



SCV  
**KITZ SCT**  
DIAPHRAGM VALVE  
PCTFE-SEAT  
MADE IN JAPAN

General Product Catalogue

**KITZ SCT**

KITZ SCT Corporation





## General Product Catalogue

**KITZ SCT**  
KITZ SCT Corporation



## Ultra High Purity Valves

VALVE

p1



## Ultra High Purity Fittings

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# How To Use Product Catalogue

## Major Category

KITZ SCT's products are categorized according to six themes. The categories are color-coded and are noted at the top of the page and in headings.

- Ultra High Purity Valves
- Ultra High Purity Fittings
- Vacuum Component
- PFA Valves
- PFA Fittings
- Antistatic Unit

# KD Diaphragm Valve

The KD series realizes a high Cv value for compactly designed direct diaphragm valves. These valves are of the quality that they can handle the high-purity gases used in semiconductor production facilities, and they also have high durability and high corrosion resistance performance.

## Middle Categories

Lists each product series.

## Main Specifications

The main specifications show room temperature (about 20°) test data. There may be cases where the indicated performance cannot be guaranteed when the usage environment changes.

## Size

The sizes noted are valve sizes and fitting sizes, but for custom specifications the valve and fitting sizes can be freely chosen.

Example) Valve size 1/4" x fitting size 1/2"

## Cv

A numerical value that expresses the ease with which a fluid flows. The Cv is not a fixed value but varies depending on the usage conditions. The Cv value of an inch-sized valve (KD, IB series, etc.) conforms to SEMASPEC #90120394B-STD. The Cv value of a pipe-sized valve (SBB, IBC/IBD/IBE, BZD series, etc.) conforms to JIS-B2005-2-3. Consider the CV value a minimum reference value.

## Fluid Temperature

The fluid temperature is the range of temperatures of the gas fluid body. The heat resistance of the handle and actuator part may be limited when the entire valve is used at a high temperature.

## Amount of Test Leakage

The amount of test leakage complies with that in the SEMI F1 inboard test and internal acceptance test. An inboard test (external leakage) is a helium-blowing test in which the inside is a vacuum and the outside is at atmospheric pressure. The internal acceptance test (internal leakage) is a test method that involves blowing helium at atmospheric pressure from an inlet with the valve closed. The amount of helium penetration into the valve seat is not stipulated.

## Cycle Life

The cycle Life durability shows actual results under KITZ SCT's test conditions, e.g., N2-charged, maximum operating pressure, room temperature, etc. These are not guaranteed values because of the differences depending on the number of years used and the usage conditions.

## Product Grade

For the product grade and material, the body material that forms the basis of each product and the inner surface treatment of the parts that come into contact with gas can be selected.

Representative examples:

- STD-316L : Mechanical polished finish + SUS316L
- EP-316L : Electro polished finish + SUS316L
- SEP-316L : Electro polished finish + SUS316L (Double melt material)

### ■ Features

- ⊙ Excellent purge characteristic is realized by minimizing the internal volume to 1.4cm<sup>3</sup> (1/4" Male CVC, Open) through reduction of vertical flow paths.
- ⊙ Original wetted area seal mechanism enables highest sealing performance, durability, purge performance, and corrosion resistance.
- ⊙ High corrosion resistance performance by carefully selected diaphragm materials and ultimately smallest individual differences based on KITZ SCT's original molding method realized high durability performance.
- ⊙ Handles high-purity gases used with semiconductors and pursues particle performance to the ultimate degree by means of the highest-level production environment and polished inner surfaces.

### ■ Specifications

Size		KD2 (1/8")	KD4 (1/4")	KD8 (1/2")	KD12 (3/4")
Cv		0.05	0.27	0.7	1.7
Maximum Operating Pressure		142psig (0.98MPa(G))			
Wetted Area Volume*1		PCTFE, PI, PFA Metal	0.014in <sup>3</sup> (0.23cm <sup>3</sup> )	0.089in <sup>3</sup> (1.4cm <sup>3</sup> ) 0.079in <sup>3</sup> (1.3cm <sup>3</sup> )	0.451in <sup>3</sup> (7.4cm <sup>3</sup> ) 0.457in <sup>3</sup> (7.5cm <sup>3</sup> )
Fluid Temperature	PCTFE	Manual Valve	-10°C-80°C		
		Pneumatic Valve	-10°C-150°C		
	PFA	Manual Valve	-10°C-120°C (150°C actual results 500,000 cycles)		
		Pneumatic Valve	-10°C-150°C		
Metal (body material)*3		-10°C-200°C			
Atmospheric Temperature		-10°C-60°C			
Leak Rates	Across the Seat He Leak Test Rates	PCTFE, PI, PFA	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)		
		Metal	≤ 3×10 <sup>-9</sup> sccs (≤ 3×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)		
	Inboard He Leak Test Rates		≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)		
Actuation Pressure		58-101psig (0.4-0.7MPa(G))			
Cycle Life*2	Manual Valve	PCTFE, PI, PFA	100,000 cycles		
		Metal	30,000 cycles		
	Pneumatic Valve	PCTFE, PI, PFA	800,000 cycles	2 million cycles	30,000 cycles
		Metal	100,000 cycles		N/A

- \*1 Straight flow, CVC male, OPEN state
- \*2 Test Condition / Seat material : PCTFE Gas : N2 Pressure : 0.98MPa
- \*3 Usable only for certain products. For details, contact your sales representative.

### ■ Product grade

Grade	STD	EP	SEP*
Body Material	SUS316L		
Surface Roughness	≤ Ra 0.5 μm / 20 μm	≤ Ra 0.13 μm / 5 μm	
Polish	Mechanical Polished	Electro Polished	
Cleaning	Degreasing + Precision cleaning		
Packaging	Single bagged package	Double bagged package	

\* SEP-316L: 1/8", 1/4", 3/8", 1/2" are available

### ■ Wetted area material

Body	SUS316L, SUS316LE (Double melt material)
Seat	PCTFE, PFA, PI, metal (body material)
Diaphragm	Cobalt alloy (3/4" size is SUS316L)

## Notes

### ● Your Product Order

Because our products cover a wide range, please confirm the product number, size, material, and grade from the product code table before placing your order.

### ● Product Explanation

Due to space constraints, detailed explanations are omitted. Please speak with the sales representative about any unclear points or technical data.

### ● Customized Products

We also make customized products to meet individual specifications other than those in this catalog.

Please speak with our sales representative after preparing detailed specification requirements.

Incidentally, a "technical number" that is not noted in the product code table is appended to customized product models.

### ● Product Dimensions

Unless otherwise noted product dimensions shown are given in millimeters.

Because the dimensions given in the catalog are representative values, please treat them as references.

Some tube sizes are given in inches. Please refer to the "Product Dimensions Table" for millimeter conversions.

### ● Precautions When Selecting a Product

- Although there can be an unlimited number of combinations from the product code table, we cannot accommodate all combinations.

Please note that there are some products that we do not handle.

- Unnecessary accumulation of gas or particles may occur with compression fittings due to its internal design. Please be warned when used at sensitive locations.

- When our products are to be used in an environment subject to statutory regulations or when specifications for use, etc., are defined in standards or provisions arbitrarily established in business locations, etc., where our products are to be installed, select the appropriate products after checking the regulations, standards, and provisions.

- When using our products in fields such as nuclear power, railways, aircraft, aerospace, vehicles, medical equipment, food manufacturing equipment, entertainment equipment, safety equipment and the like, be sure to check with us in advance and take sufficient safety measures.

**Straight Type**



**Product Code Table**

Model	Size	Operation	Valve Shape	Connection	Seat Material	Handle Color	Grade + Body Material
KD	4	M	S	VF	C	RD	EP-316L

HD-type diaphragm valve  
 2-1/8" 4-1/4" 6-3/8" 8-1/2" 12-3/4"  
 270° manual  
 S: Straight A: Angle L: L-shape  
 V: CVC male WF: CVC female S: Compression W: Butt weld  
 C/PCTFE A/PFA P/PI M/Metal Body material  
 Not shown: Blue (standard) RD: Red WH: White GR: Green PK: Pink SL: Silver YG: Yellow-green \*2  
 Body material: YS: Yellow GR: Green BR: Brown PU: Purple BK: Black  
 \*1  
 \*2 SEP-316L: 1/8", 1/4", 3/8", 1/2" are available

\*1 For a metal seat, we can handle only 1/8", 1/4", 1/2" sizes. Since the valve dimensions change if a metal seat is selected, contact our sales representative for details.  
 \*2 SEP-316L: 1/8", 1/4", 3/8", 1/2" are available

**Product Code Table**

Please ask to the sales representative for special-order items without a product code.

\* Although there can be an unlimited number of combinations from the product code table, we cannot accommodate all combinations. Although product classes that are not listed in a code table are shown with drawing numbers as a technical number, some products that have technical numbers may be standard items. Please be aware of this.

**Dimensions**

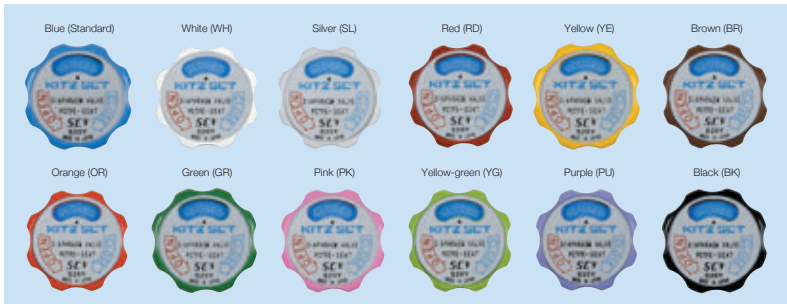
Model	Type	Connection	L	L <sup>*</sup>	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	M	M <sub>1</sub>	M <sub>2</sub>
KD2MS-VC	1/8" CVC Male		1.61 (41.0)	-	2.24 (57.0)	0.28 (7.0)	0.85 (21.5)	0.94 (24.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14x1.0
KD4MS-VC	1/4" CVC Male		2.24 (57.0)	-	2.68 (68.0)	0.43 (11.0)	1.06 (27.0)	1.65 (42.0)	1.02 (25.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20x1.0
KD8MS-VC	1/2" CVC Male		3.03 (77.0)	-	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.10 (28.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20x1.0
KD12MS-VC	3/4" CVC Male		4.21 (107.0)	-	3.86 (98.0)	0.91 (23.0)	1.65 (42.0)	1.89 (48.0)	1.81 (46.0)	1.38 (35.0)	1.38 (35.0)	2-M5 Depth 0.31 (8.0)	-
KD2MS-VFC	1/8" CVC Female		2.20 (56.0)	-	2.24 (57.0)	0.28 (7.0)	0.85 (21.5)	0.94 (24.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14x1.0
KD4MS-VFC	1/4" CVC Female		2.78 (70.6)	-	2.68 (68.0)	0.43 (11.0)	1.06 (27.0)	1.65 (42.0)	1.02 (25.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20x1.0
KD8MS-VFC	1/2" CVC Female		3.27 (83.0)	-	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.10 (28.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20x1.0
KD12MS-VFC	3/4" CVC Female		7.06 (179.2)	-	3.86 (98.0)	0.91 (23.0)	1.65 (42.0)	1.89 (48.0)	1.81 (46.0)	1.38 (35.0)	1.38 (35.0)	2-M5 Depth 0.31 (8.0)	-
KD2MS-SC	1/8" Compression Fitting		3.06 (77.8)	0.24 (6.1)	2.24 (57.0)	0.28 (7.0)	0.85 (21.5)	0.94 (24.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14x1.0
KD4MS-SC	1/4" Compression Fitting		1.89 (48.0)	0.31 (7.9)	2.68 (68.0)	0.43 (11.0)	1.06 (27.0)	1.65 (42.0)	1.02 (25.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20x1.0
KD6MS-SC	3/8" Compression Fitting		2.52 (64.0)	0.37 (9.5)	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.10 (28.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20x1.0
KD8MS-SC	1/2" Compression Fitting		2.52 (64.0)	0.50 (12.7)	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.10 (28.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20x1.0
KD12MS-SC	3/4" Compression Fitting		4.96 (126.0)	0.56 (14.3)	3.86 (98.0)	0.91 (23.0)	1.65 (42.0)	1.89 (48.0)	1.81 (46.0)	1.38 (35.0)	1.38 (35.0)	2-M5 Depth 0.31 (8.0)	-
KD2MS-WC	1/8" Butt Weld		1.65 (42.0)	-	2.24 (57.0)	0.28 (7.0)	0.85 (21.5)	0.94 (24.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14x1.0
KD4MS-WC	1/4" Butt Weld		2.13 (54.0)	-	2.68 (68.0)	0.43 (11.0)	1.06 (27.0)	1.65 (42.0)	1.02 (25.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20x1.0
KD6MS-WC	3/8" Butt Weld		2.72 (69.0)	-	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.10 (28.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20x1.0
KD8MS-WC	1/2" Butt Weld		2.72 (69.0)	-	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.10 (28.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20x1.0
KD12MS-WC	3/4" Butt Weld		6.14 (156.0)	-	3.86 (98.0)	0.91 (23.0)	1.65 (42.0)	1.89 (48.0)	1.81 (46.0)	1.38 (35.0)	1.38 (35.0)	2-M5 Depth 0.31 (8.0)	-

\* L<sup>\*</sup> dimension for compression fitting is the dimension of how far tube inserted from end of body.

**Dimensions Table**

The dimensions table shows only representative products. Please ask the sales and service representative about products not shown or detailed drawings. Dimensions may change depending on the product specifications, but the handle color, seat material, product grade, and the material will not differ.

**Handle Color**



**Product Improvements**

Because improvements are always being made to our products, changes may be made to the specifications without notice because of performance improvements.

**Breaking the Product Seal**

All except for a few of the products we make are produced in a clean room environment where we maintain a high level of product cleanliness.

Please open the product seal in a clean room environment.

**Notes on Usage**

All except a few of our products are premised on use in a clean room or equivalent environment.

In other usage environments there is the possibility that product performance cannot be maintained

We do not bear any responsibility in such cases.

Basic product performance, such as leak performance, may not be guaranteed if excessive jarring is applied to the product.

Please take adequate precautions when handling our products.

**Precautions When Exporting**

When our products are exported, the exporter must obtain permission from the Ministry of Economy, Trade and Industry based on the Foreign Exchange and Foreign Trade Law's Export Trade Control Order stipulations.

Contact us about anything that is unclear.

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Ultra High Purity Valves

Ultra High Purity Fittings

Vacuum Components

PFA Valves

PFA Weld Fittings

Artistic Unit



# How To Use Product Catalogue

[ Product standard dimensions table ]

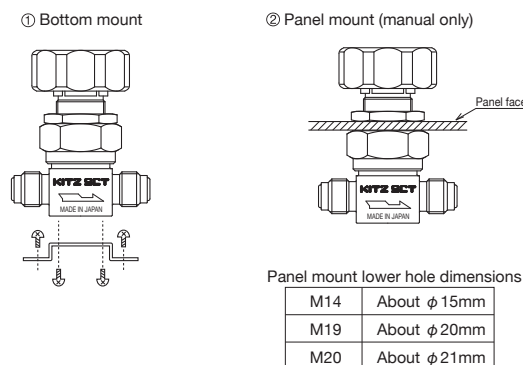
Unit: inch (mm)

Tube Size		
Inch/Outer	Diameter	Thickness
1/8"	0.13 (3.18)	0.027 (0.70)
1/4"	0.25 (6.35)	0.039 (1.00)
3/8"	0.38 (9.53)	0.039 (1.00)
1/2"	0.50 (12.70)	0.049 (1.24)
3/4"	0.75 (19.05)	0.049 (1.24)
1"	1.00 (25.40)	0.065 (1.65)

Unit: inch (mm)

Pipe Size		
Nominal Diameter	Outer Diameter	Thickness
10A	0.68 (17.3)	0.047 (1.20)
15A	0.85 (21.7)	0.065 (1.65)
20A	1.07 (27.2)	0.065 (1.65)
25A	1.34 (34.0)	0.065 (1.65)
32A	1.68 (42.7)	0.065 (1.65)
40A	1.91 (48.6)	0.065 (1.65)
50A	2.38 (60.5)	0.065 (1.65)
65A	3.00 (76.3)	0.083 (2.10)
80A	3.51 (89.1)	0.083 (2.10)
100A	4.50 (114.3)	0.083 (2.10)
125A	5.50 (139.8)	0.110 (2.80)

[ valve anchoring method ]



## Materials details

SUS304	Austenite Stainless Steel	18Cr-8Ni
SUS316		18Cr-12Ni-2.5Mo Type of steel based on SUS304 with Mo added. Better corrosion resistance than SUS304, as well as excellent pitting corrosion resistance.
SUS316L		18Cr-12Ni-2.5Mo-low C Has excellent corrosion resistance due to the addition of the Mo and resistance against intra-granular corrosion because of the low C.
SUS316LE		316L material double-melted to reduce Mn, S, and other impurities in steel.
NI	Nickel	Pure nickel
PCTFE	Resin	Fluorine resin, polychlorotrifluoro ethylene Has high mechanical strength and excellent compressive strength. A material suitable for high-pressure packing or gaskets.
PFA		Fluorine resin, tetrafluoroethylene perfluoroalkyl Has excellent mechanical strength at high temperatures in particular, and resistance against chemicals.
PI		Polyimide resin Boasts higher heat resistance than other organic substances and polymer materials, and has high performance with respect to mechanical strength and resistance to chemicals.

## [Flow Path]

Our company's valve can respond to various flow channels. We will introduce some typical flow channels. (The side of ▼ in the illustration shows the first side). In addition, the valve can also respond to the flow channel of a block valve. For details, please ask to the sales representative.

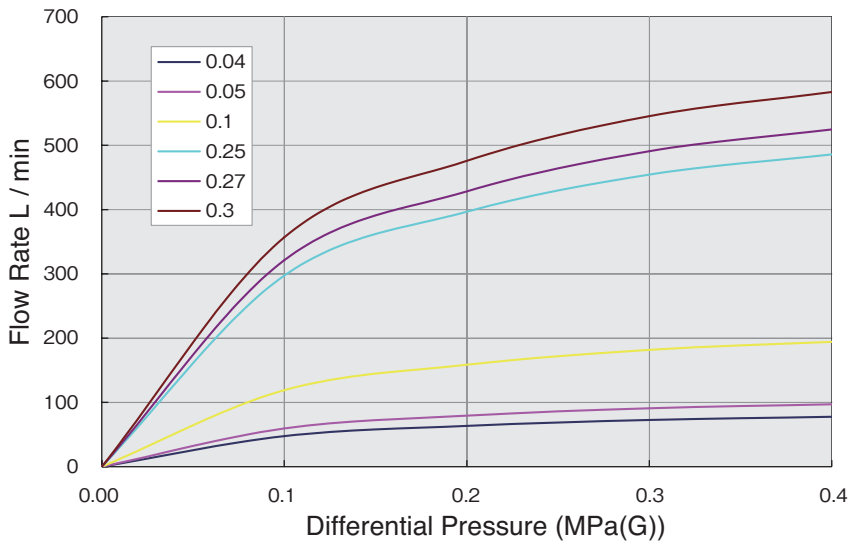
Port	Pattern	Flow direction	
		Close	Open
4Port			
3Port			

Port	Pattern	Flow direction	
		Close	Open
3Port			
2Port			



Reference Material :  $P_1$  is calculated based on the specific air as 1 under 1MPa(absolute) pressure.

Cv, differential pressure Flow curve



Cv value calculation formula (Note 1)

According to FCI formula (Note 2) :

Formula for gas

$$C_v = \frac{Q_g}{273} \sqrt{\frac{G_g T_1}{\Delta P (P_1 + P_2)}} \quad (\text{In the case of } \Delta P < 0.5P_1)$$

$$C_v = \frac{Q_g \sqrt{G_g T_1}}{236 P_1} \quad (\text{In the case of } \Delta P \geq 0.5P_1)$$

$C_v$  : Valve Capacity Coefficient

$G_g$  : Air under normal conditions vs. Specific Gravity of Relevant Gas under normal conditions

$P_1$  : Valve Inlet Pressure [kg/cm<sup>2</sup>abs]

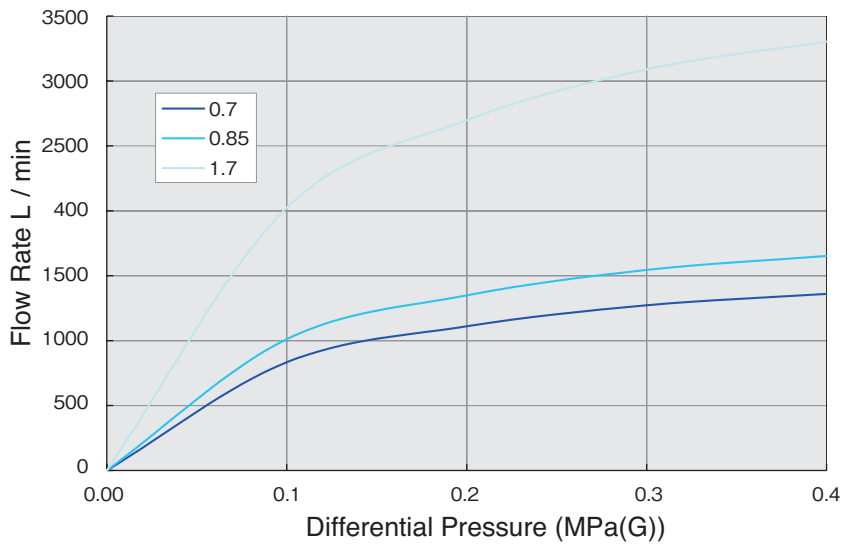
$P_2$  : Valve Outlet Pressure [kg/cm<sup>2</sup>abs]

$\Delta P$  : Differential Pressure of Valve  $P_1 - P_2$  [kg/cm<sup>2</sup>]

$Q_g$  : Volume Flow of Gas [Nm<sup>3</sup>/h]

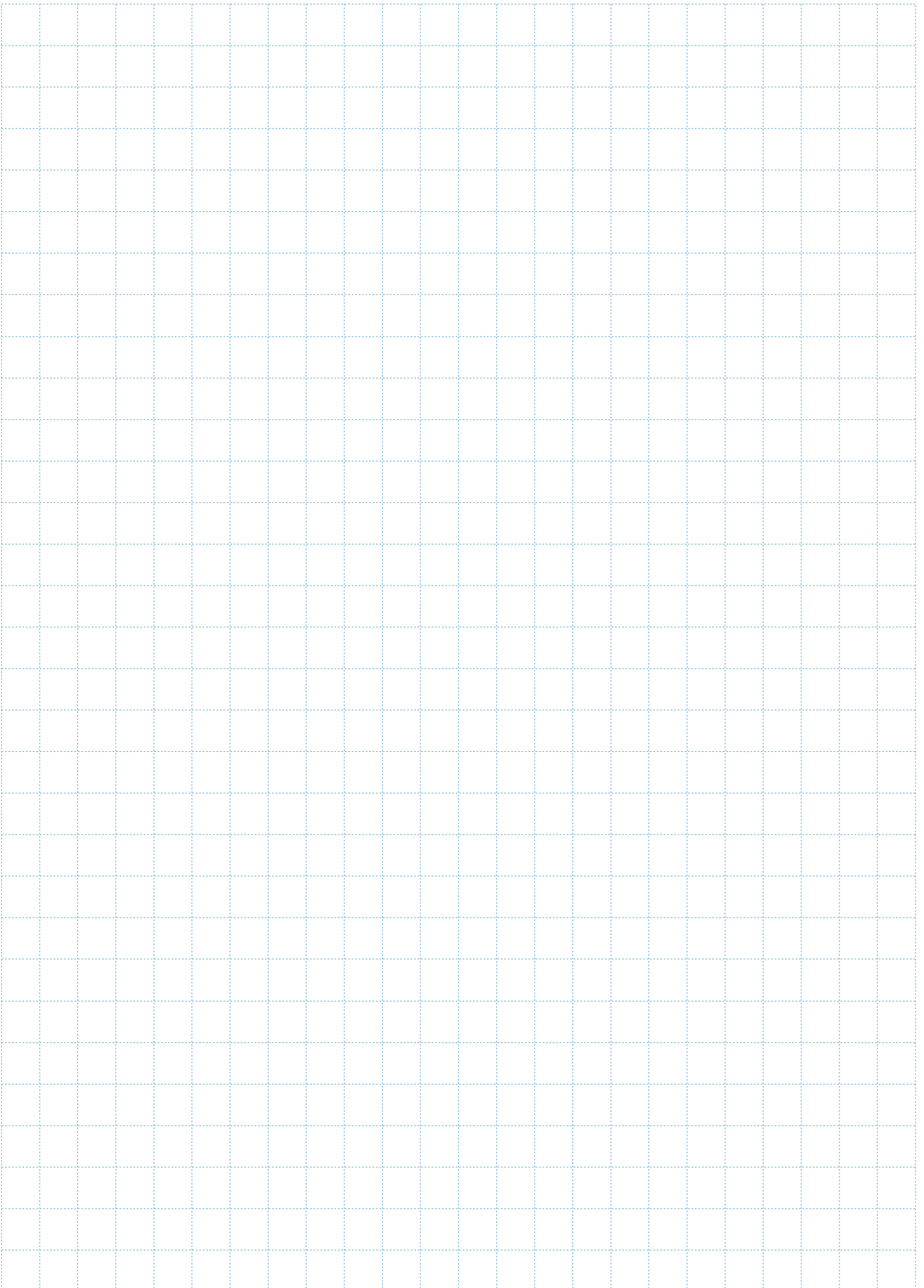
$T_1$  : Valve Inlet Temperature [K]

Cv, differential pressure Feature of gas flow rate



Note 1) The traditional Cv-value calculation formula is used, therefore, the formula is indicated in old unit type but not in SI unit type.

memo



# Ultra High Purity Valves

## VALVE

### Essential in semiconductor fabrication processes KITZ SCT's series of valves

Higher purity and high reliability are essential in the gas supply systems used in semiconductor fabrication processes

KITZ SCT's superclean valves (SCVs) are products that boast high reliability and high durability to meet the exact needs of our customers. The excellent features of the SCVs include improved gas exchange characteristics because of minimal internal capacity, better degassing characteristics due to the smaller surface area of the seat that comes into contact with gas, prevention of plastic expansion, and improved valve operation speed due to the use of aluminum in the piston.

