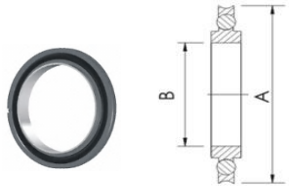


ISO Flange & Fitting

Center Ring, Alum w/ Retainer, Alum, Viton

Material : Aluminum, Viton O-ring, Aluminum Retainer

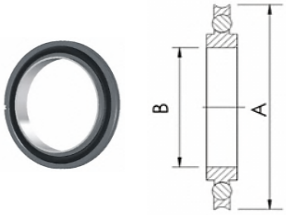
Part No.	A (Inch)	B (Inch)
ISO63-CRA-R	3.70	2.64
ISO80-CRA-R	4.29	3.15
ISO100-CRA-R	5.04	3.94
ISO160-CRA-R	7.05	5.91
ISO200-CRA-R	9.37	8.27
ISO250-CRA-R	11.30	10.14



Center Ring, SST w/Retainer, Alum, Viton

Material : SS304 Ring , Viton O-ring, Alum. Retainer

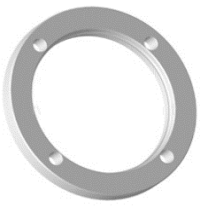
Part No.	Material	A (Inch)	B (Inch)
ISO63-CR-R	304	3.70	2.64
ISO80-CR-R	304	4.29	3.15
ISO100-CR-R	304	5.04	3.94
ISO160-CR-R	304	7.05	5.91
ISO200-CR-R	304	9.37	8.27
ISO250-CR-R	304	11.30	10.14
ISO63-CR-R-316	316	3.70	2.64
ISO80-CR-R-316	316	4.29	3.15
ISO100-CR-R-316	316	5.04	3.94
ISO160-CR-R-316	316	7.05	5.91
ISO200-CR-R-316	316	9.37	8.27
ISO250-CR-R-316	316	11.30	10.14

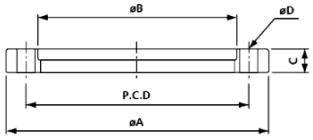


Rotatable Bolt Ring

Material : 304SS Bolt Flange, Split Retainer Ring

Part No.	A (Inch)	B (Inch)	C (Inch)	D (Inch)
ISO63-BR-R	5.12	3.88	0.47	0.35
ISO80-BR-R	5.71	4.47	0.47	0.35
ISO100-BR-R	6.50	5.26	0.47	0.35
ISO160-BR-R	8.86	7.31	0.63	0.43
ISO200-BR-R	11.22	9.67	0.63	0.43
ISO250-BR-R	13.19	11.64	0.63	0.43
ISO320-BR-R	16.73	14.80	0.79	0.55





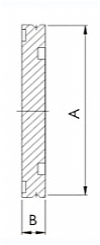
ISO Flange & Fitting

Blank Flange

Material : 304SS, 316L or Almuinum

Part No.	Material	A (Inch)	B (Inch)
ISO63-CF	304	3.74	0.47
ISO80-CF	304	4.33	0.47
ISO100-CF	304	5.12	0.47
ISO160-CF	304	7.09	0.47
ISO200-CF	304	9.45	0.47
ISO250-CF	304	11.42	0.47
ISO320-CF	304	14.57	0.67
ISO400-CF	304	17.72	0.67
ISO500-CF	304	21.65	0.67
ISO630-CF	304	27.17	0.87
ISO63-CF-A	Alum.	3.74	0.47
ISO80-CF-A	Alum.	4.33	0.47
ISO100-CF-A	Alum.	5.12	0.47
ISO160-CF-A	Alum.	7.09	0.47
ISO200-CF-A	Alum.	9.45	0.47
ISO250-CF-A	Alum.	11.42	0.47
ISO320-CF-A	Alum.	14.57	0.67
ISO400-CF-A	Alum.	17.72	0.67
ISO500-CF-A	Alum.	21.65	0.67
ISO630-CF-A	Alum.	27.17	0.87
ISO63-CF-316	316	3.74	0.47
ISO80-CF-316	316	4.33	0.47
ISO100-CF-316	316	5.12	0.47
ISO160-CF-316	316	7.09	0.47
ISO200-CF-316	316	9.45	0.47
ISO250-CF-316	316	11.42	0.47
ISO320-CF-316	316	14.57	0.67
ISO400-CF-316	316	17.72	0.67
ISO500-CF-316	316	21.65	0.67
ISO630-CF-316	316	27.17	0.87



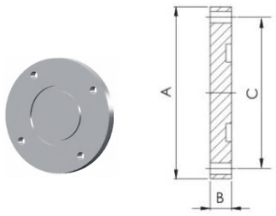


ISO Flange & Fitting

Blank Flange, Bolted

Material : 304SS, 316L or Almuinum

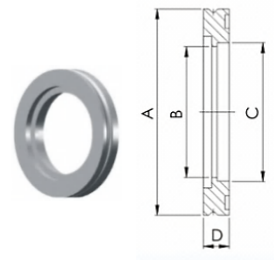
Part No.	A (Inch)	B (Inch)	C (Inch)	Bolt Holes
ISO63-CF-H	5.12	0.47	4.33	4
ISO80-CF-H	5.71	0.47	4.92	8
ISO100-CF-H	6.50	0.47	5.71	8
ISO160-CF-H	8.86	0.63	7.87	8
ISO200-CF-H	11.22	0.63	10.24	12
ISO250-CF-H	13.19	0.63	12.2	12
ISO320-CF-H	16.73	0.79	15.55	12
ISO400-CF-H	20.08	0.79	18.9	16
ISO500-CF-H	24.02	0.79	22.83	16
ISO630-CF-H	29.53	0.94	28.35	20



Bored Flange

Material : 304SS, 316L or Almuinum

Part No.	A (Inch)	B (Inch)	C (Inch)	D (Inch)
ISO63-2.5-BF	3.74	2.37	2.51	0.47
ISO80-3.0-BF	4.33	2.87	3.01	0.47
ISO100-4.0-BF	5.12	3.87	4.01	0.47
ISO160-6.0-BF	7.09	5.87	6.02	0.47
ISO200-8.0-BF	9.45	7.76	8.02	0.47
ISO250-10.0-BF	11.42	9.75	10.02	0.47
ISO320-12.0-BF	14.60	11.80	12.02	0.67
ISO320-12.75-BF	14.57	12.22	12.77	0.67
ISO400-16.0-BF	17.72	15.62	16.03	0.67
ISO500-20.0-BF	21.65	19.62	20.03	0.67
ISO630-24.0-BF	27.17	23.81	24.02	0.87
ISO63-2.5-BF-316	3.74	2.37	2.51	0.47
ISO80-3.0-BF-316	4.33	2.87	3.01	0.47
ISO100-4.0-BF-316	5.12	3.87	4.01	0.47
ISO160-6.0-BF-316	7.09	5.87	6.02	0.47
ISO200-8.0-BF-316	9.45	7.76	8.02	0.47
ISO250-10.0-BF-316	11.42	9.75	10.02	0.47
ISO320-12.0-BF-316	14.60	11.80	12.02	0.67

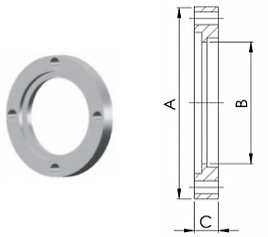


ISO Flange & Fitting

Bored Flange, Bolted

Material : 304SS or Aluminum

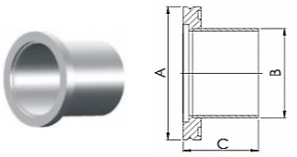
Part No.	A (Inch)	B (Inch)	C (Inch)	Bolt Holes
ISO63-2.5-BF-H	5.12	2.44	0.47	4
ISO80-3.0-BF-H	5.71	2.94	0.47	8
ISO100-4.0-BF-H	6.50	3.91	0.47	8
ISO160-6.0-BF-H	8.86	5.87	0.63	8
ISO200-8.0-BF-H	11.22	7.87	0.63	12
ISO250-10.0-BF-H	13.19	9.87	0.63	12
ISO320-12.0-BF-H	16.73	12.22	0.79	12
ISO320-12.75-BF-H	16.73	11.80	0.79	12
ISO400-16.0-BF-H	20.08	15.62	0.79	16
ISO500-20.0-BF-H	24.02	19.62	0.79	16
ISO600-24.0-BF-H	29.53	23.80	0.94	20



Half Nipple

Material : 304SS

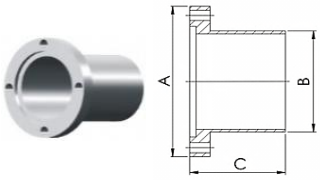
Part No.	A (Inch)	B (Inch)	C (Inch)
ISO63-HN	3.74	2.50	3.94
ISO80-HN	4.33	3.00	3.94
ISO100-HN	5.12	4.00	3.94
ISO160-HN	7.09	6.00	3.94
ISO200-HN	9.45	8.00	3.94
ISO250-HN	11.42	10.00	3.94



Half Nipple, Bolted

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)
ISO63-HN-H	5.12	2.50	3.94
ISO80-HN-H	5.71	3.00	3.94
ISO100-HN-H	6.50	4.00	3.94
ISO160-HN-H	8.86	6.00	3.94
ISO200-HN-H	11.22	8.00	3.94
ISO250-HN-H	13.19	10.00	3.94

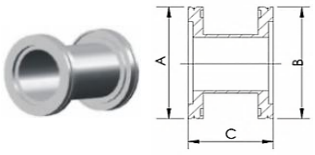


ISO Flange & Fitting

Full Nipple

Material : 304SS

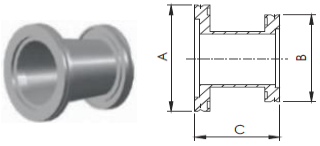
Part No.	A (Inch)	B (Inch)	C (Inch)
ISO63-FN	ISO63	ISO63	6.50
ISO80-FN	ISO80	ISO80	7.00
ISO100-FN	ISO100	ISO100	8.26
ISO160-FN	ISO160	ISO160	10.76



Straight Reducer

Material : 304SS

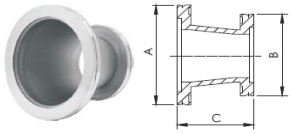
Part No.	A (Inch)	B (Inch)	C (Inch)
ISO80/63-R	ISO80	ISO63	3.00
ISO100/63-R	ISO100	ISO63	3.00
ISO100/80-R	ISO100	ISO80	3.00
ISO160/63-R	ISO160	ISO63	3.00
ISO160/80-R	ISO160	ISO80	3.00
ISO160/100-R	ISO160	ISO100	3.00



Conical Reducer

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)
ISO80/63-RC	ISO80	ISO63	4.12
ISO100/63-RC	ISO100	ISO63	4.12
ISO100/80-RC	ISO100	ISO80	4.12
ISO160/63-RC	ISO160	ISO63	4.12
ISO160/80-RC	ISO160	ISO80	4.12

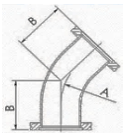


ISO Flange & Fitting

45° Elbow

Material : 304SS

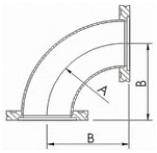
Part No.	A (Inch)	B (Inch)
ISO63-E45	3.75	3.24
ISO80-E45	4.50	3.94
ISO100-E45	6.00	5.06
ISO160-E45	-	9.71

90° Elbow

Material : 304SS

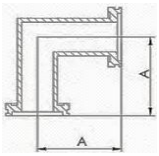
Part No.	A (Inch)	B (Inch)
ISO63-E90	3.75	4.00
ISO80-E90	4.50	4.75
ISO100-E90	6.00	6.25
ISO160-E90	9.00	9.25
ISO200-E90	12.00	12.25
ISO250-E90	15.00	15.25

90° Elbow, Mitered

Material : 304SS

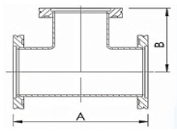
Part No.	A (Inch)
ISO63-E90-M	3.25
ISO80-E90-M	3.50
ISO100-E90-M	4.13
ISO160-E90-M	5.43
ISO250-E90-M	9.88

Equal Tee

Material : 304SS

Part No.	A (Inch)	B (Inch)
ISO63-T	6.50	3.25
ISO80-T	7.00	3.50
ISO100-T	8.24	4.12
ISO160-T	10.50	5.25
ISO200-T	14.50	7.25

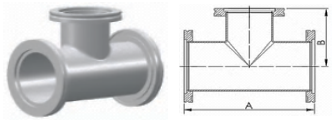



ISO Flange & Fitting

Reducer Tee

Material : 304SS

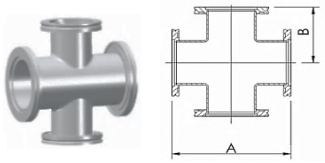
Part No.	A (Inch)	B (Inch)
ISO80/63-TR	7.00	3.50
ISO100/63-TR	8.26	4.00
ISO100/80-TR	8.26	4.00
ISO160/63-TR	10.50	5.00
ISO160/80-TR	10.50	5.00
ISO160/100-TR	10.50	5.13



4-Way Cross

Material : 304SS

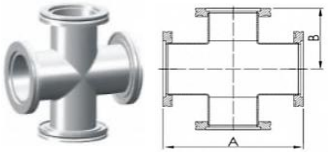
Part No.	A (Inch)	B (Inch)
ISO63-4X	6.50	3.25
ISO80-4X	7.00	3.50
ISO100-4X	8.24	4.12
ISO160-4X	10.50	5.25



4-Way Cross, Reducing

Material : 304SS

Part No.	A (Inch)	B (Inch)
ISO80/63-4X	7.00	3.50
ISO100/63-4X	8.26	4.00
ISO100/80-4X	8.26	4.00
ISO160/63-4X	10.50	5.00
ISO160/80-4X	10.50	5.00
ISO160/100-4X	10.50	5.13



ISO Flange & Fitting

Conflat Flange

* Our standard material is in SS 304 that has been specially treated to remove impurities

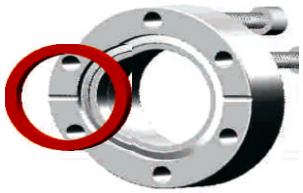
* Our standard flange material is certified to meet ASTMA-240 and has less than 0.02% sulfur to prevent sulfur strigers

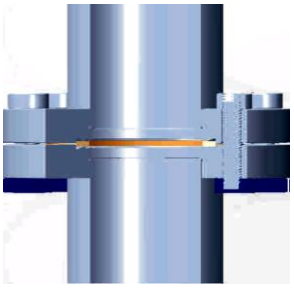
* When copper gasket is pressed between flanges, cold flow is limited by vertical wall. Pressure developed cause gasket to fill surface imperfections and produce a highly reliable seal

* CF flanges can be baked to 450 C and cooled to -200 C and suitable for vacuum of $1x10^{-13}$ Torr

* CF fittings such as elbow, tee, nipple,cross comes standard with one end fixed and other end rotatable for ease of intallation







Standard Specification

Application:	Ultra High vacuum
Materials:	304SS, 316L
Flanges Sizes:	CF1.33" ~ CF16.50"
Tube Sizes:	1/2" ~12.0"
Vacuum Range	760 Torr ~ $1x10^{-13}$ Torr
Gasket Materials :	OFHC Copper or Silver Plated

**** Available size from CF1.33 through CF16.5**

**** Quantity Discount available**

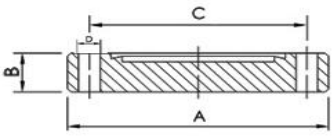
Conflat Flange

Blank Flange, Non-Rotate Through

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)	Bolt Circle Dia.	# of Bolt Holes
CF1.33-000-N	1.33	0.30	1.06	0.17	6
CF2.12-000-N	2.12	0.47	1.63	0.26	4
CF2.75-000-N	2.74	0.50	2.31	0.26	6
CF3.38-000-N	3.36	0.63	2.85	0.33	8
CF4.50-000-N	4.47	0.68	3.62	0.33	8
CF4.62-000-N	4.61	0.69	4.02	0.33	10
CF6.00-000-N	5.97	0.78	5.13	0.33	16
CF6.75-000-N	6.75	0.74	5.97	0.33	18
CF8.00-000-N	7.97	0.88	7.13	0.33	20
CF10.00-000-N	10.00	0.94	9.13	0.33	24
CF12.00-000-N	12.00	0.94	11.18	0.33	32
CF13.25-000-N	13.25	1.12	12.06	0.41	30
CF14.00-000-N	14.00	1.12	12.81	0.41	30
CF16.50-000-N	16.50	1.12	15.31	0.41	36





Blank Flange, Non-Rotate Tapped

Material : 304SS

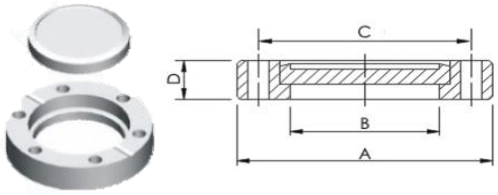
Part No.	A (Inch)	B (Inch)	C (Inch)	Thread Size	# of Bolt Holes
CF1.33-000-NT	1.33	0.30	1.06	8-32	6
CF2.12-000-NT	2.12	0.47	1.63	1/4-28	4
CF2.75-000-NT	2.73	0.50	2.31	1/4-28	6
CF3.38-000-NT	3.36	0.63	2.85	5/16-24	8
CF4.50-000-NT	4.47	0.68	3.63	5/16-24	8
CF4.62-000-NT	4.61	0.69	4.03	5/16-24	10
CF6.00-000-NT	5.97	0.78	5.13	5/16-24	16
CF6.75-000-NT	6.75	0.88	7.13	5/16-24	18
CF8.00-000-NT	7.97	0.88	7.13	5/16-24	20
CF10.00-000-NT	10.00	0.94	9.13	5/16-24	24
CF12.00-000-NT	12.00	1.02	11.18	5/16-24	32
CF13.25-000-NT	13.25	1.12	12.06	3/8-24	30
CF14.00-000-NT	14.00	1.12	12.81	3/8-24	30
CF16.50-000-NT	16.50	1.12	15.31	3/8-24	36

Conflat Flange

Blank Flange, Rotatable

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)	D (Inch)	Bolt Circle Dia.	# of Bolt Holes
CF1.33-000-R	1.33	-	1.06	0.30	0.17	6
CF2.12-000-R	2.12	-	1.63	0.47	0.26	4
CF2.75-000-R	2.73	-	2.31	0.50	0.26	6
CF3.38-000-R	3.36	-	2.85	0.69	0.33	8
CF4.50-000-R	4.47	-	3.63	0.75	0.33	8
CF4.62-000-R	4.61	-	4.03	0.69	0.33	10
CF6.00-000-R	5.97	-	5.13	0.84	0.33	16
CF6.75-000-R	6.75	-	5.97	0.94	0.33	18
CF8.00-000-R	7.97	-	7.13	0.94	0.33	20
CF10.00-000-R	10.00	-	9.13	0.69	0.33	24
CF12.00-000-R	12.00	-	11.18	0.75	0.33	32
CF13.25-000-R	13.25	-	12.06	0.69	0.41	30
CF14.00-000-R	14.00	-	12.81	0.84	0.41	30
CF16.50-000-R	16.50	-	15.31	0.94	0.41	36



Blank Flange, Rotatable Tapped

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)	D (Inch)	Thread Size	# of Bolt Holes
CF1.33-000-RT	1.33	-	1.06	0.30	8-32	6
CF2.12-000-RT	2.12	-	1.63	0.47	1/4-28	4
CF2.75-000-RT	2.73	-	2.31	0.50	1/4-28	6
CF3.38-000-RT	3.36	-	2.85	0.69	5/16-24	8
CF4.50-000-RT	4.47	-	3.63	0.75	5/16-24	8
CF4.62-000-RT	4.61	-	4.03	0.69	5/16-24	10
CF6.00-000-RT	5.97	-	5.13	0.84	5/16-24	16
CF6.75-000-RT	6.75	-	5.97	0.94	5/16-24	18
CF8.00-000-RT	7.97	-	7.13	0.94	5/16-24	20
CF10.00-000-RT	10.00	-	9.13	0.69	5/16-24	24
CF12.00-000-RT	12.00	-	11.18	0.75	5/16-24	32
CF13.25-000-RT	13.25	-	12.06	0.69	3/8-24	30
CF14.00-000-RT	14.00	-	12.81	0.84	3/8-24	30
CF16.50-000-RT	16.50	-	15.31	0.94	3/8-24	36

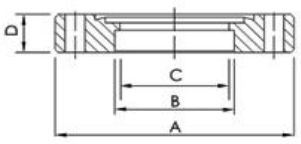
Conflat Flange

Bored Flange, Non-Rotatable

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)	D (Inch)	Bolt Circle Dia.	# of Bolt Holes
CF1.33-025-N	1.33	0.25	0.13	0.30	0.17	6
CF1.33-038-N	1.33	0.38	0.26	0.30	0.17	6
CF1.33-050-N	1.33	0.51	N/A	0.30	0.17	6
CF1.33-075-N	1.33	0.76	0.63	0.30	0.17	6
CF2.12-075-N	2.12	0.76	0.69	0.47	0.26	4
CF2.12-100-N	2.12	1.01	0.94	0.47	0.26	4
CF2.75-025-N	2.73	0.25	N/A	0.50	0.33	6
CF2.75-050-N	2.73	0.50	N/A	0.50	0.33	6
CF2.75-075-N	2.73	0.76	0.63	0.50	0.33	6
CF2.75-100-N	2.73	1.01	0.87	0.50	0.33	6
CF2.75-125-N	2.73	1.26	1.13	0.50	0.33	6
CF2.75-150-N	2.73	1.51	1.44	0.50	0.33	6
CF2.75-175-N	2.73	1.76	1.62	0.50	0.33	6
CF3.38-150-N	3.37	1.51	1.38	0.62	0.33	8
CF3.38-200-N	3.37	2.01	1.88	0.62	0.33	8
CF4.50-150-N	4.47	1.51	1.38	0.69	0.33	8
CF4.50-200-N	4.47	2.01	1.94	0.69	0.33	8
CF4.50-250-N	4.47	2.51	2.44	0.69	0.33	8
CF4.62-250-N	4.62	2.51	2.44	0.81	0.33	10
CF4.62-300-N	4.62	3.01	2.94	0.81	0.33	10
CF6.00-400-N	5.97	4.01	3.92	0.78	0.33	16
CF6.75-500-N	6.75	5.01	4.88	0.84	0.33	18
CF8.00-600-N	7.97	6.02	5.92	0.88	0.33	20
CF10.00-800-N	9.97	8.02	7.89	0.97	0.33	24
CF12.00-1000-N	11.97	10.03	9.88	1.02	0.33	32
CF14.00-1200-N	14.00	12.03	11.75	1.12	0.41	30
CF16.50-1400-N	16.50	14.03	13.75	1.12	0.41	36





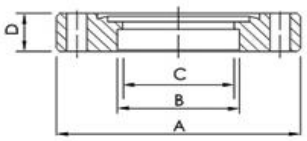
Conflat Flange

Bored Flange, Non-Rotatable Tapped

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)	D (Inch)	Thread Size	# of Bolt Holes
CF1.33-025-NT	1.33	0.25	0.13	0.30	8-32	6
CF1.33-038-NT	1.33	0.38	0.26	0.30	8-32	6
CF1.33-050-NT	1.33	0.51	N/A	0.30	8-32	6
CF1.33-075-NT	1.33	0.76	0.63	0.30	8-32	6
CF2.12-075-NT	2.12	0.76	0.69	0.47	1/4-28	4
CF2.12-100-NT	2.12	1.01	0.94	0.47	1/4-28	4
CF2.75-025-NT	2.73	0.25	N/A	0.50	1/4-28	6
CF2.75-050-NT	2.73	0.50	N/A	0.50	1/4-28	6
CF2.75-075-NT	2.73	0.76	0.63	0.50	1/4-28	6
CF2.75-100-NT	2.73	1.01	0.87	0.50	1/4-28	6
CF2.75-125-NT	2.73	1.26	1.13	0.50	1/4-28	6
CF2.75-150-NT	2.73	1.51	1.44	0.50	1/4-28	6
CF2.75-175-NT	2.73	1.76	1.62	0.50	1/4-28	6
CF3.38-150-NT	3.37	1.51	1.38	0.62	5/16-24	8
CF3.38-200-NT	3.37	2.01	1.88	0.62	5/16-24	8
CF4.50-150-NT	4.47	1.51	1.38	0.69	5/16-24	8
CF4.50-200-NT	4.47	2.01	1.94	0.69	5/16-24	8
CF4.50-250-NT	4.47	2.51	2.44	0.69	5/16-24	8
CF4.62-250-NT	4.62	2.51	2.44	0.81	5/16-24	10
CF4.62-300-NT	4.62	3.01	2.94	0.81	5/16-24	10
CF6.00-400-NT	5.97	4.01	3.92	0.78	5/16-24	16
CF6.75-500-NT	6.75	5.01	4.88	0.84	5/16-24	18
CF8.00-600-NT	7.97	6.02	5.92	0.88	5/16-24	20
CF10.00-800-NT	9.97	8.02	7.89	0.97	5/16-24	24
CF12.00-1000-NT	11.97	10.03	9.88	1.02	5/16-24	32
CF14.00-1200-NT	14.00	12.03	11.75	1.12	3/8-24	30
CF16.50-1400-NT	16.50	14.03	13.75	1.12	3/8-24	36





