

UHP

**Bellows Valve
VCB**



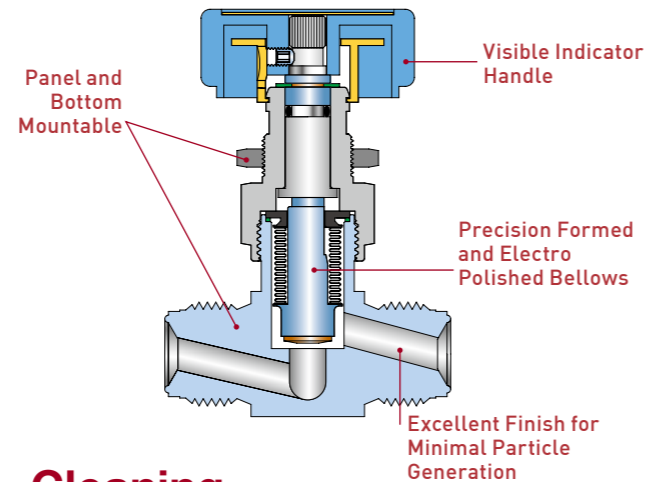
Bellows Valve VCB

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Features

- Compact designed body with minimal dead space
- Body material comply with SEMI F-20, "Specification 316LSS Materials for UHP (Ultra High Purity) Grade Semiconductor Manufacturing Applications"
- Low actuation torque
- Minimal particle generation
- Minimal contributions of moisture, oxygen and hydrocarbon with UNILOK's own special cleaning process in a certified clean room
- Excellent finish level of wetted areas with UNILOK's own electro polish process
- 316LSS precision formed and electro-polished bellows for long cycle life
- PCTFE stem tip material with remarkable chemical and thermal resistance
- Both panel and bottom mounting available



Cleaning

All components are precisely cleaned with 18MΩ deionized water after the passivation procedure in accordance with our own UHP cleaning process
Reference specification : SEMI E49.6.

Packaging

Each component is double bagged to ensure component cleanliness and to protect them from environmental contamination.
Referenced specification : SEMI E49.1.

Important Notification

Proper installation, materials compatibility, operation and maintenance of these valves are the responsibility of the user. The total system design must be taken into consideration to ensure optimal performance and safety. Overall process of testing, cleaning, assembling and packaging for every VCB series valves are performed in a certified clean room.

Helium Leak Test

Every VCB series valves are inboard helium leak tested to a rate of 4×10^{-9} atm.cc/s at seat and all seals.

Particle Contribution Test

According to ASTM F1394-92.

Moisture Contribution Test

According to SEMA-90120397B-STD.

Assembling

According to SEMI E49.6.

Materials of Construction

No.	Description	Materials	
		Manual	Pneumatic
1	Body	316LSS	316LSS
2	Gasket	PCTFE	PCTFE
3	Bellows	316LSS	316LSS
4	Stem	316LSS	316LSS
5	Bonnet	316LSS	316LSS
6	Panel Nut	316SS	316SS
7	Handle	Aluminum	-

Internal Surface Finish Levels

Description	Surface Finish(μm)	
	Average	Maximum
BA	< 0.4	< 1.6
EP	< 0.125	< 0.4

How To Order

UNILOK VCB series valves are ordered by part number as shown below.

Example : The following part number, **VCBLU-08T-SL-BA** is designated for Low Pressure Bellows Valve, both 1/2" UNILOK Tube Fittings, 316LSS, BA.



Valve Type	
BL	Standard Low Pressure
BF	Forged Body

Connection Size						
Fractional(Inch) Tube O.D. Designation						
Tube O.D.	inch	1/4	3/8	1/2	3/4	1
	mm	6.35	9.52	12.70	19.05	25.40
Designator		04T	06T	08T	12T	16T

Operation Type	
None	Manual Indicator Handle
PO	Pneumatic - Normal Open
PC	Pneumatic - Normal Close

Connection Type	
U	UNILOK Tube Fitting
C-*M	Male UCR
C-*F	Female UCR
WB-	Butt Weld -Tube
WB-*P	Butt Weld - Pipe
FL	Flanged