KITZ-SCT supplies the high-grade model "KD series" and other products suited for a variety of uses with a high level of technological capabilities and abundant know-how.

Can accommodate high-pressure certified products. Please contact our sales representative for details.

<b>KD (diaphragm valves)</b>	
2-port	3
Multi-port	6
Two-step valve	8
Valves that accommodate a high temperature of 250°C	10
LOTO valve	11
Quick turn valve	12
<b>KCD (diaphragm valves)</b>	
Compact diaphragm valves	13
<b>VLCD (diaphragm valves)</b>	
Compact diaphragm valves	15
<b>VLD (diaphragm valves)</b>	
Diaphragm valves	16
<b>WD (diaphragm valves)</b>	
Replaceable seat	18
<b>RD (diaphragm valves)</b>	
High pressure diaphragm valves	20
<b>VRD (diaphragm valves)</b>	
Diaphragm valves	25
<b>ZCD (zero volume valves)</b>	
Zero volume valves	26
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<b>IC (check valves)</b>	
Check valves	31
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"Variac" variable flow valves	36
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<b>IBC/IBD/IBE (bellows valves)</b>	
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Clean butterfly valves	44



# KD

## Diaphragm Valve

The KD series realizes a high Cv value for compactly designed direct diaphragm valves. These valves are of the quality that they can handle the high-purity gases used in semiconductor production facilities, and they also have high durability and high corrosion resistance performance.

### ■ Features

- Excellent purge characteristic is realized by minimizing the internal volume to 1.4cm<sup>3</sup> (1/4" Male CVC, Open) through reduction of vertical flow paths.
- Original wetted area seal mechanism enables highest sealing performance, durability, purge performance, and corrosion resistance.
- High corrosion resistance performance by carefully selected diaphragm materials and ultimately smallest individual differences based on KITZ SCT's original molding method realized high durability performance.
- Handles high-purity gases used with semiconductors and pursues particle performance to the ultimate degree by means of the highest-level production environment and polished inner surfaces.

### ■ Specifications

Size		KD2 (1/8")	KD4 (1/4")	KD8 (1/2")	KD12 (3/4")
Cv		0.05	0.27	0.7	1.7
Maximum Operating Pressure		142psig (0.98MPa(G))			
Wetted Area Volume*1	PCTFE, PI, PFA	0.014in <sup>3</sup> (0.23cm <sup>3</sup> )	0.085in <sup>3</sup> (1.4cm <sup>3</sup> )	0.451in <sup>3</sup> (7.4cm <sup>3</sup> )	1.525in <sup>3</sup> (25cm <sup>3</sup> )
	Metal		0.079in <sup>3</sup> (1.3cm <sup>3</sup> )	0.457in <sup>3</sup> (7.5cm <sup>3</sup> )	N/A
Fluid Temperature	PCTFE		-10°C~80°C		
	PFA	Manual Valve	-10°C~150°C		
		Pneumatic Valve	-10°C~120°C (150°C actual results 500,000 cycles)		
	PI		-10°C~150°C		
Metal (body material)*3		-10°C~200°C			N/A
Atmospheric Temperature		-10°C~60°C			
Leak Rates	Across the Seat He Leak Test Rates	PCTFE, PI, PFA	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)		
		Metal	≤ 3×10 <sup>-9</sup> sccs (≤ 3×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)		
	Inboard He Leak Test Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)			
Actuation Pressure		58~101psig (0.4~0.7MPa(G))			
Cycle Life*2	Manual Valve	PCTFE, PI, PFA	100,000 cycles		
		Metal	30,000 cycles		
	Pneumatic Valve	PCTFE, PI, PFA	800,000 cycles	2 million cycles	
		Metal	100,000 cycles	N/A	

\*1 Straight flow, CVC male, OPEN state

\*2 Test Condition / Seat material : PCTFE Gas : N<sub>2</sub> Pressure : 0.98MPa

\*3 Usable only for certain products. For details, contact your sales representative.

### ■ Product grade

Grade	STD	EP	SEP*
Body Material	SUS316L		SUS316LE (Double melt material)
Surface Roughness	≤ Ra 0.5 μm / 20 μin	≤ Ra 0.13 μm / 5 μin	
Polish	Mechanical Polished	Electro Polished	
Cleaning	Degreasing + Precision cleaning		
Packaging	Single bagged package	Double bagged package	

\* SEP-316LE:1/8", 1/4", 3/8", 1/2" are available

### ■ Wetted area material

Body	SUS316L, SUS316LE (Double melt material)
Seat	PCTFE, PFA, PI, metal (body material)
Diaphragm	Cobalt alloy (3/4" size is SUS316L)

### ■ Precautions

- ① The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ② For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.



# Straight Type



## Product Code Table

Model	Size	Operation	Valve Shape	Connection	Seat Material	Handle Color	Grade + Body Material
<b>KD</b>	<b>4</b>	<b>M</b>	<b>S</b>	<b>VF</b>	<b>C</b>	<b>RD</b>	<b>EP-316L</b>
KD-type diaphragm valve	2:1/8" 4:1/4" 6:3/8" 8:1/2" 12:3/4"	270° manual	S: Straight A: Angle L: L-shape	V: CVC male VF: CVC female S: Compression W: Butt weld	C: PCTFE A: PFA P: PI M: Metal (body material) *1	Not shown: Blue (standard) RD: Red WH: White GR: Green PK: Pink SL: Silver YG: Yellow-green YE: Yellow OR: Orange BR: Brown PU: Purple BK: Black	STD-316L : Mechanical Polished+SUS316L EP-316L : Electro Polished+316L SEP-316L : Electro Polished+316LE *2

\*1 For a metal seat, we can handle only 1/8", 1/4", 1/2" sizes. Since the valve dimensions change if a metal seat is selected, contact our sales representative for details.  
\*2 SEP-316LE: 1/8", 1/4", 3/8", 1/2" are available

## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	L <sup>*</sup>	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	M	M <sub>1</sub>	M <sub>2</sub>
	KD2MS-VC	1/8" CVC Male	1.61 (41.0)	-	2.24 (57.0)	0.28 (7.0)	0.85 (21.5)	0.94 (24.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14×1.0
	KD4MS-VC	1/4" CVC Male	2.24 (57.0)	-	2.68 (68.0)	0.43 (11.0)	1.06 (27.0)	1.65 (42.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD8MS-VC	1/2" CVC Male	3.03 (77.0)	-	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD12MS-VC	3/4" CVC Male	4.21 (107.0)	-	3.86 (98.0)	0.91 (23.0)	-	1.65 (42.0)	1.89 (48.0)	1.81 (46.0)	1.38 (35.0)	2-M5 Depth 0.31 (8.0)	-
	KD2MS-VFC	1/8" CVC Female	2.20 (56.0)	-	2.24 (57.0)	0.28 (7.0)	0.85 (21.5)	0.94 (24.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14×1.0
	KD4MS-VFC	1/4" CVC Female	2.78 (70.6)	-	2.68 (68.0)	0.43 (11.0)	1.06 (27.0)	1.65 (42.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD8MS-VFC	1/2" CVC Female	3.27 (83.0)	-	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD12MS-VFC	3/4" CVC Female	7.06 (179.2)	-	3.86 (98.0)	0.91 (23.0)	-	1.65 (42.0)	1.89 (48.0)	1.81 (46.0)	1.38 (35.0)	2-M5 Depth 0.31 (8.0)	-
	KD2MS-SC	1/8" Compression Fitting	3.06 (77.8)	0.24 (6.1)	2.24 (57.0)	0.28 (7.0)	0.85 (21.5)	0.94 (24.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14×1.0
	KD4MS-SC	1/4" Compression Fitting	1.89 (48.0)	0.31 (7.9)	2.68 (68.0)	0.43 (11.0)	1.06 (27.0)	1.65 (42.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD6MS-SC	3/8" Compression Fitting	2.52 (64.0)	0.37 (9.5)	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD8MS-SC	1/2" Compression Fitting	2.52 (64.0)	0.50 (12.7)	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD12MS-SC	3/4" Compression Fitting	4.96 (126.0)	0.56 (14.3)	3.86 (98.0)	0.91 (23.0)	-	1.65 (42.0)	1.89 (48.0)	1.81 (46.0)	1.38 (35.0)	2-M5 Depth 0.31 (8.0)	-
	KD2MS-WC	1/8" Butt Weld	1.65 (42.0)	-	2.24 (57.0)	0.28 (7.0)	0.85 (21.5)	0.94 (24.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14×1.0
	KD4MS-WC	1/4" Butt Weld	2.13 (54.0)	-	2.68 (68.0)	0.43 (11.0)	1.06 (27.0)	1.65 (42.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD6MS-WC	3/8" Butt Weld	2.72 (69.0)	-	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD8MS-WC	1/2" Butt Weld	2.72 (69.0)	-	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD12MS-WC	3/4" Butt Weld	6.14 (156.0)	-	3.86 (98.0)	0.91 (23.0)	-	1.65 (42.0)	1.89 (48.0)	1.81 (46.0)	1.38 (35.0)	2-M5 Depth 0.31 (8.0)	-

\* L<sub>1</sub> dimension for compression fitting is the dimension of how far tube inserted from end of body.

## Handle Color





## Product Code Table

Model	Size	Operation	Valve shape	Connection	Seat material	Handle type	Handle color	Grade + Body material
<b>KD</b>	<b>4</b>	<b>Q</b>	<b>S</b>	<b>VF</b>	<b>C</b>		<b>RD</b>	<b>EP-316L</b>
KD-type diaphragm valve	2:1/8" 4:1/4" 6:3/8" 8:1/2"	90° manual	S: Straight A: Angle L: L-shape	V: CVC male VF: CVC female S: Compression W: Butt weld	C:PCTFE A:PFA P:PI M.: Metal (body material) *1	Not shown: Standard POC: Push-lock type	Not shown: Blue (standard) BK: Black GR: Green RD: Red SL: Silver WH: White YE: Yellow	STD-316L: Mechanical Polished +SUS316L EP-316L: Electro Polished + SUS316L SEP-316LE: Electro Polished +SUS316LE

\*1 For a metal seat, we can handle only 1/8" and 1/4" sizes. Since the valve dimensions change if a metal seat is selected, contact our sales representative for details.

## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	L*	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	M	M <sub>1</sub>	M <sub>2</sub>
	KD2QS-VC	1/8" CVC Male	1.61 (41.0)	-	2.28 (58.0)	0.28 (7.0)	0.85 (21.5)	1.46 (37.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14×1.0
	KD4QS-VC	1/4" CVC Male	2.24 (57.0)	-	2.87 (73.0)	0.43 (11.0)	1.06 (27.0)	1.93 (49.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD8QS-VC	1/2" CVC Male	3.03 (77.0)	-	3.39 (86.0)	0.63 (16.0)	1.32 (33.5)	1.93 (49.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD2QS-VFC	1/8" CVC Female	2.20 (56.0)	-	2.28 (58.0)	0.28 (7.0)	0.85 (21.5)	1.46 (37.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14×1.0
	KD4QS-VFC	1/4" CVC Female	2.78 (70.6)	-	2.87 (73.0)	0.43 (11.0)	1.06 (27.0)	1.93 (49.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD8QS-VFC	1/2" CVC Female	3.27 (83.0)	-	3.39 (86.0)	0.63 (16.0)	1.32 (33.5)	1.93 (49.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD2QS-SC	1/8" compression	3.06 (77.8)	0.24 (6.1)	2.28 (58.0)	0.28 (7.0)	0.85 (21.5)	1.46 (37.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14×1.0
	KD4QS-SC	1/4" compression	1.89 (48.0)	0.31 (7.9)	2.87 (73.0)	0.43 (11.0)	1.06 (27.0)	1.93 (49.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD6QS-SC	3/8" compression	2.52 (64.0)	0.37 (9.5)	3.39 (86.0)	0.63 (16.0)	1.32 (33.5)	1.93 (49.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD8QS-SC	1/2" compression	2.52 (64.0)	0.50 (12.7)	3.39 (86.0)	0.63 (16.0)	1.32 (33.5)	1.93 (49.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD2QS-WC	1/8" Butt Weld	1.65 (42.0)	-	2.28 (58.0)	0.28 (7.0)	0.85 (21.5)	1.46 (37.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14×1.0
	KD4QS-WC	1/4" Butt Weld	2.13 (54.0)	-	2.87 (73.0)	0.43 (11.0)	1.06 (27.0)	1.93 (49.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD6QS-WC	3/8" Butt Weld	2.72 (69.0)	-	3.39 (86.0)	0.63 (16.0)	1.32 (33.5)	1.93 (49.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD8QS-WC	1/2" Butt Weld	2.72 (69.0)	-	3.39 (86.0)	0.63 (16.0)	1.32 (33.5)	1.93 (49.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0

\* L<sub>1</sub> dimension for compression fitting is the dimension of how far tube inserted from end of body.



**Product Code Table**

Model	Size	Operation	Valve shape	Connection	Seat material	Options	Grade + Body material
<b>KD</b>	<b>4</b>	<b>C</b>	<b>S</b>	<b>VF</b>	<b>C</b>		<b>EP-316L</b>
KD-type diaphragm valve	2:1/8" 4:1/4" 6:3/8" 8:1/2" 12:3/4"	C: Normally closed O: Normally open	S: Straight A: Angle L: L-shape	V: CVC male VF: CVC female S: Compression W: Butt weld	C: PCTFE A: PFA P: PI M.: Metal (body material)	Not shown: Standard S: With open/close sensor	STD-316L: Mechanical Polished + SUS316L EP-316L: Electro Polished + SUS316L SEP-316LE: Electro Polished +SUS316LE <sup>*2</sup>

\*1 For a metal seat, we can handle only 1/8" and 1/4" sizes. Since the valve dimensions change if a metal seat is selected, contact our sales representative for details.  
\*2 SEP-316LE: 1/8", 1/4", 3/8", 1/2" are available

**Dimensions**

Unit: inch (mm)

Model	Type	Connection	L	Li*	H	H <sub>i</sub>	A	B	C	P	M	M <sub>1</sub>
	KD2□S-VC	1/8" CVC Male	1.61 (41.0)	-	2.09 (53.0)	0.28 (7.0)	1.10 (28.0)	0.75 (19.0)	0.75 (19.0)	Rc1/8	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	KD4□S-VC	1/4" CVC Male	2.24 (57.0)	-	2.64 (67.0)	0.43 (11.0)	1.56 (39.7)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD8CS-VC	1/2" CVC Male	3.03 (77.0)	-	3.31 (84.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD8OS-VC		3.03 (77.0)	-	3.03 (77.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD12CS-VC	3/4" CVC Male	4.21 (107.0)	-	5.83 (148.0)	0.91 (23.0)	3.35 (85.0)	1.89 (48.0)	1.81 (46.0)	Rc1/8	1.38 (35.0)	2-M5 Depth 0.31 (8.0)
	KD12OS-VC		4.21 (107.0)	-	5.63 (143.0)	0.91 (23.0)	3.35 (85.0)	1.89 (48.0)	1.81 (46.0)	Rc1/8	1.38 (35.0)	2-M5 Depth 0.31 (8.0)
	KD2□S-VFC	1/8" CVC Female	2.20 (56.0)	-	2.09 (53.0)	0.28 (7.0)	1.10 (28.0)	0.75 (19.0)	0.75 (19.0)	Rc1/8	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	KD4□S-VFC	1/4" CVC Female	2.78 (70.6)	-	2.64 (67.0)	0.43 (11.0)	1.56 (39.7)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD8CS-VFC	1/2" CVC Female	3.27 (83.0)	-	3.31 (84.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD8OS-VFC		3.27 (83.0)	-	3.03 (77.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD12CS-VFC	3/4" CVC Female	7.06 (179.2)	-	5.83 (148.0)	0.91 (23.0)	3.35 (85.0)	1.89 (48.0)	1.81 (46.0)	Rc1/8	1.38 (35.0)	2-M5 Depth 0.31 (8.0)
	KD12OS-VFC		7.06 (179.2)	-	5.63 (143.0)	0.91 (23.0)	3.35 (85.0)	1.89 (48.0)	1.81 (46.0)	Rc1/8	1.38 (35.0)	2-M5 Depth 0.31 (8.0)
	KD2□S-SC	1/8" compression	3.06 (77.8)	0.24 (6.1)	2.09 (53.0)	0.28 (7.0)	1.10 (28.0)	0.75 (19.0)	0.75 (19.0)	Rc1/8	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	KD4□S-SC	1/4" compression	1.89 (48.0)	0.31 (7.9)	2.64 (67.0)	0.43 (11.0)	1.56 (39.7)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD6CS-SC	3/8" compression	2.52 (64.0)	0.37 (9.5)	3.31 (84.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD6OS-SC		2.52 (64.0)	0.37 (9.5)	3.03 (77.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD8CS-SC	1/2" compression	2.52 (64.0)	0.50 (12.7)	3.31 (84.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD8OS-SC		2.52 (64.0)	0.50 (12.7)	3.03 (77.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD12CS-SC	3/4" compression	4.96 (126.0)	0.56 (14.3)	5.83 (148.0)	0.91 (23.0)	3.35 (85.0)	1.89 (48.0)	1.81 (46.0)	Rc1/8	1.38 (35.0)	2-M5 Depth 0.31 (8.0)
	KD12OS-SC		4.96 (126.0)	0.56 (14.3)	5.63 (143.0)	0.91 (23.0)	3.35 (85.0)	1.89 (48.0)	1.81 (46.0)	Rc1/8	1.38 (35.0)	2-M5 Depth 0.31 (8.0)
	KD2□S-WC	1/8" Butt Weld	1.65 (42.0)	-	2.09 (53.0)	0.28 (7.0)	1.10 (28.0)	0.75 (19.0)	0.75 (19.0)	Rc1/8	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	KD4□S-WC	1/4" Butt Weld	2.13 (54.0)	-	2.64 (67.0)	0.43 (11.0)	1.56 (39.7)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD6CS-WC	3/8" Butt Weld	2.72 (69.0)	-	3.31 (84.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD6OS-WC		2.72 (69.0)	-	3.03 (77.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD8CS-WC	1/2" Butt Weld	2.72 (69.0)	-	3.31 (84.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD8OS-WC		2.72 (69.0)	-	3.03 (77.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD12CS-WC	3/4" Butt Weld	6.14 (156.0)	-	5.83 (148.0)	0.91 (23.0)	3.35 (85.0)	1.89 (48.0)	1.81 (46.0)	Rc1/8	1.38 (35.0)	2-M5 Depth 0.31 (8.0)
	KD12OS-WC		6.14 (156.0)	-	5.63 (143.0)	0.91 (23.0)	3.35 (85.0)	1.89 (48.0)	1.81 (46.0)	Rc1/8	1.38 (35.0)	2-M5 Depth 0.31 (8.0)

\* Li dimension for compression fitting is the dimension of how far tube inserted from end of body.

# Branch



## Product Code Table

Model	Size	Operation	Valve shape	Connection	Seat material	Flow	Handle color	Grade + Body material
<b>KD</b>	<b>4</b>	<b>M</b>	<b>B</b>	<b>VF</b>	<b>C</b>	<b>A</b>	<b>RD</b>	<b>EP-316L</b>

Options

KD-type diaphragm valve

2: 1/8"  
4: 1/4"  
6: 3/8"  
8: 1/2"

270° manual

B: Branch  
\*3

V: CVC male  
VF: CVC female  
W.: Butt weld  
\*2

C: PCTFE  
A: PFA  
P: PI  
M.: Metal  
(body material)

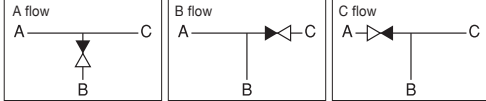
A: A flow  
B: B flow  
C: C flow  
\*1

Not shown: Blue (standard)  
RD: Red WH: White  
GR: Green PK: Pink  
SL: Silver YG: Yellow-green  
BK: Black OR: Orange  
YE: Yellow PU: Purple  
BR: Brown

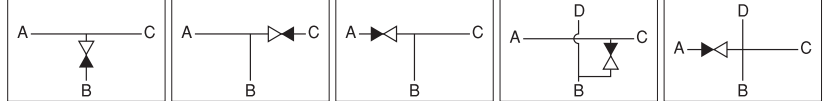
STD-316L : Mechanical Polished+SUS316L  
EP-316L : Electro Polished + SUS316L  
SEP-316LE : Electro Polished +SUS316LE

\*1 The branched flow type is to the right of the diagram.  
\*2 In cases where there are different types of fittings, please note them in the order of Port A, B, and C of the internal flow in the diagram to the right. Example) In the case where A port = CVC female, B port = CVC female, C port = CVC male, the model will be "VFVVFV."  
\*3 We also can produce non-standard branched flow and four-way valves as options.