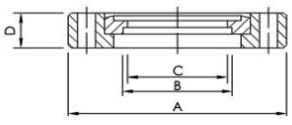
Conflat Flange

Bored Flange, Rotatable

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)	D (Inch)	Bolt Circle Dia.	# of Bolt Holes
CF1.33-025-R	1.33	0.25	0.13	0.30	0.17	6
CF1.33-038-R	1.33	0.38	0.26	0.30	0.17	6
CF1.33-050-R	1.33	0.50	0.50	0.30	0.17	6
CF1.33-075-R	1.33	0.76	0.63	0.30	0.17	6
CF2.12-075-R	2.12	0.76	0.63	0.47	0.26	4
CF2.12-100-R	2.12	1.02	0.94	0.47	0.26	4
CF2.75-025-R	2.75	0.25	0.13	0.50	0.33	6
CF2.75-050-R	2.75	0.50	0.50	0.50	0.33	6
CF2.75-075-R	2.75	0.76	0.63	0.50	0.33	6
CF2.75-100-R	2.75	1.02	0.94	0.50	0.33	6
CF2.75-125-R	2.75	1.26	1.13	0.50	0.33	6
CF2.75-150-R	2.75	1.52	1.44	0.50	0.33	6
CF2.75-175-R	2.75	1.76	1.62	1.50	0.33	6
CF3.38-150-R	3.38	1.52	1.44	0.71	0.33	8
CF3.38-200-R	3.38	2.02	1.94	0.71	0.33	8
CF4.50-150-R	4.50	1.51	1.38	0.71	0.33	8
CF4.50-200-R	4.50	2.01	1.94	0.71	0.33	8
CF4.50-250-R	4.50	2.52	2.44	0.71	0.33	8
CF4.62-300-R	4.62	3.01	2.94	0.81	0.33	10
CF6.00-400-R	6.00	4.02	3.92	0.79	0.33	16
CF6.75-500-R	6.75	5.01	4.88	0.84	0.33	18
CF8.00-600-R	8.00	6.02	5.92	0.87	0.33	20
CF10.0-800-R	10.00	8.02	7.89	0.98	0.33	24
CF12.00-1000-R	11.97	10.03	9.88	1.02	0.33	32
CF14.00-1200-R	14.00	12.03	11.75	1.12	0.41	30
CF16.50-1400-R	16.50	14.03	13.75	1.12	0.41	36





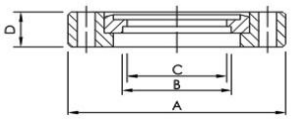
Conflat Flange

Bored Flange, Rotatable Tapped

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)	D (Inch)	Thread Size	# of Bolt Holes
CF1.33-050-RT	1.33	0.50	0.50	0.30	8-32	6
CF1.33-075-RT	1.33	0.76	0.63	0.30	8-32	6
CF2.12-100-RT	2.12	1.02	0.94	0.45	1/4-28	4
CF2.75-150-RT	2.75	1.52	1.44	0.50	1/4-28	6
CF3.38-150-RT	3.38	1.52	1.44	0.63	5/16-24	8
CF3.38-200-RT	3.38	2.02	1.94	0.63	5/16-24	8
CF4.50-250-RT	4.50	2.52	2.44	0.71	5/16-24	8
CF4.62-300-RT	4.62	3.02	2.94	0.69	5/16-24	10
CF6.00-400-RT	6.00	4.02	3.92	0.79	5/16-24	16
CF8.00-600-RT	8.00	6.02	5.92	0.87	5/16-24	20



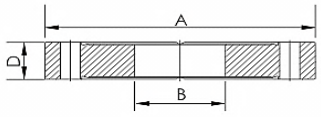


CF Double-Sided Flanges

Material : 304SS

Part No.	A (Inch)	B (Inch)	D (Inch)
CF1.33-000-DS	1.33	-	0.30
CF1.33-050-DS	1.33	0.50	0.30
CF1.33-075-DS	1.33	0.75	0.30
CF2.75-000-DSx0.50	2.75	-	0.50
CF2.75-000-DSx0.75	2.75	-	0.75
CF2.75-125-DSx0.50	2.75	1.25	0.50
CF2.75-150-DSx0.50	2.75	1.50	0.50
CF2.75-150-DSx0.75	2.75	1.50	0.75
CF3.38-200-DS	3.38	2.00	0.63
CF4.50-000-DS	4.50	-	0.68
CF4.50-150-DS	4.50	1.50	0.68
CF4.50-250-DS	4.50	2.50	0.68
CF6.00-000-DS	6.00	-	0.78
CF6.00-400-DS	6.00	4.00	0.78
CF8.00-600-DS	8.00	6.00	0.88





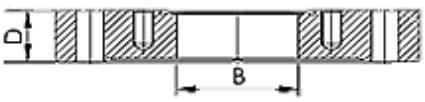
Conflat Flange

Zero Length Reducer Adapter

Material : 304SS

Part No.	B (Inch)	D (Inch)		
CF2.12/1.33-Z	0.62	0.47	CF1.33" Tapped holes	CF2.12" Thru holes
CF2.75/1.33-Z	0.62	0.50	CF1.33" Tapped holes	CF2.75" Thru holes
CF2.75/2.12-Z	1.00	0.50	CF2.12" Tapped holes	CF2.75" Thru holes
CF3.38/1.33-Z	0.62	0.63	CF1.33" Tapped holes	CF3.38" Thru holes
CF3.38/2.12-Z	1.00	0.63	CF2.12" Tapped holes	CF3.38" Thru holes
CF3.38/2.75-Z	1.50	0.63	CF2.75" Tapped holes	CF3.38" Thru holes
CF4.50/1.33-Z	0.62	0.69	CF1.33" Tapped holes	CF4.50" Thru holes
CF4.50/2.12-Z	1.00	0.69	CF2.12" Tapped holes	CF4.50" Thru holes
CF4.50/2.75-Z	1.50	0.69	CF2.75" Tapped holes	CF4.50" Thru holes
CF4.50/3.38-Z	2.00	0.69	CF3.38" Tapped holes	CF4.50" Thru holes
CF4.62/1.33-Z	0.62	0.69	CF1.33" Tapped holes	CF4.62" Thru holes
CF4.62/2.12-Z	1.00	0.69	CF2.12" Tapped holes	CF4.62" Thru holes
CF4.62/2.75-Z	1.50	0.69	CF2.75" Tapped holes	CF4.62" Thru holes
CF4.62/3.38-Z	2.00	0.69	CF3.38" Tapped holes	CF4.62" Thru holes
CF6.00/1.33-Z	0.62	0.78	CF1.33" Tapped holes	CF6.00" Thru holes
CF6.00/2.75-Z	1.50	0.78	CF2.75" Tapped holes	CF6.00" Thru holes
CF6.00/3.38-Z	2.00	0.78	CF3.38" Tapped holes	CF6.00" Thru holes
CF6.00/4.50-Z	2.50	0.78	CF4.50" Tapped holes	CF6.00" Thru holes
CF6.00/4.62-Z	3.00	0.78	CF4.62" Tapped holes	CF6.00" Thru holes
CF6.75/2.75-Z	1.50	0.84	CF2.75" Tapped holes	CF6.75" Thru holes
CF6.75/4.50-Z	2.50	0.84	CF4.50" Tapped holes	CF6.75" Thru holes
CF8.00/1.33-Z	0.62	0.88	CF1.33" Tapped holes	CF8.00" Thru holes
CF8.00/2.75-Z	1.50	0.88	CF2.75" Tapped holes	CF8.00" Thru holes
CF8.00/4.50-Z	2.50	0.88	CF4.50" Tapped holes	CF8.00" Thru holes
CF8.00/6.00-Z	4.00	0.88	CF6.00" Tapped holes	CF8.00" Thru holes





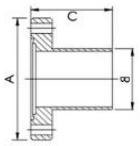
Conflat Flange

Half Nipple, Non-Rotate

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)
CF1.33-075-HN	1.33	0.75	1.50
CF2.12-100-HN	2.12	1.00	2.05
CF2.75-150-HN	2.75	1.50	2.46
CF3.38-200-HN	3.38	2.00	3.22
CF4.50-250-HN	4.50	2.50	3.38
CF4.62-300-HN	4.62	3.00	3.53
CF6.00-400-HN	6.00	4.00	4.32
CF8.00-600-HN	8.00	6.00	5.50



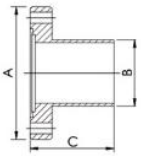


Half Nipple, Non-Rotate Tapped

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)
CF1.33-075-HNT	1.33	0.75	1.50
CF2.12-100-HNT	2.12	1.00	2.05
CF2.75-150-HNT	2.75	1.50	2.46
CF3.38-200-HNT	3.38	2.00	3.22
CF4.50-250-HNT	4.50	2.50	3.38
CF4.62-300-HNT	4.62	3.00	3.53
CF6.00-400-HNT	6.00	4.00	4.32
CF8.00-600-HNT	8.00	6.00	5.50



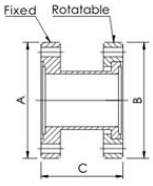


Full Nipple, Rotatable

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)
CF1.33-075-FN	1.33	1.33	3.00
CF2.12-100-FN	2.12	2.12	4.10
CF2.75-150-FN	2.75	2.75	4.92
CF3.38-200-FN	3.38	3.38	6.44
CF4.50-250-FN	4.50	4.50	6.76
CF4.62-300-FN	4.62	4.62	7.06
CF6.00-400-FN	6.00	6.00	8.64
CF8.00-600-FN	8.00	8.00	11.00





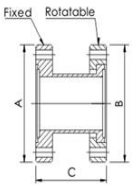
Conflat Flange

Full Nipple, Rotatable Tapped

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)
CF1.33-075-FNT	1.33	1.33	3.00
CF2.12-100-FNT	2.12	2.12	4.10
CF2.75-150-FNT	2.75	2.75	4.92
CF3.38-200-FNT	3.38	3.38	6.44
CF4.50-250-FNT	4.50	4.50	6.76
CF4.62-300-FNT	4.62	4.62	7.06
CF6.00-400-FNT	6.00	6.00	8.64
CF8.00-600-FNT	8.00	8.00	11.00



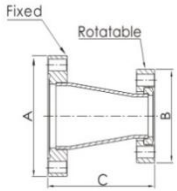


Conical Reducer

Material : 304SS

Part No.	A (Inch)	B (Inch)	C (Inch)
CF2.75/1.33-RC	2.75	1.33	3.08
CF3.38/2.75-RC	3.38	2.75	2.80
CF4.50/2.75-RC	4.50	2.75	2.96
CF4.50/3.38-RC	6.00	2.75	4.29
CF6.00/2.75-RC	6.00	2.75	4.29
CF6.00/4.50-RC	6.00	4.50	4.44
CF8.00/6.00-RC	6.00	2.75	4.29



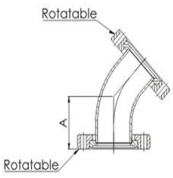


Elbow 45°

Material : 304SS

Part No.	A (Inch)
CF1.33-E45	0.94
CF2.12-E45	1.14
CF2.75-E45	1.74
CF3.38-E45	2.07
CF4.50-E45	3.37
CF4.62-E45	3.96
CF6.00-E45	5.22



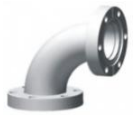


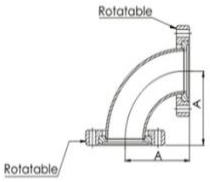
Conflat Flange

Elbow 90°

Material : 304SS

Part No.	A (Inch)
CF1.33-E90	1.50
CF2.12-E90	1.67
CF2.75-E90	2.46
CF3.38-E90	3.22
CF4.50-E90	4.12
CF4.62-E90	4.78
CF6.00-E90	6.44



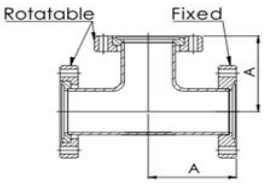


Equal Tee

Material : 304SS

Part No.	A (Inch)
CF1.33-T	1.50
CF2.12-T	2.05
CF2.75-T	2.46
CF3.38-T	3.22
CF4.50-T	3.38
CF4.62-T	3.53
CF6.00-T	4.32
CF8.00-T	5.50



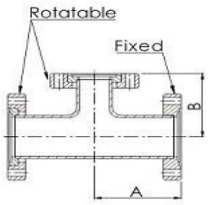


Reducing Tee

Material : 304SS

Part No.	A (Inch)	B (Inch)
CF2.75/1.33-TR	2.46	1.87
CF2.75/2.12-TR	2.46	2.29
CF3.38/1.33-TR	3.22	2.13
CF3.38/2.75-TR	3.22	2.71
CF4.50/2.75-TR	3.38	2.96
CF4.50/3.38-TR	3.38	3.48
CF4.62/3.38-TR	3.53	3.73
CF4.62/4.50-TR	3.53	3.63
CF6.00/2.75-TR	4.32	3.71
CF6.00/3.38-TR	4.32	4.23
CF6.00/4.50-TR	4.32	4.13
CF6.00/4.62-TR	4.32	4.03





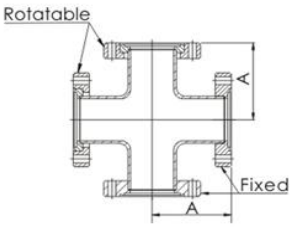
Conflat Flange

4-Way Cross

Material : 304SS

Part No.	A (Inch)
CF1.33-4X	1.50
CF2.12-4X	2.05
CF2.75-4X	2.46
CF3.38-4X	3.22
CF4.50-4X	3.38
CF4.62-4X	3.53
CF6.00-4X	4.32



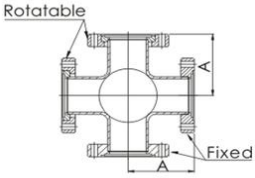


5 Way Cross

Material : 304SS

Part No.	A (Inch)
CF1.33-5X	1.50
CF2.12-5X	2.05
CF2.75-5X	2.46
CF3.38-5X	3.22
CF4.50-5X	3.38
CF4.62-5X	3.63
CF6.00-5X	5.31



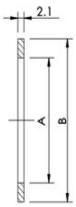


OFHC Copper Gasket

Material : OFHC Copper

Part No.	A (Inch)	B (Inch)
CF1.33-CU	0.64	0.84
CF2.12-CU	1.01	1.29
CF2.75-CU	1.45	1.89
CF3.38-CU	2.01	2.43
CF4.50-CU	2.50	3.24
CF4.62-CU	3.01	3.60
CF6.00-CU	4.01	4.74
CF6.75-CU	5.01	5.57
CF8.00-CU	6.01	6.74
CF10.00-CU	8.01	8.74





** We have inventory up to size 16.50".

Conflat Flange

12-pt silver-plated bolts for CF flange - with Hex Nuts

Part No.	Type
SAN-32-075	Allen head, CF1.33, 8-32x0.75
SBN-28-125	12-pt head, CF2.75, 1/4-28x1.25
SBN-28-212	12-pt head, CF2.75, 1/4-28x2.13
SBN-24-175	12-pt head, CF3.38, 5/16-24x1.75
SBN-24-200	12-pt head, CF4.50, 5/16-24x2.00
SBN-24-200	12-pt head, CF6.00, 5/16-24x2.00
SBN-24-225	12-pt head, CF6.00, 5/16-24x2.25
SBN-24-225	12-pt head, CF8.00, 5/16-24x2.25



12-pt silver-plated bolts for CF flange - with PlateNuts

Part No.	Type
SPAN-32-075-133	Allen head, CF1.33, 8-32x0.75
SPBN-28-125-275	12-pt head, CF2.75, 1/4-28x1.25
SPBN-28-212-275	12-pt head, CF2.75, 1/4-28x2.13
SPBN-24-175-338	12-pt head, CF3.38, 5/16-24x1.75
SPBN-24-200-450	12-pt head, CF4.50, 5/16-24x2.00
SPBN-24-200-600	12-pt head, CF6.00, 5/16-24x2.00
SPBN-24-225-600	12-pt head, CF6.00, 5/16-24x2.25
SPBN-24-225-800	12-pt head, CF8.00, 5/16-24x2.25



Silver-plated bolts for Tapped CF flanges

Part No.	Type
SAX-32-050	Allen head, CF1.33, 8-32x0.50
SBX-28-087	12-pt head, CF2.75, 1/4-28x0.88
SBX-24-125	12-pt head, CF2.75, 5/16-24-1.25
SBX-24-175	12-pt head, CF3.38, 5/16-24x1.75

Plate Nut for CF flange

Part No.	Type
PN-133-25	Platenut, CF1.33, 8-32x0.50
PN-212-25	Platenut, CF2.12, 1/4-28
PN-275-25	Platenut, CF2.75, 1/4-28
PN-338-25	Platenut, CF3.38, 5/16-24
PN-450-25	Platenut, CF4.50, 5/16-24
PN-600-25	Platenut, CF6.00, 5/16-24
PN-800-25	Platenut, CF8.00, 5/16-24
PN-1000-25	Platenut, CF10.0, 5/16-24
PN-1200-25	Platenut, CF12.0, 5/16-24



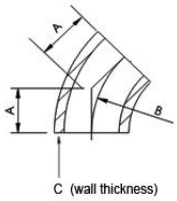
Weld Tube

45° Elbow

Material : 304 Material : 316L

Part No.	Part No.	A(inch)	B(inch)	C(inch)
WT3/4-E45	WT3/4-E45-316	0.47	1.13	0.06
WT1.0-E45	WT1.0-E45-316	0.62	1.50	0.06
WT1.5-E45	WT1.5-E45-316	0.93	2.25	0.06
WT2.0-E45	WT2.0-E45-316	1.24	3.00	0.06
WT2.5-E45	WT2.5-E45-316	1.56	3.75	0.06
WT3.0-E45	WT3.0-E45-316	1.86	4.50	0.06
WT4.0-E45	WT4.0-E45-316	2.49	6.00	0.08
WT6.0-E45	WT6.0-E45-316	3.73	9.00	1.09



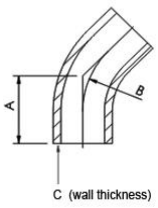


45° Elbow with Tangent

Material : 304 Material : 316L

Part No.	Part No.	A(inch)	B(inch)	C(inch)
WT3/4-E45T	WT3/4-E45T-316	0.76	1.13	0.06
WT1.0-E45T	WT1.0-E45T-316	1.19	1.50	0.06
WT1.5-E45T	WT1.5-E45T-316	1.63	2.25	0.06
WT2.0-E45T	WT2.0-E45T-316	2.31	3.00	0.06
WT2.5-E45T	WT2.5-E45T-316	3.00	3.75	0.06
WT3.0-E45T	WT3.0-E45T-316	3.68	4.50	0.06
WT4.0-E45T	WT4.0-E45T-316	4.81	6.00	0.08





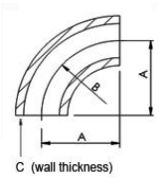
Weld Tube

90° Elbow

Material : 304SS Material : 316L

Part No.	Part No.	A(inch)	B(inch)	C(inch)
WT3/4-E90	WT3/4-E90-316	1.13	1.13	0.06
WT1.0-E90	WT1.0-E90-316	1.50	1.50	0.06
WT1.5-E90	WT1.5-E90-316	2.25	2.25	0.06
WT2.0-E90	WT2.0-E90-316	3.00	3.00	0.06
WT2.5-E90	WT2.5-E90-316	3.75	3.75	0.06
WT3.0-E90	WT3.0-E90-316	4.50	4.50	0.06
WT4.0-E90	WT4.0-E90-316	6.00	6.00	0.08
WT6.0-E90	WT6.0-E90-316	6.00	9.00	0.11



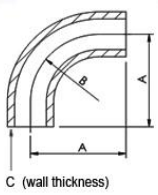


90° Elbow with Tangent

Material : 304SS

Part No.	A(inch)	B(inch)	C(inch)
WT3/4-E90T	1.42	1.00	0.06
WT1.0-E90T, 46.23mm	1.82	1.50	0.06
WT1.0-E90T, 52.40mm	2.06	1.50	0.06
WT1.5-E90T	2.94	2.25	0.06
WT2.0-E90T	4.06	3.00	0.06
WT2.5-E90T	5.19	3.75	0.06
WT3.0-E90T	6.31	4.50	0.06
WT4.0-E90T	8.31	6.00	0.08



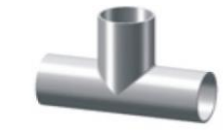


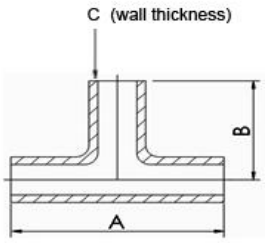
Weld Tube

Equal Tee

Material : 304SS

Part No.	A(inch)	B(inch)	C(inch)
WT3/4-T	2.00	1.00	0.06
WT1.0-T	3.75	1.87	0.06
WT1.5-T	4.50	2.25	0.06
WT2.0-T	6.00	3.00	0.06
WT2.5-T	6.00	3.00	0.06
WT3.0-T	6.50	3.25	0.06
WT4.0-T	7.75	3.87	0.08



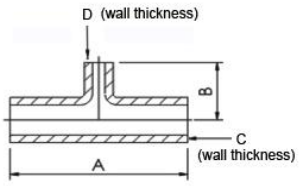


Reducing Tee

Material : 304SS

Part No.	A(inch)	B(inch)	C(inch)	D(inch)
WT1.0/0.75-TR	3.76	1.12	0.06	0.06
WT1.5/0.75-TR	4.50	1.38	0.06	0.06
WT1.5/1.0-TR	4.50	2.12	0.06	0.06
WT2.0/0.75-TR	6.00	1.63	0.06	0.06
WT2.0/1.0-TR	6.00	2.38	0.06	0.06
WT2.0/1.5-TR	6.00	2.50	0.06	0.06
WT2.5/1.5-TR	6.00	2.75	0.06	0.06
WT2.5/2.0-TR	6.00	3.25	0.06	0.06
WT3.0/1.5-TR	6.50	3.00	0.06	0.06
WT3.0/2.0-TR	6.50	3.25	0.06	0.06
WT3.0/2.5-TR	6.50	3.50	0.06	0.06
WT4.0/1.5-TR	7.76	3.50	0.08	0.06
WT4.0/2.0-TR	7.76	4.00	0.08	0.06
WT4.0/2.5-TR	7.76	3.75	0.08	0.06
WT4.0/3.0-TR	7.76	3.75	0.08	0.06
WT6.0/4.0-TR	10.00	4.88	0.08	0.08





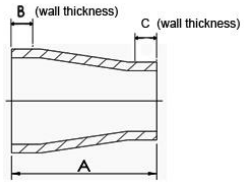
Weld Tube

Conical Reducer

Material : 304SS Material : 316L

Part No.	Part No.	A(inch)	B(inch)	C(inch)
WT1.0/0.75-RC	WT1.0/0.75-RC-316	1.37	0.06	0.06
WT1.5/0.75-RC	WT1.5/0.75-RC-316	2.37	0.06	0.06
WT1.5/1.0-RC	WT1.5/1.0-RC-316	2.37	0.06	0.06
WT2.0/1.0-RC	WT2.0/1.0-RC-316	2.37	0.06	0.06
WT2.0/1.5-RC	WT2.0/1.5-RC-316	2.37	0.06	0.06
WT2.5/1.5-RC	WT2.5/1.5-RC-316	2.37	0.06	0.06
WT2.5/2.0-RC	WT2.5/2.0-RC-316	2.37	0.06	0.06
WT3.0/1.5-RC	WT3.0/1.5-RC-316	3.63	0.06	0.06
WT3.0/2.0-RC	WT3.0/2.0-RC-316	3.63	0.06	0.06
WT3.0/2.5-RC	WT3.0/2.5-RC-316	3.63	0.06	0.06
WT4.0/2.0-RC	WT4.0/2.0-RC-316	3.63	0.08	0.06
WT4.0/2.5-RC	WT4.0/2.5-RC-316	3.63	0.08	0.06
WT4.0/3.0-RC	WT4.0/3.0-RC-316	3.63	0.08	0.06