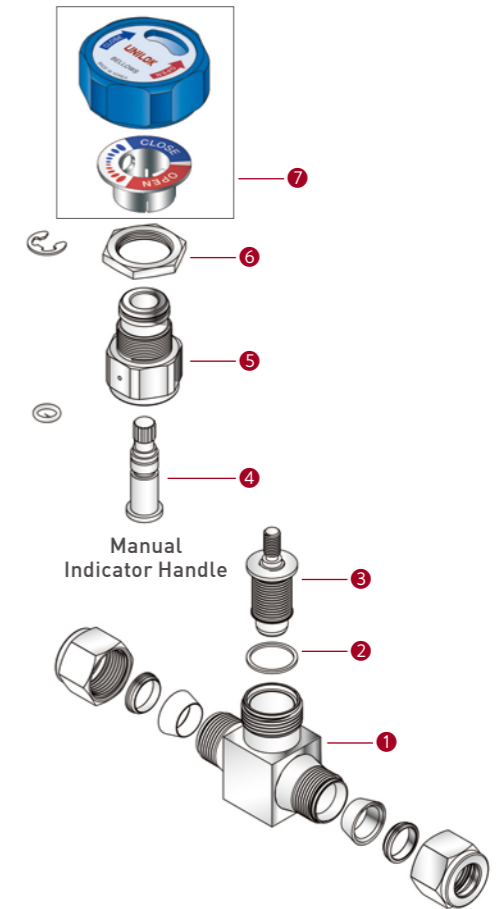
Pipe Size Designation (NPT or ISO7/1-PT)			
Pipe Size	15A	20A	25A
Designator	15A	20A	25A

Materials	
DM	316LSS-SEMI F20
SL	316LSS

UCR (Metal Face Seal) Size Designator			
Pipe Size	1/4	1/2	3/4
Designator	04	08	12

Surface Finish Level	
BA	BA - Bright Annealing
EP	EP - Electro Polished

Standard Type Low Pressure Bellows Valves

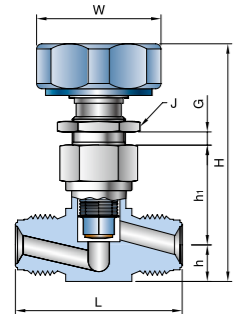


VCBL series - 1/4"~1/2"

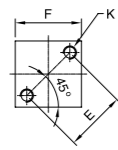
(Standard Type Low Pressure Bellows Valve - Manual Operation)

Specification

Size	1/4"	3/8", 1/2"
Orifice Size	4.3	8
Cv Value	0.3	0.7
Max. Working Pressure	10 bar (145 psig)	
Max. Working Temperature	-10~80°C (14~176°F)	
Internal Leakage Allowance - He (Holding Time - Min 30 sec)	≤4x10 ⁻⁹ atm.cc/s	
External Leakage Allowance - He (Holding Time - Min 1 min)	≤4x10 ⁻⁹ atm.cc/s	



Male UCR



Bottom Mounting

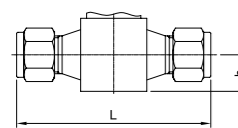
Handle Position



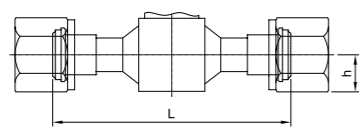
Open



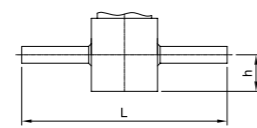
Close



UNILOK Tube Fitting



Female UCR



Tube Butt Weld

Ordering Information & Dimensions

Part No.	End Connection		Dimensions (mm)									
	Inlet	Outlet	L	h	h ₁	H	F	E	K	W(Ø)	G	J(Ø)
VCBL	U-04T-	1/4" UNILOK	64.2	13.8	37.7	90.0	25.0	23.0	M5	47.0	2.0	23.0
	U-06T-	3/8" UNILOK	77.6									
	U-08T-	1/2" UNILOK	83.0									
	C-04M-	1/4" Male UCR	58.0									
	C-08M-	1/2" Male UCR	63.0									
	C-04F-	1/4" Female UCR	70.6									
	C-08F-	1/2" Female UCR	90.0									
	WB-04T-	1/4" Tube Butt Weld	150.0									
	WB-08T-	1/2" Tube Butt Weld	150.0									

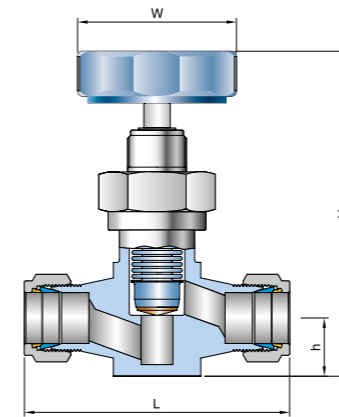
Dimensions are for reference only and are subject to change without prior notice.