### Flow direction (standard)



### Flow direction (examples of options)



## Dimension

Unit: inch (mm)

Model	Type	Connection	L	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	F	M	M <sub>1</sub>	M <sub>2</sub>
	KD2MB-VC	1/8" CVC Male	1.61 (41.0)	2.24 (57.0)	0.28 (7.0)	0.85 (21.5)	0.94 (24.0)	0.75 (19.0)	0.75 (19.0)	0.81 (20.5)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14×1.0
	KD4MB-VC	1/4" CVC Male	2.24 (57.0)	2.68 (68.0)	0.43 (11.0)	1.06 (27.0)	1.65 (42.0)	1.02 (26.0)	0.98 (25.0)	1.10 (28.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD8MB-VC	1/2" CVC Male	3.03 (77.0)	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.42 (36.0)	1.52 (38.5)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD2MB-VFC	1/8" CVC Female	2.20 (56.0)	2.24 (57.0)	0.28 (7.0)	0.85 (21.5)	0.94 (24.0)	0.75 (19.0)	0.75 (19.0)	1.10 (28.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14×1.0
	KD4MB-VFC	1/4" CVC Female	2.78 (70.6)	2.68 (68.0)	0.43 (11.0)	1.06 (27.0)	1.65 (42.0)	1.02 (26.0)	0.98 (25.0)	1.37 (34.8)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD8MB-VFC	1/2" CVC Female	3.27 (83.0)	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.42 (36.0)	1.63 (41.5)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD2MB-WC	1/8" Butt Weld	1.65 (42.0)	2.24 (57.0)	0.28 (7.0)	0.85 (21.5)	0.94 (24.0)	0.75 (19.0)	0.75 (19.0)	0.83 (21.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14×1.0
	KD4MB-WC	1/4" Butt Weld	2.13 (54.0)	2.68 (68.0)	0.43 (11.0)	1.06 (27.0)	1.65 (42.0)	1.02 (26.0)	0.98 (25.0)	1.04 (26.5)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD6MB-WC	3/8" Butt Weld	2.72 (69.0)	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.42 (36.0)	1.36 (34.5)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD8MB-WC	1/2" Butt Weld	2.72 (69.0)	3.19 (81.0)	0.63 (16.0)	1.42 (36.0)	1.65 (42.0)	1.42 (36.0)	1.42 (36.0)	1.36 (34.5)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0



## Product Code Table

Model	Size	Operation	Valve shape	Connection	Seat material	Flow	Handle type	Handle color	Grade + Body material
<b>KD</b>	<b>4</b>	<b>Q</b>	<b>B</b>	<b>VF</b>	<b>C</b>	<b>A</b>		<b>RD</b>	<b>EP-316L</b>

Options

KD-type diaphragm valve

2: 1/8"  
4: 1/4"  
6: 3/8"  
8: 1/2"

90° manual

B: Branch

V: CVC male  
VF: CVC female  
W.: Butt weld  
\*3

C: PCTFE  
A: PFA  
P: PI  
M.: Metal  
(body material)

A: A flow  
B: B flow  
C: C flow  
\*2

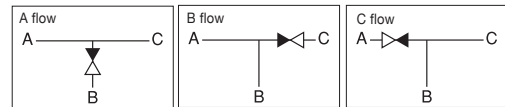
Not shown: Standard  
POC: Push-lock type

Not shown: Blue (standard)  
BK: Black SL: Silver  
GR: Green WH: White  
RD: Red YE: Yellow

STD-316L : Mechanical Polished+SUS316L  
EP-316L : Electro Polished + SUS316L  
SEP-316LE : Electro Polished +SUS316LE

\*1 For a metal seat, we can handle only the 1/4" size. Since the valve dimensions change if a metal seat is selected, contact our sales representative for details.  
\*2 The branched flow type is to the right of the diagram.  
\*3 In cases where there are different types of fittings, please note them in the order of Port A, B, and C of the internal flow in the diagram to the right. Example) In the case where A port = CVC female, B port = CVC female, C port = CVC male, the model will be "VFVVFV."

### Flow direction



## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	F	M	M <sub>1</sub>	M <sub>2</sub>
	KD2QB-VC	1/8" CVC Male	1.61 (41.0)	2.28 (58.0)	0.28 (7.0)	0.85 (21.5)	1.46 (37.0)	0.75 (19.0)	0.75 (19.0)	0.81 (20.5)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14×1.0
	KD4QB-VC	1/4" CVC Male	2.24 (57.0)	2.87 (73.0)	0.43 (11.0)	1.06 (27.0)	1.93 (49.0)	1.02 (26.0)	0.98 (25.0)	1.10 (28.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD8QB-VC	1/2" CVC Male	3.03 (77.0)	3.39 (86.0)	0.63 (16.0)	1.32 (33.5)	1.93 (49.0)	1.42 (36.0)	1.42 (36.0)	1.52 (38.5)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD2QB-VFC	1/8" CVC Female	2.20 (56.0)	2.28 (58.0)	0.28 (7.0)	0.85 (21.5)	1.46 (37.0)	0.75 (19.0)	0.75 (19.0)	1.10 (28.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14×1.0
	KD4QB-VFC	1/4" CVC Female	2.78 (70.6)	2.87 (73.0)	0.43 (11.0)	1.06 (27.0)	1.93 (49.0)	1.02 (26.0)	0.98 (25.0)	1.37 (34.8)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD8QB-VFC	1/2" CVC Female	3.27 (83.0)	3.39 (86.0)	0.63 (16.0)	1.32 (33.5)	1.93 (49.0)	1.42 (36.0)	1.42 (36.0)	1.63 (41.5)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD2QB-WC	1/8" Butt Weld	1.65 (42.0)	2.28 (58.0)	0.28 (7.0)	0.85 (21.5)	1.46 (37.0)	0.75 (19.0)	0.75 (19.0)	0.83 (21.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)	M14×1.0
	KD4QB-WC	1/4" Butt Weld	2.13 (54.0)	2.87 (73.0)	0.43 (11.0)	1.06 (27.0)	1.93 (49.0)	1.02 (26.0)	0.98 (25.0)	1.06 (27.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD6QB-WC	3/8" Butt Weld	2.72 (69.0)	3.39 (86.0)	0.63 (16.0)	1.32 (33.5)	1.93 (49.0)	1.42 (36.0)	1.42 (36.0)	1.36 (34.5)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0
	KD8QB-WC	1/2" Butt Weld	2.72 (69.0)	3.39 (86.0)	0.63 (16.0)	1.32 (33.5)	1.93 (49.0)	1.42 (36.0)	1.42 (36.0)	1.36 (34.5)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)	M20×1.0



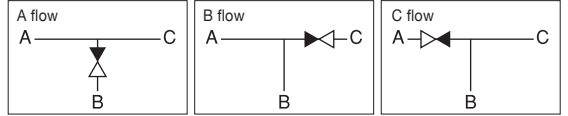


## Product Code Table

Model	Size	Operation	Valve shape	Connection	Seat material	Flow	Options	Grade + Body material
<b>KD</b>	<b>4</b>	<b>C</b>	<b>B</b>	<b>VF</b>	<b>C</b>	<b>A</b>		<b>EP-316L</b>
KD-type diaphragm valve	2:1/8" 4:1/4" 6:3/8" 8:1/2"	C: Normally closed O: Normally open	B: Branched flow	V: CVC male VF: CVC female W.: Butt weld *3	C:PCTFE A:PFA P:PI M.: Metal (body material)	A: A flow B: B flow C: C flow *2	Not shown: Standard S: With open/close sensor	STD-316L : Mechanical Polished + SUS316L EP-316L : Electro Polished + SUS316L SEP-316LE : Electro Polished + SUS316LE

- \*1 For a metal seat, we can handle only the 1/8" and the 1/4" size. Since the valve dimensions change if a metal seat is selected, contact our sales representative for details.  
 \*2 The branched flow type is to the right of the diagram.  
 \*3 In cases where there are different types of fittings, please note them in the order of Port A, B, and C of the internal flow in the diagram to the right.  
 Example) In the case where A port = CVC female, B port = CVC female, C port = CVC male, the model will be "VVFV."

### Flow direction



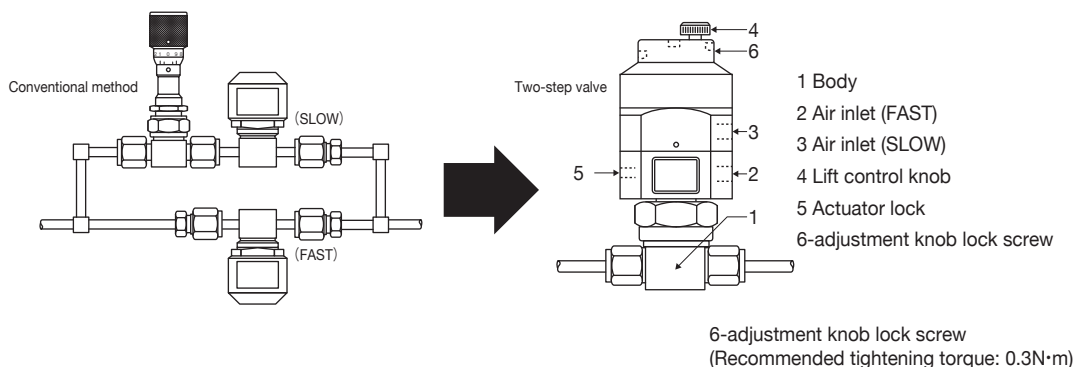
## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	H	H <sub>1</sub>	A	B	C	F	P	M	M <sub>1</sub>
	KD2□B-VC	1/8" CVC Male	1.61 (41.0)	2.09 (53.0)	0.28 (7.0)	1.10 (28.0)	0.75 (19.0)	0.75 (19.0)	0.81 (20.5)	Rc1/8	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	KD4□B-VC	1/4" CVC Male	2.24 (57.0)	2.64 (67.0)	0.43 (11.0)	1.56 (39.7)	1.02 (26.0)	0.98 (25.0)	1.10 (28.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD8CB-VC	1/2" CVC Male	3.03 (77.0)	3.31 (84.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	1.52 (38.5)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD8OB-VC		3.03 (77.0)	3.03 (77.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	1.52 (38.5)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD2□B-VFC	1/8" CVC Female	2.20 (56.0)	2.09 (53.0)	0.28 (7.0)	1.10 (28.0)	0.75 (19.0)	0.75 (19.0)	1.10 (28.0)	Rc1/8	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	KD4□B-VFC	1/4" CVC Female	2.78 (70.6)	2.64 (67.0)	0.43 (11.0)	1.56 (39.7)	1.02 (26.0)	0.98 (25.0)	1.37 (34.8)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD8CB-VFC	1/2" CVC Female	3.27 (83.0)	3.31 (84.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	1.63 (41.5)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD8OB-VFC		3.27 (83.0)	3.03 (77.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	1.63 (41.5)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD2□B-WC	1/8" Butt Weld	1.65 (42.0)	2.09 (53.0)	0.28 (7.0)	1.10 (28.0)	0.75 (19.0)	0.75 (19.0)	0.83 (21.0)	Rc1/8	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	KD4□B-WC	1/4" Butt Weld	2.13 (54.0)	2.64 (67.0)	0.43 (11.0)	1.56 (39.7)	1.02 (26.0)	0.98 (25.0)	1.06 (27.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD6CB-WC	3/8" Butt Weld	2.72 (69.0)	3.31 (84.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	1.36 (34.5)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD6OB-WC		2.72 (69.0)	3.03 (77.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	1.36 (34.5)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD8CB-WC	1/2" Butt Weld	2.72 (69.0)	3.31 (84.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	1.36 (34.5)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD8OB-WC		2.72 (69.0)	3.03 (77.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	1.36 (34.5)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)

# Two-step Valve

## Comparison with conventional methods



## Features

- ① An epoch-making combination valve that enables manual flow control and fully on/fully off two-stage control by means of an air actuator.
- ② The control of the fluid by means of a diaphragm rather than a needle realizes a particle free valve and speedy gas supply.
- ③ Significant cost savings and space savings are possible by eliminating bypass pipings and control instrumentation required for conventional systems.
- ④ The optimal Cv value for the usage objectives can be set arbitrarily.

## Precautions

- ① In cases where the pressure inside the valve is lower than atmospheric pressure, micro-adjustments of the Cv value may be difficult. Set the Cv value under the same conditions as those of actual usage.
- ② Flow rates outside the adjustment range will not be reproducible.
- ③ The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ④ For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.

## Specifications

Size		KD4T (1/4")	KD8T (1/2")
Cv		Adjustment range: 0.02-0.12, when fully open: 0.27	Adjustment range: 0.05-0.26, when fully open: 0.7
Maximum Operating Pressure		142psig(0.98MPa (G))	
Wetted Area Volume		0.085in <sup>3</sup> (1.4cm <sup>3</sup> )	0.451in <sup>3</sup> (7.4cm <sup>3</sup> )
		Straight flow, CVC male, OPEN state	
Fluid Temperature	PCTFE	-10°C~80°C (when open)	
	PFA	-10°C~120°C (150°C actual results 500,000 cycles)	
	PI	-10°C~150°C	
Atmospheric Temperature		-10°C~60°C	
Leak Rates	Across the Seat He Leak Test Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)	
	Inboard He Leak Test Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)	
Actuation Pressure		58~101psig (0.4~0.7MPa (G))	
Cycle Life		2 million cycles	

## Product Grade

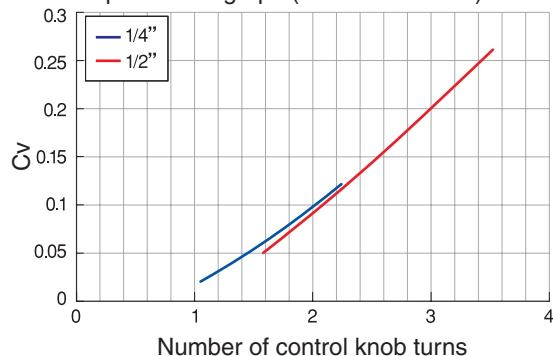
Grade	STD	EP	SEP
Body Material	SUS316L		SUS316LE (Double melt material)
Surface Roughness	≤ Ra 0.5 μm / 20 μin	≤ Ra 0.13 μm / 5 μin	
Polish	Mechanical Polished	Electro Polished	
Cleaning	Degreasing + Precision cleaning		
Packaging	Single bagged package	Double bagged package	

Precautions:  
Two-step valves have a structure that controls the flow by adjusting the lift amount of the on/off valve of the diaphragm so that the usage conditions may cause the pre-set flow to change.

## Wetted Area Material

Body	SUS316L, SUS316LE (Double melt material)
Seat	PCTFE, PFA, PI
Diaphragm	Cobalt alloy

Two-step valve Cv graph (reference values)





## Product Code Table

Model	Size	Operation	Valve shape	Connection	Seat material	Grade + Body material
<b>KD</b>	<b>4</b>	<b>T</b>	<b>S</b>	<b>V</b>	<b>C</b>	<b>EP-316L</b>
KD-type diaphragm valve	4: 1/4" 8: 1/2"	Two-step	S: Straight A: Angle (Option) B: Branch (Option)	V: CVC male VF: CVC female	C: PCTFE A: PFA P: PI	STD-316L : Mechanical Polished + SUS316L EP-316L : Electro Polished + SUS316L SEP-316LE : Electro Polished + SUS316LE

## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	P	M	M <sub>1</sub>
	KD4TS-VC	1/4" CVC Male	2.24 (57.0)	4.76 (121.0)	0.43 (11.0)	3.86 (98.0)	1.73 (44.0)	1.02 (26.0)	0.98 (25.0)	2- Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD8TS-VC	1/2" CVC Male	3.03 (77.0)	5.57 (141.5)	0.63 (16.0)	4.47 (113.5)	2.28 (58.0)	1.42 (36.0)	1.42 (36.0)	2- Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD4TS-VFC	1/4" CVC Female	2.78 (70.6)	4.76 (121.0)	0.43 (11.0)	3.86 (98.0)	1.73 (44.0)	1.02 (26.0)	0.98 (25.0)	2- Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD8TS-VFC	1/2" CVC Female	3.27 (83.0)	5.57 (141.5)	0.63 (16.0)	4.47 (113.5)	2.28 (58.0)	1.42 (36.0)	1.42 (36.0)	2- Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)

Note: The air supply inlet is on the backside of the illustration.

# High-temperature Valve (250°C)

## ■ Features

- ⊙ All metal components of the valve enable use at 250°C.
- ⊙ KITZ SCT's design minimizes sharp drops in the Cv value in a high temperature environment and realizes high performance, a compact size, and a low price.
- ⊙ Because all of the component parts of the valve, including the actuator, and not just the parts that come into contact with the gas, can be used in a high-temperature environment, the valves can be used optimally in metal-organic processes where thermal uniformity is essential.

## ■ Specifications

Size		KD4K (1/4")	KD8K (1/2")
Cv	Room Temperature	0.25	0.7
	250°C (Reference Value)	0.23	0.5
	250°C Internal Vacuum (Reference Value)	0.2	0.35
Maximum Operating Pressure		142psig (0.98MPa(G))	
Wetted Area Volume		0.079in <sup>3</sup> (1.3cm <sup>3</sup> )	0.457in <sup>3</sup> (7.5cm <sup>3</sup> )
Fluid Temperature		20°C~250°C	
Leak Rates (Room temperature when shipped)	Across the Seat He Leak Test Rates	≤ 3×10 <sup>-9</sup> sccs (≤ 3×10 <sup>-10</sup> Pa·m <sup>3</sup> /s) *	
	Inboard He Leak Test Rates	≤ 3×10 <sup>-9</sup> sccs (≤ 3×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)	
Actuation Pressure		72~101psig (0.5~0.7MPa(G))	
Cycle Life		50,000 cycles	

\* Using interior leak rate: ≤ 3×10<sup>-4</sup> sccs (≤ 3×10<sup>-5</sup> Pa·m<sup>3</sup>/s)

## ■ Product Grade

Grade	EP	SEP
Body Material	SUS316L	SUS316LE (Double melt material)
Surface Roughness	≤ Ra 0.13 μm / 5 μin	
Polish	Electro Polished	
Cleaning	Degreasing + Precision cleaning	
Packaging	Double bagged package	

## ■ Wetted Area Material

Body	SUS316L, SUS316LE (Double melt material)
Seat	Metal (body material)
Diaphragm	Cobalt alloy

## ■ Precautions

- ① The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ② For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.



## ■ Product Code Table

Model	Size	Operation	Valve shape	Connection	Seat material	Grade + Body material	
<b>KD</b>	<b>4</b>	<b>K</b>	<b>C</b>	<b>S</b>	<b>V</b>	<b>M</b>	<b>EP-316L</b>
KD-type diaphragm valve	4: 1/4" 6: 3/8" 8: 1/2"	High-temperature type C: Normally closed O: Normally open	S: Straight A: Angle (Option) B: Branch (Option)	V: CVC male VF: CVC female W: Butt weld	M: Metal	EP-316L : Electro Polished + SUS316L SEP-316LE : Electro Polished + SUS316LE	

## ■ Dimensions

Unit: inch (mm)

Model	Type	Connection	L	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	P	M	M <sub>1</sub>
	KD4KCS-VM	1/4" CVC Male	2.24 (57.0)	4.00 (101.5)	0.43 (11.0)	2.78 (70.5)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1/8" Compression fittings	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD4KOS-VM-66		2.24 (57.0)	3.72 (94.5)	0.43 (11.0)	2.50 (63.5)	2.44 (62.0)	1.02 (26.0)	0.98 (25.0)	1/8" Compression fittings	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD8KCS-VM	1/2" CVC Male	3.03 (77.0)	5.12 (130.0)	0.63 (16.0)	3.70 (94.0)	2.44 (62.0)	1.42 (36.0)	1.42 (36.0)	1/8" Compression fittings	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD8KOS-VM-18		3.03 (77.0)	4.80 (122.0)	0.63 (16.0)	3.39 (86.0)	2.68 (68.0)	1.42 (36.0)	1.42 (36.0)	1/8" Compression fittings	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD4KCS-VFM	1/4" CVC Female	2.78 (70.6)	4.00 (101.5)	0.43 (11.0)	2.78 (70.5)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1/8" Compression fittings	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD4KOS-VFM		2.78 (70.6)	3.72 (94.5)	0.43 (11.0)	2.50 (63.5)	2.44 (62.0)	1.02 (26.0)	0.98 (25.0)	1/8" Compression fittings	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD8KCS-VFM	1/2" CVC Female	3.27 (83.0)	5.12 (130.0)	0.63 (16.0)	3.70 (94.0)	2.44 (62.0)	1.42 (36.0)	1.42 (36.0)	1/8" Compression fittings	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD8KOS-VFM		3.27 (83.0)	4.80 (122.0)	0.63 (16.0)	3.39 (86.0)	2.68 (68.0)	1.42 (36.0)	1.42 (36.0)	1/8" Compression fittings	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD4KCS-WM	1/4" Butt Weld	2.13 (54.0)	4.00 (101.5)	0.43 (11.0)	2.78 (70.5)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1/8" Compression fittings	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD4KOS-WM		2.13 (54.0)	3.72 (94.5)	0.43 (11.0)	2.50 (63.5)	2.44 (62.0)	1.02 (26.0)	0.98 (25.0)	1/8" Compression fittings	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	KD6KCS-WM	3/8" Butt Weld	2.72 (69.0)	5.12 (130.0)	0.63 (16.0)	3.70 (94.0)	2.44 (62.0)	1.42 (36.0)	1.42 (36.0)	1/8" Compression fittings	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD6KOS-WM		2.72 (69.0)	4.80 (122.0)	0.63 (16.0)	3.39 (86.0)	2.68 (68.0)	1.42 (36.0)	1.42 (36.0)	1/8" Compression fittings	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD8KCS-WM	1/2" Butt Weld	2.72 (69.0)	5.12 (130.0)	0.63 (16.0)	3.70 (94.0)	2.44 (62.0)	1.42 (36.0)	1.42 (36.0)	1/8" Compression fittings	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	KD8KOS-WM		2.72 (69.0)	4.80 (122.0)	0.63 (16.0)	3.39 (86.0)	2.68 (68.0)	1.42 (36.0)	1.42 (36.0)	1/8" Compression fittings	1.10 (28.0)	2-M5 Depth 0.20 (5.0)



# LOTO Valve

## ■ Features

- ⊙ When the valve is closed, the handle goes down and the key hole can be seen.
- ⊙ When opening the valve, pull up the handle and turn it.
- ⊙ By passing through a padlock or wire (minimum  $\phi 3.18$ ), lock-out and tag-out of the valve can be conducted. This helps to prevent an erroneous operation by the operator.
- ⊙ As an option, the operation can be met during OPEN status, or both OPEN-CLOSE statuses.

## ■ Specifications

Size	KD4QL (1/4")	KD8QL (1/2")
Cv	0.27	0.7
Maximum Operating Pressure	142psig(0.98MPa(G))	
Wetted Area Volume	0.085in <sup>3</sup> (1.4cm <sup>3</sup> )	0.451in <sup>3</sup> (7.4cm <sup>3</sup> )
Fluid Temperature	PCTFE	-10°C~80°C
	PFA	-10°C~150°C
Leak Rates	Across the Seat He Leak Test Rates	$\leq 1 \times 10^{-9}$ sccs ( $\leq 1 \times 10^{-10}$ Pa·m <sup>3</sup> /s)
	Inboard He Leak Test Rates	$\leq 1 \times 10^{-9}$ sccs ( $\leq 1 \times 10^{-10}$ Pa·m <sup>3</sup> /s)
Cycle Life	1 million cycles	

## ■ Product Grade

Grade	STD	EP	SEP
Seat	PCTFE, PFA		
Body Material	SUS316L		SUS316LE (Double melt material)
Surface Roughness	$\leq Ra0.5\mu\text{m}/20\mu\text{in}$	$\leq Ra 0.13 \mu\text{m} / 5 \mu\text{in}$	
Cleaning	Degreasing + Precision cleaning		
Packaging	Single bagged package	Double bagged package	

## ■ Precautions

- ① The valves are not guaranteed to function if their exterior is submerged inside a vacuum.