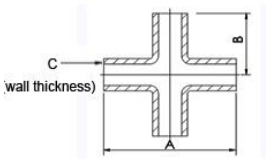


4-Way Cross

Material : 304SS

Part No.	A(inch)	B(inch)	C(inch)
WT3/4-4X	3.75	1.87	0.06
WT1.0-4X, 47.6mm	3.75	1.87	0.06
WT1.0-4X, 45.7mm	3.60	1.80	0.06
WT1.5-4X	4.50	2.25	0.06
WT2.0-4X	6.00	3.00	0.06
WT2.5-4X	6.00	3.00	0.06
WT3.0-4X	6.50	3.25	0.06
WT4.0-4X	7.75	3.88	0.08





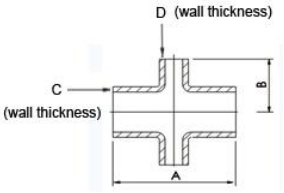
Weld Tube

4-Way Cross , Reducing

Material : 304SS

Part No.	A(inch)	B(inch)	C(inch)	D(inch)
WT1.0/0.75-4X	3.76	1.12	0.06	0.06
WT1.5/0.75-4X	4.50	1.38	0.06	0.06
WT1.5/1.0-4X	4.50	2.13	0.06	0.06
WT2.0/0.75-4X	6.00	1.63	0.06	0.06
WT2.0/1.0-4X	6.00	1.63	0.06	0.06
WT2.0/1.5-4X	6.00	2.50	0.06	0.06
WT2.5/1.5-4X	6.00	2.75	0.06	0.06
WT2.5/2.0-4X	6.00	3.25	0.06	0.06
WT3.0/1.5-4X	6.50	3.00	0.06	0.06
WT3.0/2.0-4X	6.50	3.50	0.06	0.06
WT3.0/2.5-4X	6.50	3.25	0.06	0.06
WT4.0/1.5-4X	7.76	3.50	0.08	0.06
WT4.0/2.0-4X	7.76	4.00	0.08	0.06
WT4.0/2.5-4X	7.76	3.75	0.08	0.06
WT4.0/3.0-4X	7.76	3.75	0.08	0.06



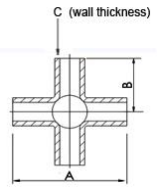


5-Way Cross

Material : 304SS

Part No.	A(inch)	B(inch)	C(inch)
WT3/4-5X	2.00	1.00	0.06
WT1.0-5X	3.76	1.88	0.06
WT1.5-5X	4.50	2.25	0.06
WT2.0-5X	6.00	3.00	0.06
WT2.5-5X	6.00	3.00	0.06
WT3.0-5X	6.50	3.25	0.06
WT4.0-5X	7.76	3.88	0.08



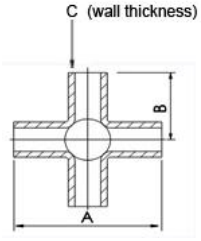




6-Way Cross

Material : 304SS

Part No.	A(inch)	B(inch)	C(inch)
WT3/4-6X	2.00	1.00	0.06
WT1.0-6X	3.76	1.88	0.06



Adapters

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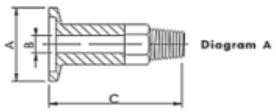
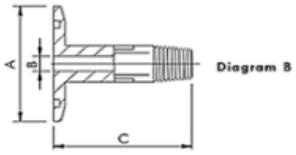
KF Flange to Male NPT

Materials : 304 (Flange) & 316L (Gland)-Call to request

Part No.	Size	A (inch)	B (inch)	C (inch)	Diagram
KF16-1/8MPT	KF16 X 1/8" Male NPT adaptor, 304	1.18	0.19	1.47	A
KF16-1/4MPT	KF16 X 1/4" Male NPT adaptor, 304	1.18	0.28	1.47	A
KF16-1/2MPT	KF16 X 1/2" Male NPT adaptor, 304	1.18	0.47	1.69	A
KF25-1/8MPT	KF25 X 1/8" Male NPT adaptor, 304	1.57	0.19	1.47	B
KF25-1/4MPT	KF25 X 1/4" Male NPT adaptor, 304	1.57	0.28	1.47	B
KF25-1/2MPT	KF25 X 1/2" Male NPT adaptor, 304	1.57	0.47	1.69	B
KF25-3/4MPT	KF25 X 3/4" Male NPT adaptor, 304	1.57	0.63	1.69	B
KF40-1/4MPT	KF40 X 1/4" Male NPT adaptor, 304	2.17	0.28	1.47	B
KF40-1/2MPT	KF40 X 1/2" Male NPT adaptor, 304	2.17	0.47	1.69	B
KF40-3/4MPT	KF40 X 3/4" Male NPT adaptor, 304	2.17	0.63	1.69	B
KF50-1/4MPT	KF50 X 1/4" Male NPT adaptor, 304	2.95	0.28	1.38	B
KF50-1/2MPT	KF50 X 1/4" Male NPT adaptor, 304	2.95	0.47	1.69	B
KF50-3/4MPT	KF50 X 3/4" Male NPT adaptor, 304	2.95	0.63	1.69	B





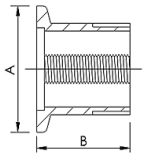


KF Flange to Female NPT

Materials : 304, or 316L (call to request)

Part No.	Size	A (inch)	B (inch)
KF16-1/8FPT	KF16 X 1/8" Female NPT adaptor, 304	1.18	0.75
KF16-1/4FPT	KF16 X 1/4" Female NPT adaptor, 304	1.18	0.75
KF25-1/8FPT	KF25 X 1/8" Female NPT adaptor, 304	1.57	0.75
KF25-3/8FPT	KF25 X 3/8" Female NPT adaptor, 304	1.57	0.75
KF25-1/4FPT	KF25 X 1/4" Female NPT adaptor, 304	1.57	0.75
KF25-3/4FPT	KF25 X 3/4" Female NPT adaptor, 304	1.57	1.00
KF25-1/2FPT	KF25 X 1/2" Female NPT adaptor, 304	1.57	1.00
KF40-1/8FPT	KF40 X 1/8" Female NPT adaptor, 304	2.17	1.00
KF40-1/4FPT	KF40 X 1/4" Female NPT adaptor, 304	2.17	1.00
KF40-1/2FPT	KF40 X 1/2" Female NPT adaptor, 304	2.17	1.00
KF40-3/4FPT	KF40 X 3/4" Female NPT adaptor, 304	2.17	1.00
KF50-1/8FPT	KF50 X 1/8" Female NPT adaptor, 304	2.95	1.00
KF50-1/4FPT	KF50 X 1/4" Female NPT adaptor, 304	2.95	1.00
KF50-1/2FPT	KF50 X 1/2" Female NPT adaptor, 304	2.95	1.00





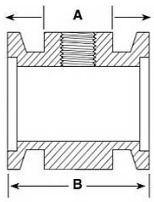
Adapters

KF Flange to FPT TEE

Material: Aluminum, or SS304 (call to request)

Part No.	Size	A (inch)	B (inch)
KF16-1/8FPT-AT	KF16-1/8 Female pipe thread	0.75	1.57
KF16-1/4FPT-AT	KF16-1/4 Female pipe thread	0.75	1.57
KF25-1/8FPT-AT	KF25-1/8 Female pipe thread	0.75	1.57
KF25-1/4FPT-AT	KF25-1/4 Female pipe thread	0.75	1.57
KF40-1/8FPT-AT	KF40-1/8 Female pipe thread	0.75	1.57
KF40-1/4FPT-AT	KF40-1/4 Female pipe thread	0.75	1.57
KF50-1/8FPT-AT	KF50-1/8 Female pipe thread	0.75	1.57
KF50-1/4FPT-AT	KF50-1/4 Female pipe thread	0.75	1.57



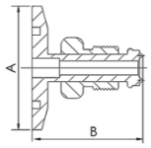


KF Flange to Male VCR

Materials : 304, or 316L (call to request)

Part No.	Size	A (inch)	B (inch)
KF16-1/4MVCR	KF16-1/4" Male VCR adaptor, 304	1.18	1.46
KF16-3/8MVCR	KF16-3/8" Male VCR adaptor, 304	1.18	1.65
KF16-1/2MVCR	KF16-1/2" Male VCR adaptor, 304	1.18	1.65
KF25-1/4MVCR	KF25-1/4" Male VCR adaptor, 304	1.57	1.46
KF25-3/8MVCR	KF25-3/8" Male VCR adaptor, 304	1.57	1.65
KF25-1/2MVCR	KF25-1/2" Male VCR adaptor, 304	1.57	1.65
KF25-3/4MVCR	KF25-3/4" Male VCR adaptor, 304	1.57	2.15
KF40-1/4MVCR	KF40-1/4" Male VCR adaptor, 304	2.17	1.46
KF40-3/8MVCR	KF40-3/8" Male VCR adaptor, 304	2.17	1.65
KF40-1/2MVCR	KF40-1/2" Male VCR adaptor, 304	2.17	1.65
KF40-3/4MVCR	KF40-3/4" Male VCR adaptor, 304	2.17	2.15
KF50-1/4MVCR	KF50-1/4" Male VCR adaptor, 304	2.95	1.46
KF50-3/8MVCR	KF50-3/8" Male VCR adaptor, 304	2.95	1.65
KF50-1/2MVCR	KF50-1/2" Male VCR adaptor, 304	2.95	1.65
KF50-3/4MVCR	KF50-3/4" Male VCR adaptor, 304	2.95	2.15





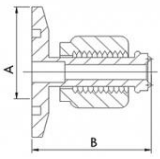
Adapters

KF Flange to Female VCR

Materials : 304, or 316L (call to request)

Part No.	Size	A (inch)	B (inch)
KF16-1/4FVCR	KF16 X 1/4" Female VCR adaptor, 304	1.18	1.46
KF16-3/8FVCR	KF16 X 3/8" Female VCR adaptor, 304	1.18	1.65
KF16-3/8FVCR	KF16 X 3/8" Female VCR adaptor, 304	1.18	1.65
KF25-1/4FVCR	KF25 X 1/4" Female VCR adaptor, 304	1.57	1.46
KF25-3/8FVCR	KF25 X 3/8" Female VCR adaptor, 304	1.57	1.65
KF25-1/2FVCR	KF25 X 1/2" Female VCR adaptor, 304	1.57	1.65
KF25-3/4FVCR	KF25 X 3/4" Female VCR adaptor, 304	1.57	2.15
KF40-1/4FVCR	KF40 X 1/4" Female VCR adaptor, 304	2.17	1.46
KF40-3/8FVCR	KF40 X 3/8" Female VCR adaptor, 304	2.17	1.65
KF40-1/2FVCR	KF40 X 1/2" Female VCR adaptor, 304	2.17	1.65
KF40-3/4FVCR	KF40 X 3/4" Female VCR adaptor, 304	2.17	2.15
KF50-1/4FVCR	KF50 X 1/4" Female VCR adaptor, 304	2.95	1.46
KF50-3/8FVCR	KF50 X 3/8" Female VCR adaptor, 304	2.95	1.65
KF50-1/2FVCR	KF50 X 1/2" Female VCR adaptor, 304	2.95	1.65
KF50-3/4FVCR	KF50 X 3/4" Female VCR adaptor, 304	2.95	2.15



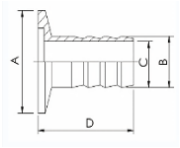


KF to Barb ftg - Hose Connector

Materials : 304

Part No.	Hose ID	A	B	C	D
KF10-8	0.31"	1.18	0.31	0.16	1.57
KF10-12	0.47"	1.18	0.47	0.31	1.57
KF16-8	0.31"	1.18	0.31	0.16	1.57
KF16-12	0.47"	1.18	0.47	0.31	1.57
KF25-8	0.31"	1.57	0.31	0.16	1.57
KF25-12	0.47"	1.57	0.47	0.31	1.57
KF25-16	0.63"	1.57	0.63	0.47	1.57
KF25-20	0.79"	1.57	0.79	0.36	1.57
KF40-12	0.47"	2.17	0.47	0.31	1.57
KF40-16	0.63"	2.17	0.63	0.47	1.57
KF40-20	0.79"	2.17	0.79	0.63	1.57
KF40-25	0.98"	2.17	0.98	0.79	1.57
KF50-25	0.98"	2.95	0.98	0.98	1.57





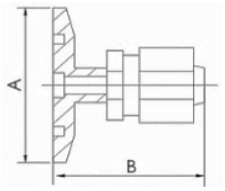
Adapters

KF to Compression fitting

Materials : 316

Part No.	Size	A (inch)	B (inch)
KF10-1/4SWAG	KF10X 1/4" SWAG	1.18	1.31
KF16-1/4SWAG	KF16X 1/4" SWAG	1.18	1.55
KF16-3/8SWAG	KF16X 3/8" SWAG	1.18	1.63
KF16-1/2SWAG	KF16X 1/2" SWAG	1.18	1.97
KF16-3/4SWAG	KF16X 3/4" SWAG	1.18	2.08
KF25-1/4SWAG	KF25X 1/4" SWAG	1.57	1.55
KF25-3/8SWAG	KF25X 3/8" SWAG	1.57	1.63
KF25-1/2SWAG	KF25X 1/2" SWAG	1.57	1.97
KF25-3/4SWAG	KF25X 3/4" SWAG	1.57	2.08
KF25-1SWAG	KF25X 1" SWAG	1.57	2.59
KF25-1 1/8SWAG	KF25X 1 1/8" SWAG	1.57	2.90
KF40-1/4SWAG	KF40X 1/4" SWAG	2.17	1.55
KF40-3/8SWAG	KF40X 3/8" SWAG	2.17	1.63
KF40-1/2SWAG	KF40X 1/2" SWAG	2.17	1.97
KF40-3/4SWAG	KF40X 3/4" SWAG	2.17	2.08
KF40-1SWAG	KF40X 1" SWAG	2.17	2.59
KF40-1 1/8SWAG	KF40X 1 1/8" SWAG	2.17	2.90
KF50-1/4SWAG	KF50X 1/4" SWAG	2.95	1.50
KF50-3/8SWAG	KF50X 3/8" SWAG	2.95	1.63
KF50-1/2SWAG	KF50X 1/2" SWAG	2.95	1.97
KF50-3/4SWAG	KF50X 3/4" SWAG	2.95	2.08
KF50-1SWAG	KF50X 1" SWAG	2.95	2.59
KF50-1 1/8SWAG	KF50X 1 1/8" SWAG	2.95	2.90





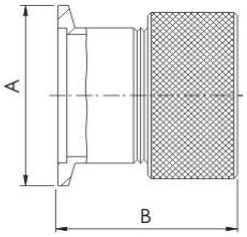
Adapters

KF Flange to Quick Couplings with Viton O-Ring

Materials : 304

Part No.	Size	Tube Size	A	B
KF16-1/8-QC	NW16-1/8”	1/8”	1.18	1.42
KF16-3/16-QC	NW16-3/16”	3/16”	1.18	1.42
KF16-1/4-QC	NW16-1/4”	1/4”	1.18	1.42
KF16-3/8-QC	NW16-3/8”	3/8”	1.18	1.42
KF16-1/2-QC	NW16-1/2”	1/2”	1.18	1.50
KF16-3/4-QC	NW16-3/4”	3/4”	1.18	1.81
KF25-1/8-QC	NW25-1/8”	1/8"	1.57	1.42
KF25-3/16-QC	NW25-3/16”	3/16"	1.57	1.42
KF25-1/4-QC	NW25-1/4”	1/4"	1.57	1.42
KF25-3/8-QC	NW25-3/8”	3/8"	1.57	1.42
KF25-1/2-QC	NW25-1/2"	1/2"	1.57	1.50
KF25-3/4-QC	NW25-3/4"	3/4"	1.57	1.81
KF25-1.0-QC	NW25-1"	1"	1.57	2.01
KF40-1/8-QC	NW40-1/8”	1/8"	2.17	1.42
KF40-3/16-QC	NW40-3/16”	3/16"	2.17	1.42
KF40-1/4-QC	NW40-1/4”	1/4"	2.17	1.42
KF40-3/8-QC	NW40-3/8"	3/8"	2.17	1.42
KF40-1/2-QC	NW40-1/2"	1/2"	2.17	1.50
KF40-3/4-QC	NW40-3/4"	3/4"	2.17	1.81
KF40-1.0-QC	NW40-1"	1"	2.17	2.01
KF40-1.5-QC	NW40-1.5"	1.5"	2.17	2.40
KF50-1/2-QC	NW50-1/2”	1/2"	2.95	1.50
KF50-3/4-QC	NW50-3/4"	3/4"	2.95	1.81
KF50-1.0-QC	NW50-1"	1"	2.95	2.01
KF50-1.5-QC	NW50-1.5"	1.5"	2.95	2.40
KF50-2.0-QC	NW50-2.0"	2"	2.95	2.40





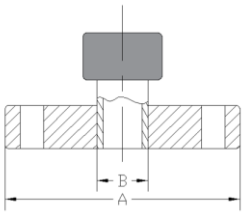
Adapters

CF Flange to Quick Couplings

Materials : 316

Part No.	A (Inch)	B (Inch)
CF1.33-1/4-QC	CF1.33	1/4"
CF1.33-3/8-QC	CF1.33	3/8"
CF1.33-1/2-QC	CF1.33	1/2"
CF2.75-1/4-QC	CF2.75	1/4"
CF2.75-3/8-QC	CF2.75	3/8"
CF2.75-0.5-QC	CF2.75	1/2"
CF2.75-0.75-QC	CF2.75	3/4"
CF2.75-1.0-QC	CF2.75	1.0"
CF2.75-1.5-QC	CF2.75	1.5"



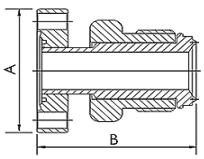


CF Flange to Male VCR

Materials : 316

Part No.	Size	A (inch)	B (inch)
CF1.33-1/4MVCR	CF1.33X 1/4" Male VCR adaptor	CF1.33	1.43
CF1.33-3/8MVCR	CF1.33X 3/8" Male VCR adaptor	CF1.33	1.55
CF1.33-1/2MVCR	CF1.33X 1/2" Male VCR adaptor	CF1.33	1.55
CF2.75-1/4MVCR	CF2.75X 1/4" Male VCR adaptor	CF2.75	1.52
CF2.75-3/8MVCR	CF2.75X 3/8" Male VCR adaptor	CF2.75	1.71
CF2.75-1/2MVCR	CF2.75X 1/2" Male VCR adaptor	CF2.75	1.71



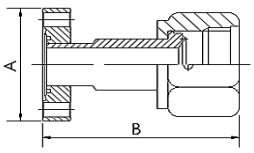


CF Flange to Female VCR

Materials : 316

Part No.	Size	A (inch)	B (inch)
CF1.33-1/4FVCR	CF1.33X 1/4" Female VCR adaptor	CF1.33	1.43
CF1.33-3/8FVCR	CF1.33X 3/8" Female VCR adaptor	CF1.33	1.55
CF1.33-1/2FVCR	CF1.33X 1/2" Female VCR adaptor	CF1.33	1.55
CF2.75-1/4FVCR	CF2.75X 1/4" Female VCR adaptor	CF2.75	1.52
CF2.75-3/8FVCR	CF2.75X 3/8" Female VCR adaptor	CF2.75	1.71
CF2.75-1/2FVCR	CF2.75X 1/2" Female VCR adaptor	CF2.75	1.71



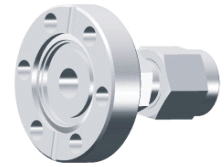


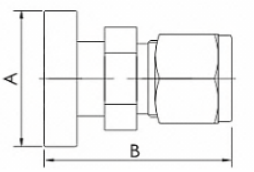
Adapters

CF to Compression fitting

Materials : 316

Part No.	Size	A	B
CF1.33-1/4SWAG	CF1.33X 1/4" SWAG	CF1.33	1.37
CF1.33-3/8SWAG	CF1.33X 3/8" SWAG	CF1.33	1.66
CF1.33-1/2SWAG	CF1.33X 1/2" SWAG	CF1.33	1.70
CF2.75-1/4SWAG	CF2.75X 1/4" SWAG	CF2.75	1.53
CF2.75-3/8SWAG	CF2.75X 3/8" SWAG	CF2.75	1.69
CF2.75-1/2SWAG	CF2.75X 1/2" SWAG	CF2.75	1.83
CF2.75-3/4SWAG	CF2.75X 3/4" SWAG	CF2.75	2.20
CF2.75-1SWAG	CF2.75X 1" SWAG	CF2.75	2.66



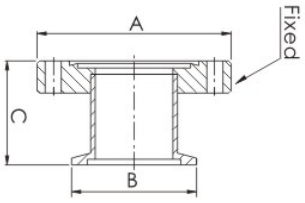


CF to KF Flange Adaptor

Materials : 304

Part No.	Ports	A	B	C
CF1.33/KF16-ADP	CF1.33-KF16	CF 1.33	KF16	1.69
CF1.33/KF25-ADP	CF1.33-KF25	CF 1.33	KF25	1.69
CF1.33/KF40-ADP	CF1.33-KF40	CF 1.33	KF40	1.69
CF1.33/KF50-ADP	CF1.33-KF50	CF 1.33	KF50	1.69
CF2.12/KF25-ADP	CF2.12-KF25	CF 2.12	KF25	1.75
CF2.75/KF16-ADP	CF2.75-KF16	CF 2.75	KF16	1.78
CF2.75/KF25-ADP	CF2.75-KF25	CF 2.75	KF25	1.78
CF2.75/KF40-ADP	CF2.75-KF40	CF 2.75	KF40	1.78
CF2.75/KF50-ADP	CF2.75-KF50	CF 2.75	KF50	1.78
CF3.38/KF25-ADP	CF3.38-KF25	CF 3.38	KF25	1.80
CF3.38/KF40-ADP	CF3.38-KF40	CF 3.38	KF40	1.80
CF3.38/KF50-ADP	CF3.38-KF50	CF 3.38	KF50	1.80
CF4.50/KF40-ADP	CF4.50-KF40	CF 4.50	KF40	1.95
CF4.50/KF50-ADP	CF4.50-KF50	CF 4.50	KF50	1.95
CF6.00/KF50-ADP	CF6.00-KF50	CF 6.00	KF50	2.02
CF8.00/KF40-ADP	CF8.00-KF40	CF8.00	KF40	2.08





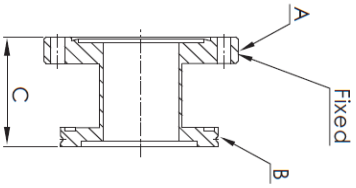
Adapters

ISO to CF Flange Adaptor

Materials : 304

Part No.	Ports	A	B	C
ISO63/CF2.75-ADP	ISO63-CF2.75	CF2.75	ISO63	2.83
ISO63/CF4.50-ADP	ISO63-CF4.50	CF4.50	ISO63	4.44
ISO80/CF4.62-ADP	ISO80-CF4.62	CF4.62	ISO80	4.44
ISO80/CF6.00-ADP	ISO80-CF6.00	CF6.00	ISO80	4.44
ISO100/CF4.50-ADP	ISO100-CF4.50	CF4.50	ISO100	4.44
ISO100/CF6.00-ADP	ISO100-CF6.00	CF6.00	ISO100	4.44
ISO160/CF2.75-ADP	ISO160-CF2.75	CF2.75	ISO160	4.44
ISO160/CF8.00-ADP	ISO160-CF8.00	CF8.00	ISO160	4.44
ISO160/CF10.00-ADP	ISO200-CF10.00	CF10.00	ISO160	4.44
ISO200/CF8.00-ADP	ISO200-CF8.00	CF8.00	ISO200	4.44
ISO200/CF10.00-ADP	ISO200-CF10.00	CF10.00	ISO200	4.44



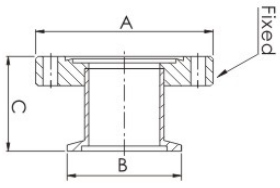


ISO to KF Flange Adaptor

Materials : 304

Part No.	Ports	A	B	C
ISO63/KF25-ADP	ISO63-KF25	ISO63	KF25	1.75
ISO63/KF40-ADP	ISO63-KF40	ISO63	KF40	1.75
ISO63/KF50-ADP	ISO63-KF50	ISO63	KF50	1.75
ISO80/KF25-ADP	ISO80-KF25	ISO80	KF25	1.75
ISO80/KF40-ADP	ISO80-KF40	ISO80	KF40	1.75
ISO80/KF50-ADP	ISO80-KF50	ISO80	KF50	1.75
ISO100/KF25-ADP	ISO100-KF25	ISO100	KF25	1.75
ISO100/KF40-ADP	ISO100-KF40	ISO100	KF40	1.75
ISO100/KF50-ADP	ISO100-KF50	ISO100	KF50	1.75
ISO160/KF40-ADP	ISO160-KF40	ISO160	KF40	1.75
ISO160/KF50-ADP	ISO160-KF50	ISO160	KF50	1.75



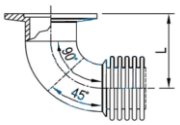


Metal - Flex Hose (vacuum connection)

Flexible vacuum coupling

Thin wall, between 0.006 - 0.008" thick resulting in greater flexibility and stroke. Used for alignment or vibration isolation. Maximum compression is typically 20% and max. extension is 10% of the flexible length .