VCBL series - 3/4"

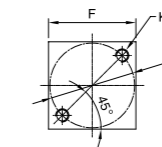
(Standard Type Low Pressure Bellows Valve - Manual Operation)

Specification

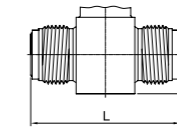
Size	3/4"
Orifice Size	12
Cv Value	2.6
Max. Working Pressure	10 bar (145 psig)
Max. Working Temperature	-10~80°C (14~176°F)
Internal Leakage Allowance - He (Holding Time - Min 30 sec)	≤4x10 ⁻⁹ atm.cc/s
External Leakage Allowance - He (Holding Time - Min 1 min)	≤4x10 ⁻⁹ atm.cc/s



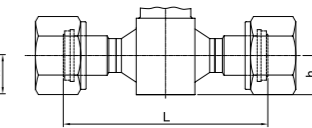
UNILOK Tube Fitting



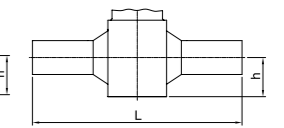
Bottom Mounting



Male UCR



Female UCR



Tube Butt Weld

Ordering Information & Dimensions

Part No.	End Connection		Dimensions (mm)						
	Inlet	Outlet	L	h	H	F	E(Ø)	K	W(Ø)
VCBL	U-12T-	3/4" UNILOK	100.0	22.0	123.0	33.0	32.0	M5	60.0
	C-12M-	3/4" Male UCR	84.0						
	C-12F-	3/4" Female UCR	115.0						
	WB-12T-	3/4" Tube Butt Weld	158.0						

Dimensions are for reference only and are subject to change without prior notice.

VCBL series - 1/4"~1/2"

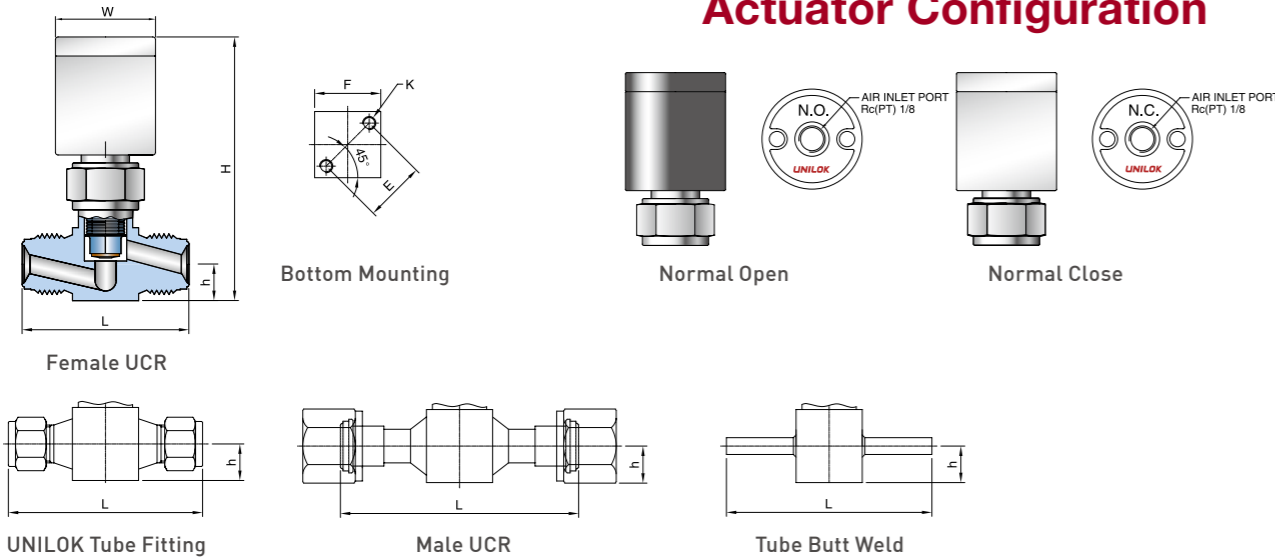
(Standard Type Low Pressure Bellows Valve - Pneumatic Actuating Operation)

Specification

Size	1/4"	3/8", 1/2"
Orifice Size	4.3	8.0
Cv Value	0.3	0.7
Max. Working Pressure	10 bar (145 psig)	
Max. Working Temperature	-10~80°C (14~176°F)	
Actuator Pressure Rating	4~7 bar (58~101 psig)	
Internal Leakage Allowance - He (Holding Time - Min 30 sec)	≤4x10 ⁻⁹ atm.cc/s	
External Leakage Allowance - He (Holding Time - Min 1 min)	≤4x10 ⁻⁹ atm.cc/s	