## ■ Wetted Area Material

Body	SUS316L, SUS316LE (Double melt material)
Seat	PCTFE, PFA
Diaphragm	Cobalt alloy



## ■ Product Code Table

Model	Size	Operation	Valve Shape	Connection	Seat Material	Options	Grade + Body Material
<b>KD</b>	<b>4</b>	<b>QL</b>	<b>S</b>	<b>V</b>	<b>C</b>	<b>LOC</b>	<b>EP-316L</b>
KD-type Diaphragm Valve	4: 1/4" 6: 3/8" 8: 1/2"	QL: 90° manual with LOTO	S: Straight	V: CVC male VF: CVC female S: Compression W: Butt weld	C: PCTFE A: PFA	LOC: Open and close locked	STD-316L: Mechanical Polished + SUS316L EP-316L: Electro Polished + SUS316L SEP-316LE: Electro Polished + SUS316LE

## ■ KD LOTO Dimensions

Unit: inch (mm)

Model	Type	Connection	L	L <sub>1</sub>	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	P	M	M <sub>1</sub>
	KD4QLS-VC	1/4" CVC Male	2.25 (57.0)	-	3.82 (97.0)	0.43 (11.0)	1.06 (27.0)	1.52 (38.5)	1.02 (26.0)	0.99 (25.0)	0.31 (7.8)	1.00 (25.4)	2-M5X0.8 (0.20 (5.0))
	KD8QLS-VC	1/2" CVC Male	3.03 (77.0)	-	4.37 (111.0)	0.63 (16.0)	1.30 (33.0)	1.52 (38.5)	1.42 (36.0)	1.42 (36.0)	0.31 (7.8)	1.10 (28.0)	2-M5X0.8 (0.20 (5.0))
	KD4QLS-VFC	1/4" CVC Female	2.78 (70.6)	-	3.82 (97.0)	0.43 (11.0)	1.06 (27.0)	1.52 (38.5)	1.02 (26.0)	0.99 (25.0)	0.31 (7.8)	1.00 (25.4)	2-M5X0.8 (0.20 (5.0))
	KD8QLS-VFC	1/2" CVC Female	3.27 (83.0)	-	4.37 (111.0)	0.63 (16.0)	1.30 (33.0)	1.52 (38.5)	1.42 (36.0)	1.42 (36.0)	0.31 (7.8)	1.10 (28.0)	2-M5X0.8 (0.20 (5.0))
	KD4QLS-SC	1/4" Compression Fitting	1.89 (48.0)	0.31 (7.9)	3.82 (97.0)	0.43 (11.0)	1.06 (27.0)	1.52 (38.5)	1.02 (26.0)	0.99 (25.0)	0.31 (7.8)	1.00 (25.4)	2-M5X0.8 (0.20 (5.0))
	KD6QLS-SC	3/8" Compression Fitting	2.52 (64.0)	0.37 (9.5)	4.37 (111.0)	0.63 (16.0)	1.30 (33.0)	1.52 (38.5)	1.42 (36.0)	1.42 (36.0)	0.31 (7.8)	1.10 (28.0)	2-M5X0.8 (0.20 (5.0))
	KD8QLS-SC	1/2" Compression Fitting	2.52 (64.0)	0.50 (12.7)	4.37 (111.0)	0.63 (16.0)	1.30 (33.0)	1.52 (38.5)	1.42 (36.0)	1.42 (36.0)	0.31 (7.8)	1.10 (28.0)	2-M5X0.8 (0.20 (5.0))
	KD4QLS-WC	1/4" Butt Weld	2.13 (54.0)	-	3.82 (97.0)	0.43 (11.0)	1.06 (27.0)	1.52 (38.5)	1.02 (26.0)	0.99 (25.0)	0.31 (7.8)	1.00 (25.4)	2-M5X0.8 (0.20 (5.0))
	KD6QLS-WC	3/8" Butt Weld	2.72 (69.0)	-	4.37 (111.0)	0.63 (16.0)	1.30 (33.0)	1.52 (38.5)	1.42 (36.0)	1.42 (36.0)	0.31 (7.8)	1.10 (28.0)	2-M5X0.8 (0.20 (5.0))
	KD8QLS-WC	1/2" Butt Weld	2.72 (69.0)	-	4.37 (111.0)	0.63 (16.0)	1.30 (33.0)	1.52 (38.5)	1.42 (36.0)	1.42 (36.0)	0.31 (7.8)	1.10 (28.0)	2-M5X0.8 (0.20 (5.0))

# Quick Turn Valve

## ■ Features

- Quick Turn series always keeps the status either “fully open” or “fully closed”.
- Butterfly shaped handle is excellent in visibility and operability.

## ■ Specifications

Size	KD4QT (1/4")	KD8QT (1/2")
Cv	0.27	0.7
Maximum Operating Pressure	142psig (0.98MPa(G))	
Wetted Area Volume	0.085in <sup>3</sup> (1.4cm <sup>3</sup> )	0.451in <sup>3</sup> (7.4cm <sup>3</sup> )
Fluid Temperature	PCTFE	-10°C~+80°C
	PFA, PI	-10°C~+150°C
Atmospheric Temperature	-10°C~+60°C	
Leak Rates	Across the Seat He Leak Test Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)
	Inboard He Leak Test Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)
Cycle Life	2 million cycles	

## ■ Product Grade

Grade	STD	EP	SEP
Seat	PCTFE, PFA, PI		
Body Material	SUS316L		SUS316LE (Double melt material)
Surface Roughness	≤Ra0.5μm/20μin	≤ Ra 0.13 μm / 5 μin	
Cleaning	Degreasing + Precision cleaning		
Packaging	Single bagged package	Double bagged package	

## ■ Precautions

- ① The valves are not guaranteed to function if their exterior is submerged inside a vacuum.

## ■ Wetted Area Material

Body	SUS316L, SUS316LE (Double melt material)
Seat	PCTFE, PFA, PI
Diaphragm	Cobalt alloy



## ■ Product Code Table

Model	Size	Operation	Valve shape	Connection	Seat material	Grade + Body material
<b>KD</b>	<b>4</b>	<b>QT</b>	<b>S</b>	<b>V</b>	<b>C</b>	<b>EP-316L</b>
KD-type diaphragm Valve	4: 1/4" 6: 3/8" 8: 1/2"	QT: 90° manual Quick turn	S: Straight	V: CVC male VF: CVC female S: Compression W: Butt weld	C: PCTFE P: PI A: PFA	STD-316L: Mechanical Polished + SUS316L EP-316L: Electro Polished + SUS316L SEP-316L: Electro Polished + SUS316LE

## ■ KD Quick Turn Dimensions

Unit: inch (mm)

Model	Type	Connection	L	L <sub>1</sub>	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	M	M <sub>1</sub>
	KD4QTS-VC	1/4" CVC Male	2.25 (57.0)	-	3.23 (82.0)	0.43 (11.0)	1.06 (27.0)	1.39 (35.3)	1.02 (26.0)	0.99 (25.0)	1.00 (25.4)	2-M5X0.8 0.20 (5.0)
	KD8QTS-VC	1/2" CVC Male	3.03 (77.0)	-	4.18 (106.0)	0.63 (16.0)	-	1.81 (46.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5X0.8 0.20 (5.0)
	KD4QTS-VFC	1/4" CVC Female	2.78 (70.6)	-	3.23 (82.0)	0.43 (11.0)	1.06 (27.0)	1.39 (35.3)	1.02 (26.0)	0.99 (25.0)	1.00 (25.4)	2-M5X0.8 0.20 (5.0)
	KD8QTS-VFC	1/2" CVC Female	3.27 (83.0)	-	4.18 (106.0)	0.63 (16.0)	-	1.81 (46.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5X0.8 0.20 (5.0)
	KD4QTS-SC	1/4" Compression Fitting	1.89 (48.0)	0.31 (7.9)	3.23 (82.0)	0.43 (11.0)	1.06 (27.0)	1.39 (35.3)	1.02 (26.0)	0.99 (25.0)	1.00 (25.4)	2-M5X0.8 0.20 (5.0)
	KD6QTS-SC	3/8" Compression Fitting	2.52 (64.0)	0.37 (9.5)	4.18 (106.0)	0.63 (16.0)	-	1.81 (46.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5X0.8 0.20 (5.0)
	KD8QTS-SC	1/2" Compression Fitting	2.52 (64.0)	0.50 (12.7)	4.18 (106.0)	0.63 (16.0)	-	1.81 (46.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5X0.8 0.20 (5.0)
	KD4QTS-WC	1/4" Butt Weld	2.13 (54.0)	-	3.23 (82.0)	0.43 (11.0)	1.06 (27.0)	1.39 (35.3)	1.02 (26.0)	0.99 (25.0)	1.00 (25.4)	2-M5X0.8 0.20 (5.0)
	KD6QTS-WC	3/8" Butt Weld	2.72 (69.0)	-	4.18 (106.0)	0.63 (16.0)	-	1.81 (46.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5X0.8 0.20 (5.0)
	KD8QTS-WC	1/2" Butt Weld	2.72 (69.0)	-	4.18 (106.0)	0.63 (16.0)	-	1.81 (46.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5X0.8 0.20 (5.0)

\* L<sub>1</sub> dimension for compression fitting is the dimension of how far tube inserted from end of body.

# KCD

## Compact Diaphragm Valves

The KCD series consists of KD series-based direct diaphragm valves that have been made more compact.

The basic performance is that of high-spec valves that inherited everything from the KD series, our high-end model.

### ■ Features

- ① With the KCD series, KITZ SCT succeeded in reducing the internal volume to 0.96 cm<sup>3</sup>, versus the 1.4 cm<sup>3</sup> (1/4" CVC male, open position).
- ② While keeping the same design as KD series, it achieved 20% reduction in external size, and the weight is also reduced. (Available only in 1/4")
- ③ The durability performance was not compromised, and achieved 2 million cycles (actual value) for the Pneumatic valve and 100,000 cycles (actual value) for the manual valve.
- ④ The highest level production environment and polish quality makes them suitable for use with high purity gases and achieves ultimate particle performance.

### ■ Specifications

Size		KCD4 (1/4")
Cv		0.1
Maximum Operating Pressure		142psig (0.98MPa(G))
Wetted area Volume		0.058in <sup>3</sup> (0.96cm <sup>3</sup> )
		Straight flow, CVC male, OPEN state
Fluid Temperature	PCTFE	
	PFA	Manual Valve
		Pneumatic Valve
	PI	
Atmospheric Temperature		-10°C~80°C
Leak Rates	Across the Seat He Leak Test Rates	-10°C~150°C
	Inboard He Leak Test Rates	-10°C~120°C (150°C actual results 500,000 cycles)
Actuation Pressure		-10°C~150°C
		-10°C~60°C
		≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)
		≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)
Cycle Life*		58~101psig (0.4~0.7MPa(G))
		100,000 cycles
		2 million cycles

\* Test Condition / Seat material : PCTFE Gas : N2 Pressure : 0.98MPa

### ■ Product Grade

Grade	STD	EP	SEP
Body Material	SUS316L		SUS316LE (Double melt material)
Surface Roughness	≤ Ra 0.5 μm / 20 μin	≤ Ra 0.13 μm / 5 μin	
Polish	Mechanical Polished	Electro Polished	
Cleaning	Degreasing + Precision cleaning		
Packaging	Single bagged package	Double bagged package	

### ■ Wetted Area Material

Body	SUS316L, SUS316LE (Double melt material)
Seat	PCTFE, PFA, PI
Diaphragm	Cobalt alloy

### ■ Precautions

- ① The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ② For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.



## Product Code Table

Model	Size	Operation	Valve Shape	Connection	Seat Material	Handle Color	Grade + Body Material
<b>KCD</b>	<b>4</b>	<b>M</b>	<b>S</b>	<b>VF</b>	<b>C</b>	<b>RD</b>	<b>EP-316L</b>
KCD-type Diaphragm Valve	1/4"	M: 180° Manual Q: 90° Manual	S: Straight A: Angle L: L-shape B: Branch *1	V: CVC Male VF: CVC Female W: Butt Weld	C: PCTFE A: PFA P: PI	Not Shown: Blue (Standard) RD: Red GR: Green SL: Silver WH: White BK: Black YE: Yellow	STD-316L: Mechanical Polished + SUS316L EP-316L: Electro Polished + SUS316L SEP-316LE: Electro Polished + SUS316LE

\*1 For branch type, etc., please ask the sales and service representative.

## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	M	M <sub>1</sub>	M <sub>2</sub>
	KCD4MS-VC	1/4" CVC Male	2.05 (52.0)	2.70 (68.5)	0.43 (11.0)	0.96 (24.5)	1.26 (32.0)	0.79 (20.0)	0.79 (20.0)	0.67 (17.0)	2-M5 Depth 0.20 (5.0)	M14×1.0
	KCD4MS-VFC	1/4" CVC Female	2.60 (66.0)	2.70 (68.5)	0.43 (11.0)	0.96 (24.5)	1.26 (32.0)	0.79 (20.0)	0.79 (20.0)	0.67 (17.0)	2-M5 Depth 0.20 (5.0)	M14×1.0
	KCD4MS-WC	1/4" Butt Weld	1.97 (50.0)	2.70 (68.5)	0.43 (11.0)	0.96 (24.5)	1.26 (32.0)	0.79 (20.0)	0.79 (20.0)	0.67 (17.0)	2-M5 Depth 0.20 (5.0)	M14×1.0



## Product Code Table

Model	Size	Operation	Valve shape	Connection	Seat material	Grade + body material
<b>KCD</b>	<b>4</b>	<b>C</b>	<b>S</b>	<b>VF</b>	<b>C</b>	<b>EP-316L</b>
KCD-type diaphragm valve	1/4"	C: Normally closed O: Normally open	S: Straight A: Angle L: L-shape B: Branch *1	V: CVC male VF: CVC female W: Butt weld	C:PCTFE A:PFA P:PI	STD-316L: Mechanical Polished +SUS316L EP-316L: Electro Polished+ SUS316L SEP-316LE: Electro Polished + SUS316LE

\*1 For branched flow type, etc., please ask the sales representative.

## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	H	H <sub>1</sub>	A	B	C	P	M	M <sub>1</sub>
	KCD4□S-VC	1/4" CVC Male	2.05 (52.0)	2.40 (61.0)	0.43 (11.0)	1.38 (35.0)	0.79 (20.0)	0.79 (20.0)	Rc1/8	0.67 (17.0)	2-M5 Depth 0.20 (5.0)
	KCD4□S-VFC	1/4" CVC Female	2.60 (66.0)	2.40 (61.0)	0.43 (11.0)	1.38 (35.0)	0.79 (20.0)	0.79 (20.0)	Rc1/8	0.67 (17.0)	2-M5 Depth 0.20 (5.0)
	KCD4□S-WC	1/4" Butt Weld	1.97 (50.0)	2.40 (61.0)	0.43 (11.0)	1.38 (35.0)	0.79 (20.0)	0.79 (20.0)	Rc1/8	0.67 (17.0)	2-M5 Depth 0.20 (5.0)

# VLCD

## Compact Diaphragm Valves

The VLCD series achieves commonization of parts and utilizes a forged body while maintaining the performance of the conventional KD series.

### Features

- Achieves 20% reduction in external size as compared to the conventional KD series. (Available only in 1/4")
- Achieves low cost pricing through commonization of parts and utilization of a forged body.
- Because the cleaning and inspection processes are the same as our conventional products, the VLCD series can be used in the manufacturing of Semiconductor, FPD, and LED production devices.

### Specifications

Size	VLCD4 (1/4")	
Cv	0.1	
Maximum Operating Pressure	142psig(0.98MPa (G))	
Wetted Area Volume	0.056in <sup>3</sup> (0.93cm <sup>3</sup> )	
Fluid Temperature	-10°C~80°C	
Leak Rates	Across the Seat He Leak Test Rates	$\leq 1 \times 10^{-9}$ sccs ( $\leq 1 \times 10^{-10}$ Pa·m <sup>3</sup> /s)
	Inboard He Leak Test Rates	$\leq 1 \times 10^{-9}$ sccs ( $\leq 1 \times 10^{-10}$ Pa·m <sup>3</sup> /s)
Atmospheric Temperature	-10°C~60°C	
Actuation Pressure (Pneumatic)	58~101psig (0.4~0.7MPa (G))	
Cycle Life *	2 million cycles	

\* Test Condition / Seat material : PCTFE Gas : N<sub>2</sub> Pressure : 0.98MPa

### Precautions

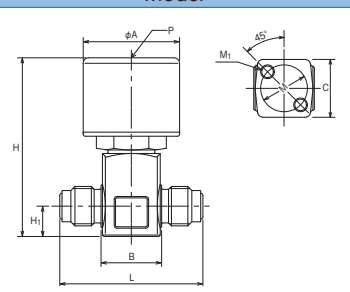
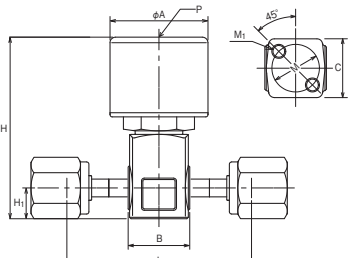
- ① The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ② For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.

### Product Code Table

Model <b>VLCD</b>	Size <b>4</b>	Operation <b>C</b>	Valve Shape <b>S</b>	Connection <b>VF</b>	Seat Material <b>C</b>	Grade + Body material <b>EP-316L</b>
VLCD-type Diaphragm Valve	4:1/4"	C: Normally Closed O: Normally Open	S: Straight	V: CVC Male VF: CVC Female	C:PCTFE	STD-316L : Mechanical Polished + SUS316L EP-316L : Electro Polished + SUS316L SEP-316LE : Electro Polished + SUS316LE

### VLCD Dimensions

Unit: inch (mm)

Model	Type	Connection	L	H	H <sub>1</sub>	A	B	C	P	M	M <sub>1</sub>
	VLCD4CS-VC-2734	1/4" CVC Male	2.05 (52.0)	2.56 (65.0)	0.43 (11.0)	1.38 (35.0)	0.87 (22.0)	0.87 (22.0)	Rc1/8	0.67 (17.0)	2-M5 Depth 0.20 (5.0)
	VLCD4CS-VFC-2735	1/4" CVC Female	2.60 (66.0)	2.56 (65.0)	0.43 (11.0)	1.38 (35.0)	0.87 (22.0)	0.87 (22.0)	Rc1/8	0.67 (17.0)	2-M5 Depth 0.20 (5.0)

### Product Grade

Grade	STD	EP	SEP
Body Material	SUS316L		SUS316LE (Double melt material)
Surface Roughness	$\leq Ra 0.5 \mu m / 20 \mu in$		$\leq Ra 0.13 \mu m / 5 \mu in$
Polish	Mechanical Polished		Electro Polished
Cleaning	Degreasing + Precision cleaning		
Packaging	Single bagged package		Double bagged package

### Wetted Area Material

Body	SUS316L, SUS316LE (Double melt material)
Seat	PCTFE
Diaphragm	Cobalt Alloy



# VLD

## Diaphragm Valves

The VLD series embodies the pursuit of simplicity and utility found in the KD series. The VLD series achieves simplification through the minimization of the number of critical parts.

### ■ Features

- While maintaining the same degree of basic performance, material, and cleaning, the VLD series realizes security and low cost through overall reduction of the number of parts and changes to the review and processing methodology.
- Because the cleaning and inspection processes are the same as our conventional model, there is no change in reliability and durability.
- Achieves maximum particle performance for high-purity gases used in semiconductor by the highest-level manufacturing environment and polishing process.

### ■ Specifications

Size	VLD4 (1/4")	VLD8 (1/2")
Cv	0.27	0.7
Maximum Operating Pressure	142psig(0.98MPa (G))	
Wetted Area Volume	0.085in <sup>3</sup> (1.4cm <sup>3</sup> )	0.451in <sup>3</sup> (7.4cm <sup>3</sup> )
Fluid Temperature	PCTFE, PFA (Pneumatic)	-10°C~80°C
	PFA(Manual)	-10°C~150°C
	PI(Manual)	-10°C~150°C
Leak Rates	Across the Seat He Leak Test Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)
	Inboard He Leak Test Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)
Atmospheric Temperature	-10°C~60°C	
Actuation Pressure (Pneumatic)	58~101psig (0.4~0.7MPa (G))	
Cycle Life *	Manual Valve	100,000 cycles
	Pneumatic Valve	4 million cycles

\* Test Condition / Seat material : PCTFE Gas : N<sub>2</sub> Pressure : 0.98MPa

### ■ Product Grade

Grade	STD	EP	SEP
Body Materials	SUS316L		SUS316LE (Double Melt Material)
Surface Roughness	≤Ra0.5μm/20μin		≤ Ra 0.13 μm / 5 μin
Polish	Mechanical Polish		Electro Polish
Cleaning	Degreasing + Precision Cleaning		
Packing	Single Bagged Package		Double Bagged Package

### ■ Wetted Area Material

Body	SUS316L, SUS316LE (Double Melt Material)
Seat *	PCTFE, PFA, PI
Diaphragm	Cobalt Alloy

\* PI Seats only available with Manual Valves

### ■ Precautions

- The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.



### ■ Product Code Table

Model	Size	Operation	Valve Shape	Connection	Seat Material	Handle Color	Grade + Body Material
VLD	4	M	S	VF	C	RD	EP-316L
<p>VLD-Type Diaphragm Valve</p> <p>4: 1/4" 6: 3/8" 8: 1/2"</p> <p>M: 270° Manual</p> <p>S: Straight B: Branch *1</p> <p>V: CVC Male VF: CVC Female S: Compression</p> <p>C: PCTFE A: PFA P: PI</p> <p>Options: Not Shown: Blue (Standard) RD: Red GR: Green SL: Silver BK: Black YE: Yellow BR: Brown</p> <p>STD-316L : Mechanical Polish + SUS316L EP-316L : Electro Polish + SUS316L SEP-316LE : Electro Polish + SUS316LE</p>							

\*1 For details, please speak with a sales representative.

### ■ VLD Dimensions

Unit: inch (mm)

Model	Type	Connection	L	L <sub>1</sub> *	H	H <sub>1</sub>	A	B	C	M	M <sub>1</sub>
	VLD4MS-VC	1/4" CVC Male	2.24 (57.0)	-	2.46 (62.4)	0.43 (11.0)	1.65 (42.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	VLD8MS-VC	1/2" CVC Male	3.03 (77.0)	-	2.99 (76.0)	0.63 (16.0)	1.65 (42.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	VLD4MS-VFC	1/4" CVC Male	2.78 (70.6)	-	2.46 (62.4)	0.43 (11.0)	1.65 (42.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	VLD8MS-VFC	1/2" CVC Male	3.27 (83.0)	-	2.99 (76.0)	0.63 (16.0)	1.65 (42.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	VLD4MS-SC	1/4" Compression	1.89 (48.0)	0.31 (7.9)	2.46 (62.4)	0.43 (11.0)	1.65 (42.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	VLD6MS-SC	3/8" Compression	2.52 (64.0)	0.37 (9.5)	2.99 (76.0)	0.63 (16.0)	1.65 (42.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	VLD8MS-SC	1/2" Compression	2.52 (64.0)	0.50 (12.7)	2.99 (76.0)	0.63 (16.0)	1.65 (42.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)

\* L<sub>1</sub> dimension for compression fitting is the dimension of how far tube is inserted from the end of the body.

**Product Code Table**



Model	Size	Operation	Valve Shape	Connection	Seat Material	Grade + Body material
<b>VLD</b>	<b>4</b>	<b>C</b>	<b>S</b>	<b>VF</b>	<b>C</b>	<b>EP-316L</b>
VLD-type Diaphragm Valve	4: 1/4" 6: 3/8" 8: 1/2"	C: Normally Closed	S: Straight	V: CVC Male VF: CVC Female S: Compression	C: PCTFE A: PFA	STD-316L : Mechanical Polished + SUS316L EP-316L : Electro Polished + SUS316L SEP-316LE : Electro Polished + SUS316LE

**VLD Dimensions**

Unit: inch (mm)

Model	Type	End connection	L	L <sub>1</sub> *	H	H <sub>1</sub>	A	B	C	P	M	M <sub>1</sub>
	VLD4CS-VC	1/4" CVC Male	2.24 (57.0)	-	2.58 (65.5)	0.43 (11.0)	1.56 (39.7)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	VLD8CS-VC	1/2" CVC Male	3.03 (77.0)	-	3.31 (84.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	VLD4CS-VFC	1/4" CVC Female	2.78 (70.6)	-	2.58 (65.5)	0.43 (11.0)	1.56 (39.7)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	VLD8CS-VFC	1/2" CVC Female	3.27 (83.0)	-	3.31 (84.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	VLD4CS-SC	1/4" Compression	1.89 (48.0)	0.31 (7.9)	2.58 (65.5)	0.43 (11.0)	1.56 (39.7)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	VLD6CS-SC	3/8" Compression	2.52 (64.0)	0.37 (9.5)	3.31 (84.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	VLD8CS-SC	1/2" Compression	2.52 (64.0)	0.50 (12.7)	3.31 (84.0)	0.63 (16.0)	2.17 (55.0)	1.42 (36.0)	1.42 (36.0)	Rc1/8	1.10 (28.0)	2-M5 Depth 0.20 (5.0)

\* L<sub>1</sub> dimension for compression fitting is the dimension of how far tube is inserted from the end of the body.