* Standard material is: SUS 316.
* Max. length: 2,000 mm







Bellow Specification

Dia (in)	ID (in)	OD (in)	Pitch	Bent R (in)	Max. psi
0.75	0.74	1.0	0.13	1.1	atm
1.00	0.98	1.4	0.15	1.3	atm
1.50	1.56	2.1	0.20	1.6	atm
2.00	1.94	2.6	0.20	2.1	atm
2.50	2.50	3.1	0.20	2.7	atm
3.00	3.10	3.8	0.26	2.8	atm
4.00	3.90	5.0	0.30	3.5	atm
6.00	5.90	6.9	0.40	5.2	atm

Flexible vacuum hose

Medium wall, between 0.008 - 0.015" thick results in stronger structure. Less susceptable to mechanical damage. Used for vacuum connection.

* Standard material : SUS 316
* Max. length: 3,000 mm



Actuator

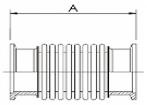
We have a distinguished competitive advantage in small actuators. Build with ultra-flexible formed bellows as small as 1/4" ID.

Welded bellows are available.
See the welded bellows section



Metal - Flex Hose (vacuum connection)





KF Flange Thin Wall Bellow

Material: SS 316 Wall Thickness: .006"

Part No.	FREE LENGTH
FH-KF16-100-006-316	4.00
FH-KF16-250-006-316	10.00
FH-KF16-305-006-316	12.00
FH-KF16-500-006-316	20.00
FH-KF16-610-006-316	24.00
FH-KF16-750-006-316	30.00
FH-KF16-915-006-316	36.00
FH-KF16-1000-006-316	39.00
FH-KF16-1219-006-316	48.00
FH-KF16-2000-006-316	79.00
FH-KF25-100-006-316	4.00
FH-KF25-250-006-316	10.00
FH-KF25-305-006-316	12.00
FH-KF25-500-006-316	20.00
FH-KF25-610-006-316	24.00
FH-KF25-750-006-316	30.00
FH-KF25-915-006-316	36.00
FH-KF25-1000-006-316	39.00
FH-KF25-1219-006-316	48.00
FH-KF25-2000-006-316	79.00
FH-KF25-2500-006-316	98.00
FH-KF40-100-006-316	4.00
FH-KF40-250-006-316	10.00
FH-KF40-305-006-316	12.00
FH-KF40-500-006-316	20.00
FH-KF40-610-006-316	24.00
FH-KF40-750-006-316	30.00
FH-KF40-915-006-316	36.00
FH-KF40-1000-006-316	39.00
FH-KF40-1219-006-316	48.00
FH-KF40-2000-006-316	79.00
FH-KF50-100-006-316	4.00
FH-KF50-250-006-316	10.00
FH-KF50-305-006-316	12.00
FH-KF50-500-006-316	20.00
FH-KF50-610-006-316	24.00
FH-KF50-750-006-316	30.00
FH-KF50-915-006-316	36.00
FH-KF50-1000-006-316	39.00
FH-KF50-1215-006-316	48.00
FH-KF50-2000-006-316	79.00

KF Flange Medium Wall Bellow

Wall Thickness: .008"

Part No.	FREE LENGTH
FH-KF16-100-008-316	4.00
FH-KF16-250-008-316	10.00
FH-KF16-305-008-316	12.00
FH-KF16-500-008-316	20.00
FH-KF16-610-008-316	24.00
FH-KF16-750-008-316	30.00
FH-KF16-915-008-316	36.00
FH-KF16-1000-008-316	39.00
FH-KF16-1219-008-316	48.00
FH-KF16-2000-008-316	79.00
FH-KF25-100-008-316	4.00
FH-KF25-250-008-316	10.00
FH-KF25-305-008-316	12.00
FH-KF25-500-008-316	20.00
FH-KF25-610-008-316	24.00
FH-KF25-750-008-316	30.00
FH-KF25-915-008-316	36.00
FH-KF25-1000-008-316	39.00
FH-KF25-1219-008-316	48.00
FH-KF25-2000-008-316	79.00
FH-KF25-2500-008-316	98.00
FH-KF40-100-008-316	4.00
FH-KF40-250-008-316	10.00
FH-KF40-305-008-316	12.00
FH-KF40-500-008-316	20.00
FH-KF40-610-008-316	24.00
FH-KF40-750-008-316	30.00
FH-KF40-915-008-316	36.00
FH-KF40-1000-008-316	39.00
FH-KF40-1219-008-316	48.00
FH-KF40-2000-010-316	79.00
FH-KF50-100-008-316	4.00
FH-KF50-250-008-316	10.00
FH-KF50-305-008-316	12.00
FH-KF50-500-008-316	20.00
FH-KF50-610-008-316	24.00
FH-KF50-750-008-316	30.00
FH-KF50-915-008-316	36.00
FH-KF50-1000-008-316	39.00
FH-KF50-1215-008-316	48.00
FH-KF50-2000-010-316	79.00

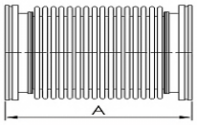
Metal - Flex Hose (vacuum connection)

ISO Flange Bellow --flex hose

Materials : SS 316

Part No.	A (Inch)
FH-ISO63-100-007-316	4.00
FH-ISO63-250-007-316	10.00
FH-ISO63-305-007-316	12.00
FH-ISO63-500-007-316	20.00
FH-ISO63-610-007-316	24.00
FH-ISO63-750-007-316	30.00
FH-ISO63-915-007-316	36.00
FH-ISO63-1000-007-316	39.00
FH-ISO63-1219-007-316	48.00
FH-ISO80-100-007-316	4.00
FH-ISO80-250-007-316	10.00
FH-ISO80-305-007-316	12.00
FH-ISO80-500-007-316	20.00
FH-ISO80-610-007-316	24.00
FH-ISO80-750-007-316	30.00
FH-ISO80-915-007-316	36.00
FH-ISO80-1000-007-316	39.00
FH-ISO80-1219-007-316	48.00
FH-ISO100-100-008-316	4.00
FH-ISO100-250-008-316	10.00
FH-ISO100-305-008-316	12.00
FH-ISO100-500-008-316	20.00
FH-ISO100-610-008-316	24.00
FH-ISO100-750-008-316	30.00
FH-ISO100-910-008-316	36.00
FH-ISO100-1000-008-316	39.00
FH-ISO100-1219-008-316	48.00
FH-ISO160-100-010-316	4.00
FH-ISO160-250-010-316	10.00
FH-ISO160-305-010-316	12.00
FH-ISO160-500-010-316	20.00
FH-ISO160-610-010-316	24.00
FH-ISO160-750-010-316	30.00
FH-ISO160-915-010-316	36.00
FH-ISO160-1000-010-316	39.00
FH-ISO160-1219-010-316	48.00



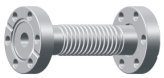


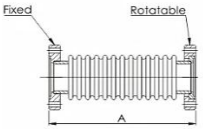
Metal - Flex Hose (vacuum connection)

CF Flange Bellow --flex hose

Materials : SS 316 Wall Thickness: .006"

Part No.	A (Inch)
FH-CF1.33-100-006-316	4.00
FH-CF1.33-250-006-316	10.00
FH-CF1.33-305-006-316	12.00
FH-CF1.33-500-006-316	20.00
FH-CF1.33-610-006-316	24.00
FH-CF1.33-750-006-316	30.00
FH-CF1.33-915-006-316	36.00



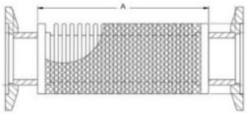


Braided Bellow - KF Flange

Materials : SS 304

Part No.	A (Inch)
FHB-KF16-250	10.00
FHB-KF16-500	20.00
FHB-KF16-750	30.00
FHB-KF16-1000	39.00
FHB-KF25-250	10.00
FHB-KF25-500	20.00
FHB-KF25-750	30.00
FHB-KF25-1000	39.00
FHB-KF40-250	10.00
FHB-KF40-500	20.00
FHB-KF40-750	30.00
FHB-KF40-1000	39.00
FHB-KF50-250	10.00
FHB-KF50-500	20.00
FHB-KF50-750	30.00
FHB-KF50-1000	39.00





Welded Bellow

Welded Metal Bellow

To order, please send request for price

Applications

Semiconductor, Flat Panel Display,
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- Beam Lines
- Flexible & Torque Couplings
- Feed Throughs
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- Wafer/Glass Handlers
- Accumulators & Reserviors
- Actuators & Pistons
- Expension Joints
- X-Y-Z Manipulators
- Mechanical Seals & Kiss Seals
- Others



Material Charateristics

Material	Treatment	Max Tensile Strength psix103	Max Tensile Strength 2% psix103	Elongation in 2 inch (%)	Hardness	Module Elasticity (psix106)	Density (lbxin2)	Thermal Expansion Coefficient 68~212oF (in/inoF x10-6)	Thermal Conduction 212oF (Btu/hr-ftoF)	Magnetic Permeability 200H (annealed)
304	Annealed	81	39	55	79R0	28	0.29	9.6	9.4	1.02 max
316L	Annealed	81	42	55	79R0	29	0.29	8.9	9.4	10.2 max
321	Annealed	90	35	55	80R0	28	0.29	9.3	9.3	10.2 max
347	Annealed	95	40	50	85R0	28	0.29	9.3	9.3	10.2 max
Alloy 20	Annealed	93	46	38	90R0	28	0.29	8.2	7.6	1.002
AM350	Annealed	145	60	40	20R0	29	0.286	8.5	8.2	12 max
AM350	SCT850oF	206	173	12.5	45R0	29.4	0.282	6.3	8.9	12.3 max
HC-276	Annealed	115	55	60	90R0	29.8	0.321	6.8	6.4	1.0002
Haynes 242	Annealed	128	65	47	-	33.2	0.327	6	7	-
Haynes 242	Aged	196	135	32	-	33.2	0.327	6	7	-
Inconel 625	Annealed	120	60	55	88R0	29.8	0.305	7.1	6.2	1.0006
Inconel 718	Annealed	117	44	-	-	29	0.296	-	6.5	1.0013
Inconel 718	Aged	180	150	12	26R0	29	0.297	6.8	6.6	1.0011
Inconel X-750	Aged	177	123	27	-	31	0.298	7	6.9	1.002
Monel 400	Annealed	70	28	55	68R0	26	0.316	7.7	13.9	-
Titanium CP2	Annealed	50	40	-	-	-	0.162	-	-	1.00005

Flex Gas Line

Flexible metal hose



Hydroformed gasline yields a very clean product. Standard cleaning procedure includes degreasing and rinse. Gaslines are 100% tested and leak checked.

Optional cleaning methords are:

* Oxygen clean
* Ultrasonic clean

Four (4) factors to consider when selecting a flexible gasline

Temperature

As temperature increases, the hose's working pressure decreases. To figure out the actual working pressure at a particular temperature, multiply the pressure by the temperature factor in the table.

Dynamic Pressure

Pulsating, surge or shock pressure can inflict severe damage on a hose.
For pulsating pressure, the working pressure should be de-rated by 1/2
For shock pressure, the working pressure should be de-rated by 1/6

Flexibility

Bend radius should not be less than the rated radius .

Chemical Compatibility

Both hose and braid must be compatible with the media that flows through the hose
Refer to NACE (National Asoc of Corrosion Engineers) for information

Working pressure de-rating factor

Degree (F)	400	500	600	700	800	900	1000	1100	1200
Degree (C)	205	260	315	370	370	480	540	595	650
Temp. factor	0.93	0.86	0.81	0.77	0.74	0.71	0.67	0.61	0.38

Available end fitting



Male, NPT (MPT)



Female, NPT (FPT)



Male Face Seal (MVCR)



Female Face Seal (FVCR)



Tube connector (swag)



Weld tube (WT)

Flex Gas Line

Flexible Gas Line

We offer two types of gas lines; "General Use" and "Stay-Put".

Gerneral Use is for industrial application of gas & liquid lines with high temperature, corrosive media and harsh environment
Stay-Put can fit into a tight space without creating stress

General Use series:



* Braided, double braided or unbraded corrugated tube assembly
* Core tube is made of 316L stainless steel
* Braid is made of 304 stainless steel
* Tube ID from 1/4" to 2"
* Max. working pressure 2,700 psi (186 bar)
* Min. static bend radius for braided hose 1.0" (25 mm)
* Min. dynamic bend radius for braided hose 4.5" (114 mm)
* Full range of end connections

Inside Diameter		Number of Braids	Outside Diameter		Static Minimum Bend Radius		Dynamic Minimum Bend Radius		Maximum Working Pressure		Burst Pressure		Weight Per Foot	Weight Per Meter
inch	mm	(#)	inch	mm	inch	mm	inch	mm	psi	bar	psi	bar	lbs	kg
1/4	6.35	0	0.41	10.4	1.0	25	4.5	114	90	6	n/a	n/a	0.04	0.06
		1	0.47	11.9					1,800	124	7,233	499	0.11	0.16
		2	0.53	13.5					2,700	186	9,100	627	0.18	0.27
3/8	9.53	0	0.65	16.5	1.2	30	5.0	127	70	5	n/a	n/a	0.10	0.15
		1	0.71	18.0					1,558	107	6,230	430	0.20	0.30
		2	0.77	19.6					2,336	161	9,345	644	0.30	0.45
1/2	12.70	0	0.77	19.6	1.5	38	5.5	140	70	5	n/a	n/a	0.11	0.16
		1	0.83	21.1					1,186	82	4,743	327	0.22	0.33
		2	0.89	22.6					1,779	123	7,115	491	0.33	0.49
5/8	15.88	0	0.96	24.4	1.8	46	7.0	178	57	4	n/a	n/a	0.17	0.25
		1	1.02	25.9					1,205	83	4,820	332	0.33	0.49
		2	1.08	27.4					1,808	125	7,230	498	0.49	0.73
3/4	19.05	0	1.16	29.5	2.1	53	8.0	203	43	3	n/a	n/a	0.19	0.28
		1	1.22	31.0					898	62	3,591	248	0.37	0.55
		2	1.28	32.5					1,347	93	5,387	371	0.55	0.82
1	25.40	0	1.47	37.3	2.7	69	9.0	229	43	3	n/a	n/a	0.26	0.39
		1	1.53	38.9					718	50	2,872	198	0.50	0.74
		2	1.59	40.4					1,077	74	4,308	297	0.74	1.10
1 1/4	31.75	0	1.75	44.5	3.1	79	10.0	254	43	3	n/a	n/a	0.29	0.43
		1	1.83	46.5					645	44	2,581	178	0.61	0.91
		2	1.91	48.5					968	67	3,872	267	0.93	1.38
1 1/2	38.10	0	2.08	52.8	3.9	99	11.0	279	28	2	n/a	n/a	0.47	0.70
		1	2.16	54.9					531	37	2,125	147	0.85	1.26
		2	2.24	56.9					797	55	3,188	220	1.23	1.83
2	50.80	0	2.61	66.3	5.1	130	13.0	330	14	1	n/a	n/a	0.59	0.88
		1	2.69	68.3					449	31	1,797	124	1.11	1.65
		2	2.77	70.4					674	46	2,696	186	1.63	2.43

Flex Gas Line

Stay-Put Gas Line

This hose series is formable and stay put. They can be bent, compressed or stretched to fit into exact space in a system without stress. Commonly used to connect piping. Formable gas line comes in 1/2", 3/8" and 1/2" ID only



Stay-put:

* Braided or unbraided
* Core tube is made of SUS 316L. Braid is made of SUS 304
* Tube ID 1/4", 3/8", 1/2"
* Max. working pressure 900 psi
* Min. static bend radius for braided hose 1.0"

Formable and stay-put

ID (in)	OD (in)	Static bent R (in)	Pitch	# of braid	Max. psi
0.25	0.38	1.0	0.08	0	90
	0.47			1	900
0.38	**0.65**	**1.20**	**0.10**	**0.00**	**70.00**
	0.79			**1.00**	**800.00**
0.50	0.66	1.5	0.12	0	70
	0.83			1	665

P/N system for Gas Line

General Use Series

Braided hose	FHB - ftg/ftg - ID - (length) - GU
Unbraided hose	FH - ftg/ftg - ID - (length) - GU

Example

FHB - MPT/FPT - 0.5 - 36 - GU	Braided metal hose - male/female thread - 1/2" ID - 36" lg, general use
FH - MPT/FPT - 0.5 - 36 - GU	Unbraided metal hose - male/female thread - 1/2" ID - 36" lg, general use

Stay-Put Series

Braided hose:	FHB - ftg/ftg - ID - (length) - SP
Unbraided hose:	FH - ftg/ftg - ID - (length) - SP

Example

FHB-WT/VCR-0.25-24 - SP	Braided flex hose, weld tubeVCR, 1/4" ID, 24" lg, Stay-Put
FH-MPT/FPT-0.25-36 - SP	Unbraided flex hose, male/female NPT, 1/4" ID, 36" lg, Stay-Put

High Purity Fitting and Valve

Vacuum Products Corp (VPC) is a global provider of ultra-pure fluid system for the research, thin-film, instrumentation, power, petrochemical industries. We use only the highest grade raw material and 1/1000" tolerance control on each and every part, we assure a leak-tight seal in every application. We offer immediate delivery of parts made of VIM-VAR

Diaphragm valve is for ultra pure fluids system; pressure relief valve protects the line from over pressurization; check valves protect the system from back flow; and strainer-contained filters prevent any impurity in the system. We use materials that conform to NACE specifications.

Our components exceed the requirements of the refinery and petrochemical industry.

100% compatible with Swagelok fittings

We specialize in custom design and quick delivery. No minimum order is required.

We have 10,000 different parts. Please call: **510-498-8518**
Submit inquiry at: sales@vacproducts.com

Specification:

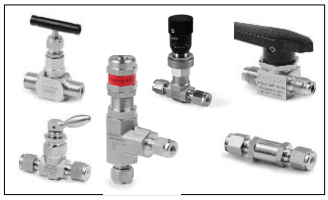
Material: 316, 316 VIM-VAR
Cleaning: Only biodegradable, phosphate and caustic-free alkaline cleaner is used
Surface Finish: 15Ra, 10Ra, 5Ra, Brite Anneal or Electropolish
Ferrule nut threads are silver plated



Compressing fitting



Face Seal fitting



Valve



Quick Connect/Felx tube



Filter



Regulator

High Purity Valve

Ball Valve





* Smooth and low operating torques
* Variety of handle colors
* Pneumatic and electric actuators available
* Panel mountable
* Leak-tight testing for every valve at the maximum working pressure with nitrogen

*** Specification**

Material:	**SS316, 316L, 904L, 304, 304L, 321**
Maximum working pressure:	**Up to 10000 psig**
Working temperature:	**-65°F ~ 450°F (-54°C ~ 232°C)**
Orifice size:	**1.3mm ~ 18mm**
Thread:	**NPT, socket weld, tube fitting**

Check Valve





* Fixed and adjustable cracking pressure
* Can be installed in any direction
* Variety of springs available

*** Specification**

Material:	**Stainless steel**
Maximum working pressure:	**Up to 6000 psig**
Cracking pressure:	**1/3 ~ 600psig**
Working temperature:	**-65°F ~ 900°F (-54°C ~ 482°C)**
Orifice size:	**1/8" ~ 1" and 6mm ~ 12mm**
Thread:	**NPT, BSPT, socket weld, butt weld, tube fitting**

High Purity Valve

Relief Valve





* Liquid or gas service
* Adjustable connect cap and adjustable set pressure
* Lock wired secure cap to maintain the set pressure
* Variety of seal materials
* Label identifies the set pressure range
* Manual override available to open the valve without changing the set pressure

*** Specification**

Material:	**Stainless steel**
Set Pressure:	**10 ~ 6000 psig @ 70°F (20°C)**
Maximum outlet pressure:	**Up to 1500 psig**
Working temperature:	**-10°F ~ 300°F (-23°C ~ 148°C)**
Orifice size:	**0.14" ~ 0.25"**
Thread:	**NPT, tube fitting**

Metering Valve





*** Specification**

Material:	**Stainless steel**
Maximum working pressure:	**Up to 5000 psig**
Working temperature:	**-65°F ~ 850°F (-54°C ~ 454°C)**
Orifice size:	**0.032" ~ 1.128"**
Thread:	**NPT, FR fitting, tube fitting**

For Product Selection, please call **510-498-8518**

Or make inquiry: **sales@vacproducts.com**

High Purity Valve

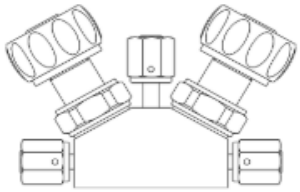
Diaphragm Valve



316 SST, 3 valves & 4 ports, 1/4"



316 SST, 1/4"



316 SST, 2 valves 3 ports

Filter







*** Specification**

Material:	**SS316, 316L, 304, 304L, 904L, 321L**
Maximum working pressure:	**Up to 6000 psig**
Working temperature:	**-20°F ~ 900°F (-29°C ~ 482°C)**
Orifice size:	**1/8" ~ 1/2"**
Nominal pore sizes for sintered element:	
	0.5, 2, 7, 15, 40, 60, 80 µm
Nominal pore sizes for strainer element:	
	100, 150, 250, 450 µm
Thread:	**NPT, socket weld, tube fitting**

For Product Selection and Quote
Please Call **510-498-8518**
Or make inquiry: **sales@vacproducts.com**

Compression Fitting

Two ferrule mechanical grip design. 100% compatible to Swagelok fitting. We cross reference to Swagelok part number. Unlike other equivalent parts, we are the only supplier with parts that passed the salt water test under high pressure and temperature. **We carry sizes from 1/8" to 1.0"**

Union



Bulkhead Union



Reducing Union



Union Elbow



Male Connectors



Female Connectors



Male Run Tee



Male Branch Tee



Union Tee



Male Elbow



Female Elbow



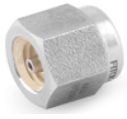
Reducer



Cap



Plug



Nut + Ferrule



Face Seal Fittings

We carry thousands of parts in inventory. Please send inquiry.

We cross reference to Swagelok part numbers.