Actuator Configuration



Ordering Information & Dimensions

Part No.	End Connection		Dimensions (mm)						
	Inlet	Outlet	L	h	H	W(Ø)	F	E	K
VCBL	U-04T-	1/4" UNILOK	64.2	13.8	99.6	37.8	25.0	23.0	M5
	U-06T-	3/8" UNILOK	77.6						
	U-08T-	1/2" UNILOK	83.0						
	C-04M-	1/4" Male UCR	58.0						
	C-08M-	1/2" Male UCR	63.0						
	C-04F-	1/4" Female UCR	70.6						
	C-08F-	1/2" Female UCR	90.0						
	WB-04T-	1/4" Tube Butt Weld	150.0						
	WB-06T-	3/8" Tube Butt Weld	150.0						
	WB-08T-	1/2" Tube Butt Weld	150.0						

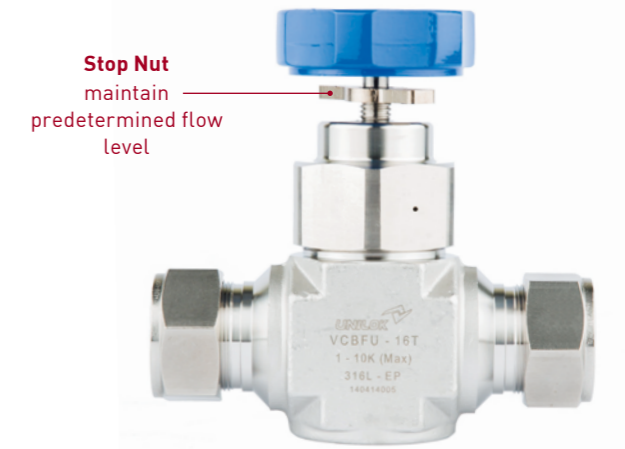
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VCBF series - 1", 15A, 20A, 25A

(Forged Body Low Pressure Bellows Valve - Manual Operation)

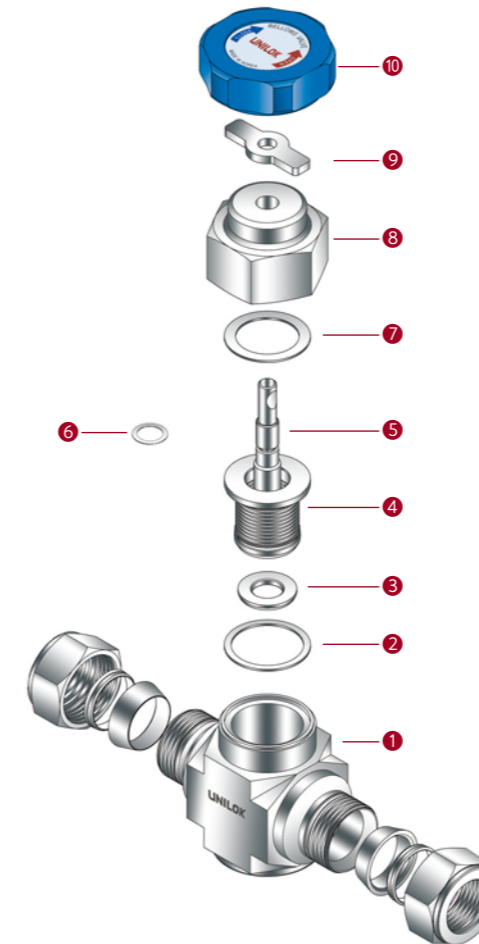
Specification

Size	1"	15A	20A	25A
Orifice Size	19	15	19	25
Cv Value	4.1	2.9	4.1	6.9
Max. Working Pressure	10 bar (145 psig)			
Max. Working Temperature	-10~80°C (14~176°F)			
Internal Leakage Allowance - He (Holding Time - Min 30 sec)	≤1x10 ⁻⁵ atm.cc/s			
External Leakage Allowance - He (Holding Time - Min 1 min)	≤1x10 ⁻⁵ atm.cc/s			