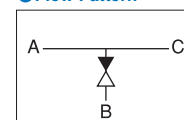
**Product Code Table**



Model	Size	Operation	Valve Shape	Main Pipe Connection	Main Pipe Size	B-Port Connection	Seat Material	Handle Color	Grade + Body Material
<b>VLD</b>	<b>4</b>	<b>M</b>	<b>B</b>	<b>W</b>	<b>15A</b>	<b>V</b>	<b>C</b>	<b>RD</b>	<b>EP-316L</b>
VLD-type Diaphragm Valve	4: 1/4" 6: 3/8" 8: 1/2"	270° Manual	Branch	Butt Weld	15A, 20A 25A, 32A 40A, 50A 65A	V: CVC Male S: Compression *1	C: PCTFE A: PFA P: PI	Not shown: Blue (Standard) RD: Red GR: Green SL: Silver BK: Black YE: Yellow BR: Brown	STD-316L : Mechanical Polish + SUS316L EP-316L : Electro Polish + SUS316L SEP-316LE : Electro Polish + SUS316LE *2

\*1 For B-port fitting types other than shown, please consult a sales representative.  
\*2 Regardless of body material, the T-shape section of ports A-C will be SUS316L.

**Flow Pattern**



**VLD Branch Dimensions**

Unit: inch (mm)

Model	Type	B port End Connection	L	H	H <sub>1</sub>	D	T	A	F
	VLD4MB-W15AVC	1/4" CVC Male	4.33 (110.0)	3.62 (92.0)	1.22 (31.0)	0.85 (21.7)	0.06 (1.65)	1.65 (42.0)	1.85 (47.0)
	VLD4MB-W25AVC		4.72 (120.0)	4.13 (105.0)	1.49 (37.8)	1.34 (34.0)	0.06 (1.65)	1.65 (42.0)	1.85 (47.0)
	VLD4MB-W32AVC		5.51 (140.0)	4.74 (120.5)	1.91 (48.5)	1.68 (42.7)	0.06 (1.65)	1.65 (42.0)	2.32 (59.0)
	VLD4MB-W40AVC		5.51 (140.0)	5.00 (127.0)	2.05 (52.0)	1.91 (48.6)	0.06 (1.65)	1.65 (42.0)	2.32 (59.0)
	VLD4MB-W50AVC		5.51 (140.0)	5.49 (139.5)	2.30 (58.5)	2.38 (60.5)	0.06 (1.65)	1.65 (42.0)	2.32 (59.0)
	VLD4MB-W65AVC		5.91 (150.0)	6.10 (155.0)	2.62 (66.5)	3.00 (76.3)	0.08 (2.1)	1.65 (42.0)	2.32 (59.0)
	VLD8MB-W15AVC	1/2" CVC Male	4.33 (110.0)	4.29 (109.0)	1.54 (39.0)	0.85 (21.7)	0.06 (1.65)	1.65 (42.0)	2.58 (65.5)
	VLD8MB-W25AVC		4.72 (120.0)	4.80 (122.0)	1.81 (46.1)	1.34 (34.0)	0.06 (1.65)	1.65 (42.0)	2.58 (65.5)
	VLD8MB-W32AVC		5.51 (140.0)	5.18 (131.5)	2.01 (51.0)	1.68 (42.7)	0.06 (1.65)	1.65 (42.0)	2.58 (65.5)
	VLD8MB-W40AVC		6.30 (160.0)	5.45 (138.5)	2.17 (55.0)	1.91 (48.6)	0.06 (1.65)	1.65 (42.0)	2.58 (65.5)
	VLD8MB-W50AVC		6.30 (160.0)	6.00 (152.5)	2.48 (63.0)	2.38 (60.5)	0.06 (1.65)	1.65 (42.0)	2.58 (65.5)
	VLD8MB-W65AVC		7.09 (180.0)	6.59 (167.5)	2.76 (70.0)	3.00 (76.3)	0.08 (2.1)	1.65 (42.0)	2.58 (65.5)

Note: For dimensions other than the model dimensions, header production is possible by special order. Please consult a sales representative.

# WD

Diaphragm Valves for Liquid Gas Delivery

The WD series valves are high performance diaphragm valves suitable for liquid materials.

## ■ Features

- ⊙ Capable of using high purity liquid materials such as TEOS used for semiconductor and liquid-crystal production.
- ⊙ Seat assembly can be replaced on the user side while maintaining the valve's basic properties, particle performance, and purge characteristics.
- ⊙ Effective in improving ease of maintenance and reducing running costs for chemical canisters that require periodic cleaning.
- ⊙ Seat assembly replacement tool is the same for both manual and pneumatic operation.
- ⊙ With an actuator diameter of  $\phi 39.7\text{mm}$ , it is possible to support a 40mm line pitch.

## ■ Specifications

Size		WD4 (1/4")
Cv	Manual Valve	0.3
	Pneumatic Valve	0.23
Wetted Area Volume		0.164in <sup>3</sup> (2.7cm <sup>3</sup> )
Maximum Operating Pressure	Manual Valve	2.94MPa (G)
	Pneumatic Valve	142psig(0.98MPa (G))
Fluid Temperature	PCTFE	-10°C~80°C
	PFA	-10°C~150°C
	PI(Manual)	-10°C~150°C
Atmospheric Temperature		-10°C~60°C, (PFA Pneumatic valve: -10°C~150°C)
Leak Rates	Across the Seat He Leak Test Rates	$\leq 1 \times 10^{-9}$ sccs ( $\leq 1 \times 10^{-10}$ Pa·m <sup>3</sup> /s)
	Inboard He Leak Test Rates	$\leq 1 \times 10^{-9}$ sccs ( $\leq 1 \times 10^{-10}$ Pa·m <sup>3</sup> /s)
Actuation Pressure (Pneumatic Valve Only)		72~101psig (0.5~0.7MPa (G))
Cycle Life		30,000 cycles

## ■ Product Grade

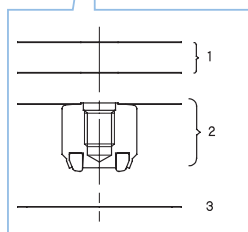
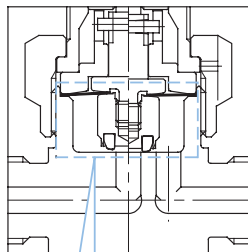
Grade	STD	EP
Body Material	SUS316L	
Surface Roughness	$\leq \text{Ra } 0.5 \mu\text{m} / 20 \mu\text{in}$	$\leq \text{Ra } 0.13 \mu\text{m} / 5 \mu\text{in}$
Polish	Mechanical Polish	Electro Polish
Cleaning	Degreasing + Precision Cleaning	
Packaging	Single Bagged Package	Double Bagged Package

## ■ Wetted Area Material

Body	SUS316L
Seat*	PCTFE, PFA, PI
Diaphragm	SUS316L

\* PI Seats only available with Manual Valves

## ■ Maintenance Parts



No	Part Name	Type	Quantity	
1	Backup Diaphragm	WD4-D4M0241-06	2	
2	Diaphragm sub-ASSY	PCTFE	WD4-D4M0321-01	1
		PFA	WD4-D4M0809-A10	1
		PI	WD4-DX4M0651-A10	1
3	Gasket	WD4-D4M0241-11	1	

## ■ Precautions

- ① The valves are not guaranteed to function if their exterior is submerged inside a vacuum.

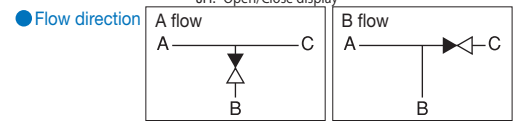


**Product Code Table**

<b>Model</b> WD	<b>Size</b> 4	<b>Operation</b> M	<b>Valve shape</b> S	<b>Connection</b> VF	<b>Seat material</b> C	<b>Nut</b> □	<b>Flow</b> A	<b>Options</b> Handle color RD	<b>Grade + Body material</b> EP-316L
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WG-type diaphragm valve    4 : 1/4"    M: Manual    S: Straight  
B: Branch    V: CVC male    VF: CVC female    C: PCTFE    Not shown: standard    A: A flow    Not shown: blue (standard)  
W: 1/4" butt weld    W6: 3/8" butt weld    W8: 1/2" butt weld    N: Panel Nut mounted    B: B flow    RD: Red  
GR: Green    SL: Silver    WH: White    BK: Black    YE: Yellow    JH: Open/Close display

\*1 Branched flow valves are shown in the diagram to the right.



**Dimensions**

Unit: inch (mm)

Model	Type	Connection	L	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	M	M <sub>1</sub>	M <sub>2</sub>
 WD4MS-VC-N-588		1/4" CVC Male	2.24 (57.0)	2.72 (69.0)	0.43 (11.0)	1.06 (27.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
 WD4MS-VFC-N-589		1/4" CVC Female	2.78 (70.6)	2.72 (69.0)	0.43 (11.0)	1.06 (27.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0
 WD4MS-W6C-N-544		3/8" Butt Weld	1.89 (48.0)	2.72 (69.0)	0.43 (11.0)	1.06 (27.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)	M20×1.0

**Product Code Table**

<b>Model</b> WD	<b>Size</b> 4	<b>Operation</b> C	<b>Valve Shape</b> S	<b>Connection</b> V	<b>Material</b> C	<b>Grade + Body Material</b> EP-316L
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WD-type Diaphragm Valve    4: 1/4"    C: Normally Closed    S: Straight    V: CVC Male    VF: CVC Female    W: Butt Weld    C: PCTFE    A: PFA    STD-316L : Mechanical Polish + SUS316L    EP-316L : Electro Polish + SUS316L

**Dimensions**

Unit: inch (mm)

Model	Type	Connection	L	H	H <sub>1</sub>	A	B	C	P	M	M <sub>1</sub>
 WD4CS-VC		1/4" CVC Male	2.24 (57.0)	3.23 (82.0)	0.43 (11.0)	1.56 (39.7)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
 WD4CS-VFC		1/4" CVC Female	2.78 (70.6)	3.23 (82.0)	0.43 (11.0)	1.56 (39.7)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
 WD4CS-W6C-2970		3/8" Butt Weld	1.89 (48.0)	3.23 (82.0)	0.43 (11.0)	1.56 (39.7)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)

# RD

## High Pressure Diaphragm Valves

The RD series diaphragm valves are high pressure valves with compact body and lower operation torque.

### ■ Features

#### Manual Valve

- ⊙ Large diameter wheel handle provides smooth operation feel.
- ⊙ The valves employ a large window and easy-to-see OPEN/CLOSE display so that the state of the valve can be confirmed at a glance.

#### Pneumatic Valve

- ⊙ The new type vertical cylindrical actuator accommodates a minimal line pitch, so there is no need to worry about the orientation after installation.
- ⊙ A compact, high-durability actuator is realized as a result of adopting KITZ SCT's patented wedge-type force booster.
- ⊙ The rigidity of the joint between the actuator and the body is further increased for improved reliability.

### ■ Specifications

Size		RD2 (1/8")	RD4 (1/4")	RD8 (1/2")
Cv		0.04	0.1	0.25
Maximum Operating Pressure		2350psig (16.2MPa (G))	16.2MPa (G), 20.6MPa (G) Metal: 8.5MPa (G), 3.43MPa (G)	3000psig (20.6MPa (G))
Wetted area Volume		0.009in <sup>3</sup> (0.15cm <sup>3</sup> )	0.061in <sup>3</sup> (1.0cm <sup>3</sup> )	0.397in <sup>3</sup> (6.7cm <sup>3</sup> )
		Straight flow, CVC male, OPEN state		
Fluid Temperature	PCTFE, PVDF	-10°C~42°C		
	Metal	-10°C~100°C		
	PI *	-10°C~150°C		
Atmospheric Temperature	PCTFE, PVDF	-10°C~40°C		
	PI, Metal	-10°C~60°C		
Leak Rates	Across the Seat He Leak Test Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s) Metal: ≤ 3×10 <sup>-9</sup> sccs (≤ 3×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)		
	Inboard He Leak Test Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)		
Actuation Pressure(Pneumatic Valve Only)		58~101psig (0.4~0.7MPa (G))		
Cycle Life	Manual Valve	30,000 cycles; metal not supported		
	Pneumatic Valve	100,000 cycles; metal (1/4" only) 10,000 cycles		

\* In case ends connection are Female CVC, please refer to pp 47 for fluid temperature Range

### ■ Product Grade

Grade	STD	EP	SEP
Body Material	SUS316L		SUS316LE (Double melt material)
Surface Roughness	≤ Ra 0.5 μm / 20 μin	≤ Ra 0.13 μm / 5 μin	
Polish	Mechanical Polished	Electro Polished	
Cleaning	Degreasing + Precision cleaning		
Packaging	Single bagged package	Double bagged package	

### ■ Wetted Area Material

Body	SUS316L, SUS316LE (Double melt material)
Seat	PCTFE, PI, PVDF, Metal
Diaphragm	Cobalt alloy

### ■ Precautions

- ① The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ② For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.





## Product Code Table

Model	Size	Operation	Valve shape	Pressure	Connection	Seat material	Options	Grade + Body material
<b>RD</b>	<b>4</b>	<b>M</b>	<b>S</b>	<b>H</b>	<b>V</b>	<b>C</b>		<b>EP-316L</b>
RD-type diaphragm valve	2:1/8" 4:1/4" 8:1/2"	M:270° manual *1	S: Straight	H:16.2MPa(G) L:20.6MPa(G)	V:CVC male VF:CVC female S: Compression W: Butt weld	C: PCTFE P: PI D: PVDF	Not shown: Blue (standard) RD: Red GR: Green SL: Silver BK: Black YE: Yellow BR: Brown WH: White	STD-316L : Mechanical Polished + SUS316L EP-316L : Electro Polished + SUS316L SEP-316LE : Electro Polished + SUS316LE

\*1 1/8" size is 180° manual.

## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	L <sub>i</sub> *	H	H <sub>i</sub>	A	B	C	M	M <sub>i</sub>
	RD2MSH-VC	1/8" CVC Male	1.61 (41.0)	-	2.36 (60.0)	0.28 (7.0)	1.34 (34.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	RD4MSH-VC	1/4" CVC Male	2.24 (57.0)	-	3.19 (81.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD4MSI-VC		2.24 (57.0)	-	3.19 (81.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD8MSI-VC	1/2" CVC Male	3.03 (77.0)	-	3.90 (99.0)	0.63 (16.0)	2.36 (60.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	RD2MSH-VFC	1/8" CVC Female	2.20 (56.0)	-	2.36 (60.0)	0.28 (7.0)	1.34 (34.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	RD4MSH-VFC	1/4" CVC Female	2.78 (70.6)	-	3.19 (81.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD4MSI-VFC		2.78 (70.6)	-	3.19 (81.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD8MSI-VFC	1/2" CVC Female	3.27 (83.0)	-	3.90 (99.0)	0.63 (16.0)	2.36 (60.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	RD2MSH-SC	1/8" Compression Fittings	3.06 (77.8)	0.24 (6.1)	2.36 (60.0)	0.28 (7.0)	1.34 (34.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	RD4MSH-SC	1/4" Compression Fittings	1.89 (48.0)	0.31 (7.9)	3.19 (81.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD4MSI-SC		1.89 (48.0)	0.31 (7.9)	3.19 (81.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD8MSI-SC	1/2" Compression Fittings	2.52 (64.0)	0.50 (12.7)	3.90 (99.0)	0.63 (16.0)	2.36 (60.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	RD2MSH-WC	1/8" Butt Weld	1.65 (42.0)	-	2.36 (60.0)	0.28 (7.0)	1.34 (34.0)	0.75 (19.0)	0.75 (19.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	RD4MSH-WC	1/4" Butt Weld	2.13 (54.0)	-	3.19 (81.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD4MSI-WC		2.13 (54.0)	-	3.19 (81.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD8MSI-WC	1/2" Butt Weld	2.72 (69.0)	-	3.90 (99.0)	0.63 (16.0)	2.36 (60.0)	1.42 (36.0)	1.42 (36.0)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)

\* L<sub>i</sub> dimension for compression fitting is the dimension of how far tube inserted from end of body.



## Product Code Table

Model	Size	Operation	Valve shape	Pressure	Connection	Seat material	Grade + Body material
<b>RD</b>	<b>4</b>	<b>C</b>	<b>S</b>	<b>H</b>	<b>V</b>	<b>C</b>	<b>EP-316L</b>
RD-type diaphragm valve	2:1/8" 4:1/4" 6:3/8" 8:1/2"	Normally closed	Straight	H:16.2MPa(G) I:20.6MPa(G) G:8.5MPa(G) *1 E:3.43MPa(G) *1	V: CVC male VF: CVC female S: Compression W.: Butt weld	C:PCTFE P:PI D:PVDF M:Metal	STD-316L: +SUS316L EP-316L: + SUS316L SEP-316LE: +SUS316LE

\*1 For seat materials, pressures G and E are supported for metal only.  
(Metal seats support only 1/4" size pneumatic valves.)

## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	L <sub>1</sub> *	H	H <sub>1</sub>	A	B	C	P	M	M <sub>1</sub>
	RD2CSH-VC	1/8" CVC Male	1.61 (41.0)	-	3.52 (89.5)	0.28 (7.0)	1.26 (32.0)	0.75 (19.0)	0.75 (19.0)	Rc1/8	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	RD4CSH-VC-971	1/4" CVC Male	2.24 (57.0)	-	3.90 (99.0)	0.43 (11.0)	1.50 (38.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD4CSI-VC-972		2.24 (57.0)	-	3.90 (99.0)	0.43 (11.0)	1.50 (38.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD8CSI-VC	1/2" CVC Male	3.03 (77.0)	-	7.38 (187.5)	0.63 (16.0)	2.20 (56.0)	1.42 (36.0)	1.42 (36.0)	Rc1/4	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	RD2CSH-VFC	1/8" CVC Female	2.20 (56.0)	-	3.52 (89.5)	0.28 (7.0)	1.26 (32.0)	0.75 (19.0)	0.75 (19.0)	Rc1/8	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	RD4CSH-VFC-1371	1/4" CVC Female	2.78 (70.6)	-	3.90 (99.0)	0.43 (11.0)	1.50 (38.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD4CSI-VFC-1295		2.78 (70.6)	-	3.90 (99.0)	0.43 (11.0)	1.50 (38.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD8CSI-VFC	1/2" CVC Female	3.27 (83.0)	-	7.38 (187.5)	0.63 (16.0)	2.20 (56.0)	1.42 (36.0)	1.42 (36.0)	Rc1/4	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	RD2CSH-SC	1/8" Compression Fittings	3.06 (77.8)	0.24 (6.1)	3.52 (89.5)	0.28 (7.0)	1.26 (32.0)	0.75 (19.0)	0.75 (19.0)	Rc1/8	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	RD4CSH-SC-1484	1/4" Compression Fittings	1.89 (48.0)	0.31 (7.9)	3.90 (99.0)	0.43 (11.0)	1.50 (38.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD4CSI-SC-2546		1.89 (48.0)	0.31 (7.9)	3.90 (99.0)	0.43 (11.0)	1.50 (38.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD8CSI-SC-2546	1/2" Compression Fittings	2.52 (64.0)	0.50 (12.7)	7.38 (187.5)	0.63 (16.0)	2.20 (56.0)	1.42 (36.0)	1.42 (36.0)	Rc1/4	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	RD2CSH-WC	1/8" Butt Weld	1.65 (42.0)	-	3.52 (89.5)	0.28 (7.0)	1.26 (32.0)	0.75 (19.0)	0.75 (19.0)	Rc1/8	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	RD4CSH-WC-1408	1/4" Butt Weld	2.13 (54.0)	-	3.90 (99.0)	0.43 (11.0)	1.50 (38.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD4CSI-WC-1571		2.13 (54.0)	-	3.90 (99.0)	0.43 (11.0)	1.50 (38.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD8CSI-WC	1/2" Butt Weld	2.72 (69.0)	-	7.38 (187.5)	0.63 (16.0)	2.20 (56.0)	1.42 (36.0)	1.42 (36.0)	Rc1/4	1.10 (28.0)	2-M5 Depth 0.20 (5.0)

\* L<sub>1</sub> dimension for compression fitting is the dimension of how far tube inserted from end of body.

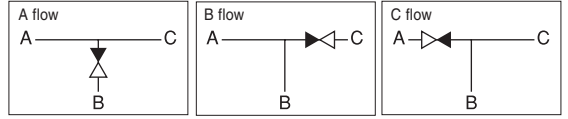


## Product Code Table

Model	Size	Operation	Valve shape	Pressure	Connection	Seat material	Flow	Handle color	Grade + Body material
<b>RD</b>	<b>4</b>	<b>M</b>	<b>B</b>	<b>H</b>	<b>V</b>	<b>C</b>	<b>A</b>		<b>EP-316L</b>
RD-type diaphragm valve	2:1/8" 4:1/4" 8:1/2"	240° manual *2	Branch	H:16.2MPa(G) L:20.6MPa(G)	V: CVC male VF: CVC female W: Butt weld	C:PCTFE P:PI D:PVDF	A: A flow B: B flow C: C flow *1	Not shown: Blue (standard) RD: Red GR: Green SI: Silver BK: Black YE: Yellow BR: Brown WH: White	STD-316L : Mechanical Polished+SUS316L EP-316L : Electro Polished+SUS316L SEP-316LE : Electro Polished+SUS316LE

\*1 Branched flow are shown in the diagram to the right.  
\*2 1/8" size is 180° manual.

### Flow direction



## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	H	H <sub>1</sub>	A	B	C	F	M	M <sub>1</sub>
	RD2MBH-VC	1/8" CVC Male	1.61 (41.0)	2.36 (60.0)	0.28 (7.0)	1.34 (34.0)	0.75 (19.0)	0.75 (19.0)	0.81 (20.5)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	RD4MBH-VC	1/4" CVC Male	2.24 (57.0)	3.19 (81.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.10 (28.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD4MBI-VC		2.24 (57.0)	3.19 (81.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.10 (28.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD8MBI-VC	1/2" CVC Male	3.03 (77.0)	3.90 (99.0)	0.63 (16.0)	2.36 (60.0)	1.42 (36.0)	1.42 (36.0)	1.52 (38.5)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	RD2MBH-VFC	1/8" CVC Female	2.20 (56.0)	2.36 (60.0)	0.28 (7.0)	1.34 (34.0)	0.75 (19.0)	0.75 (19.0)	1.10 (28.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	RD4MBH-VFC	1/4" CVC Female	2.78 (70.6)	3.19 (81.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.37 (34.8)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD4MBI-VFC		2.78 (70.6)	3.19 (81.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.37 (34.8)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD8MBI-VFC	1/2" CVC Female	3.27 (83.0)	3.90 (99.0)	0.63 (16.0)	2.36 (60.0)	1.42 (36.0)	1.42 (36.0)	1.63 (41.5)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	RD2MBH-WC	1/8" Butt Weld	1.65 (42.0)	2.36 (60.0)	0.28 (7.0)	1.34 (34.0)	0.75 (19.0)	0.75 (19.0)	0.83 (21.0)	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	RD4MBH-WC	1/4" Butt Weld	2.13 (54.0)	3.19 (81.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.04 (26.5)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD4MBI-WC		2.13 (54.0)	3.19 (81.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.04 (26.5)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD8MBI-WC	1/2" Butt Weld	2.72 (69.0)	3.90 (99.0)	0.63 (16.0)	2.36 (60.0)	1.42 (36.0)	1.42 (36.0)	1.36 (34.5)	1.10 (28.0)	2-M5 Depth 0.20 (5.0)

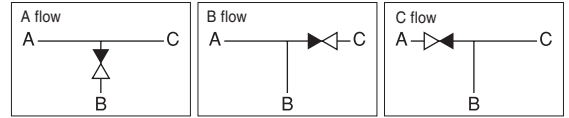


## Product Code Table

Model	Size	Operation	Valve shape	Pressure	Connection	Seat material	Flow	Grade + Body material
<b>RD</b>	<b>4</b>	<b>C</b>	<b>B</b>	<b>H</b>	<b>V</b>	<b>C</b>	<b>A</b>	<b>EP-316L</b>
RD-type diaphragm valve	2:1/8" 4:1/4" 8:1/2"	Normally closed	Branch	H: 16.2MPa(G) I: 20.6MPa(G) G: 8.5MPa(G) *2 E: 3.43MPa(G) *2	V: CVC male VF: CVC female W: Butt weld	C: PCTFE P: PI D: PVDF M: Metal	A: A flow B: B flow C: C flow *1	STD-316L : Mechanical Polished + SUS316L EP-316L : Electro Polished + SUS316L SEP-316LE : Electro Polished + SUS316LE

- \*1 Branched flow are shown in the diagram to the right.  
\*2 For seat materials, pressures G and E are supported for metal only. (Metal seats support only 1/4" size pneumatic valves.)