FR Gland to Short Tube Butt Weld



FR Gland to Tube Butt Weld



Silver Plated/Unplated Gasket, Nonretained



FR Gland to Tube Port



FR Body to Female NPT



Gasket Retainer Assembly



FR Body to Tube Fitting



Union Bodies



Female Nut



Bulkhead Union Bodies



FR Body to Male NPT



Cap



FR Body to Male NPT Elbow



FR Body Union Elbow



Male Nut



FR Body Union Tee



FR Body Union Cross



Plug



Quick-Connects and Hose Connector

Quick Connect



*** Specification**

Material:	**Stainless steel**
Maximum working pressure:	**Up to 6000 psig**
Working temperature:	**-10°F ~ 400°F (-23°C ~ 204°C)**
Orifice size:	**1/8" ~ 1" and 6mm ~ 12mm**
Thread:	**NPT, hose connector, tube fitting**
Type Available:	**Single-end shutoff, double-end shutoff, full-flow quick-connects**

Metal Flexible Hose Assemblies



*** Specification**

Material:	**Stainless steel**
Maximum working pressure:	**Up to 3100 psig**
Working temperature:	**-325°F ~ 800°F (-200°C ~ 426°C)**
Orifice size:	**1/4" ~ 2"**
Thread:	**NPT, tube fitting**

For Product Selection and Quote
Please Call **408-805-5607**
Or make inquiry: **sales@vacproducts.com**

Vacuum Gauge

Thyracont Vacuum Instruments GmbH

Over 40 years in development and manufacturing of innovative vacuum instrumentation
Strong background in Research and Development, customized service availiable
****All Thyracont products are CE marked and carry a 2 year warranty**

Smartline- New generation Smartline Intelligent Vacuum transducer

Range: 1200-5x 10-10 mbar
Correct pressure reading due to separate gas correction factor for each sensor
Low thermal and electric interference with the vacuum process insensitive to shock venting



VSR Series- Peizo/Pirani tranceducer, 1200-1x 10-4 mbar

Application: Load lock, Analysis technology, vacuum furnaces, leak test, process engineering

Model	Description
VSR53D	Piezo / Pirani, 1200-1e-4 mbar, metal sealed, DN16KF
VSR54D	Piezo /Pirani, 1200-1e-4 mbar, metal sealed, DN16CF

VSP Series- Pulsed Pirani transducer, 1000 -1x 10-4 mbar

Applications: Freeze Drier Chambers, Vacuum Loadlocks, Vacuum Distillation
Vacuum Pump Monitoring, Leak Detectors, Vacuum Forelines

Model	Description
VSP63D	Pirani, 1000-1e-4 mbar, metal sealed, DN16KF
VSP64D	Pirani, 1000-1e-4 mbar, metal sealed, DN16CF

VSM Series- Pulsed Pirani & Inverted Magnetron cold cathode sensors, 1000-5 x10-9 mbar

Applications: Vacuum Furnaces & Ovens, Thin Film Deposition Systems
Gas Laser Manufacture, Low-e Glass Coating System

Model	Description
VSM77D	Cold cathode / Pirani, 1000-5e-9 mbar, metal sealed, DN25KF
VSM78D	Cold cathode / Pirani, 1000-5e-9 mbar, metal sealed, DN40KF
VSM79D	Cold cathode / Pirani, 1000-5e-9 mbar, metal sealed, DN40CF

VSH Series- Pulsed Pirani & dual filament Bayard-Alpert ionization sensors, 1000-5 x10-9 mbar

Applications: Ion Beam Etch & Deposition, Optical Coating, Particle Accelerators
Vacuum Glove Boxes, Freeze Drying, House Vacuum Systems

Model	Description
VSH77D	Hot cathode / Pirani, 1000-5e-9 mbar, metal sealed, DN25KF
VSH78D	Hot cathode / Pirani, 1000-5e-9 mbar, metal sealed, DN40KF
VSH79D	Hot cathode / Pirani, 1000-5e-9 mbar, metal sealed, DN40CF

Vacuum Gauge

** Replace part number "D" with "DL" for optional large LED display
** Replace part number "D" with "E" for EtherCAT
** All smartline transducers can operate independently or with VD12 or VD14 Digital Controller.

Analogline Transducer



Range: 1400-1 x 10-4 mbar
Robust build and insensitive against shock venting and vibration
Ceramic sensor, dirt resistance and contamination insensitive
Excellent measurement accuracy
Analog stand output signal 0-10V or 40-2- ma for PLCs

VCC series- capacitance vacuum sensor, 200 - 1 x 10-1 mbar
Independent of gas type
Applications: Vacuum Insulations, Packing Machines, Medical Technology
Chemical Process Engineering, Evacuation and Filling

Model	Description
VCC200MA4	Capacitance, 200-0.1 mbar, 4-20 mA, linear, DN16KF



VSC series- Piezo resistive sensor with Viton sealing, 1400 - 1 mbar
Applications: Appliance Engineering, Medical Technology, Packing Machines
Operation control and documentation of Vacuum plants and pumps

Model	Description
VSC43MA4	Ceramic, 1400-1 mbar, 4-20 mA, linear, DN16KF
VSC43MV	Ceramic, 1400-1 mbar, 0-10 V, linear, DN16KF

VSP Series- Pulsed Pirani transducer, 1000 -1x 10-4 mbar
Applications: Freeze drying, lyophiliation, Anaysis instruments, process engineering
Vacuum Pump Monitoring, Leak Detectors, Vacuum Forelines

Model	Description
VSP63MA4	Pirani, 1000-1e-4 mbar, 4-20 mA, logarithmic, metal sealed, DN16KF
VSP63MV	Pirani, 1000-1e-4 mbar, 0-10 V, logarithmic, metal sealed, DN16KF
VSP64MV	Pirani, 1000-1e-4 mbar, 0-10 V, logarithmic, metal sealed, DN16CF

Display and Control Unit



VD12
Single channel unit for any Thyracont transducer
2 configurable independent set points.
Pressure display in Torr, mbar or hPa
USB port and VacuGraph software available for data analysis
Shielded metal cases for preventing electromagnetic interface



VD14
4 channel unit for any Thyracont transducer
2 configurable set points per measurement channel

Vacuum Gauge

Pressure display in Torr, mbar or hPa
RS232 port and VacuGraph software available for data analysis
Shielded metal cases for preventing electromagnetic interface



Model	Description
VD12S2	2 channels, 1400-5e-10 mbar, for Smartline transducers and Analogline transducers with 0-10 V output, metal sealed, USB-interface
VD14S4	4 channels, 1200-5e-10 mbar, for Smartline transducers and Analogline transducers with

** Products listed above are most favorable items, but not the complete Thyracont product line.
Please feel free to contact us if you need anything else.

Vacuum Accessory

Sealant & Lubricant

High Vacuum Sealant

Low vapor pressure resin sealant for sealing leaks.

Loctite Epoxi-Patch Kit

Useful to 1x10-9 Torr. Forms strong bond with glass, ceramic and metal. Hardens at room temperature. Contains no solvent. Max. bake temperature is 125 C

Celvaseal

Siliocone resin, useful to 1x10-11 Torr. Much less weight loss compare to Loctite after bake. RGA indicates no evidence of hydrocarbons or other contaminations. Withstand repeated temperature cycling from -200 C to 450 C over long intervals of time.



High Vacuum Lubricant

High vacuum grease and lubricant has low vapor pressure. Generally used to wet O-Ring to improve sealing when ultra vacumm is not required. Also used on threaded fasteners to keep from sticking inside a vacuum environment.



Available in:

Apezon, L-Type	Hydrocarbon base
Apiezon, M-Type	Hydrocarbon base
Krytox, LVP	Florinated oil. Up to 570 F
Loctite, 51609	Contain MoSi2 dry Lub. -129 C to 131 C
Dow Croning	Siloicone base. -40 C to 260 C

PinchOff Tube

Made from OFE Copper. Commonly used on portable device as a pump port for vacuum.

Flange Size	L	N	O
1- 1/3"	6.00"	0.25	0.83
1- 1/3"		0.37	0.83
1- 1/3"		0.50	0.83
2-3/4"		0.25	1.89
2-3/4"		0.37	1.89
2-3/4"		0.50	1.89



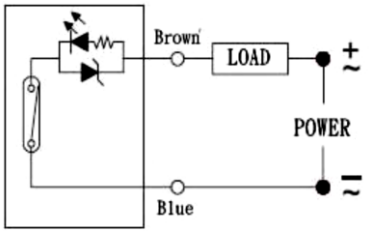


Vacuum Accessory

Solenoid Valve

Position Sensor

Part No#	Specification	Size
Position Indicator	POSITION INDICATOR, DC/AC 5-120V	KF16 ~ ISO250



Air supply fitting 1/8" NPT (KF16-KF50) / 1/4" NPT (ISO63-ISO250)

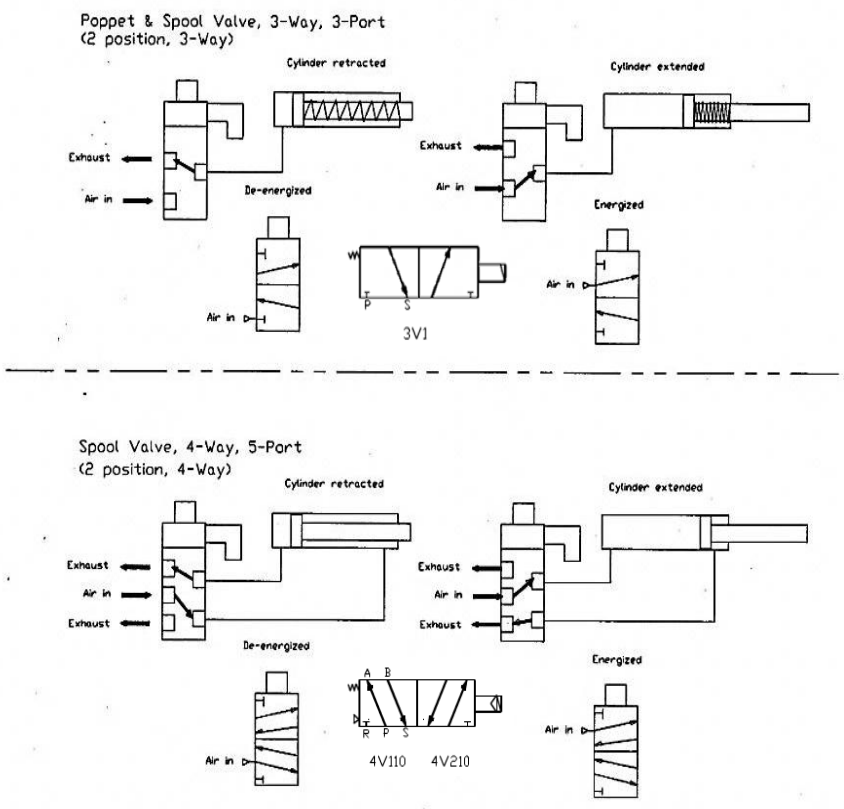
Voltage option DC: 24V / AC: 110V / 220V

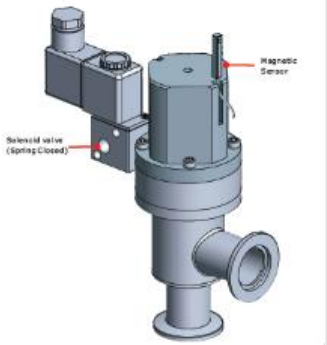
Solenoid Valve

Part No#	Specification	Size
3V1-06- 24	DC 24V, 1/8" NPT	
3V1-06-110	AC110V, 1/8" NPT	
4V-210-08-24	DC 24V, 1/4" NPT	
4V-210-08-110	AC110V, 1/4" NPT	



Electro-pneumatic Valve (Single acting)





Electro-pneumatic Valve (Double acting)



Viewport

Available in different material types and surface treatments to allow for optimal transmission of specified wavelengths.



Optical disk for viewing only uses borosilicate glass such as 7056 or Kodial. For optical critical applications, fused silica, quartz, sapphire, Pyrex are used. Choose optical material that has a high transmission at the wavelength of interest.

Kodial viewport can withstand repeated bakeout cycle to 350° C. However, to avoid thermal stress, the heating rate should not exceed 2 deg. per minute. For clamp syle viewport, finger-tight the bolts; use cross-flange tightening pattern, and never rotate any bolt more than 1/8 turn at a time.

UV grade fused silica viewports has a bakeout temperature of 200^0C. Sapphire Viewport has a bakeout temperature of 450^0C.

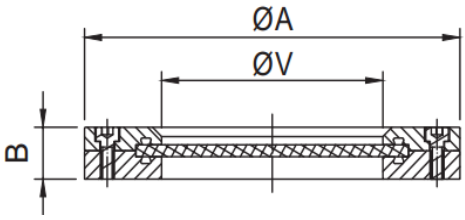
Pyrex Viewports provide a convenient and economical solution for vacuum systems requiring periodic glass subtrate replacement. Applications like vacuum coating will deposit materials on viewports which will eventually render them useless. The Pyrex substrate is sealed against an gasket and clamped in place with an aluminum flange which prevents metal to glass contact.

Please email your inquiry to support@vacproducts.com or call (510) 498-8518

HV ViewPorts

Standard Specification

Application : High Vacuum
Flange Materials : SUS304, SUS316L
Vacuum Range: 760 Torr ~ 1 x 10^{-9}Torr
Glass Materials : Borosilicate



Clamp Type

Part Number	Flange size	V	A	B
ISO 63-VP	ISO 63	60.20	130.00	22.00
ISO100-VP	ISO 100	97.30	165.00	22.00
ISO160-VP	ISO 160	148.10	225.00	26.00

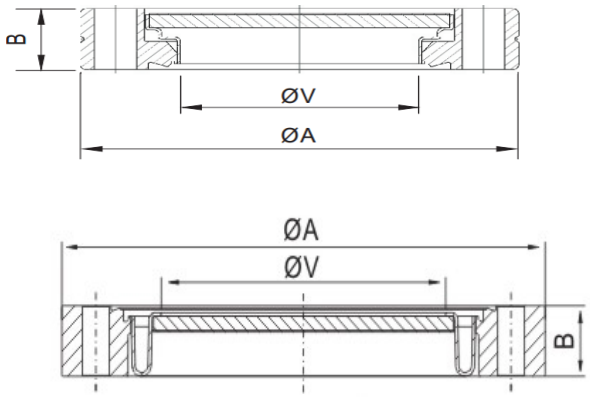
Viewport

Weld Type

UHV ViewPorts

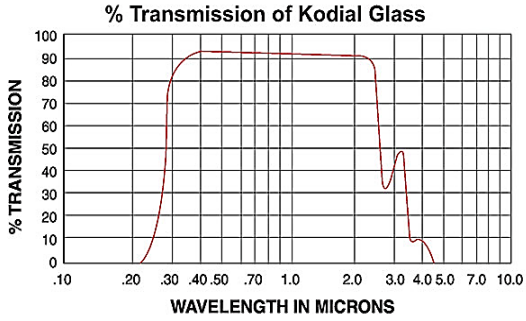
Standard Specification

Application : Ultra High Vacuum
Vacuum Range: 760 Torr ~ 1 x 10^{-13} Torr
Glass Materials : Kodial
Flange Materials : SUS304, SUS316L, SUS304ESR, SUS316LN
Optical Coating : Optional

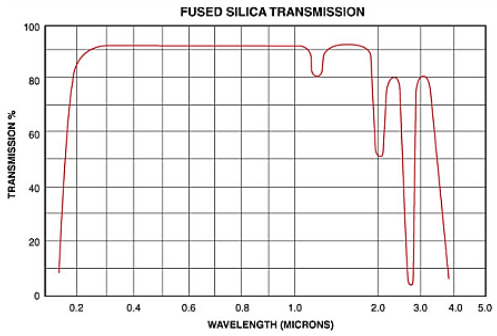


P/N	A mm	B mm	V mm	view angle	max. temp	min. temp
CF1.33-VP	34.00	8.00	15.80	65.00	400°C	-170°C
CF2.75-VP	70.00	13.00	38.00	98.00	400°C	-170°C
CF4.53-VP	114.00	17.50	63.60	120.00	400°C	-170°C
CF6.00-VP	152.00	20.00	89.20	122.00	400°C	-170°C
CF8.00-VP	203.00	22.00	137.00	140.00	400°C	-170°C

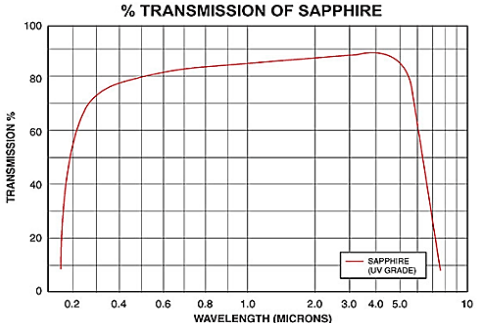
Kodial Glass



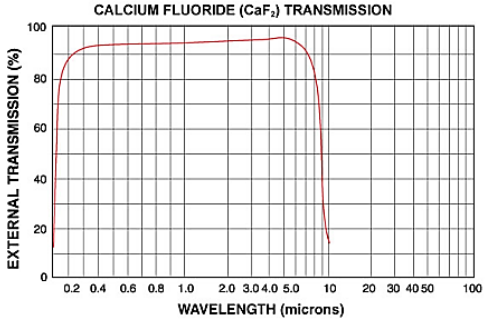
Fused Silica / Quartz



Sapphire



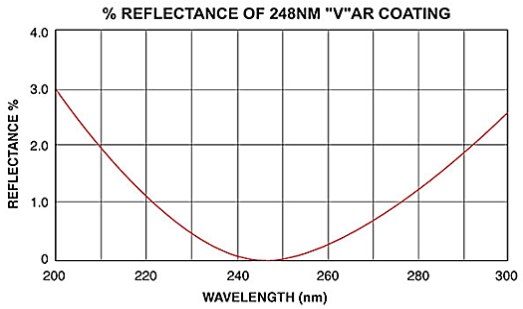
Exotic Glass

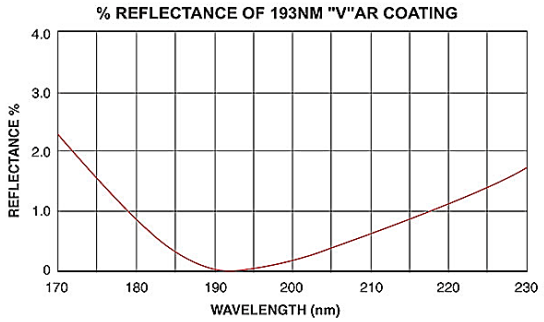


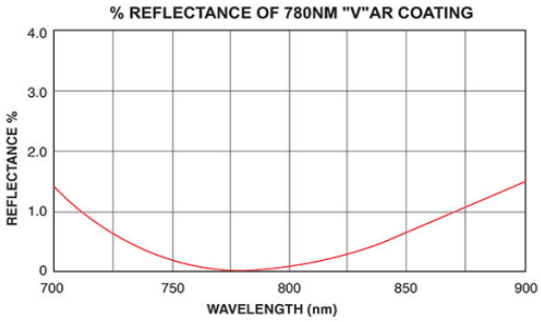
Viewport

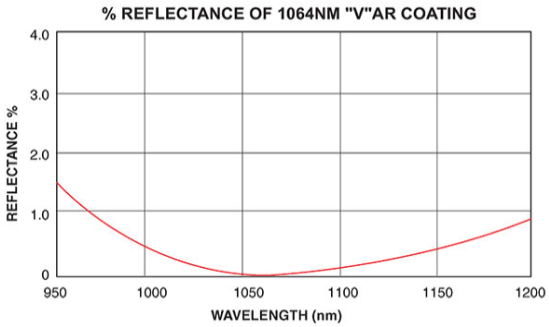
Door

Laser Transmission Viewport



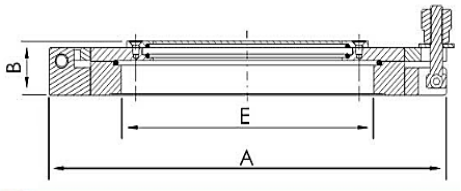




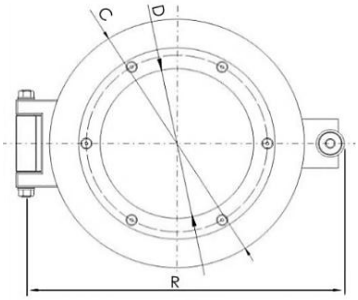


Door

Door can be equipped with a viewport.
For Blank door, dimension "D" does not apply







Viewport Door

P/N	A	B	C	D	E
QDV-CF4.5	6.97	1.26	4.49	2.52	2.52
QDV-CF6.0	8.46	1.38	5.98	4.02	4.02
QDV-CF8.0	10.87	1.46	7.95	5.98	6.02
QDV-CF10.0	12.83	1.54	9.96	5.98	8.03

* For blank-off door, please use QDB for P/N prefix

Viewport

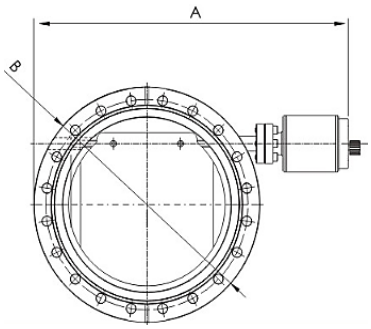
Shutter

Shutter, bellow sealed

Viewport can become contaminated from the coating material.
Shutter is used to prevent deposition onto the viewport, thus preserve the quality of viewport.
Shutter can be locked in either open or close position.

Available in manual, pneumatic or motorized configuration.





Material:	304
Max. bake temperature:	250 ^{0}C
Operating temperature :	120° C to 150° C
Operate Pressure Range:	760 Torr ~ 1x10-10 Torr 1,000
Leak Rate	1 x 10-10 Torr l/s, He

P/N	Flange	A (inch)	A (mm)	B (inch)	B (mm)
STRM-CF2.75	CF2.75	6.54	166.00	2.73	69.30
STRM-CF4.50	CF4.50	7.95	197.00	4.47	113.50
STRM-CF6.00	CF6.00	9.25	235.00	5.97	151.60
STRM-CF8.00	CF8.00	11.06	281.00	7.97	202.40
STRM-CF10.00	CF10.00	12.72	323.00	9.97	253.20

Pneumatic Shutter

Adjustable stop
Flow regulator: Standard
Solenoid operated: 100 psi, max
Bake temperature: 150° C



Chamber

Custom Build-to-Print Chamber

Chambers come in many shapes and sizes consist of Bell Jar, Rectangular, and Cylindrical configurations. Available in Stainless Steel, supplied with electropolished surface finish with mounting bosses and can be ordered with support frame. Additionally, seamless integration with feedthrough options is provided for applications. Please refer to the next page for the feedthrough selection.

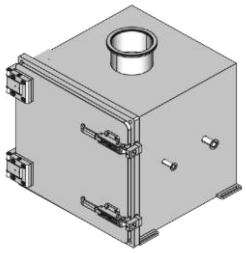




Specification:	
Vacuum range:	$1x10^{-9}$ Torr
Leak test:	1 x 10-9 std cc/sec He

Standard Chamber

These chambers are robust, economical, and made of Stainless Steel with an electropolished surface finish. They can be customized with different ports and accessories to meet specific requirements.



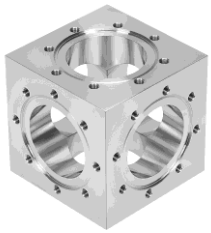
Box Chamber

Material: 304 SS

Sturdy hinged door providing quick and easy access

Size	Port	Cost
12"	Up to 4 ports: KF16, KF25, KF40, ISO100	$4,463
16"		$6,767
24"		$12,077

* Port available in KF, CF, ISO, NPT, ASA, and through hole
* Customization available for an additional price.



6-Way Cube

Material: 304 SS

compact and versatile

Size	Thread	Cost
6"	8-32	$2,436
12"	1/4-28	P.O.R
18"	5/16-24	P.O.R
24"	5/16-24	P.O.R

* 316 material available upon request

Additional discount when ordered with electrical feedthrough, pump, and accessories

* Drawings and specification available upon request.
* If needed custom chambers, please email your inquiry to sales@vacproducts.com or call 510-498-8518

Ceramic Feedthrough

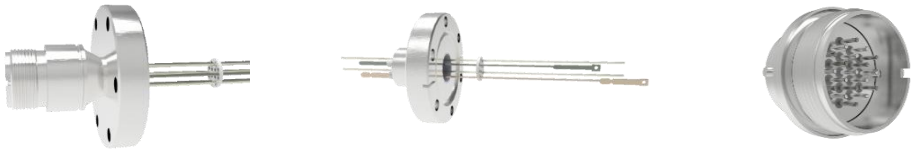
Power Feedthrough **High volt and current. 1-12 pins**



Coaxial Feedthrough **(BNC, MHV, SHV, SMA), 1-15 pins**



Thermalcouple **K, C, E, J, T, N, R/S, Single Lead**



Multi-pin FT **Sub-D, Micro-D, Mil-C-5015, Mil-C-26482**



Ceramic Break (Isolator) **Ceramic or Glass, 5-60KV**



Connector & Cable



Liquid Feedthrough **Gas, Fluid & LN2**



Ceramic Feedthrough

Power Feedthrough



High current



High voltage



3 Pin



Med. Power



Power FT is used for the transmission of high voltages or high current into vacuum systems. Power feedthroughs offer a broad range of voltage and current.
FT is widely used in Aerospace, Nonotechnology, Communication and Semiconductor.