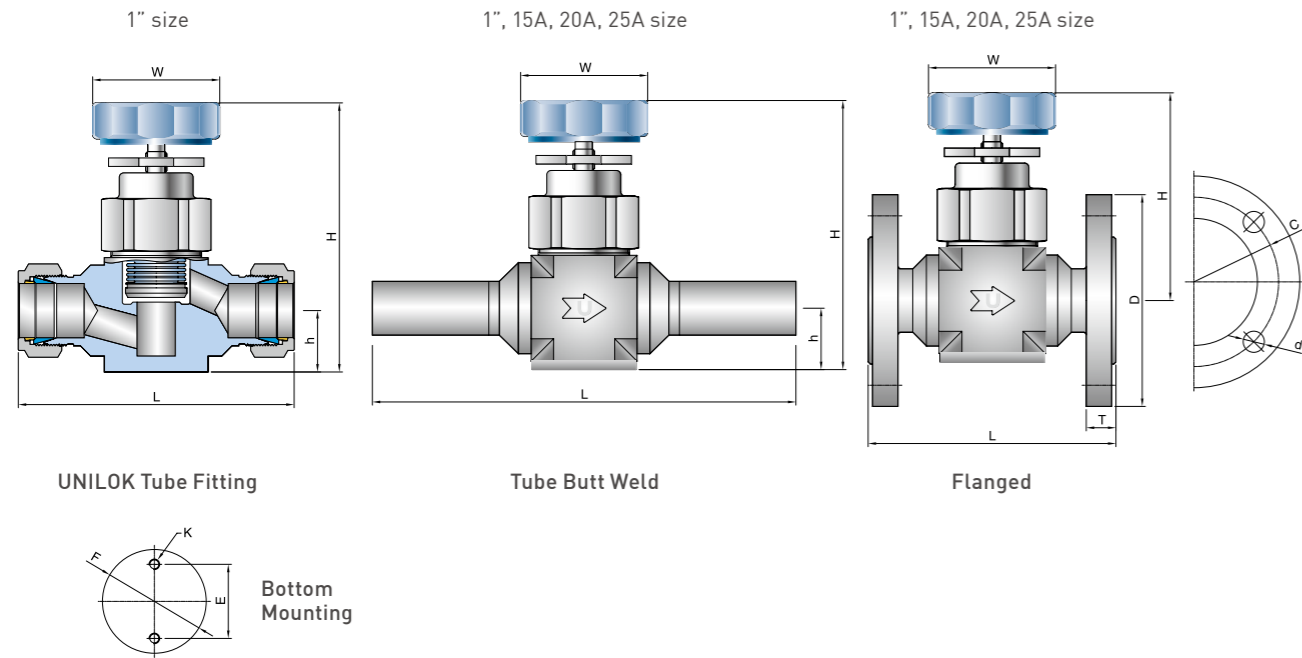


Materials of Construction

No.	Description	Materials
1	Body	316LSS
2	Gasket	PCTFE
3	Disk	PTFE
4	Bellows	316LSS
5	Stem	316LSS
6	O-ring	FKM
7	Packing	PCTFE
8	Bonnet	316LSS
9	Stop Nut	Brass Ni coated
10	Handle	Aluminum



Dimensions are for reference only and are subject to change without prior notice.



UHP

Casting Bellows Valve VCBC

Ordering Information & Dimensions

UNILOK Tube Fitting - 1" size

Part No.	End Connection		Dimensions (mm)						
	Inlet	Outlet	L	h	H	F(Ø)	E	K	W(Ø)
VCBF U-16T-	1" UNILOK		130.2	29.0	127.0	49.0	35.0	M5	60.0

Tube Butt Weld - 1", 15A, 20A, 25A size

Part No.	End Connection		Dimensions (mm)			
	Inlet	Outlet	L	h	K	W(Ø)
VCBF	WB-16T-	1" Tube Butt Weld	200.0	29.0	127.0	60.0
	WB-15AP-	15A Pipe Butt Weld	200.0	24.0	117.0	
	WB-20AP-	20A Pipe Butt Weld	200.0	28.0	127.0	
	WB-25AP-	25A Pipe Butt Weld	210.0	33.0	143.0	