### Flow direction



## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	H	H <sub>1</sub>	A	B	C	F	P	M	M <sub>1</sub>
	RD2CBH-VC	1/8" CVC Male	1.61 (41.0)	3.52 (89.5)	0.28 (7.0)	1.26 (32.0)	0.75 (19.0)	0.75 (19.0)	0.81 (20.5)	Rc1/8	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	RD4CBH-VC	1/4" CVC Male	2.24 (57.0)	3.90 (99.0)	0.43 (11.0)	1.50 (38.0)	1.02 (26.0)	0.98 (25.0)	1.10 (28.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD4CBI-VC		2.24 (57.0)	3.90 (99.0)	0.43 (11.0)	1.50 (38.0)	1.02 (26.0)	0.98 (25.0)	1.10 (28.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD8CBI-VC	1/2" CVC Male	3.03 (77.0)	7.38 (187.5)	0.63 (16.0)	2.20 (56.0)	1.42 (36.0)	1.42 (36.0)	1.52 (38.5)	Rc1/4	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	RD2CBH-VFC	1/8" CVC Female	2.20 (56.0)	3.52 (89.5)	0.28 (7.0)	1.26 (32.0)	0.75 (19.0)	0.75 (19.0)	1.10 (28.0)	Rc1/8	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	RD4CBH-VFC	1/4" CVC Female	2.78 (70.6)	3.90 (99.0)	0.43 (11.0)	1.50 (38.0)	1.02 (26.0)	0.98 (25.0)	1.37 (34.8)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD4CBI-VFC		2.78 (70.6)	3.90 (99.0)	0.43 (11.0)	1.50 (38.0)	1.02 (26.0)	0.98 (25.0)	1.37 (34.8)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD8CBI-VFC	1/2" CVC Female	3.27 (83.0)	7.38 (187.5)	0.63 (16.0)	2.20 (56.0)	1.42 (36.0)	1.42 (36.0)	1.63 (41.5)	Rc1/4	1.10 (28.0)	2-M5 Depth 0.20 (5.0)
	RD2CBH-WC	1/8" Butt Weld	1.65 (42.0)	3.52 (89.5)	0.28 (7.0)	1.26 (32.0)	0.75 (19.0)	0.75 (19.0)	0.83 (21.0)	Rc1/8	0.67 (17.0)	2-M4 Depth 0.20 (5.0)
	RD4CBH-WC	1/4" Butt Weld	2.13 (54.0)	3.90 (99.0)	0.43 (11.0)	1.50 (38.0)	1.02 (26.0)	0.98 (25.0)	1.04 (26.5)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD4CBI-WC		2.13 (54.0)	3.90 (99.0)	0.43 (11.0)	1.50 (38.0)	1.02 (26.0)	0.98 (25.0)	1.04 (26.5)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	RD8CBI-WC	1/2" Butt Weld	2.72 (69.0)	7.38 (187.5)	0.63 (16.0)	2.20 (56.0)	1.42 (36.0)	1.42 (36.0)	1.36 (34.5)	Rc1/4	1.10 (28.0)	2-M5 Depth 0.20 (5.0)

# VRD

## Diaphragm Valves

The "VRD" series is a 1/4" high pressure direct diaphragm valve for 20.6 Mpa enclosed gas pressure.

Perfect for machines with internal plumbing and gas lines which must completely prevent leaks relating to high pressure, high temperature, and high vacuum (Cylinder Cabinet, BSGS).

### ■ Features

- ⊙ Takes the same performance as the existing RD series and achieves lower cost through the reduction of the number of parts.
- ⊙ Operation torque reduced compared to RD series.
- ⊙ Compact size compared to conventional products by reducing height by 6mm.
- ⊙ More simple, compact, and with lower cost compared to previous designs.

### ■ Specifications

Size		VRD4 (1/4")
Cv		≤0.1
Maximum Operating Pressure		3000psig(20.6MPa (G))
Wetted Area Volume		1.0cm <sup>3</sup>
Fluid Temperature	PCTFE, PVDF	-10°C~42°C
	PI	-10°C~150°C
Atmospheric Temperature	PCTFE, PVDF	-10°C~40°C
	PI	-10°C~60°C
Leak Rates	Across the Seat He Leak Test Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)
	Inboard He Leak Test Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)
Cycle Life		50,000 cycles

### ■ Product Grade

Grade	STD	EP	SEP
Body Material	SUS316L		SUS316LE (Double melt material)
Surface Roughness	≤Ra0.5μm/20μin		≤ Ra 0.13 μm / 5 μin
Polish	Mechanical Polish	Electro Polish	
Cleaning	Degreasing + Precision Cleaning		
Packaging	Single Bagged Package	Double Bagged Package	

### ■ Wetted Area Material

Body	SUS316L, SUS316LE (Double Melt Material)
Seat	PCTFE, PI, PVDF
Diaphragm	Cobalt Alloy

### ■ Precautions

- ⊙ The valves are not guaranteed to function if their exterior is submerged inside a vacuum.



### ■ Product Code Table

Model	Size	Operation	Valve shape	Pressure	Connection	Seat material	Grade + Body material
VRD	4	M	S	I	VF	C	EP-316L
VRD-type Diaphragm Valve	4:1/4"	240° manual	S: Straight B: Branch	I:20.6MPa	V: CVC Male VF: CVC Female S: Compression W: Butt Weld	C:PCTFE A:PI D:PVDF	STD-316L : Mechanical Polish + SUS316L EP-316L : Electro Polish + SUS316L SEP-316LE : Electro Polish + SUS316LE

### ■ VRD Dimensions

Unit: inch (mm)

Model	Type	Connection	L	L <sup>*</sup>	H	H <sub>1</sub>	A	B	C	M	M <sub>1</sub>
	VRD4MSI-VC	1/4" CVC Male	2.24 (57.0)	-	2.95 (75.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	VRD4MSI-VFC	1/4" CVC Female	2.78 (70.6)	-	2.95 (75.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	VRD4MSI-SC	1/4" Compression	1.89 (48.0)	0.31 (7.9)	2.95 (75.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	VRD4MSI-WC	1/4" Butt Weld	2.13 (54.0)	-	2.95 (75.0)	0.43 (11.0)	2.05 (52.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.20 (5.0)

\* L<sub>1</sub> dimension for compression fitting is the dimension of how far the tube is inserted from the end of the body.



# ZCD

## Zero Volume Valve

ZCD series diaphragm is minimized the dead volume within the valve and enhanced the gas displacement feature drastically.

### Features

- By minimizing the dead volume from the seat to the main flow channel while closing the valve, the gas displacement feature becomes excellent.
- In order to prevent vacuum closing of the diaphragm and to improve the opening speed, the lift (ASSY) section forcibly lifts the diaphragm.
- The lift (ASSY) section can be replaced by the user.

### Specifications

Size		ZCD4Q	ZCD4C
Cv		0.1	
Maximum Operating Pressure		142psig(0.98MPa(G))	
Wetted Area Volume		0.054in <sup>3</sup> (0.9cm <sup>3</sup> )	
Dead Volume of Bifurcation		0.007cm <sup>3</sup> *1	
Fluid Temperature	PCTFE	-10°C~+80°C	
	PI	-10°C~+60°C	
Atmospheric Temperature		-10°C~+60°C	
Actuation Pressure		-	72.52~101.53psig (0.5~0.7MPa(G))
Leak Rates	Across the Seat He Leak Test Rates	≤ 1×10 <sup>-9</sup> sccs(≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)	
	Inboard He Leak Test Rates	≤ 1×10 <sup>-9</sup> sccs(≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)	
Cycle Life	Pneumatic Valve	30,000 cycles	2 million cycles*2

### Product Grade

Grade	STD	EP
Seat	PCTFE, PFA*3	
Body Materials	SUS316L	
Surface Roughness	≤ Ra 0.5 μm / 20 μin	≤ Ra 0.13 μm / 5 μin
Polish	Mechanical Polish	Electro Polish
Cleaning	Degreasing + Precision cleaning	
Packing	Single bagged package	Double bagged package

### Wetted Area Material

Body	SUS316L, SUS316LE (Double melt material)
Seat	PCTFE, PFA*3
Diaphragm	Cobalt alloy

### Precautions

- The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
  - For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.
- \*1 For header pipe 1/4" size. Varies depending on the header pipe size, etc.  
\*2 For fluid temperatures of 80°C and below. For PFA (NC), 300,000 cycles at 150°C and 600,000 cycles at 120°C  
\*3 Only pneumatic valve (NC) setting is available for PFA seats.



### Product Code Table

Model	Size	Operation	Valve shape	Connection	Seat material	Grade + Body material
ZCD	4	Q	S	V	C	EP-316L

Zero Volume-type diaphragm valve    4: 1/4"    QT: 90° manual    S: Straight  
A: Angle    L: L-shape    B: Branch  
V: CVC male    VF: CVC female    C: PCTFE  
S: Compression    W: Butt weld  
STD-316L: Mechanical Polished + SUS316L  
EP-316L : Electro Polished + SUS316L

\*1 Please contact sales representative for branch type.

### ZCD Manual Dimensions

Unit: inch (mm)

Model	Type	Connection	L	L <sub>1</sub> *	H	H <sub>1</sub>	A	B	C	P	M	M <sub>1</sub>
ZCD4QS-VC		1/4" CVC Male	2.05 (52.0)	-	3.11 (79.0)	0.43 (11.0)	1.02 (26.0)	0.87 (22.0)	0.83 (21.0)	-	1.00 (25.4)	2-M5X0.8 0.20 (5.0)
ZCD4QS-VFC		1/4" CVC Female	2.60 (66.0)	-	3.11 (79.0)	0.43 (11.0)	1.02 (26.0)	0.87 (22.0)	0.83 (21.0)	-	1.00 (25.4)	2-M5X0.8 0.20 (5.0)
ZCD4QS-SC		1/4" Compression Fitting	1.73 (44.0)	0.31 (7.9)	3.11 (79.0)	0.43 (11.0)	1.02 (26.0)	0.87 (22.0)	0.83 (21.0)	-	1.00 (25.4)	2-M5X0.8 0.20 (5.0)
ZCD4QS-WC		1/2" Butt Weld	1.97 (50.0)	-	3.11 (79.0)	0.43 (11.0)	1.02 (26.0)	0.87 (22.0)	0.83 (21.0)	-	1.00 (25.4)	2-M5X0.8 0.20 (5.0)

\* L<sub>1</sub> dimension for compression fitting is the dimension of how far tube inserted from end of body.



## Product Code Table

Model	Size	Operation	Valve shape	Connection	Seat material	Grade + Body material
ZCD	4	C	S	V	C	EP-316L
ZCD: Zero Volume -type diaphragm valve ZCDV: Zero Volume -type diaphragm valve with flow -control (Option)	4: 1/4"	C: Normally closed O: Normally open	S: Straight A: Angle L: L-shape B: Branch *1	V: CVC male VF: CVC female S: Compression W: Butt weld	C: PCTFE A: PFA *2	STD-316L: Mechanical Polished + SUS316L EP-316L: Electro Polished + SUS316L

\*1 Contact your sales representative regarding multi port connection types.  
\*2 Only normally closed (NC) setting is available for PFA seats.

## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	L <sup>*</sup>	H	H <sub>1</sub>	A	B	C	P	M	M <sub>1</sub>
	ZCD4CS-VC	1/4" CVC Male	2.047 (52.0)	-	3.504 (89.0)	0.433 (11.0)	1.102 (28.0)	0.866 (22.0)	0.827 (21.0)	2-M5×0.8 0.20 (5.0)	0.669 (17.0)	2-M5×0.8 0.20 (5.0)
	ZCD4OS-VC	1/4" CVC Male	2.047 (52.0)	-	3.740 (95.0)	0.433 (11.0)	1.102 (28.0)	0.866 (22.0)	0.827 (21.0)	2-M5×0.8 0.20 (5.0)	0.669 (17.0)	2-M5×0.8 0.20 (5.0)
	ZCD4CS-VFC	1/4" CVC Female	2.598 (66.0)	-	3.504 (89.0)	0.433 (11.0)	1.102 (28.0)	0.866 (22.0)	0.827 (21.0)	2-M5×0.8 0.20 (5.0)	0.669 (17.0)	2-M5×0.8 0.20 (5.0)
	ZCD4OS-VFC	1/4" CVC Female	2.598 (66.0)	-	3.740 (95.0)	0.433 (11.0)	1.102 (28.0)	0.866 (22.0)	0.827 (21.0)	2-M5×0.8 0.20 (5.0)	0.669 (17.0)	2-M5×0.8 0.20 (5.0)
	ZCD4CS-SC	1/4" Compression Fitting	1.732 (44.0)	-	3.504 (89.0)	0.433 (11.0)	1.102 (28.0)	0.866 (22.0)	0.827 (21.0)	2-M5×0.8 0.20 (5.0)	0.669 (17.0)	2-M5×0.8 0.20 (5.0)
	ZCD4OS-SC	1/4" Compression Fitting	1.732 (44.0)	-	3.740 (95.0)	0.433 (11.0)	1.102 (28.0)	0.866 (22.0)	0.827 (21.0)	2-M5×0.8 0.20 (5.0)	0.669 (17.0)	2-M5×0.8 0.20 (5.0)
	ZCD4CS-WC	1/4" Butt Weld	1.969 (50.0)	-	3.504 (89.0)	0.433 (11.0)	1.102 (28.0)	0.866 (22.0)	0.827 (21.0)	2-M5×0.8 0.20 (5.0)	0.669 (17.0)	2-M5×0.8 0.20 (5.0)
	ZCD4OS-WC	1/4" Butt Weld	1.969 (50.0)	-	3.740 (95.0)	0.433 (11.0)	1.102 (28.0)	0.866 (22.0)	0.827 (21.0)	2-M5×0.8 0.20 (5.0)	0.669 (17.0)	2-M5×0.8 0.20 (5.0)

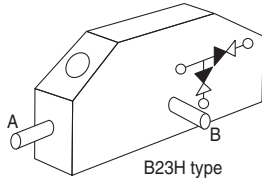
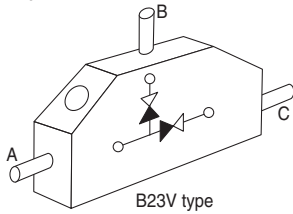
\* L<sup>\*</sup> dimension for compression fitting is the dimension of how far tube is inserted from the end of body.

# Mono Block Valves

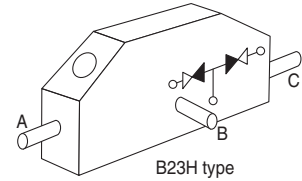
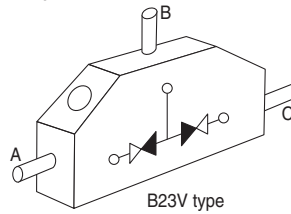
## Block-type

### Flow Direction

A flow



B flow



### Features

- ⊙ Excellent degassing characteristics is achieved through minimized flow paths by combining 2 of the KD, KCD, or RD valves together in one valve body.
- ⊙ The basic performance is inherited from the performance of the base valves, and an extremely compact panel design can be achieved by combining the actuators of choice in one valve body.
- ⊙ The optimal flow layout can be made through selection of various flow systems, pipe routing, and fittings.
- ⊙ A series of three or more actuator block valves can also be produced for special applications.

### Specifications

Size	KD2 (1/8")	KD4 (1/4")	KD8 (1/2")
Cv	0.04	0.22	0.7
Wetted Area Volume	0.034in <sup>3</sup> (0.56cm <sup>3</sup> )	0.195in <sup>3</sup> (3.2cm <sup>3</sup> )	1.208in <sup>3</sup> (19.8cm <sup>3</sup> )

Other specifications and product grades conform to the valves on which the series is based.

### Precautions

- Ⓛ The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- Ⓛ For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.



### Block Valve Manual Product Code Table

Block valve	Number of valves	Number of ports	Port direction	Model	Size	V1	V2	Connection method	Seat material	Handle type	Handle color	Flow	Port direction	Grade + Body material
B	2	3	H	KD	4	M	Q	VF	C	□	□	A	L	EP-316L

V: CVC male  
 VF: CVC female  
 W: Butt weld  
 \*4  
 C: PCTFE  
 A: PFA  
 P: PI  
 \*5  
 Not shown: Standard  
 POC: Push-lock type  
 Not shown: Blue (standard)  
 BK: Black  
 GR: Green  
 RD: Red  
 SL: Silver  
 WH: White  
 YE: Yellow  
 Not shown: Standard  
 L: Reversed  
 STD-316L: Mechanical Polished + SUS316L  
 EP-316L: Electro Polished + SUS316L  
 SEP-316LE: Electro Polished + SUS316LE

- \*1 For the port direction and flow, please refer to the Flow direction noted above.  
 \*2 Please contact sales representative for detail.  
 \*3 In the case where the actuators are the same, there will be one symbol.  
 \*4 In the case where the types of fittings differ, please note them in the above order of Flow direction Ports A, B, and C.  
 Example) For the case of Port A = CVC female, Port B = CVC female, Port C = CVC male, the model will be "VFVFV".  
 \*5 Contact us for materials other than the above.

### Dimensions

Unit: inch (mm)

Model	Type	Connection	L	H	H <sub>1</sub>	A	A <sub>1</sub>	B	T <sub>1</sub>	C	W	T	M <sub>1</sub>
	B23VK-D2M-VFC	1/8" CVC Female	3.50 (89.0)	2.05 (52.0)	0.28 (7.0)	0.94 (24.0)	3.54 (90.0)	2.05 (52.0)	0.83 (21.0)	1.79 (45.5)	1.34 (34.0)	0.47 (12.0)	2-M5 Depth 0.20 (5.0)
	B23VK-D4M-VFC	1/4" CVC Female	4.24 (107.6)	2.83 (72.0)	0.43 (11.0)	1.65 (42.0)	4.80 (122.0)	2.52 (64.0)	1.02 (26.0)	2.12 (53.8)	1.57 (40.0)	0.59 (15.0)	4-M5 Depth 0.20 (5.0)
	B23VK-D8M-VFC	1/2" CVC Female	5.63 (143.0)	3.43 (87.0)	0.63 (16.0)	1.65 (42.0)	5.59 (142.0)	3.82 (97.0)	1.42 (36.0)	2.81 (71.5)	2.36 (60.0)	0.79 (20.0)	4-M5 Depth 0.20 (5.0)
	B23HK-D2M-VFC	1/8" CVC Female	3.50 (89.0)	2.05 (52.0)	0.28 (7.0)	0.94 (24.0)	3.54 (90.0)	2.05 (52.0)	0.83 (21.0)	1.14 (29.0)	1.34 (34.0)	0.47 (12.0)	2-M5 Depth 0.20 (5.0)
	B23HK-D4M-VFC	1/4" CVC Female	4.24 (107.6)	2.83 (72.0)	0.43 (11.0)	1.65 (42.0)	4.80 (122.0)	2.52 (64.0)	1.02 (26.0)	1.37 (34.8)	1.57 (40.0)	0.59 (15.0)	4-M5 Depth 0.20 (5.0)
	B23HK-D8M-VFC	1/2" CVC Female	5.63 (143.0)	3.43 (87.0)	0.63 (16.0)	1.65 (42.0)	5.59 (142.0)	3.82 (97.0)	1.42 (36.0)	1.61 (41.0)	2.36 (60.0)	0.79 (20.0)	4-M5 Depth 0.20 (5.0)



## Block Valve Pneumatic Product Code Table

<b>B</b>	<b>2</b>	<b>3</b>	<b>H</b>	<b>KD</b>	<b>4</b>	<b>C</b>	<b>O</b>	<b>VF</b>	<b>C</b>	<b>A</b>	<b>L</b>	<b>EP-316L</b>
Block valve	Number of valves	Number of ports	Port direction V: Vertical H: Horizontal *1	Model KD: KD-type diaphragm valve KCD: KCD-type diaphragm valve RD: High-pressure diaphragm valve *4	Size 2: 1/8" 4: 1/4" 8: 1/2"	V1 C: Normally closed O: Normally open *2	V2	Connection V: CVC male VF: CVC female W: Butt weld *3	Seat material C: PCTFE A: PFA P: PI	Flow A: flow B: flow *1	Options Not shown: Standard L: Reversed	Grade + Body material STD-316L Mechanical Polished + SUS316L EP-316L Electro Polished + SUS316L SEP-316LE: Electro Polished + SUS316LE

- \*1 For the port direction and flow, please refer to Flow direction on P. 28.  
 \*2 In the case where the actuators are the same, there will be one symbol.  
 \*3 In the case where the types of fittings differ, please note them as on P. 28 in the order of Flow direction Ports A, B, and C.  
 Example) For the case of Port A = CVC female, Port B = CVC female, Port C = CVC male, the model will be "VFVFV."  
 \*4 Contact your sales representative for details.

## Dimensions

Unit: inch (mm)

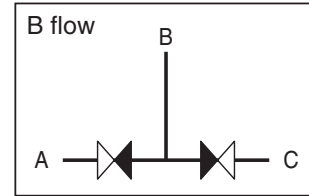
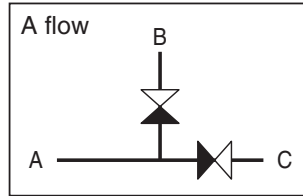
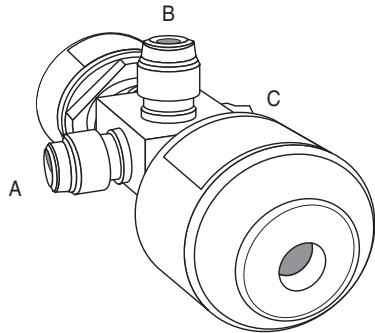
Model	Type	Connection	L	H	H <sub>1</sub>	A	A <sub>1</sub>	B	T <sub>1</sub>	C	W	T	M <sub>1</sub>	P
	B23VKD2 □□-VFC	1/8" CVC Female	3.50 (89.0)	2.20 (56.0)	0.28 (7.0)	1.10 (28.0)	3.86 (98.0)	2.05 (52.0)	0.83 (21.0)	1.79 (45.5)	1.34 (34.0)	0.47 (12.0)	2-M5 Depth 0.20 (5.0)	2-Rc1/8
	B23VKD4 □□-VFC	1/4" CVC Female	4.24 (107.6)	2.78 (70.5)	0.43 (11.0)	1.56 (39.7)	4.72 (120.0)	2.52 (64.0)	1.02 (26.0)	2.12 (53.8)	1.57 (40.0)	0.59 (15.0)	4-M5 Depth 0.20 (5.0)	2-Rc1/8
	B23VKD8 □□-VFC	1/2" CVC Female	5.63 (143.0)	3.88 [3.70] (98.5 [94.0]) *5	0.63 (16.0)	2.17 (55.0)	6.50 [6.14] (165.0 [156.0]) *5	3.82 (97.0)	1.42 (36.0)	2.81 (71.5)	2.36 (60.0)	0.79 (20.0)	4-M5 Depth 0.20 (5.0)	2-Rc1/8
	B23HKD2 □□-VFC	1/8" CVC Female	3.50 (89.0)	2.20 (56.0)	0.28 (7.0)	1.10 (28.0)	3.86 (98.0)	2.05 (52.0)	0.83 (21.0)	1.14 (29.0)	1.34 (34.0)	0.47 (12.0)	2-M5 Depth 0.20 (5.0)	2-Rc1/8
	B23HKD4 □□-VFC	1/4" CVC Female	4.24 (107.6)	2.78 (70.5)	0.43 (11.0)	1.56 (39.7)	4.72 (120.0)	2.52 (64.0)	1.02 (26.0)	1.37 (34.8)	1.57 (40.0)	0.59 (15.0)	4-M5 Depth 0.20 (5.0)	2-Rc1/8
	B23HKD8 □□-VFC	1/2" CVC Female	5.63 (143.0)	3.88 [3.70] (98.5 [94.0]) *5	0.63 (16.0)	2.17 (55.0)	6.50 [6.14] (165.0 [156.0]) *5	3.82 (97.0)	1.42 (36.0)	1.61 (41.0)	2.36 (60.0)	0.79 (20.0)	4-M5 Depth 0.20 (5.0)	2-Rc1/8

\*5 Dimensions given in parentheses are for the 'normally open' configuration.