Quality is Endorsed by NASA, Sandia, Argonne, AMAT, LAM, KLA, Raytheon and more

We custom build FT to your specification. Please send requirements.

	volt/amp	Conductor	# of Pin	Op. Temp.	
Med. Voltage	10k/25	BeCu	1-8	-100^{0}C to 450^{0}C	Bake temp.:
High Voltage	100k/180	BeCu	1-4	-100^{0}C to 450^{0}C	CF flange: 450 C.
High power	12k/600	Cu, Ni, SST	1-10	-100^{0}C to 450^{0}C	KF flange: 150C.
Water cooled	8k/1,000	Cu	1-4	-100^{0}C to 450^{0}C	

Base plate style operating temperature is -20^{0}C to 150^0 C

High current conductor selection guide:

	Current	Corrosion Resistance
Copper	High	Low
SST	Low	Medium
Nickel	Medium	High



The important criteria are maximum operating voltage, maximum current per conductor, base pressure and working environment (gas type and pressure).
Standard High Power and High Voltage FT of didfferent rating and flange style are in stock.

Several mounting options for power feedthroughs: Weldable, KF, CF, and Baseplate. Baseplate versions of power FT are commonly used in vacuum furnaces and coating applications. Many designs are also configured for NPT style adapter.

Ceramic Feedthrough

Coaxial Cable

A coaxial cable has a center conductor insulated from a conducting outer shield which blocks electrical noice from surrounding, thus provide stable, repeatable signal

Designed to transfer low-current, low or high voltage signals from low or high impedance sources across the vacuum wall.

A coaxial cable's main characteristic is its impedance. Impedance is a function of the diameter and spacing of conductors and the insulator's dielectric constant, but not the function of its length.

Double-ended is used where continuous air and vacuum RF shielding is required
Single-ended is used where continuous shielding is not important

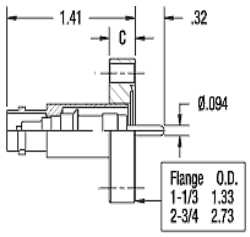
Connector selection :

BNC : Used in 50 and 75 ohms low power transmition lines
MHV : Used in medium power with high voltage requirement. Pins are exposed.
SHV : Used in high voltage. Male and female contacts are recessed for higher safety in disconnected condition

Multiple conductors are available depending on the connector type

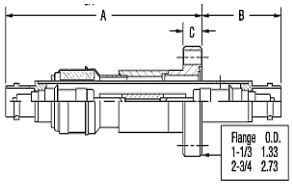
Grounded, Single end:





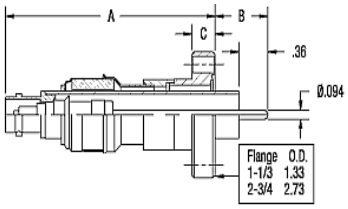
Grounded, Double end:



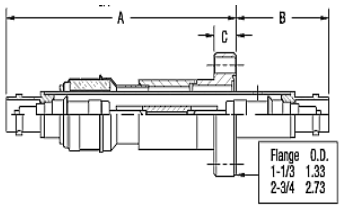


Floating Shield ,Single & Double end





Single end



Double end

Ceramic Feedthrough

Thermal Couple

Force induced when heat is applied to two dissimilar metal wires. A variety of vacuum-side connectors are available. Thermal Couple is available from one to five TC pairs



2 TC pairs



5 TC pairs



screw-mount connection



weld-end connection



The wires are air-side terminated to accept one of the several connections methods: plug, push-on split connectors or screw connections. Vacuum-side connections might be push-on split connector, or screw mounted.

When selecting T/C feedthrough, major consideration are the temperature range, number of measurement location, and the requirement of power conductor built into the same FT

Basic selection

Type	TC Material		Temperature ^0C	Compensate Wire Junction
	positive	Negative		
T	Copper	Constantan	-184 to 400	N/A
K	Chromel	Alumel	-184 to 1260	N/A
J	Iron	Constantan	0 to 750	N/A
C	Tungsten	Tungsten	0 to 2,760	N/A

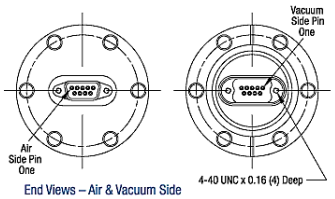
Type R: Noble matal (Platinum-Rhodium) thermal couple is good up to 1540 C
Type C: Refractory metal (Tungsten-Rhenium) thermal couple is good up to 2760 C

*** Drawings and specification available upon request.**

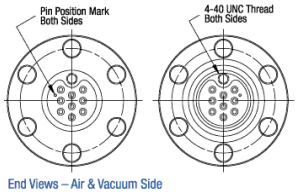
Ceramic Feedthrough

Multi-Pin Feedthrough

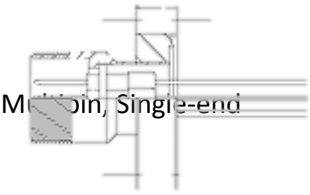




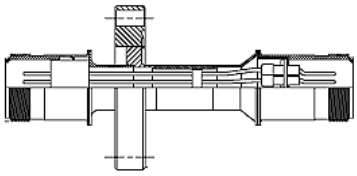
Type D



Type C



Multipin, Single-end



Multipin FT are commonly used for transmission of electrical signals and/or low power applications. They are sometimes refer to as Instrumentation FT as in surface analysis, electron microscopy and process.

Multi-pin FT, not coaxially shielded, are used for low impedance source where induced noise is less significant.

Product Series:

Type C	Gold plated 9 pin, is used where space is at a premiun.
Type D	Gold plated 9,15,25,50 pin; meet MIL-C-24308 specification
Multipin	Gold plated 4 to 35 pins. Thread connector meets MIL-C-5015

Available in CF or KF flanges
Atmosphere connector is supplied (require customer wiring).
Vacuum connector is purchased separately.

	Volt-Amp / Pin	Pin mat'l	# of Pin
Type C	up to 300 V, <10 amp	Be-Cu	9
Type D	up to 500 V, < 10 amp	Be-Cu	9,15,25,50
Multipin	up to 700 V, <10 amp	Alumel	4 to 35

Bake temperature: CF: 450 C. KF: 150 C. Connector: 65 C

Ceramic Feedthrough

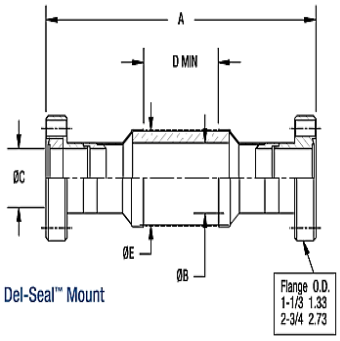
Ceramic Break

An electrical insulator. Metal ends provide a means of attaching to a vacuum chamber

Voltage rating: between 3kV to 40kV.
Tube size: from 3/4" to 1 1/2" ID. However up to 8" diameter can be accomodated.



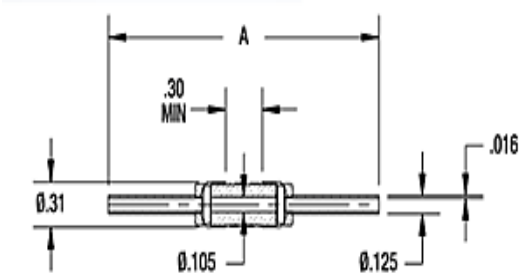




Liquid Break is used to transmit coolant fluid to provide electrical break in the transmission line. When external part of chamber is isolated from ground, yet needs a cryogenic or water supply, small diameter ceramic-metal Break is used (mounted externaally to the chamber)

Temperature range: -200 °C to 450 °C
Thermal gradients of 25 °C per minute must be observed with these products.





Glass in place of ceramic is available upon request.

Ceramic Feedthrough

Liquid Feedthrough

Mainly for deliverying liquid or gas to a device inside a vacuum chamber, often to maintain the device's temperature or to actuate a pneumatic mechanism. Occasionally, liquid-gas FT connects to internal devices that are not electrically grounded. For these applications, use electrically isolated power FT with tube conductors.

Cryogenic FT are similar to gas-liquid FT except for a long thermal path between tube and flange. Heat transfer is reduced and hence cryogenic evaporation rate.



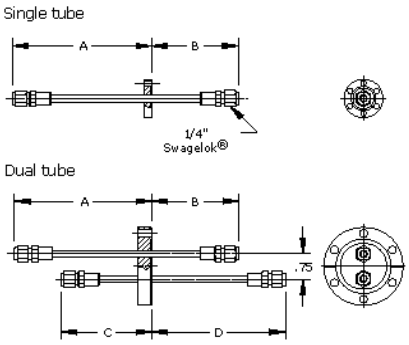
LN2



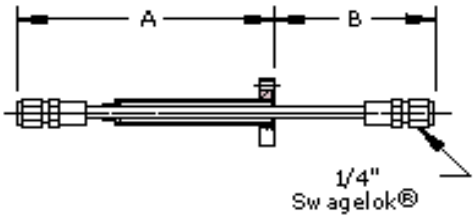
Flanged mount
CF or KF



Baseplate



Standard configuration



LN2 configuration



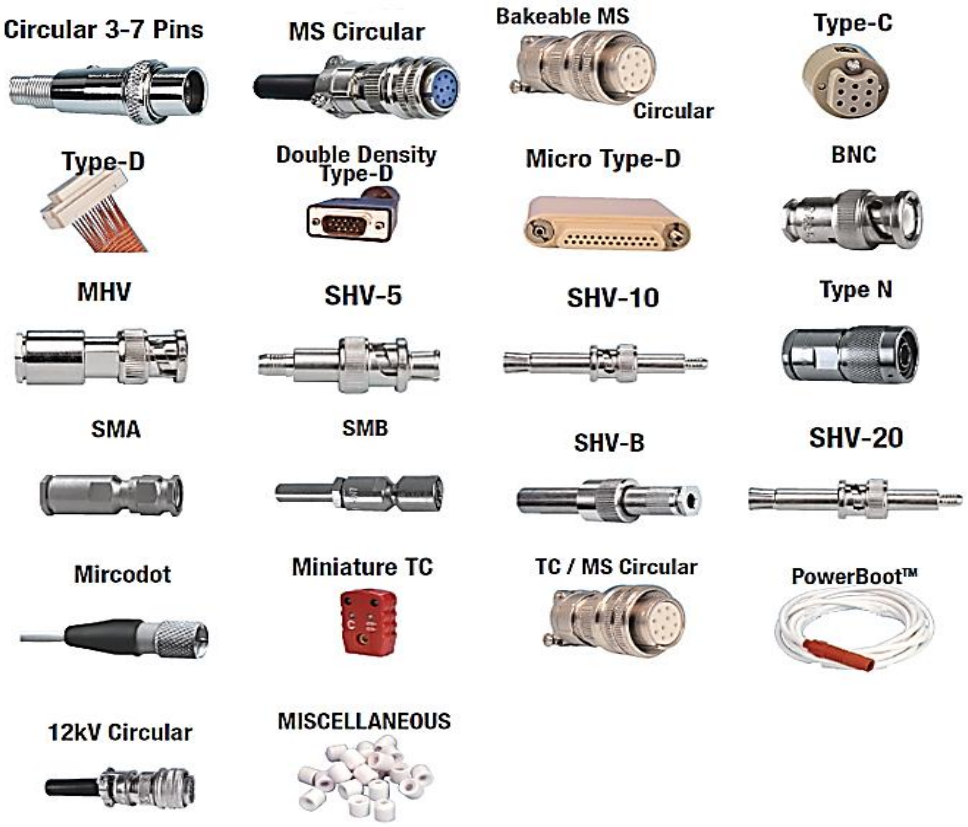
End connection Is available in Swagelok, VCR or welded

*** Drawings and specification available upon request.**

Ceramic Feedthrough

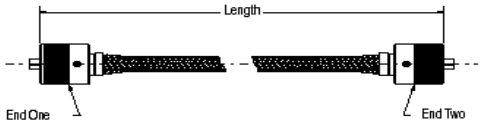
Connectors

Available connector types



Coaxial Cable

Specifications	
Termination Type	A, B, C, D, BNC, MHV, Microdot, BNC-Kapton®
Cable Type	0.125", 0.250"
Application	Feedthroughs
Voltage	To 3kV-DC
Current	To 15A
Service Temperature	to 400°C
Materials	304-Stainless Steel Braid Aluminium Hardware Beryllium-Copper Contacts Alumina Ceramic Copper Conductor



*** Drawings and specification available upon request.**

Ferromagnetic Feedthrough

Ferro Feedthrough for Rotation Transmission

Standard Feedthrough

Magnetic feedthrough is the ideal way to transfer rotational motion from atmosphere to vacuum or overpressure environment. Benefits are friction-less motion, high torque transmission, high speed (>10,000 Rpm), low drag, smooth motion and no particle generation . Withstand corrosive process without degrading.

Common use of ferro feedthrough are:

1) Cost effective O-ring feedthrough replacement
2) Sample handling, position and Robotics
3) Substrate rotation in vacuum chamber
4) Agitate fluid under vacuum
5) Damper for vibration-free application
6) Hematic seal for clean environment

Our Product range includes **standard** and **special** feedthrough. We also supply **retrofits** of conventional feedthroughs of other manufacturers.

We specialize in **customized design** to optimize performance at competitive price

Solid Shaft Thread Mounting





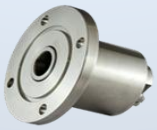
Solid Shaft Nose Mounting





Hollow Shaft





Standard Specification

Leak rate: 1×10^{-9} std. cc/sec, He
Vacuum range: 8×10^{-7} Torr
Max. operation pressure: 28 psi
Bearing lubrication: Fomblin / Krytox

Specification for CF flange
Leak rate: 1×10^{-11} std cc/sec, He
Vacuum range: 5×10^{-10} Torr

Standard ferrofluid
Base oil: Hydrocarbon
Max. operation temperature: 0-80 °C

Reactive gas ferrofluid
Base oil: Perfluorinated Polyether
Max. operation temperature: 0-90 °C

Ferromagnetic Feedthrough

Part number system

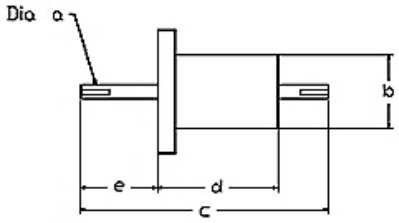
S	F	N	Shaft size	Cooling	Bearing	Mounting
S= solid shaft	F= flange	N= non-active	025= 0.25"	W= water cooling	N= ordinary	C133=CF1.33
H= hollow shaf	B= base plate	A= active	100= 1.00"	N= no cooling	H= overload	C275=CF2.75
	T= thread				C= cantilever	O6=6" flange w/o-ring
	C= cartridge				O= special	O7=7" flange w/o-ring
						516= 5/16-24 thread
						716= 7/16-20 thread
						100= 1" mtg plate

Solid Shaft - CF Flange

VPC P/N	a	b	c	d	e	Torque [lb.in]	Speed (RPM)
SFN025NN-C133	0.25	0.75	3.25	1.75	0.75	8.40	6300
SFN025NN-C275	0.25	1.50	4.06	2.56	0.75	8.40	6300
SFN025WN-C275	0.25	1.50	4.06	2.56	0.75	8.40	7000
SFN038NN-C275	0.38	1.50	4.06	2.56	0.75	53.80	3820
SFN038WN-C275	0.38	1.50	4.56	3.06	0.75	53.80	7000
SFN050NN-C275	0.50	2.38	8.66	4.91	2.50	107.00	3100

(Dimension: Inch)



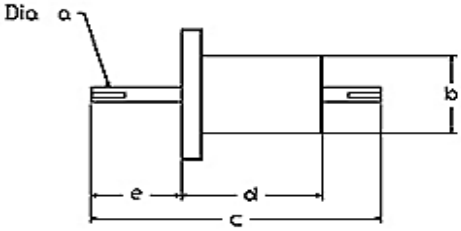


Solid Shaft - O-Ring

VPC P/N	a	b	c	d	e	B.C.	O-R face	Torque [lb.in]	Speed (RPM)
SFN050NN-06	0.50	2.87	6.03	3.56	1.22	4.75 x 4	V234	107	3100
SFN050WN-06	0.50	2.87	6.03	3.56	1.22	4.75 x 4	V234	107	7000
SFN050WN-07	0.50	5.00	16.32	6.00	4.32	6.00 x 6	V351	107	7000
SFN075WN-05	0.75	3.00	9.39	4.88	1.84	6.00 x 6	V337	205	6300
SFN075NN-06	0.75	2.87	6.03	3.56	1.25	4.75 x 4	V234	205	1910
SFN100WN-06	1.00	4.00	12.625	5.38	3.00	5.00 x 6	V340	709	2730

(Dimension: Inch)





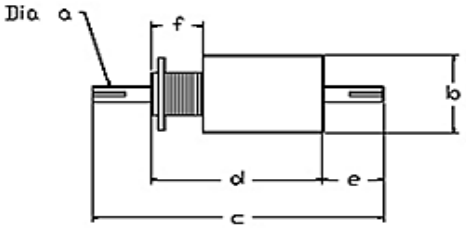
Ferromagnetic Feedthrough

Solid Shaft - Thread Mount

VPC P/N	a	b	c	d	e	B.C.	O-R face	Torque [lb.in]	Speed (RPM)
STN019NN-516	0.19	0.63	2.56	1.58	0.48	0.28	V012	5	7600
STN025NN-716	0.25	0.75	3.44	1.94	0.75	0.38	V015	6	6300
STN050NN-114	0.50	2.87	8.81	5.07	1.25	1.51	V128	205	3100
STN050WN-114	0.50	2.87	8.81	5.07	1.25	1.51	V128	205	7000
STN075NN-114	0.75	2.87	8.81	5.07	1.25	1.51	V128	709	1910
STN075WN-114	0.75	2.87	8.81	5.07	1.25	1.51	V128	709	6300

(Dimension: Inch)



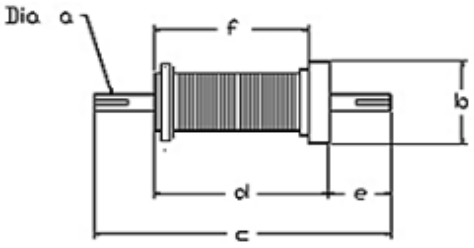


Solid Shaft - Baseplate Mount

VPC P/N	a	b	c	d	e	B.C.	O-R face seal	Torque [lb.in]	Speed (RPM)
SBN025NN-100	0.25	1.625	3.44	1.93	0.75	1.68	V026	8	6300
SBN025NN-100E	0.25	1.618	3.12	1.62	0.75	1.37	V026	8	6300
SBN025NN-150	0.25	2.12	3.97	2.47	0.75	2.22	V132	8	6300
SBN025NN-075	0.25	1.625	3.44	1.93	0.75	1.68	V026	8	6300
SBN038NN-100	0.375	1.62	3.39	1.65	0.865	1.30	V026	54	3820
SBN038NN-150	0.375	2.12	3.97	2.47	0.75	2.22	V132	54	3820

(Dimension: Inch)





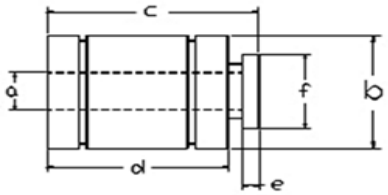
Ferromagnetic Feedthrough

Hollow Shaft - Cartridge Mount

VPC P/N	a	b	c	d	e	f	O-R OUTER	O-R INNER	Speed (RPM)
HCN050NN	0.50	2.00	3.22	2.75	0.38	1.25	V032	V014	3100
HCN100NN	1.00	2.62	3.34	2.75	0.50	2.00	V037	V022	1500
HCN150NN	1.50	3.25	3.71	3.00	0.63	3.00	V041	V029	950
HCN200NN	2.00	3.75	3.97	3.25	0.63	3.50	V153	V033	760
HCN300NN	3.00	5.25	4.46	3.63	0.75	4.50	V159	V151	500

(Dimension: Inch)





Now available in magnetically coupled version.

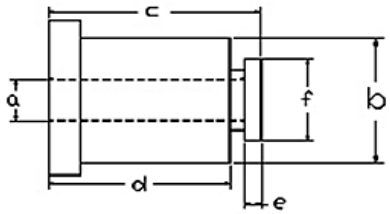
Max. RPM:	36 RPM
Max Torque:	260 in-lb
Bake Temperature:	150° C
Flange size:	CF2.75, CF4.5
Actuator:	manual or motor drive

Hollow Shaft - O-Ring Flanged

VPC P/N	a	b	c	d	e	f	O-R OUTER	O-R INNER	Speed (RPM)
HFN050NN-O6	0.50	2.75	3.22	2.75	0.38	1.25	V238	V014	3100
HFN050WN-O6	0.50	2.75	3.22	2.75	0.38	1.25	V238	V014	6300
HFN100NN-O7	1.00	3.00	3.34	2.75	0.50	2.00	V244	V022	1500
HFN100WN-O7	1.00	3.00	3.34	2.75	0.50	2.00	V244	V022	2730
HFN150NN-O7	1.50	3.75	3.71	3.00	0.63	3.00	V244	V029	955
HFN150WN-O7	1.50	3.75	3.71	3.00	0.63	3.00	V244	V029	1600
HFN200NN-O7	2.00	4.18	3.97	3.25	0.63	3.50	V244	V033	764
HFN200WN-O7	2.00	4.18	3.97	3.25	0.63	3.50	V244	V033	1100
HFN300NN-O10	3.00	5.87	4.72	3.88	0.75	4.50	V262	V151	500
HFN300WN-O10	3.00	5.87	4.72	3.88	0.75	4.50	V262	V151	610

(Dimension: Inch)





Ferromagnetic Feedthrough

Cross Reference Chart

Solid Shaft - CF Flange

VPC P/N	LESKER P/N	FERROTEC P/N	REGAKU P/N	Description
SFN025NN-C133	KLFDCF025133	FE103915	FD-CFM-0250	1/4" shaft, CF1.33 flange
SFN025NN-C275	KLFDCF025275	FE103532	FD-CF-0250	1/4" shaft, CF2.75 flange
SFN025WN-C275	KLFDCF025275W	FE103501	FD-CF-0250-W	1/4" shaft, CF2.75 flange, water cool
SFN038NN-C275	KLFDCF037276	FE103154	FD-CF-0375	3/8" shaft, CF2.75 flange
SFN038WN-C275	KLFDCF037275W	FE103912	FD-CF-0375-W	3/8" shaft, CF2.75 flange, water cool
SFN050NN-C275	KLFDCF050276	FE103909	FD-CF-0500	1/2" shaft, CF2.75 flange

Solid Shaft - O-Ring

VPC P/N	LESKER P/N	FERROTEC P/N	REGAKU P/N	Description
SFN050NN-O6	KLFDOF05060	FE103244	FD-F1-0500	1/2" shaft, 6" flange, Viton
SFN050WN-O6	KLFDOF05060W	FE103182	FD-F1-0500-W	1/2" shaft, 6" flange, Viton, water cool
SFN050WN-O7	KLFDOF05070W	FE103329		1/2" shaft, 7" flange, Viton, water cool
SFN075WN-O5	KLFDOF07550W	FE103904	FD-F1-0750-W	3/4" shaft, 5" flange, Viton, water cool
SFN075NN-O6	KLFDOF07560	FE103246		3/4" shaft, 6" flange, Viton
SFN100WN-O6	KLFDOF10060W	FE103259		1" shaft, 6" flange, Viton, water cool

Solid Shaft - Thread Mount

VPC P/N	LESKER P/N	FERROTECH P/N	REGAKU P/N	Description
STN019NN-516	KLFDTM018516	FE103971		3/16" shaft, 5/16-25
STN025NN-716	KLFDTM025716	FE103978	FD-BS-0250	1/4" shaft, 7/16-21
STN0505NN-114	KLFDTM050114	FE103191		1/2" shaft, 1"-15
STN0505WN-114	KLFDTM050114W	FE103204	FD-BS-0500-W	1/2" shaft, 1"-14, water cool
STN075NN-114	KLFDTM075114	FE103193		3/4" shaft, 1"-15
STN075WN-114	KLFDTM075114W	FE103206	FD-BS-0750-W	3/4" shaft, 1"-14, water cool

Solid Shaft - Baseplate Mount

VPC P/N	LESKER P/N	FERROTECH P/N	REGAKU P/N	Description
SBN025NN-10	KLFDBP02510	FE103237	FD-LSR-0250-A	1/4" shaft, 1.0" mtg plate
SBN025NN-10E	KLFDBP02510E	FE103519		1/4" shaft, 1.0" mtg plate
SBN025NN-15	KLFDBP02515	FE103979	FD-LSR-0250-C	1/4" shaft, 1.5" mtg plate
SBN025NN-075	KLFDBP02575	FE103236	FD-LSR-0250-D	1/4" shaft, 0.75" mtg plate
SBN038NN-10	KLFDBP03710	FE103664		3/8" shaft, 1.0" mtg plate
SBN038NN-15	KLFDBP03715	FE103991	FD-CF-.375-B	3/8" shaft, 1.5" mtg plate

Ferromagnetic Feedthrough

Hollow Shaft - Cartridge Mount

VPC P/N	LESKER P/N	FERROTECH P/N	REGAKU P/N	Description
HCN050NN	KLFDHC050	FE132405		1/2" hollow cartridge
HCN100NN	KLFDHC100	FE103319	10C-8925-B	1" hollow cartridge
HCN150NN	KLFDHC150	FE103320	10C-8925-C	1.5" hollow cartridge
HCN200NN	KLFDHC200	FE103321	10C-8925-D	2" hollow cartridge
HCN300NN	KLFDHC300	FE103322	10C-8925-E	3" hollow cartridge

Hollow Shaft - O-Ring Flanged

VPC P/N	LESKER P/N	FERROTECH P/N	REGAKU P/N	Description
HFN050NN-O6	KLFDHOF05060	FE103358		0.5" hollow shaft, 6" flange
HFN050WN-O6	KLFDHOF05060W	FE105395		0.5" hollow shaft, 6" flange, water cool
HFN100NN-O7	KLFDHOF10070	FE103359		1" hollow shaft, 7" flange
HFN100WN-O7	KLFDHOF10070W	FE105396		1" hollow shaft, 7" flange, water cool
HFN150NN-O7	KLFDHOF15070	FE103360		1.5" hollow shaft, 7" flange
HFN150WN-O7	KLFDHOF15070W	FE103354		1.5" hollow shaft, 7" flange, water cool
HFN200NN-O7	KLFDHOF20070	FE103361		2" hollow shaft, 7" flange
HFN200WN-O7	KLFDHOF20070W	FE103921		1.5" hollow shaft, 7" flange, water cool
HFN300NN-O10	KLFDHOF30010	FE133218		3" hollow shaft, 10" flange
HFN300WN-O10	KLFDHOF30010W	FE133760		3" hollow shaft, 10" flange, water cool

Now available in magnetically coupled version.