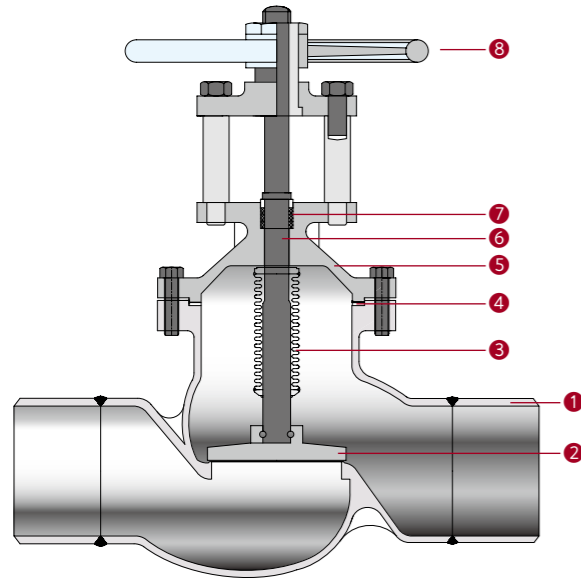
Flanged - 1", 15A, 20A, 25A size

Part No.	End Connection		Dimensions (mm)						
	Inlet	Outlet	L	H	W(Ø)	D(Ø)	C(Ø)	d(Ø)	T
VCBF	FL-16	1" Flanged	117.0	98.0	60.0	100.0	75.0	15.0	14.0
	FL-15A	15A Flanged	108.0	93.0		95.0	70.0	15.0	12.0
	FL-20A	20A Flanged	117.0	98.0		100.0	75.0	15.0	14.0
	FL-25A	25A Flanged	127.0	110.0		125.0	90.0	19.0	14.0



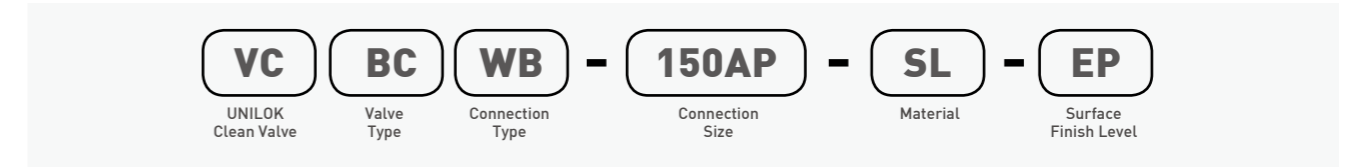
Dimensions are for reference only and are subject to change without prior notice.

Materials of Construction



No.	Description	Materials
1	Body	SCS 19
2	Disk	PTFE
3	Bellows	316L SS
4	Gasket	PTFE
5	Bonnet	SCS 19
6	Stem	304L SS
7	Packing	PTFE
8	Handle	FCD 450

How To Order



Valve Type	
BC	Bellows Valve for Low Pressure (CASTING TYPE)

Connection Size					
Pipe Size Designator					
Pipe Size	65A	80A	100A	125A	~ 450A
Designator	65A	80A	100A	125A	~ 450A

Material	
S4	304 SS/SCS 13
SS	316 SS/SCS 14
SL	316L SS/SCS 16

Connection Type	
WB-*P	Butt Weld-Pipe
FL	Flanged

Surface Finish Level	
AP	Annealing & Pickling
BA	Bright Annealing
EP	Electro Polishing

Specification

Size	64A	80A	100A	125A	150A	200A	250A	300A	350A	400A	450A	500A
Orifice Size	65	80	100	124	148	200	250	300	350	400	440	490
Cv Value	81	132	200	302	434	772	1200	1600	2000	2650	3100	3400
Max. Working Pressure	10 kgf/cm ²											
Max. Working Temperature	-10 ~ 80°C											
Internal Leakage Allowance - He (Holding Time - Min 30 sec)	≤1x10 ⁻⁵ atm.cc/s											
External Leakage Allowance - He (Holding Time - Min 1 min)	≤1x10 ⁻⁵ atm.cc/s											

Internal Surface Finish Levels

Grade		BA	EP
Surface Roughness	Average	< 0.4 μm	<0.125 μm
	Maximum	< 1.6 μm	<0.4 μm
Cleaning		Degreasing + Precision Cleaning	
Clean Room Environment		Class 10 [Some Products, Class 100]	

Ordering Information & Dimensions

Model	End Connection	SIZE	Dimensions (mm)		
			L	H	D
	Butt Weld	65A	416	280	160
		80A	441	300	200
		100A	492	380	200
		125A	556	470	300
		150A	606	470	300
		200A	795	700	400
		250A	1022	900	450
		300A	1100	1000	500
		350A	1187	1050	710
		400A	1314	1050	710
	Flange	65A	216	280	160
		80A	241	300	200
		100A	292	380	200
		125A	356	470	300
		150A	406	470	300
		200A	495	700	400
		250A	622	900	450
		300A	698	1000	500
		350A	787	1050	710
		400A	914	1050	710
450A	1040	1150	800		

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