# Mono Block Valve

## Flicker-type

### Flow Direction



### Features

- Flicker valves minimize the dead space by making the valve body of KITZ SCT's dual actuator three-way block valves even more compact. The two valve actuators are laid out in horizontally opposed position with the valve body between them.
- The compact design of the valve makes design of the layout inside a valve box easier, and helps reduce the volume of the valve box itself.
- The simple valve body makes compact design because of easy designing when insulator or heater jacket is required.
- Flicker valves can be provided with standard KD, compact KCD, or high pressure RD series actuators.

### Specifications

Size	KD2 (1/8")	KD4 (1/4")	KD8 (1/2")
Cv	0.04	0.22	0.7
Wetted Area Volume	0.019in <sup>3</sup> (0.31cm <sup>3</sup> )	0.140in <sup>3</sup> (2.3cm <sup>3</sup> )	0.720in <sup>3</sup> (11.8cm <sup>3</sup> )

Other specifications and product grades conform to the valves on which the series is based.

### Precautions

- ① The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ② For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.



### Product Code Table

Block valve	Number of valves	Number of ports	Port direction	Model	Size	V1	V2	Connection method	Seat material	Handle type	Handle color	Flow	Grade + body material
B	2	3	F	KD	4	C	O	VF	C	□	□	A	EP-316L

\*1 For the port direction and flow, please refer to the Flow direction noted above.  
 \*2 In the case where the actuators are the same, there will be one symbol.  
 \*3 In the case where the types of fittings differ, please note them in the above order of Flow direction Ports A, B, and C.  
 Example) For the case of Port A = CVC female, Port B = CVC female, Port C = CVC male, the model will be "VFVVFV."  
 \*4 Contact us for materials other than the above.

### Dimensions

Unit: inch (mm)

Model	Type	Connection	L	E	H	A	B	C	P	M	M <sub>1</sub>
	B23FKD2□□-VC	1/8" CVC Male	1.61 (41.0)	0.81 (20.5)	3.62 (92.0)	1.10 (28.0)	0.81 (20.5)	0.59 (15.0)	Rc1/8	0.51 (13.0)	2-M4 Depth 0.20 (5.0)
	B23FKD4□□-VC	1/4" CVC Male	2.24 (57.0)	1.12 (28.5)	4.69 (120.0)	1.56 (39.7)	1.12 (28.5)	0.83 (21.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.20 (5.0)
	B23FKD2□□-VFC	1/8" CVC Female	2.20 (56.0)	1.10 (28.0)	3.62 (92.0)	1.10 (28.0)	1.10 (28.0)	0.59 (15.0)	Rc1/8	0.51 (13.0)	2-M4 Depth 0.20 (5.0)
	B23FKD2□□-VFC	1/8" CVC Female	2.74 (69.6)	1.37 (34.8)	4.69 (120.0)	1.56 (39.7)	1.37 (34.8)	0.83 (21.0)	Rc1/8	1.00 (25.4)	2-M4 Depth 0.20 (5.0)
	B23FKD8□□-VFC	1/2" CVC Female	3.27 (83.0)	1.63 (41.5)	5.35 (136.0)	2.17 (55.0)	1.63 (41.5)	1.57 (40.0)	Rc1/8	0.79 (20.0)	2-M5 Depth 0.20 (5.0)



# IC Check Valves

The IC series valves are poppet sliding check valves that have smooth closing and opening operation due to their precision fitting finish. In addition, because of their specially designed elastomer, the valves can retain a seal from low pressure to high pressure, and they have been perfected into designs that minimize gas accumulation due to their compact design.

## Features

- ⊙ Made out of SUS316L, these valves have improved corrosion resistance.
- ⊙ These valves have a mechanism such that when there is strong back pressure, the poppet and body contact at each metal part, and the force of the pressing of the poppet and molded gasket and the stress are always constant, so a long life will be obtained.
- ⊙ The specially designed molded gasket employs elastomer, instead of a conventional O-ring to minimize the dead space. In addition, special processing prevents blowouts.
- ⊙ The component parts have simpler structures. In addition, excellent external air-tightness is obtained by the use of metal seat.
- ⊙ Precision fit between the two bodies and the design of the sealing surface provides excellent seal performance.
- ⊙ KITZ SCT has taken advantage of the elasticity of the elastomer during the assembly to achieve highest sealing performance for both external and internal leak.

## Specifications

Size	IC4 (1/4")		IC6 (3/8")		IC8 (1/2")	
Cv	0.35		1.1		1.1	
Maximum Operating Pressure	2350psig (16.2MPa(G))					
Fluid Temperature	-10°C~80°C					
Leak Rates	Inboard He Leak Test Rates		≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)			
Cracking Pressure (kPa)	1/3:2.26	1:6.86	10:68.6	25:171.6	1/3:2.26	
Back Pressure Seal (kPa)	4.26psig (29.4kpa)	0.71psig (4.9kpa)	4.26psig (29.4kpa)			

## Product Grade

Grade	STD	EP
Body Material	SUS316L	
Surface Roughness	≤ Ra 0.5 μm / 20 μin	≤ Ra 0.13 μm / 5 μin
Polish	Mechanical Polished	Electro Polished
Cleaning	Degreasing + Precision cleaning	
Packaging	Single bagged package	Double bagged package

## Precautions

- ① For these valve seals, the appropriate differential pressure for each value of cracking pressure will be needed.
- ② In cases where the differential pressure is small due to the operating state, variations in seal performance may occur.
- ③ During initial operation or when operated after long inactivity, the initial cracking pressure may be slightly higher than the cracking pressure specified.
- ④ The cracking pressure rated on the valve is a pressure for the valve to be fully open, but the valve starts opening at lower than rated pressure.
- ⑤ Back Pressure Seal is subject to change depending on seat material. Back Pressure Seal is 69 (KPa) when the seat material is Kalrez.
- ⑥ The valves are not guaranteed to function if their exterior is submerged inside a vacuum.



## Product Code Table

Model	Size	Cracking pressure	Connection	Seat material	Grade + Body material
IC	4	1/3H	VF	F	EP-316L
Check valve	4:1/4" 6:3/8" 8:1/2"	1/3H:2.26kPa 1H:6.86kPa 10H:68.6kPa 25H:171.6kPa	V: CVC male VF: CVC female S: Compression	F: Fluorine rubber NE: Neoprene rubber KL: KALREZ® *1	STD-316L : Mechanical Polished + SUS316L EP-316L : Electro Polished + SUS316L

\*1 KL=KALREZ® is a trademark of DuPont Performance Elastomers  
Only those sizes that accommodate a 1/4" cracking pressure of 1H or less.

## Dimensions

Unit: inch (mm)

Model	Type	Connection	A	L	D	Li*
	IC4-□-V□	1/4" CVC Male	0.75 (19.0)	2.22 (56.4)	1.00 (25.4)	-
	IC8-□-V□	1/2" CVC Male	0.94 (24.0)	2.72 (69.0)	1.26 (32.0)	-
	IC4-□-VF□	1/4" CVC Female	0.75 (19.0)	2.76 (70.0)	1.00 (25.4)	-
	IC8-□-VF□	1/2" CVC Female	0.94 (24.0)	3.11 (79.0)	1.26 (32.0)	-
	IC4-□-S□	1/4" Compression Fittings	0.75 (19.0)	1.81 (46.0)	1.00 (25.4)	0.31 (7.9)
	IC6-□-S□	3/8" Compression Fittings	0.94 (24.0)	2.20 (55.9)	1.26 (32.0)	0.37 (9.5)
	IC8-□-S□	1/2" Compression Fittings	0.94 (24.0)	2.28 (57.8)	1.26 (32.0)	0.50 (12.7)

\* Li dimension for compression fitting is the dimension of how far tube inserted from end of body.

# TD/TCD

## B-SEAL-type

B-SEAL valves use a KITZ SCT proprietary sealing method.  
The use of the TD/TCD Series enables support for integrated gas supply systems.



### Valve Features

- KITZ-SCT's unique B-SEAL structure: Speedy and sure installation is made possible due to its center-lock mechanism. Reduction of assembly process and time required for the maintenance by user is expected to contribute to an overall cost reduction.
- Using KITZ-SCT's unique snap mechanism incorporated in manual valves extensively facilitates the operation even in a limited working space. In addition, the valve can be operated by one-touch, which helps avoid insufficient or excessive torque when turning the handle to either end, and thus increases an operational reliability. Considering safety, a miss-operation protective mechanism (fixing screw) is newly adopted.
- The valve is equipped with a mechanism to avoid miss-insertion and miss-installation by means of notch located on the base.
- The seal type use 1/8" CVC fitting that has been proven in a conventional gas system.

### Major Specifications

Type (Size)		TCD	TD
Cv Value		0.15	0.25
Maximum Operating Pressure		142psig (0.98MPa(G))	
Fluid Temperature	PCTFE	-10~80°C(14~176F)	
	PFA	-10~120 °C(14~248F)	
Actuation Pressure		65~87psig (0.45~0.6MPa (G))	
Leak Rates	Across the Seat He Leak Rates	1×10 <sup>-9</sup> atm-cc/s (1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)	
	Inboard He Leak Rates	1×10 <sup>-9</sup> atm-cc/s (1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)	
Cycle Life	Manual Valve	50,000	
	Pneumatic Valve	1,000,000	

### Product Grade

Grade	EP
Material	316L
Surface Roughness	≤ Ra 0.13 μm / 5 μin
Polishing	Electropolishing finish
Cleaning	Degreasing + Precision cleaning
Packing	W-Packing with clean pack. N2-charge

### Manual Valves

Model	Type	Cv Value
	TCD4MS-GC-546-EP	0.15
	TD4MS-GC-548-EP	0.25

### Check Valves

Model	Type	Cracking Pressure	Packing
	IC4-1/3-GF-75-EP	1/3psig	FKM
	IC4-1-GF-82-EP	1psig	
	IC4-10-GF-84-EP	10psig	

### Composite Valves

Model	Type	Operation
	TCD4CI-1/3-GCF-□-EP	NO
	TCD4OI-1/3-GCF-□-EP	NC

### Pneumatic Valves (N.C.)

Model	Type	Cv Value
	TCD4CS-GC-386-EP	0.15
	TD4CS-GC-509-EP	0.25

### Pneumatic Valves (N.O.)

Model	Type	Cv Value
	TCD4OS-GC-□-EP	0.15
	TD4OS-GC-□-EP	0.25

### Flow Control Valves

Model	Type
	TCD4FS-GM-04

# TD

## C-SEAL-type

The TD Series includes compactly designed valves for integrated gas supply systems, supporting a 1.125" C-seal.



### Valve Features

- These valves are diaphragm valves of Surface Mount type, and are compatible with 1.125" C-SEAL. Both manual and pneumatic valves in this series incorporate a compact actuator, which allows the valve to suit to fine line pitches.
- The manual valves are 90° open/close types, and capable to equip a lock key for preventing miss-operations.
- TD Series has achieved 0.3 for Cv value that is still higher than that of our KD Series.
- The surface that comes in contact with gases are made rich in chrome, and achieved Cr/Fe >2.0.(SEP specification)
- Achieving Hv300 on the sealing surface, repeated detachability is further improved.

### Major Specifications

The standard model is TD Series.

Type (Size)	TD	
Cv Value	0.3	
Maximum Operating Pressure	142psig(0.98MPa(G))	
Fluid Temperature	PCTFE	-10~80°C(14~176F)
Actuation Pressure	58~101psig (0.4~0.7MPa(G))	
Leak Rates	Across the Seat He Leak Rates	1×10 <sup>-9</sup> atm-cc/s (1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)
	Inboard He Leak Rates	1×10 <sup>-9</sup> atm-cc/s (1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)
Cycle Life	Manual Valve	10,000
	Pneumatic Valve	1,000,000

Note: For PFA and PI seats, contact your sales representative.

### Product Grade

Grade	STD	EP	SEP
Body Material	SUS316L		SUS316LE (Double melt material)
Surface Roughness	≤Ra0.5μm/20μin	≤ Ra 0.13 μm / 5 μin	
Polish	Mechanical Polish	Electro Polish	
Cleaning	Degreasing + Precision Cleaning		
Packaging	Single Bagged Package	Double Bagged Package	

### Manual Valves

Model	Type	Cv Value
	TD4OS-GC-□	0.3

### Pneumatic Valves 2 Port (N.C.)

Model	Type	Cv Value
	TD4CS-GC-985	0.3

### Pneumatic Valves 2 Port (N.O.)

Model	Type	Cv Value
	TD4OS-GC-□	0.3

### Pneumatic Valves 3 Port (N.C.)

Model	Type	Cv Value
	TD4CB-GC-1003	0.3

### Pneumatic Valves 3 Port (N.O.)

Model	Type	Cv Value
	TD4CB-GC-□	0.3

# IB

## Bellows Valves

A higher Cv value IB series has is more advantageous than diaphragm valves in use where large flows are required, such as facility supply lines.

### ■ Features

- ① The proprietary seat shape serves to reduce particle generation from the disk and improves durability.
- ② Smaller dead space enables shorter purge time.
- ③ The IB series can be used not only in gas supply systems but also in exhaust systems. Unique specifications such as high temperature, high corrosion resistance, and variable flow rate can also be accommodated.

### ■ Specifications

Size	IB4 (1/4")	IB6 (3/8")-IB8 (1/2")	
Cv	0.3	0.85	
Wetted Area Volume	0.185in <sup>3</sup> (3.03cm <sup>3</sup> )	0.359in <sup>3</sup> (5.88cm <sup>3</sup> )	
Maximum Operating Pressure	CVC male, OPEN state 142psig (0.98MPa(G))		
Fluid Temperature	Manual Valve (PCTFE, PFA, Fluorine rubber)	-10~100°C	
	Pneumatic Valve	PCTFE	-10~100°C
		PFA	-10~150°C*
		Fluorine rubber	-10~180°C*
Atmospheric Temperature	-10~60°C		
Actuation Pressure	58~101psig (0.4~0.7MPa(G))		
Leak Rates	Across the Seat He Leak Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)	
	Inboard He Leak Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)	
Cycle Life	Pneumatic valve 1 million cycles , manual valve 100,000 cycles		

\* Bonnet Gasket Material is "SUS316L" only

### ■ Product Grade

Grade	STD	EP
Material	SUS316L	
Surface Roughness	Only Body's Internal Roughness ≤ Ra 0.5 μm / 20 μin	≤ Ra 0.13 μm / 5 μin
Cleaning	Degreasing + Precision cleaning	
Packaging	Single bagged package	Double bagged package

### ■ Standard Materials

Body	SUS316L
Bellows	SUS316L
Bellows Flange	SUS316L
Bonnet	SUS304

### ■ Precautions

- ① Depending on the customer's usage conditions, the IB series may have a lower bellows life cycle due to accumulation of buildup material or corrosion.
- ② The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ③ For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.

# Straight Type



## Product Code Table

Model	Size	Operation	Valve shape	Connection	Bonnet Gasket material	Disk material	Handle shape	Grade + Body material
<b>IB</b>	<b>4</b>	<b>M</b>	<b>S</b>	<b>V</b>	<b>C</b>	<b>C</b>	<b>JH</b>	<b>EP-316L</b>
IB-type bellows Seal valve	4:1/4" 6:3/8" 8:1/2"	Manual	Straight	V: CVC male VF: CVC female S: Compression W: Butt weld	C:PCTFE M:SUS316L (Fluorine resin coating)	C:PCTFE F: Fluorine rubber A:PFA	Not displayed: Standard JH: Open/Close display	STD-316L : Mechanical Polished + SUS316L EP-316L : Electro Polished + SUS316L

Please ask the sales representative about handle colors.

## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	L <sub>1</sub>	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	M	M <sub>1</sub>	M <sub>2</sub>
	IB4MS-V□□	1/4" CVC Male	2.25 (57.1)	-	2.72 (69.0)	0.43 (11.0)	1.06 (27.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB8MS-V□□	1/2" CVC Male	2.56 (65.1)	-	3.19 (81.0)	0.63 (16.0)	1.34 (34.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB4MS-VF□□	1/4" CVC Female	2.78 (70.6)	-	2.72 (69.0)	0.43 (11.0)	1.06 (27.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB8MS-VF□□	1/2" CVC Female	3.27 (83.0)	-	3.19 (81.0)	0.63 (16.0)	1.34 (34.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB4MS-S□□	1/4" Compression Fittings	1.89 (48.0)	0.31 (7.9)	2.85 (72.3)	0.56 (14.3)	1.06 (27.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB6MS-S□□	3/8" Compression Fittings	2.52 (64.0)	0.37 (9.5)	3.06 (77.7)	0.50 (12.7)	1.34 (34.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB8MS-S□□	1/2" Compression Fittings	2.52 (64.0)	0.50 (12.7)	3.06 (77.7)	0.50 (12.7)	1.34 (34.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB4MS-W□□	1/4" Butt Weld	5.91 (150.0)	-	2.72 (69.0)	0.43 (11.0)	1.06 (27.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB6MS-W□□	3/8" Butt Weld	5.91 (150.0)	-	3.19 (81.0)	0.63 (16.0)	1.34 (34.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB8MS-W□□	1/2" Butt Weld	5.91 (150.0)	-	3.19 (81.0)	0.63 (16.0)	1.34 (34.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0



## Product Code Table

<b>Model</b> <b>IB</b>	<b>Size</b> <b>4</b>	<b>Operation</b> <b>Q</b>	<b>Valve shape</b> <b>S</b>	<b>Connection</b> <b>V</b>	<b>Bonnet Gasket material</b> <b>C</b>	<b>Disk material</b> <b>C</b>	<b>Grade + Body material</b> <b>EP-316L</b>
IB-type bellows Seal valve	4:1/4" 6:3/8" 8:1/2"	Q: 90° - Handle rotation Manual Valves	Straight	V: CVC male VF: CVC female S: Compression W: Butt weld	C:PCTFE M:SUS316L (PFA coating)	C:PCTFE F: Fluorine rubber A:PFA	STD-316L : Mechanical polished + SUS316L EP-316L : Electro polished + SUS316L

Please ask the sales representative about handle colors.

## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	L <sub>1</sub>	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	M	M <sub>1</sub>	M <sub>2</sub>
	IB4QS-V□□	1/4" CVC Male	2.25 (57.1)	-	3.35 (85.0)	0.43 (11.0)	1.06 (27.0)	1.93 (49.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB8QS-V□□	1/2" CVC Male	2.56 (65.1)	-	3.87 (98.2)	0.63 (16.0)	1.34 (34.0)	1.93 (49.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB4QS-VF□□	1/4" CVC Female	2.78 (70.6)	-	3.35 (85.0)	0.43 (11.0)	1.06 (27.0)	1.93 (49.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB8QS-VF□□	1/2" CVC Female	3.27 (83.0)	-	3.87 (98.2)	0.63 (16.0)	1.34 (34.0)	1.93 (49.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB4QS-S□□	1/4" Compression Fittings	1.89 (48.0)	0.31 (7.9)	3.46 (88.0)	0.56 (14.3)	1.06 (27.0)	1.93 (49.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB6QS-S□□	3/8" Compression Fittings	2.52 (64.0)	0.37 (9.5)	3.74 (95.0)	0.50 (12.7)	1.34 (34.0)	1.93 (49.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB8QS-S□□	1/2" Compression Fittings	2.52 (64.0)	0.50 (12.7)	3.74 (95.0)	0.50 (12.7)	1.34 (34.0)	1.93 (49.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0





## Product Code Table

Model	Size	Operation	Valve shape	Connection	Bonnet Gasket material	Disk material	Grade + Body material
<b>IB</b>	<b>4</b>	<b>C</b>	<b>S</b>	<b>V</b>	<b>C</b>	<b>C</b>	<b>EP-316L</b>
IB-type bellows Seal valve	4:1/4" 6:3/8" 8:1/2"	C: Normally closed O: Normally open	Straight	V: CVC male VF: CVC female S: Compression W: Butt weld	C:PCTFE M:SUS316L (PFA coating)	C:PCTFE F: Fluorine rubber A:PFA	STD-316L : Mechanical Polished + SUS316L EP-316L : Electro Polished + SUS316L

\* In the pneumatic valves that have a maximum usage temperature of 180°C, the disk material is fluorine rubber and the bonnet gasket material is SUS316L (PFA coated). The actuator dimension  $\phi A$  in that case will be  $\phi 39$  for 1/4" to 1/2". We also offer a hot seal for a special-purpose heater.

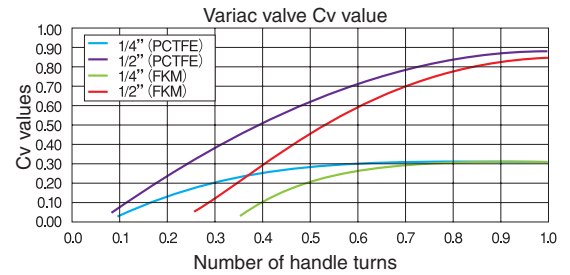
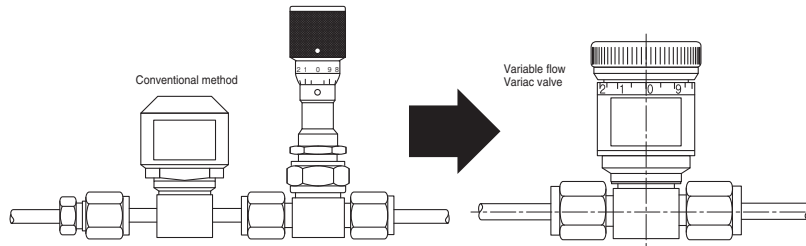
## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	L <sub>1</sub>	H	H <sub>1</sub>	A	B	C	P	M	M <sub>1</sub>
	IB4□S-V□□	1/4" CVC Male	2.25 (57.1)	-	2.72 (69.0)	0.43 (11.0)	1.54 (39.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB8□S-V□□	1/2" CVC Male	2.56 (65.1)	-	3.27 (83.0)	0.63 (16.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB8□S-V□F		2.56 (65.1)	-	3.27 (83.0)	0.63 (16.0)	1.54 (39.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB4□S-VF□□	1/4" CVC Female	2.78 (70.6)	-	2.72 (69.0)	0.43 (11.0)	1.54 (39.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB8□S-VF□□	1/2" CVC Female	3.27 (83.0)	-	3.27 (83.0)	0.63 (16.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB8□S-VF□F		3.27 (83.0)	-	3.27 (83.0)	0.63 (16.0)	1.54 (39.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB4□S-S□□	1/4" Compression Fittings	1.89 (48.0)	0.31 (7.9)	2.85 (72.3)	0.56 (14.3)	1.54 (39.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB6□S-S□□	3/8" Compression Fittings	2.52 (64.0)	0.37 (9.5)	3.14 (79.7)	0.50 (12.7)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB6□S-S□F		2.52 (64.0)	0.37 (9.5)	3.14 (79.7)	0.50 (12.7)	1.54 (39.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB8□S-S□□	1/2" Compression Fittings	2.52 (64.0)	0.50 (12.7)	3.14 (79.7)	0.50 (12.7)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 8
	IB8□S-S□F		2.52 (64.0)	0.50 (12.7)	3.14 (79.7)	0.50 (12.7)	1.54 (39.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 8
	IB4□S-W□□	1/4" Butt Weld	5.91 (150.0)	-	2.72 (69.0)	0.43 (11.0)	1.54 (39.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB6□S-W□□	3/8" Butt Weld	5.91 (150.0)	-	3.27 (83.0)	0.63 (16.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB6□S-W□F		5.91 (150.0)	-	3.27 (83.0)	0.63 (16.0)	1.54 (39.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB8□S-W□□	1/2" Butt Weld	5.91 (150.0)	-	3.27 (83.0)	0.63 (16.0)	1.89 (48.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB8□S-W□F		5.91 (150.0)	-	3.27 (83.0)	0.63 (16.0)	1.54 (39.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)

# "Variac" Variable Flow Valve

## Comparison with conventional methods



## Features

- The flow can be controlled by rotating the black handle on top of the actuator. One valve can act as two valves -- a pneumatic valve and a needle valve. This enables a simpler piping layout, space conservation, and cost reduction.
- High temperature Variac valves (maximum operating temperature 180°C) are also available upon request. A dedicated hot shell heater is also available as a separate part.