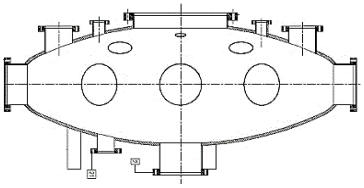
Max. RPM:	36 RPM
Max Torque:	260 in-lb
Bake Temperature:	150° C
Flange size:	CF2.75, CF4.5
Actuator:	manual or motor drive

Transfer System

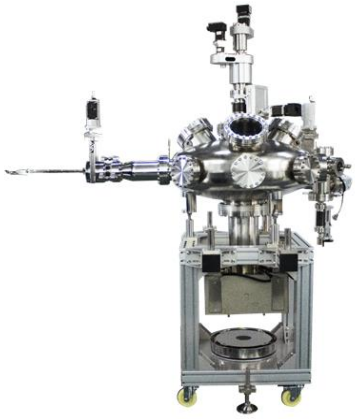
There are two common type of transfer systems: Linear and Radial. While Linear system has nearly unlimited scalability, the Radial system is used where small footprint is critical.

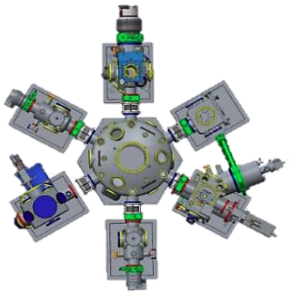
Radial Transfer System

The Radial transfer System is hosted in an UFO-shaped chamber. It allows sample to go through many different process chambers "in-situ" without being exposed to atmosphere. It eliminates any chance of potential comtamination. Up to 8 sub-systems can be connected to an UFO. Our UFO is equipped with transfer mechanism that extends up to 820 mm from port edge.



UFO



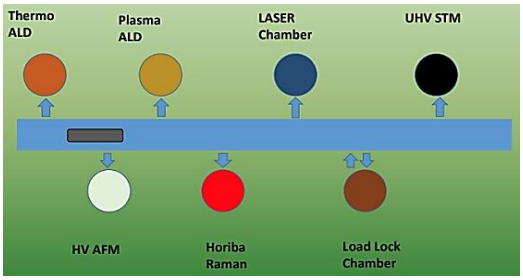


Features

* Base pressure:	< 5x10-10 mbar
* Capacity:	up to 8 sub-systems
* Stroke:	820 mm, measured from port edge
* Actuation:	Manual or motorized

Linear Transfer System





* Unlimited transfer distance via extentions
* Movable trolley holds up to 12 samples
* Trolley on a stainless steel track in vacuum
* Trolley is magnetically coupled to tranporter (outside the vacuum)
* Buffer module to house process chambers and analysis

Transfer System

Magnetic Transporter for UHV

Magnetic Transporters are UHV devices to manipulate a sample inside a vacuum chamber. Motion is achieved by use of magnets outside the vacuum to manipulate the sample inside the vacuum. The unique (patented) design of our heavy-duty transporters use a strong square hollow shaft instead of a round shaft providing very high performance. Conventional single shaft transporters are also available.

Product advantages:

* Higher rigidity
* Higher decoupling force
* Higher precision
* Longer extension without sagging
* Built-in 2nd operation for pick-and-place, etc

Models of magnetic transporters:

VFMS: Linear only; single shaft -- uses heavy duty **square** shaft.

VFMD: Linear + rotary; dual shaft -- a round shaft inside a heavy duty **square** shaft

VFML: Linear and/or Linear+rotary; single shaft -- uses single **round** shaft

> **VFMS** and **VFMD** perform better than competition due to the use of heavy duty **square** shaft. Higher rigidity allows linear extension beyond 160" in verticle position and 60" in horizontal with little sagging.
> **VFMD** construction has a round shaft that rotates inside a **square hollow shaft.** Two shafts working independently allowing secondary operation such as clamping , lifting, rotation, lock and rotate stages which make them the best on the market.
> **VFML** is designed for light duty. It is based on conventional design (single round shaft) at a greater savings.

All magnetic transporters have the following common features

Actuator Housing	Anodized Aluminum
Magnets	NdFeB
Vac. Range	1x10-11 Torr
Bake Temp	250°C (carriage removed)



Square Shaft Magnetic Transporters

Dual Shaft

VFMD-LR : Linear + rotary, dual shaft

Single Shaft

VFMS-L : Linear only, single shaft

Metal bearing is ideal for applications where excellent tactile feedback is desired or for high duty cycle use.
Carriages glide on polymeric bushings (outside of vacuum) are for use where a slight stiction is

Transfer System

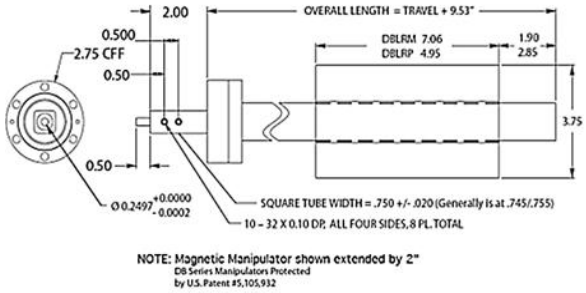
Dual Shaft, with square shaft

Linear + Rotary, VFMD-LR



Specifications:

Linear Compliance: 0.0035 in/lb
Linear Decoupling 26 lbs
Rotary Torque 12 in-lbs
Pneumatic and Motor drive available



Numerous end-effectors are available for Magnetic Transporters. The independent motions of the VFMD-LR maniplators allow the rotation of the inner shaft to operate a cam for vertical lift, flex a gripper, open/close a pincher, rotate gear-box or secure a locking device. Available end-effectors include: Lift, Grip, Pinch and more.

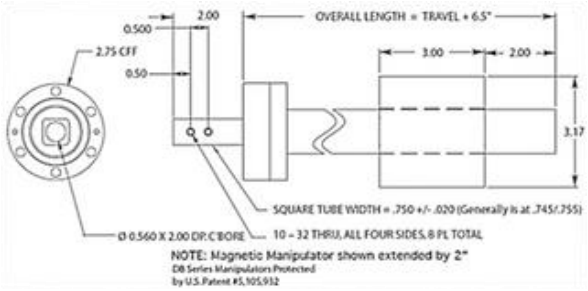
Single square shaft

Linear only, VFMS-L



Specifications:

Linear Compliance: 0.0025 in/lb
Linear Decoupling 26 lbs
Pneumatic and Motor drives available



Round Shaft Magnetic Transporters

Lite Duty, with round shaft

Lite duty transporter, VFML

In addition to Square shaft, we also has the conventional round shaft design for the lite duty application at a cost saving.

Linear + Rotary
VFML-LR

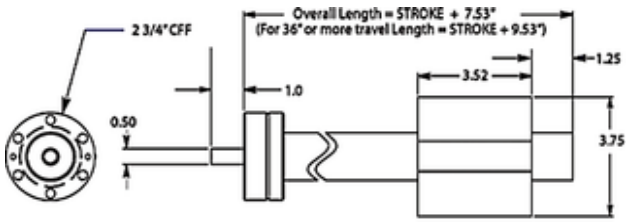
VFML-LR: Single round shaft magnetic manipulator is ideal for simple transfers requiring linear and/or rotary motion. It is less expensive than VFMD, and it offers superior linear force and torque to that of other conventional manipulators.

Transfer System

Specifications:

Linear Travel:	Up to 36"
Linear Decoupling	13 lbs
Rotary Torque	8 in-lbs
Pneumatic and Motor drives available	





Wobble stick, VFML-WS

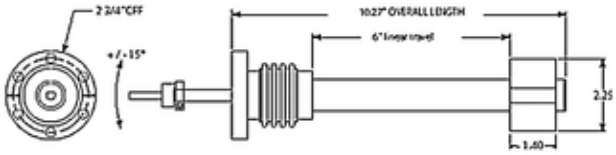
Magnetically-Coupled Transfer Sticks are an economical way to perform simple linear-angular motion within a vacuum system. They are robust and reliable reducing the risk of leaks by eliminating the use of edge welded bellows. Rare earth magnets "outside of vacuum" provide a strong magnetic coupling. With the external magnet carriage assembly removed, it is bakeable to 250°C.
Standard TransferSticks are available with up to 12 inches of push-pull linear travel and an angular tilt of ± 11 degrees.

Specifications:

Actuator Housing	Anodized Aluminum
Magnets	NdFeB
Vac Range	1x10-11 Torr
Linear decoupling	4 lbs
Angular Movement	+/- 11 degrees
Flange	CF2.75

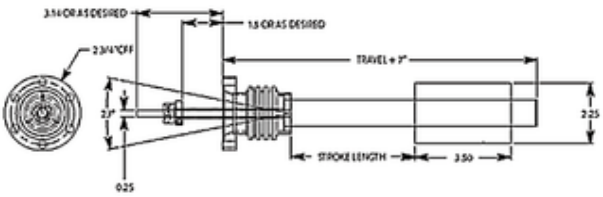
Linear only - VFML-WS-L





Linear + Rotary - VFML-WS-LR



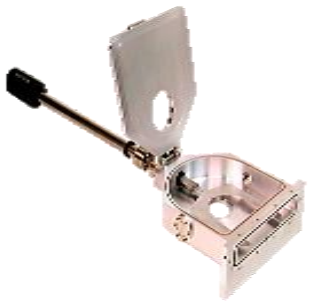


HV/UHV Loadlock and Transfer Systems

High-vacuum compatible loadlocks are designed to load wafers or other substrates into a SEMI-standard or custom process module. Using magnetically coupled transfer devices, wafers or other substrates can be repeatedly loaded and removed without breaking vacuum. Chambers are available for wafers or substrates
up to 200, 300 or 450mm. Loadlock systems can be manually operated and motorized. Customized systems are available.

Typically a loadlock is mounted to a gate valve attached to a main system chamber. Position a sustrate in through the loadlock door. After the loadlock is evacuated to the desired vacuum level, the gate valve would be opened and the substrate transferred into the chamber for processing. This allows repeated substrate loading/unloading without breaking vacuum greatly reducing process time.

Manual Transfer - Single-Wafer Loadlock System,



The MASCOT can mimic the motions of a complex and costly robot but is convenient to use and significantly less costly. Chambers are available for wafers or substrates up to 200, 300 or 450 mm. Optional items available are vertical lift capability, heavy-duty cart for portability and limit switches.

A linear-only transporter **(VFMD-L)** will precisely transfer a substrate into a process chamber where the receiving station has vertical lift capability to remove the substrate from a carrier on the end of the manipulator. The carriage rotation **(VFMD-LR)** is used to operate a dynamic end effector with vertical motion to lift or lower a substrate onto the receiving stage for processing in a chamber without lift function. The VFMD returns to lift the substrate and withdraw it into the loadlock chamber after processing is complete.

Specifications:

Material	Chamber - Machined from solid aluminum block HV compatible; Viton o-rings Magnetic Transporter - All UHV compatible
Substrate Sizes	100mm, 300mm, 450mm or custom
Pump Port	ISO NW100 (4" ID)
Auxiliary Ports	Three ISO NW40 (1.57" ID)
Transfer Distance	Up to 60 inches

Motion Feedthrough (FT)

Available in rotation, linear or both

Rotary Feedthrough (FT), VFR series

Standard:	VFR-S
Economy:	VFR-E
Hi. Temp:	VFR-HT
Precision:	VFR-P
Heavy Duty:	VFR-HD



Rotary FT has 5 design variations; each for a specific requirement. See below table.
Housing are made of aluminum, except Hi Temp series which is all SST
All rotary FT comes standard with a scale.
"Economy Series", which does not have a scale, is a lowest cost version
Torque of Heavy Duty series can be as high as 240 in-lb.
"Precision Series" is equipped with a precision micrometer

Rotary FT: VFR

Specification:

	Economy	Standard	Hi Temp	Hy Duty	Precision
Bake temp (^{0}C)	200	200.00	315.00	200.00	200.00
Op. temp. (^{0}C)	-20 to 150	-20 to 150	-20 to 315	-20 to 150	-20 to 150
Scale resolution	5 deg	5 deg	5 deg	5 deg	2 deg
Max Torque	125 in-oz	125 in-oz	125 in-oz	5 ft-lb	320 in-oz
Flange	CF133/275	CF133/275	CF133/275	CF275	CF275
Flange	KF16/40	KF16/40	--------	KF40	KF40
Leak rate	1x10 $^{-9}$ standard cc/s				

Actuator:
Manual, bellow-sealed
Pneumatic, bellow-sealed
Electric, bellow-sealed
Magnetic Coupled

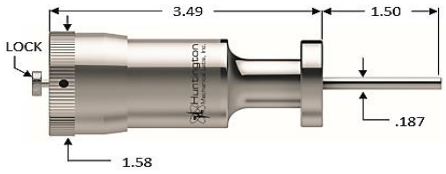
*** Drawings and spec. available upon request.**

Motion Feedthrough (FT), Rotary

Rotary

"Economy" : VFR-E





Scale resolution: 5°

P/N	FLANGE	DESCRIPTION	WT (LBS)
VFR-E-CF133	1 1/3"	Rotary Feedthrough, Aluminum w/o dial	0.6
VFR-E-CF275	2 3/4"	Rotary Feedthrough, Aluminum w/o dial	1.1
VFR-E-KF16	KF 16	Rotary Feedthrough, Aluminum w/o dial	0.6
VFR-E-KF40	KF 40	Rotary Feedthrough, Aluminum w/o dial	1

Standard : VFR-S



Same dimension as "Mini Economy"

P/N	FLANGE	DESCRIPTION	WT (LBS)
VFR-S-CF133	1 1/3"	Rotary Feedthrough, anodised with dial	0.6
VFR-S-CF275	2 3/4"	Rotary Feedthrough, anodised with dial	1.1
VFR-S-KF16	KF 16	Rotary Feedthrough, Anodized with dial	0.6
VFR-S-KF40	KF 40	Rotary Feedthrough, Anodized with dial	1

High Temp. : VFR-HT

Identical dimension as Standard (VFR-S) except equipped with all stainless steel body and housing.



P/N	FLANGE	DESCRIPTION	WT (LBS)
VFR-HT-CF133	1 1/3"	High -Temparture Rotary, 304 SS with dial	0.6
VFR-HT-CF275	2 3/4"	High -Temparture Rotary, 304 SS with dial	1.1

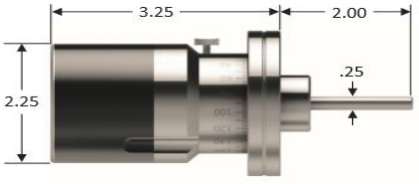
Motion Feedthrough (FT), Rotary

Rotary

Precision: VFR-P

* Low backlash
* Rotary position lock
* Manual or motorized





Resolution: 2°

P/N	FLANGE	DESCRIPTION	WT (LBS)
VFR-P-CF275	2 3/4"	Compact Design, w/ 1/4" shaft	3
VFR-SP-KF40	KF 40	Compact Design, w/ 1/4" shaft	2.5

Heavy Duty: VFR-HD

* 0.375 diameter shaft
* Manual or motorized





Resolution : 2°

P/N	FLANGE	DESCRIPTION	WT (LBS)
VFR-HD-CF275	2 3/4"	Vernier Scale, w/ CF FLANGE	5
VFR-HD-KF40	KF 40	Vernier Scale, w/ KF FLANGE	4.3

Magnetic Feedthrough

Miniature magnetic ally coupled rotary feedthrough is UHV compatible. It is the most economical FT of all . The trade off is not suitable for fast recipricating application.

Actuator:	maunal or pneumatic
Max. Torque:	3.5 in-lb
Bake Temperture:	150° C
Etched scale:	5° increment
Resolution:	1°
Vacuum Range:	1x10-11 Torr
Shaft diameter:	6 mm with tap hole



Available in CF1.33 flange only

*** Drawings and spec. available upon request.**

Motion Feedthrough (FT), Linear

Linear

Linear Feedthrough (FT), VFL series

Linear Series has 5 variations of design; each for a specific requirement.
Housing are made of Aluminum, except "Hi Temp" series which are all SST
Rotary FT comes with a scale. "Precision Series" comes with a micrometer

Higher load of up to 110 lbs of axial force is available.

	Linear Series: VFL				
	Standard	Hi Temp	Push/Pull	Precision	Hv Duty
Bake temp (C)	200	315	200	200	200
OP. temp (C)	-20 to 150	-20 to 250	-20 to 150	-20 to 80	-20 to 150
dial resolution	.002" (0.5mm)	.002"	---------	.0001"	.002"
linear resolution	.05"	.05"	.05"	.0001"	.05"
M. Axial	10 lb	10 lb	25 lb	5 lb	50
M. Lateral	5 lb	5 lb	20 lb	5 lb	20

* Pneumatic style requires a male 1/8 NPT fitting

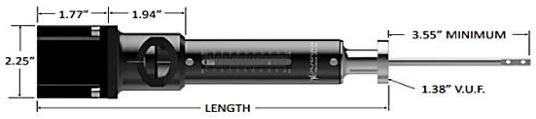
Linear Series:

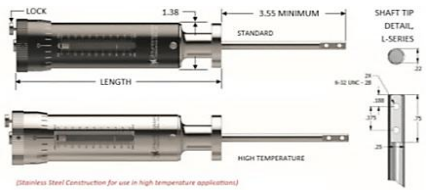
Standard	= VFL-S
Hi. Temp	= VFL-HT
Push/Pull	= VFL-PP
Precision	= VFL-P
Heavy duty	= VFL-HD

Actuator:
Manual, bellow-sealed
Pneumatic, bellow sealed
Electric motor, bellow-sealed
Magnetic Coupled

Standard : VFL-S

Available in manual or motorized. Area exposed to vacuum are stainless steel.
Motor resolution = 51,200 microsteps/rev





P/N	Flange	Stroke	Length	Wt (lbs)
VFL-S-CF133 x 1.0	CF 1.33	1	4.47"	1
VFL-S-CF133 x 2.0		2	5.85"	1.5
VFL-S-CF133 x 4.0		4	8.61"	2.5
VFL-S-CF275 x 1.0	CF 2.75	1	4.47"	1.5
VFL-S-CF275 x2.0		2	5.85"	2
VFL-S-CF275 x 4.0		4	8.61"	3
VFL-S-KF16 x 1.0	KF 16	1	4.47"	1
VFL-S-KF16 x 2.0		2	5.85"	1.5
VFL-S-KF16 x 4.0		4	8.61"	2.5

Pump & Trap

Ebara EV-A Dry Vacuum Pump

The EV-A Series is a family of air-cooled, dry pumps that have industry-leading specifications. The family consists of the EV-A3 (9 cfm), the EV-A6 (21.6 cfm), and the EV-A10 (36 cfm). Typical applications include Load Locks, PVD Systems, Analytical instruments and Electron Microscopes.
These pumps are ideal for replacing wet pumps as well as Scroll type dry vacuum pumps.

Features and Benefits :

* Small Air-Cooling Pump
* No-Contact Design
* High Pumping Speeds at Atmosphere
* Highest Water Vapor Pumping of Any Air-Cooled Dry Pump
* UL, CE, and NRTL rated

Applications:

* Load Locks
* Analytical Instruments (LCMS, ICPMS)
* Electron Microscopes
* PVD Systems
* Oxygen Plasma Systems

Model EV-A03

The Model EV-A03 air cooled dry pump offers high pumping speed (9 cfm) and high water vapor pumping (250 g/hr) when used with the optional gas ballast valve.

The pump is available with optional casters/levelers.



Specifications

Pumping Speed, l/min	Max	250
	Atmospheric Open	150
Ultimate Pressure, Pa	Gas Ballast: Off	1
	Gas Ballast: On	10
Max. Inlet Pressure		Atmospheric Pressure
Max. Water Vapor Pumping Rate (at Gas Ballast: On), g/hr		250
Connection	Gas Inlet	NW25
	Gas Outlet	NW25
Approx. Power at Ultimate Pressure, kW		0.34
Weight	kg	23
	lbs	51
Power Supply	[1 Phase/100V model]	1 Phase, 100-115V, 50/60Hz
	[1 Phase/200V model]	1 Phase, 200-240V, 50/60Hz
	[3 Phase/200V model]	3 Phase, 200-240V, 50/60Hz

Pump & Trap

Ebara EV-A Dry Vacuum Pump

Model EV-PA

The Model EV-PA air cooled dry pump offers high pumping speed and high water vapor pumping when used with the optional gas ballast valve. The pump is available with optional casters/levelers.

Specifications	Model	EV-PA250	EV-PA500
Pumping Speed [l/min]	Gas Ballast Off	230	500
	Gas Ballast On	200	430
Ultimate Pressure [mTorr]	Gas Ballast Off	3.75	3.75
	Gas Ballast On	15	15
Approx. Power [kW] At Ultimate Pressure / Max.		0.24 / 0.38	0.27 / 0.6
Maximum Continuous Gas Load [slm]		15	10
Noise Level [dBA]		< 58	< 58
Connection Flanges Inlet / Outlet		KF25 / KF25	KF40 / KF25
Dimensions L x W x H [mm]		482 x 189 x 252	482 x 189 x 272
Approx. Weight [kg / lbs]		16 / 35	21 / 46
Voltage Supply		100 - 230V +/- 10%, 50/60Hz	
Power Capacity		450VA	660VA
Circuit Protection Rating		10A	10A
Remote Control Signal		D-sub 15 pin	



Model EV-A10

The Model EV-A10 air cooled dry pump offers industry leading specifications in an air cooled dry pump. The pump comes standard with four lockable casters/levelers.



Specifications

Pumping Speed, l/min	Max	1000
	Atmospheric Open	800
Ultimate Pressure, Pa	Gas Ballast: Off	1
	Gas Ballast: On	2
Max. Inlet Pressure		Atmospheric Pressure
Max. Water Vapor Pumping Rate (at Gas Ballast: On), g/hr		500
Connection	Gas Inlet	NW40
	Gas Outlet	NW25
Approx. Power at Ultimate Pressure, kW		1.1
Weight	kg	72
	lbs	159
Power Supply	[1 Phase/100V model]	------
	[1 Phase/200V model]	1 Phase, 200-240V, 50/60Hz
	[3 Phase/200V model]	3 Phase, 200-240V, 50/60Hz

Pump & Trap

Vane Pump

VP Series

VP Series pumps are rugged mechanical oil-sealed pumps with speeds ranging from 8 to 300 m3/hr (5 to 178 CFM). Compact and quiet, they feature advanced lubrication circuits, highly reliable to suit specific application. A built-in anti-suckback valve isolates the pump from the process during power interruptions, and keeps oil out of your system.
Vane pump has become industry's standard choice for laboratory and light industrial application. Known for its rapid pumping and ability to handle vapor, vane pumps are designed for reliable and long-term opeation. Single phase motors are equiped with thermal overload protection at no extra charge. Distinguished by high pumping speed even in low pressure ranges. It does not require regular maintenance other than oil change at service intervals.

Shipping includes: 1 litre of oil, KF25 center ring and O-Ring. Supplied at no extra charge.
Fomblin oil, if required, must be purchased separately for PFPE pumps.

Application:

* Electron Microscopy
* Vacuum oven & furnace
* Thin-film coating
* Vacuum Brazing
* Metrology and analytical
* Medical instrument
* Backing to Turbo pump
* Loadlock and transfer chamber
* Refrigeration & Freeze drying
* Glove box, Oven
* Gas bottle filling
* Automotive



Reliable system with anti suck-back protection

Every pump has protection device to prevent oil and air suck-back into the vacuum system if the pump stops while under vacuum. A variety of protection devices are used, depending on the pump size and cost, but emphasis is always placed on reliability and simplicity. When you use gas ballast on the pump, you must use a solenoid operated gas ballast control valve to prevent air suck-back.

The pumps incorporate a positive pressure oil lubrication system to ensure correct lubrication to prevent oil starvation with high gas loads. This oil lubrication level in the reservoir is less critical than other pump design.

Electric motor option

	VP2-4	VP2-8	VP2-16	VP2-24
115 V, 1 phase	X	X	X	
230 V, 1 phase	X	X	X	X
220 V, 3 phase	X	X	X	X
380 V, 3 phase	X	X	X	X

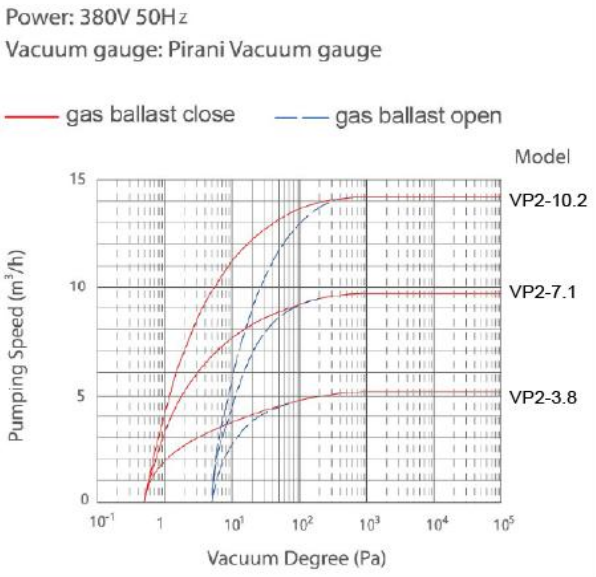
Pump & Trap

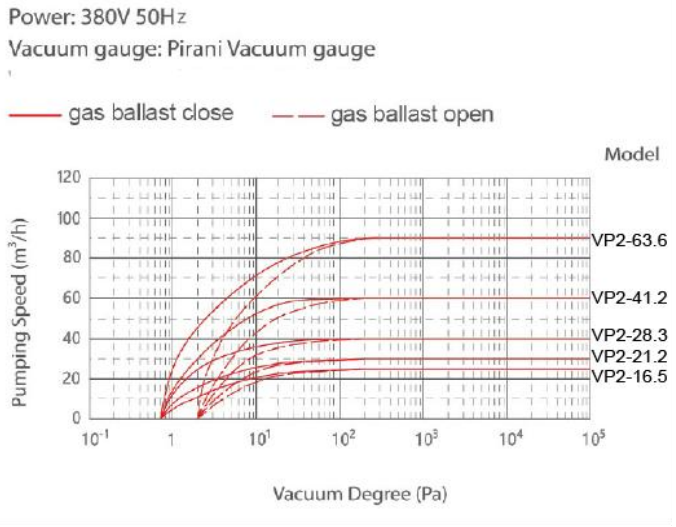
Vane Pump

Pump can operate at 50-70% of the maximum oil level .
A sight glass allows convenient monitoring of the level.

Specifications

Units	Ult. Pressure Torr	Pump speed cfm (l/m)	Inlet mm	Outlet mm	Power kw (HP)
VP2-3.8	5 x10^{-1}	3.8 (108)	KF25	KF25	0.4
VP2-7.1	5 x10^{-1}	7.1 (200)	KF25	KF25	0.4
VP2-10.2	5 x10^{-1}	10.2 (290)	KF25	KF25	0.55
VP2-16	3.8 x10^{-3}	11.3 (320)	KF25	KF25	0.74/0.55
VP2-16.5	5 x10^{-1}	16.5 (467)	KF25	KF40	0.75
VP2-21.2	5 x10^{-1}	21.2 (600)	KF40	KF40	1.1
VP2-28.3	5 x10^{-1}	28.3 (800)	KF40	KF40	1.5
VP2-30	3.8 x10^{-3}	21.2 (600)	KF25	KF40	1.1
VP2-41.2	5 x10^{-1}	41.2 (1167)	KF40	KF40	2.2
VP2-63.6	5 x10^{-1}	63.6 (1800)	KF40	KF40	2.2





Accessories:

1) Trap – minimize back streaming of oil vapor to vacuum chamber during power failure
2) Oil Mist Eliminator – keep oil mist off the exhaust port and recirculate back to reservoir
3) Angle valve – to keep pump at high vacuum when chamber is vented for service

Pump & Trap

Screw Pump

Screw pump Series:	PS, PD

PS: Standard single-stage pump, water cooled motor

PD: Low energy dual-stage pump. water cooled motor

PSE: Air cooled moter

PDE: Air cooled moter




p




PD Series Screw Pump

PS Screw Pump

Technical Data for PSE Series Dry Vacuum Pump Specification									
Model		Unit	PSE80	PSE160	PSE180	PSE602	PSE902	PSE1302	PSE1802
Pumping Speed		L/min	1300/1600	2150/2600	2500/3000	8300/10000	12500/15000	17500/21000	25000/30000
		m³/hr	80/96	130/156	150/180	500/600	750/900	1050/1260	1500/1800
		CFM	47/57	77/92	88/106	294/353	441/530	618/742	883/1060
Ultimate Pressure		Torr	≤7.5 x 10^{-3}			≤7.5 x 10^{-4}			
Motor	Voltage	V	220~380 (50/60 Hz)						
	Rated Power	kW	3.75	5.6	5.6	3.75+3.75	5.6+3.73	5.6+5.6	5.6+5.6
Connection	Inlet		NW50			ISO100		ISO160	
	Outlet		NW40						
Full Air Mode	Cooler Fan Rated Power	kW	0.373						
	Water Pump Rated Power	kW	0.373						
N2	Pressure	Mpa	0.05						
	Dilute Flow	SLM	0~60 (Process Dependent)						
	Sealing Flow	SLM	6~8						
	Connection		Swagelok 1/4"						
Dim	L x W x H	Inch	51x20x22	51x20x23	51x20x23	51x20x31	51x20x32	51x20x34	55x20x34
Weight		Lbs	662	750	805	1004	1158	1267	1235
Noise		dB(A)	<68	<70	<70	<70	<70	<70	<70
Interface			SEMI E73-0299						
Operation Temp.		°F	41°F ~ 104°F						
Operation Moisture		RH	≤90%						

Pump & Trap

PD Screw Pump

Technical Data for PD Series Energy Saving Dry Vacuum Pump				
Model		**Unit**	**PDE120**	**PDE100**
Pumping Speed		L/min	1300/2000	4500/5500
		m3/hr	80/120	270/330
		cfm	47/70	160/195
Ultimate Pressure		Torr	$\leq 7.5 \times 10^{-3}$	
		mBar	$\leq 1 \times 10^{-2}$	
		Pa	≤ 2	
Motor	**Frequency**	Hz	50/60	
	Voltage	V	220/380/440±5% (3Phase) 50/60Hz	
	Rated Power	kW	3.73	7.5
Connection	**Inlet**		NW50	ISO63
	Outlet		NW40	
	Min. Flow	L/min	3	
Cooling Water	**Max Pressure**	kg/cm2	4	
	Pressure Dif	kf/cm2	1	
	Temp.	°F	64°F ~ 77°F	
	Connection		RC 38"	
N2	**Pressure**	Mpa	0.05	
	Purge Flow	SLM	6~60	
	Connection		Swagelok 1/4"	
Dim	**L x W x H**	Inch	46x21x24	54x23x24
Weight		Lbs	616	770
Noise		dB(A)	< 70	< 72
System Max. Leak-rate		mbar l/s	1X10-5	
Operation Temp.		°F	41°F ~ 104°F	
Operation Moisture		RH	≤ 90%	
Interface			SEMI E73-0299	

Pump & Trap

Scroll Pump

SP Series

For those who are on tight budget, we offer an alternative selection to solve your budget concern.

SP series of Scroll pumps are available in sizes from 2.5 cfm to 43 cfm.
This series offers the lowest initial investment. 10,000 hour life warranty.
This series pump has same performance of TriScroll but at a lower cost.
This is a generic pump, designed for customers who does not require the image of a known brand.



Technical Specification

Model				SP75	SP150	SP300	SP600	SP1000
Pumping Speed	60 Hz		cfm	2.5	5.1	10.9	22.3	42.8
Ultimate pressure			Torr	≤7.5×10^{-2}	≤6.0×10^{-2}	≤1.9×10^{-2}	≤7.5×10^{-3}	≤7.5×10^{-3}
Noise Level			dB(A)	≤52	≤57	≤61	≤63	≤67
Leakage				0.75x10-3 std cc/ sec				
Max. Inlet/Exhaust Pressure			Atm	1.0 / 1.2				
Ambient Operation Temp.			℃	5 C - 40 C				
Max. Water Treatment			G/h	50		60		
Motor 1 phase	Output		kW	0.15	0.25	0.55	0.75	---
	Voltage		V	110	110	110	110	---
	Frequency		Hz	60	60	60	60	---
	Speed		rpm	1710	1710	1730	1750	---
Motor 1 phase	Output		kW	0.15	0.25	0.55	0.75	---
	Voltage		V	220	220	220	220	---
	Frequency		Hz	50	50	50	50	---
	Speed		rpm	1425	1425	1440	1440	---
Motor 1 phase	Output		kW	0.15	0.25	0.55	0.75	---
	Voltage		V	230	230	230	230	---
	Frequency		Hz	50/60	50/60	50/60	50/60	---
	Speed		rpm	1710	1710	1710	1740	---
Motor 3 phase	Output		kW	---	0.37	0.55	0.75	1.5
	Voltage		V	---	380	380	380	380
	Frequency		Hz	---	50	50	50	50
	Speed		rpm	---	1400	1440	1440	1440
Inlet/Exhaust Flange				KF25/16	KF25/16	KF25/16	KF40/16	KF40/16×2
Dimensions			mm	350x210x245	430x250x280	492x268x324	530x312x343	580x360x400
Packing Dimension			mm	400x300x340	550x400x420	650x450x480	650x450x480	750x500x520
Net Weight			kg	13	18	32	38	52
Gross Weight			kg	21	27	42	50	65
Cooling Type				Air cooled				

Pump & Trap

Ebara Turbo Pump

Turbo Pumps, EBT, EMT

Innovative Technology - Ceramic-Bearing

Model EBT

Model EBT are mechnical-bearing, compound turbomolecular pumps which compliment line of Model EMT mag-lev turbomolecular pumps. Model EBT pumps are highly efficient, cost effective solutions to your high vauum pumping requirements. Model EBT compound turbomolecular pumps offer an extremely rugged, mechnical bearing design which provides clean, reliable vacuum generation for high tech manufacturing. Typical applications include semiconductor, thin film, photovoltaic, and analytical instruments. Model EBT of compound turbomolecular pumps can be mounted in any orientation. These pumps offer high pumping speed and high, light gas compression, making them ideal for UHV and analytical systems.





Features and Benefits

* Rugged Bearing Design Ideal for Mobile Applications
* High Pumping Speeds
* High Compression Ratios for Light Gases
* Fast Starts and Stops
* Quick Venting (No Vent Pulsing
* Fan or Water Cooling
* ISO or Conflat (CF) Flanges
* Integrated Controller (Select Models)

Applications

* Surface Treatment
* Analytical Instrument Lamps
* Electron / X-Ray Tubes
* Ion / EB-Source
* Sputter
* Glass / Film Coating
* Exhaust Carts

Options

* Natural Air or Water Cooling
* Vent Valve Kit
* Nitrogen Purge
* Install Kit (Valves, etc.)
* Isolation Valves

Pump & Trap

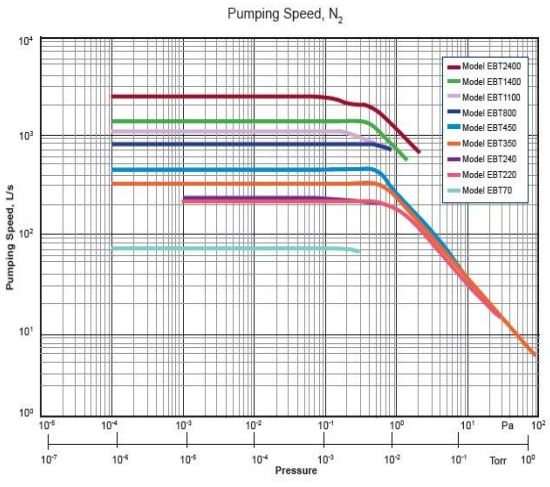
Ebara Turbo Pump

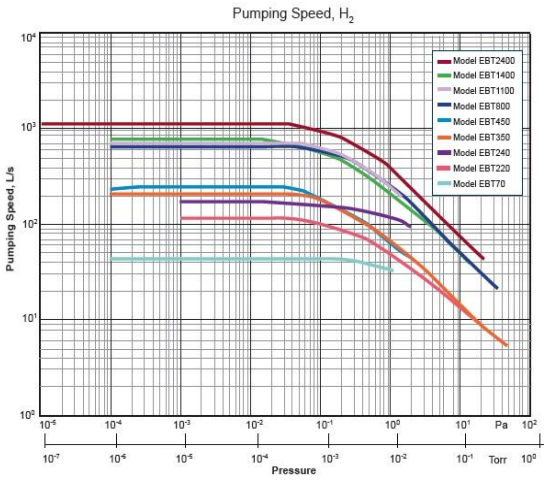
Turbo Pumps, EBT, EMT

Specifications

Model			EBT70	EBT220	EBT240	EBT350	EBT450	EBT800	EBT1100	EBT1400	EBT2400
Pumping Speed, L/s		N_2	75	220	240	350	450	820	1100	1400	2400
		H_2	45	100	160	210	240	650	720	750	1100
Compression Ratio		N_2	1×10^8								
		H_2	1.0×10^5	4.0×10^2	4.0×10^4	2.0×10^3		1.0×10^4		4.3×10^3	1.4×10^4
Ultimate Pressure	CF	Pa	$< 1 \times 10^{-7}$	$< 1 \times 10^{-6}$	$< 5 \times 10^{-7}$	$< 1 \times 10^{-6}$					-
		Torr	$< 7.5 \times 10^{-10}$	$< 7.5 \times 10^{-9}$	$< 3.8 \times 10^{-10}$	$< 7.5 \times 10^{-9}$					-
	ISO-R	Pa	$< 5 \times 10^{-7}$	$< 1 \times 10^{-6}$							
		Torr	$< 3.8 \times 10^{-9}$	$< 7.5 \times 10^{-9}$							
Recommend Backing Vacuum Pump		L/min	> 25	> 80				> 250			
		CFM	> 0.88	> 2.85				> 8.80			
Startup Time		min	2.0 - 2.5	1.0 - 1.2	5.5 - 6.0	2.0 - 2.5		7.0 - 9.0		5.5 - 7.0	5.0 - 7.0
Cooling Type			Air (Fan) / Convection	Air (Fan) / Water							
Weight	CF	kg	5.0	8.0	10.5	9.0	10.0	27.0	28.0	30.0	-
		lb	11.0	17.6	23.1	19.8	22.0	59.5	61.7	66.1	-
	ISO-R	kg	3.0	5.8	7.3	6.0	7.0	26.0	27.0	29.0	45.0
		lb	6.6	12.0	16.1	13.0	15.4	57.3	59.5	63.9	99.2

Performance Curves





Pump & Trap

Trap & Grease

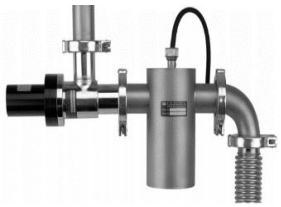
Foreline Trap

Foreline trap is an essential component when building a vacuum system. It is installed between roughing pump and the work chamber. Its function is to eliminate an oil path to the Chamber and protects the pump from condesable vapor.

The benefit of having a foreline trap is lower base pressure, cleaner chamber and extended periods of operation. A trap practically eliminate hydrocarbon back streaming issues.

Single-piece, coaxial is the most common choice due to low cost and easy replacement.

Flange	Body OD (Inch)	Total Length (Inch)
KF25	4.00	8.84
KF40	4.00	8.92
KF50	4.00	8.95





TWO-STAGE VACUUM PUMP EXHAUST FILTER KIT

For normal rotary vacuum pumps, it is recommended to vent them outside the room or to an exhaust hood to prevent indoor air contamination. Our exhaust filter enables venting rotary vacuum pumps in rooms where an outside line is neither practical nor possible. The two stage filters contains a replaceable oil mist eliminator element to trap vacuum oil and a replaceable activated charcoal element for the lighter hydrocarbon fractions.









Features:

* Provides a safe lab environment
* Purifies vacuum exhaust gases
* Separate replaceable elements for oil mist and ligher fractions
* Standard KF25 or KF40 connection
* Cartridge Filter Included (Replacement is available)
* Low cost solution

Part No.	Model	Connection	Max Flow Rate
OME10-KF25	10 CFM OIL MIST ELIMINATOR	Standard KF25	10 CFM
OME25-KF25	25 CFM OIL MIST ELIMINATOR	Standard KF25	25 CFM
OME50-KF40	50 CFM OIL MIST ELIMINATOR	Standard KF40	50 CFM

Please Call **408-805-5607** **510-498-8518**
Or make inquiry: sales@vacproducts.com

Special Product

Thermal Solution - Ebara Ceramic Fiber Cloth Heater Jackets

Pump line heating systems work to reduce buildup of solids in many LPCVD, PECVD, CVD, FPD, ALD and metal etch vacuum piping systems. This reduction in buildup helps reduce particle generation and eliminates unscheduled maintenance downtime, improving the consistency of yields and saving time and money.

Technology



Features

Temperature range

Up to 250°C (482°F) for class 10 clean room

Up to 593°C (1100°F) for class 100 clean room

All system components are heated and insulated

Standard diameters as small as ¼" and up to 8"

Heaters available for flanges, valves, custom components, etc.

Uniform temperature throughout entire line

Modular heating system

Easy on-off installation with reusable hook and loop fasteners

Energy Efficient Design

Patented grounded heating element

Exception Durability and Quality construction

Long service life, 10+ year

Applications

LPCVD	Metal etch	FPD	ALD	CVD	PECVD
Silicon nitride	Aluminum			Tungsten	Silicon nitride
Titanium nitride	Tungsten			TEOS	

Utilization

Gas lines, Exhaust lines, Forelines, Abatement, Valve, Tanks, Drums, vessels

Laboratory equipment, Analytical equipment, Vacuum Bake-out, Emission testing, Fluid delivery test

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Specifications

Operational

Standard operating temperature up to 220°C (428°F), higher temperatures available

Built-in controlling / High limit thermostat, standard at 260°C

Built-in low limit alarm thermostat

Power

120-600 VAC or DC
Single- or three-phase
50 or 60 Hz

Standard Materials

Facing - Outside cloth material (PTFE, Samox®, Fiberglass)
Liner - Inside material, touching surface of heated object (PTFE, Samox®, Fiberglass)
Insulation - Placed in between liner and facing closure (Fiberglass, Glassmat, Ceramic Materials)
Power Connector Options - MNL and CPC
Sensor Options - Standard RTD or J Type, K Type thermocouple options
Multi-strand resistance wire

Customizable Optionss

Voltage Options
Power plug / Connector
Built-in controlling / High limit thermostat
Built-in low-limit alarm thermostat
Insulation thickness and type
Temperature sensor type
Cloth jacket material options for higher temperature needs

VSN® TEMPERATURE CONTROL SYSTEM





OPERATOR INTERFACE PANEL

Controls up to 8 strings with up to 128 temperature modules per string, up to 1,024 heaters

User-configurable graphical mapping and naming to match application

Provides complete control and system optimization
Sends e-mail alerts

PID CONTROL MODULES

1:1 control for EACH heater

Advanced temperature, safety, diagnostics, and power-savings feature

LED display with highly visible status indicator light

Able to connect directly into CMS/HMI systems

Temperature range

High temperature capabilies
- Standard operating temp up to 220°C
- Up to 250°C(482°F) for class 10 cleanrooms
- Up to 593°C (1100°F) for class 100 cleanrooms

Special Products

FFKM O-Ring

Our O-Ring are tested under various corrosive condition. Results indicated less corrosion than chemrez.

Features and Benefits

For CVD and ETCH
Kalrez equivalent
Resistance to NF3
Good chemical resistance
Unique bonding structure
Low compression set
Temperature range: 250℃



S705
(K9100 equivallent)



S505E

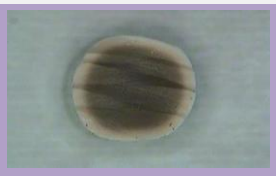
Lower cost
Superior performance

Specification:

Color	White	White
Hardness	74	82
Tensile Strength, Mpa	11.4	14.1
Elongation	195	260
Modulus at 100% Elongation, Mpa	4.8	5.1
Compression Set, 72hrs. at 200℃	24.2	32.1
Max. Temp.	250℃	250℃

Test data at customer site indicates S705 is superior than chemrez in corrosion resistance

1) Tool / Process / Wafer size – MATTSON Paradigm / Ashing / 300MM
2) Test Period - 2012.03~2012.04 (1PM, RF 350 TIME)
3) Seal Location/ Size - LID DOME / AS-383 ID804*3.53 / ID446*3.53 /AS-277/AS-278/AS-279/AS-224/ AS-035/AS-205/AS-208/AS-230 / Total 11 part

	S** S705	K** K9100
Normal		 Etching
Microscope * 50		
Microscope * 50		

*SSK S705 shows much less etch rate against Plasma & Chemical

* Please email further inquiry to sales@vacproducts.com or call 510-498-8518

Special Product

Weldment



Application

Make to print
Size from 1/4" to 10"
Full penetration weld up to 3/8" depth



Registered GSA (US Federal Government) Ssupplier

Leading the performance in vacuum products

Cost Reduction 30% ~ 50%

"We don't believe valves should be expensive
It should only be clean, reliable and robust"



What We Are :

* Guaranteed Consistancy & Superior Quality
* Saving as much as 50%
* Registered Federal Government Supplier
* Materials Originated from US Government Designated Countries
* Lowest Cost of Ownership

VPC

4841 Davenport Pl, Fremont, CA USA - (510) 498-8518 - www.vacproducts.com - sales@vacproducts.com