## Specifications

Size	IB4V (1/4")	IB6V (3/8")-IB8V (1/2")
Disk Material	PCTFE, O-ring (fluorine rubber)	
Cv	Adjustment range: 0.03~0.28	Adjustment range: 0.05~0.74
Wetted Area Volume	0.185in <sup>3</sup> (3.03cm <sup>3</sup> )	0.359in <sup>3</sup> (5.88cm <sup>3</sup> )
Maximum Operating Pressure	142psig (0.98MPa(G))	
Fluid Temperature	PCTFE	-10~100°C
	PFA	-10~150°C*
	Fluorine rubber	-10~180°C*
Atmospheric Temperature	-10°C~60°C	
Actuation Pressure	58~101psig (0.4~0.7MPa (G))	
Leak Rates	Across the Seat	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)
	Inboard He Leak Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)
Cycle Life	1 million cycles	

\* Only when bonnet gasket material is M: SUS316S (PFA coating)

## Product Grade

Grade	STD	EP
Material	SUS316L	
Surface Roughness	≤ Ra 0.5 μm / 20 μin	≤ Ra 0.13 μm / 5 μin
Cleaning	Degreasing + Precision cleaning	
Packaging	Single bagged package	Double bagged package

## Precautions

- ① The set amount of flow may vary depending on the usage conditions.
- ② The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ③ For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.



## Product Code Table

Model	Size	Type	Operation	Valve shape	Connection	Bonnet Gasket material	Disk material	Grade + Body material
IB	4	V	C	S	V	C	C	EP-316L

IB-type bellows Seal valve  
 4: 1/4" 6: 3/8" 8: 1/2"  
 Variac  
 C: Normally closed O: Normally open  
 Straight  
 V: CVC male VF: CVC female S: Compression  
 C: PCTFE M: SUS316L (PTFE coating)  
 C: PCTFE F: Fluorine rubber A: PFA T: PTFE  
 STD-316L: Mechanical Polished + SUS316L  
 EP-316L: Electro Polished + SUS316L

\* In the products that have a maximum usage temperature of 180°C, the disk material is fluorine rubber, and the bonnet gasket material is SUS316L (PTFE coated). The actuator dimension φA in that case will be φ44 from 1/4" to 1/2". We also offer a hot seal for a special-purpose heater.  
 \* All of the parts that come in contact with gas are made of SUS316L.

## Dimensions

Unit: inch (mm)

Model	Type	Connection	L	L <sub>1</sub>	H	H <sub>1</sub>	A	B	C	P	M	M <sub>1</sub>
	IB4V□S-V□□	1/4" CVC Male	2.25 (57.1)	-	3.07 (78.0)	0.43 (11.0)	1.73 (44.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB8V□S-V□□	1/2" CVC Male	2.56 (65.1)	-	3.58 (91.0)	0.63 (16.0)	2.13 (54.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB8V□S-V□F		2.56 (65.1)	-	3.58 (91.0)	0.63 (16.0)	1.54 (39.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB4V□S-VF□□	1/4" CVC Female	2.78 (70.6)	-	3.07 (78.0)	0.43 (11.0)	1.73 (44.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB8V□S-VF□□	1/2" CVC Female	3.27 (83.0)	-	3.58 (91.0)	0.63 (16.0)	2.13 (54.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB8V□S-VF□F		3.27 (83.0)	-	3.58 (91.0)	0.63 (16.0)	1.54 (39.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB4V□S-S□□	1/4" Compression Fittings	1.89 (48.0)	0.31 (7.9)	3.20 (81.3)	0.56 (14.3)	1.73 (44.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB6V□S-S□□	3/8" Compression Fittings	2.52 (64.0)	0.37 (9.5)	3.45 (87.7)	0.50 (12.7)	2.13 (54.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB6V□S-S□F		2.52 (64.0)	0.37 (9.5)	3.45 (87.7)	0.50 (12.7)	1.54 (39.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB8V□S-S□□	1/2" Compression Fittings	2.52 (64.0)	0.50 (12.7)	3.45 (87.7)	0.50 (12.7)	2.13 (54.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)
	IB8V□S-S□F		2.52 (64.0)	0.50 (12.7)	3.45 (87.7)	0.50 (12.7)	1.54 (39.0)	1.02 (26.0)	0.98 (25.0)	Rc1/8	1.00 (25.4)	2-M5 Depth 0.31 (8.0)

# Flow-control Needle Valve

## ■ Features

- ⊙ Because of the ultra-precision processing of the needle part and a structure with no backrush, \*1 desired flow rate can be set precisely.
  - ⊙ A metal gasket is standard and provides excellent heat resistance.
- \*1 Backrush: Flowback or the space formed at the rear of the engagement of gears or screws.

## ■ Specifications

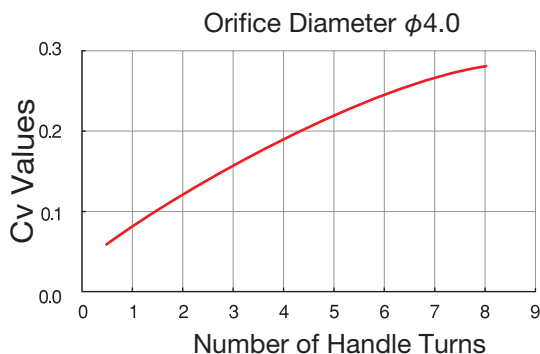
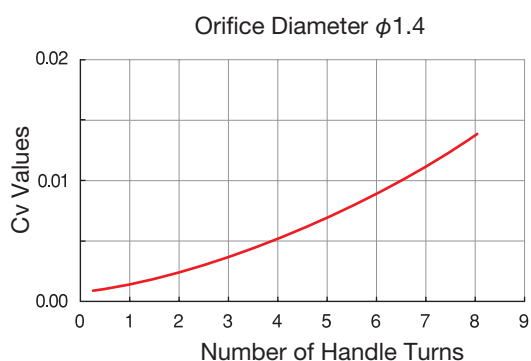
Size	IB4BN (1/4")	
Orifice diameter	φ 0.055in (1.4mm)	φ 0.157in (4.0mm)
Cv	Adjustment range: 0.001~0.0136	Adjustment range: 0.06~0.28
Wetted Area Volume	0.185in <sup>3</sup> (3.03cm <sup>3</sup> )	
Maximum Operating Pressure	142psig(0.98MPa (G))	
Fluide Temperature	-10~150°C	
Atmospheric Temperature	-10°C~60°C	
Leak Rates	Across the He leak rates Inboard He Leak Rates	
	- ≤ 3×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)	

## ■ Product Grade

Grade	STD	EP
Material	SUS316L	
Surface Roughness	Only Body's Internal Surface	≤ Ra 0.5 μm / 20 μin ≤ Ra 0.13 μm / 5 μin
Cleaning	No bead cut in welded area Degreasing + Precision cleaning	
Packaging	Single bagged package	Double bagged package

## ■ Precautions

- ① Because the needle valves employ a precision handle, please do not apply excessive torque beyond the zero point.
- ② The valves are not guaranteed to function if their exterior is submerged inside a vacuum.



## ■ Product Code Table

Model	Size	Type	Valve shape	Orifice diameter	Valve shape	Connection method	Seat material	Grade + Body material
IB	4	B	N	1.4	S	V	M	EP-316L
IB-type bellows Seal valve	1/4"	Backrushless	Needle	1.4:1.4mm 4.0:4.0mm	Straight	V: CVC male VF: CVC female	M: SUS316L (Fluorine resin coating)	STD-316L: Mechanical Polished + SUS316L EP-316L: Electro Polished + SUS316L

## ■ Dimensions

Unit: inch (mm)

Model	Type	Connection	L	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	M	M <sub>1</sub>	M <sub>2</sub>
	IB4BN1.4S-VM	1/4" CVC Male	2.25 (57.1)	4.72 (120.0)	0.43 (11.0)	1.06 (27.0)	1.10 (28.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB4BN4.0S-VM	1/4" CVC Male	2.25 (57.1)	4.72 (120.0)	0.43 (11.0)	1.06 (27.0)	1.10 (28.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB4BN1.4S-VFM	1/4" CVC Female	2.80 (71.0)	4.72 (120.0)	0.43 (11.0)	1.06 (27.0)	1.10 (28.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0
	IB4BN4.0S-VFM	1/4" CVC Female	2.80 (71.0)	4.72 (120.0)	0.43 (11.0)	1.06 (27.0)	1.10 (28.0)	1.02 (26.0)	0.98 (25.0)	1.00 (25.4)	2-M5 Depth 0.31 (8.0)	M19×1.0

# SBB

## Bellows Valves

### Straight-type

The SBB series of pipe size bellows valves have a compact design and are intended for use in high Cv and high durability supply lines.

### Features

- ⊙ We offer not only all purpose butt weld connection but also flange connections and union connections.
- ⊙ Achieving reduced weight with forged valve body.
- ⊙ Adopted a seat structure to reduce gas pooling and particle shedding.
- ⊙ By setting the air supply inlet on the top of the actuator, there is no concern over piping direction.
- ⊙ Purge port options available for the Inlet, Outlet, or Both.

### Specifications

Size		SBB10 (10A)	SBB15 (15A)	SBB20 (20A)	SBB25 (25A)
Cv		2.1	3.3	4.5	8.0
Wetted Area Volume		2.319in <sup>3</sup> (38cm <sup>3</sup> )	3.234in <sup>3</sup> (53cm <sup>3</sup> )	5.248in <sup>3</sup> (86cm <sup>3</sup> )	3.726in <sup>3</sup> (143cm <sup>3</sup> )
Maximum Operating Pressure		Butt weld, OPEN state 142psig (0.98MPa(G))			
Fluide Temperature	Manual Valve	-10~100°C			
	Pneumatic Valve	-	-10~80°C		
Atmospheric Temperature		-10°C~60°C			
Leak Rates	Across the Seat He Leak Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)			
	Inboard He Leak Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)			
Actuation Pressure		-	N · C : 72~101psig (0.5~0.7MPa(G))/N · O : 72~87psig (0.5~0.6MPa(G))		
Cycle Life	Manual Valve	-	100,000 cycles*1		50,000 cycles*1
	Pneumatic Valve (NC)	-	10,000 cycles*2		
	Pneumatic Valve (NO)	-			10,000 cycles*2

\*1 Bellows individual unit durability via N<sub>2</sub> enclosure

\*2 Product durability via N<sub>2</sub> enclosure

### Product Grade

Grade		STD	EP
Material		SUS316L	
Surface Roughness	Only Body's Internal Surface	≤ Ra 0.5 μm / 20 μin	≤ Ra 0.13 μm / 5 μin
Cleaning		Degreasing + Precision cleaning	
Packaging		Single bagged package	Double bagged package

### Precautions

- ① SBB series may experience shortened bellows life cycle under certain corrosive environment. Also, SBB series is not compatible with liquid use.
- ② The valves are not guaranteed to function if their exterior is submerged inside a vacuum.



### Product Code Table

Model	Size	Operation	Valve shape	Connection	Bonnet Gasket material	Disk material	Purge port	Grade + Body material
SBB	15	M	S	W	C	T	IP	EP-316L
SBB-type bellows seal valve		M: Manual	Straight	W: Butt weld U: Union*1 RF: RF flange	PCTFE	PTFE	Not shown: No purge port IP: 1st OP: 2nd PP: Both	STD-316L : Mechanical Polished + SUS316L EP-316L : Electro Polished + SUS316L

\*1 The union type consists of interlock and butt weld types.  
Please ask to the sales representative about handle color.  
\* Inch size butt weld also available.

### Dimensions

Unit: inch (mm)

Model	Type	Conne- ction	L	L <sub>1</sub>	L <sub>2</sub>	H	H <sub>1</sub>	A	D	t	C	G	d	F	f	n-φh	B	M <sub>1</sub>
	SBB10MS-UCT	10A union (insertion-type)	3.54 (90.0)	1.18 (30.0)	0.39 (10.0)	4.78 (121.5)	0.79 (20.0)	2.76 (70.0)	-	-	-	-	0.70 (17.8)	-	-	-	1.18 (30.0)	2-M6 Depth 0.39 (10.0)
	SBB15MS-UCT	15A union (insertion-type)	3.94 (100.0)	1.38 (35.0)	0.59 (15.0)	4.94 (125.5)	0.94 (24.0)	2.76 (70.0)	-	-	-	-	0.87 (22.2)	-	-	-	1.18 (30.0)	2-M6 Depth 0.39 (10.0)
	SBB20MS-UCT	20A union (insertion-type)	4.33 (110.0)	1.38 (35.0)	0.59 (15.0)	5.79 (147.0)	1.10 (28.0)	2.76 (70.0)	-	-	-	-	1.09 (27.7)	-	-	-	1.38 (35.0)	2-M6 Depth 0.39 (10.0)
	SBB25MS-UCT	25A union (insertion-type)	4.72 (120.0)	1.38 (35.0)	0.59 (15.0)	6.79 (172.5)	1.30 (33.0)	3.35 (85.0)	-	-	-	-	1.36 (34.5)	-	-	-	1.57 (40.0)	2-M6 Depth 0.39 (10.0)
	SBB10MS-UCT-24	10A union (Butt Weld)	3.54 (90.0)	1.97 (50.0)	-	4.78 (121.5)	0.79 (20.0)	2.76 (70.0)	0.68 (17.3)	-	-	-	-	-	-	-	1.18 (30.0)	2-M6 Depth 0.39 (10.0)
	SBB15MS-UCT-128	15A union (Butt Weld)	3.94 (100.0)	2.05 (52.0)	-	4.94 (125.5)	0.94 (24.0)	2.76 (70.0)	0.85 (21.7)	0.06 (1.65)	-	-	-	-	-	-	1.18 (30.0)	2-M6 Depth 0.39 (10.0)
	SBB20MS-UCT-90	20A union (Butt Weld)	4.33 (110.0)	2.09 (53.0)	-	5.79 (147.0)	1.10 (28.0)	2.76 (70.0)	1.07 (27.2)	0.06 (1.65)	-	-	-	-	-	-	1.38 (35.0)	2-M6 Depth 0.39 (10.0)
	SBB25MS-UCT-99	25A union (Butt Weld)	4.72 (120.0)	2.09 (53.0)	-	6.79 (172.5)	1.30 (33.0)	3.35 (85.0)	1.34 (34.0)	0.06 (1.65)	-	-	-	-	-	-	1.57 (40.0)	2-M6 Depth 0.39 (10.0)

### Dimensions

Model	Type	Conne- ction	L	L <sub>1</sub>	L <sub>2</sub>	H	H <sub>1</sub>	A	D	t	C	G	d	F	f	n-φh	B	M <sub>1</sub>
	SBB10MS-RFCT	10ARF Flange	3.94 (100.0)	-	-	4.78 (121.5)	0.79 (20.0)	2.76 (70.0)	3.54 (90.0)	-	2.56 (65.0)	1.81 (46.0)	0.47 (12.0)	0.47 (12.0)	0.04 (1.0)	4-15	1.18 (30.0)	2-M6 Depth 0.39 (10.0)
	SBB15MS-RFCT-133	15ARF Flange	4.25 (108.0)	-	-	4.94 (125.5)	0.94 (24.0)	2.76 (70.0)	3.74 (95.0)	-	2.76 (70.0)	2.01 (51.0)	0.72 (18.4)	0.47 (12.0)	0.04 (1.0)	4-15	1.18 (30.0)	2-M6 Depth 0.39 (10.0)
	SBB20MS-RFCT-94	20ARF Flange	4.61 (117.0)	-	-	5.79 (147.0)	1.10 (28.0)	2.76 (70.0)	3.94 (100.0)	-	2.95 (75.0)	2.20 (56.0)	0.94 (23.9)	0.55 (14.0)	0.04 (1.0)	4-15	1.38 (35.0)	2-M6 Depth 0.39 (10.0)
	SBB25MS-RFCT-96	25ARF Flange	5.00 (127.0)	-	-	6.79 (172.5)	1.30 (33.0)	3.35 (85.0)	4.92 (125.0)	-	3.54 (90.0)	2.64 (67.0)	1.21 (30.7)	0.55 (14.0)	0.04 (1.0)	4-19	1.57 (40.0)	2-M6 Depth 0.39 (10.0)
	SBB10MS-WCT	10A Butt weld	7.48 (190.0)	1.97 (50.0)	-	4.78 (121.5)	0.79 (20.0)	2.76 (70.0)	0.68 (17.3)	0.05 (1.2)	-	-	-	-	-	-	1.18 (30.0)	2-M6 Depth 0.39 (10.0)
	SBB15MS-WCT	15A Butt weld	7.87 (200.0)	1.97 (50.0)	-	4.94 (125.5)	0.94 (24.0)	2.76 (70.0)	0.85 (21.7)	0.06 (1.65)	-	-	-	-	-	-	1.18 (30.0)	2-M6 Depth 0.39 (10.0)
	SBB20MS-WCT	20A Butt weld	8.27 (210.0)	1.97 (50.0)	-	5.79 (147.0)	1.10 (28.0)	2.76 (70.0)	1.07 (27.2)	0.06 (1.65)	-	-	-	-	-	-	1.38 (35.0)	2-M6 Depth 0.39 (10.0)
	SBB25MS-WCT	25A Butt weld	8.66 (220.0)	1.97 (50.0)	-	6.79 (172.5)	1.30 (33.0)	3.35 (85.0)	1.34 (34.0)	0.06 (1.65)	-	-	-	-	-	-	1.57 (40.0)	2-M6 Depth 0.39 (10.0)

### Product Code Table

<b>Model</b> SBB	<b>Size</b> 15	<b>Operation</b> C	<b>Valve shape</b> S	<b>Connection</b> W	<b>Bonnet Gasket material</b> C	<b>Disk material</b> T	<b>Purge port</b> IP	<b>Grade + Body material</b> EP-316L
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IBC-type bellows seal valve

15:15A  
20:20A  
25:25A

C: Normally closed  
O: Normally open\*1

Straight

W: Butt Weld  
U: Union\*2  
RF: RF Flange

PCTFE

PTFE

Not shown:  
No purge port  
IP: 1st  
OP: 2nd  
PP: Both

STD-316L : Mechanical Polish + SUS316L  
EP-316L : Electro Polish + SUS316L

\*1 Normally open:25A are available.

\*2 The union type consists of interlock and butt weld types.

### Dimensions

Model	Type	Conne- ction	L	L <sub>1</sub>	L <sub>2</sub>	H	H <sub>1</sub>	A	D	t	C	G	d	F	f	n-φh	P	B	M <sub>1</sub>
	SBB15CS-UCT	15A union (insertion-type)	3.94 (100.0)	1.38 (35.0)	0.59 (15.0)	6.61 (168.0)	0.94 (24.0)	3.74 (95.0)	-	-	-	-	0.87 (22.2)	-	-	-	Rc1/4	1.18 (30.0)	2-M6 Depth 0.39 (10.0)
	SBB20CS-UCT	20A union (insertion-type)	4.33 (110.0)	1.38 (35.0)	0.59 (15.0)	7.17 (182.0)	1.10 (28.0)	3.74 (95.0)	-	-	-	-	1.09 (27.7)	-	-	-	Rc1/4	1.38 (35.0)	2-M6 Depth 0.39 (10.0)
	SBB25CS-UCT	25A union (insertion-type)	4.72 (120.0)	1.38 (35.0)	0.59 (15.0)	8.35 (212.0)	1.30 (33.0)	4.13 (105.0)	-	-	-	-	1.36 (34.5)	-	-	-	Rc1/4	1.57 (40.0)	2-M6 Depth 0.39 (10.0)
	SBB25OS-UCT	25A union (insertion-type)	4.72 (120.0)	1.38 (35.0)	0.59 (15.0)	7.17 (182.0)	1.30 (33.0)	4.13 (105.0)	-	-	-	-	1.36 (34.5)	-	-	-	Rc1/4	1.57 (40.0)	2-M6 Depth 0.39 (10.0)
	SBB15CS-UCT-18	15A union (Butt Weld)	3.94 (100.0)	2.05 (52.0)	-	6.61 (168.0)	0.94 (24.0)	3.74 (95.0)	0.85 (21.7)	0.06 (1.65)	-	-	-	-	-	-	Rc1/4	1.18 (30.0)	2-M6 Depth 0.39 (10.0)
	SBB20CS-UCT-21	20A union (Butt Weld)	4.33 (110.0)	2.09 (53.0)	-	7.17 (182.0)	1.10 (28.0)	3.74 (95.0)	1.07 (27.2)	0.06 (1.65)	-	-	-	-	-	-	Rc1/4	1.38 (35.0)	2-M6 Depth 0.39 (10.0)
	SBB25CS-UCT-14	25A union (Butt Weld)	4.72 (120.0)	2.09 (53.0)	-	8.35 (212.0)	1.30 (33.0)	4.13 (105.0)	1.34 (34.0)	0.06 (1.65)	-	-	-	-	-	-	Rc1/4	1.57 (40.0)	2-M6 Depth 0.39 (10.0)
	SBB25OS-UCT-04	25A union (Butt Weld)	4.72 (120.0)	2.09 (53.0)	-	7.17 (182.0)	1.30 (33.0)	4.13 (105.0)	1.34 (34.0)	0.06 (1.65)	-	-	-	-	-	-	Rc1/4	1.57 (40.0)	2-M6 Depth 0.39 (10.0)
	SBB15CS-RFCT	15A RF Flange	4.25 (108.0)	-	-	6.61 (168.0)	0.94 (24.0)	3.74 (95.0)	3.74 (95.0)	-	2.76 (70.0)	2.01 (51.0)	0.72 (18.4)	0.47 (12.0)	0.04 (1.0)	4-15	Rc1/4	1.18 (30.0)	2-M6 Depth 0.39 (10.0)
	SBB20CS-RFCT	20A RF Flange	4.61 (117.0)	-	-	7.17 (182.0)	1.10 (28.0)	3.74 (95.0)	3.94 (100.0)	-	2.95 (75.0)	2.20 (56.0)	0.94 (23.9)	0.55 (14.0)	0.04 (1.0)	4-15	Rc1/4	1.38 (35.0)	2-M6 Depth 0.39 (10.0)
	SBB25CS-RFCT	25A RF Flange	5.00 (127.0)	-	-	8.35 (212.0)	1.30 (33.0)	4.13 (105.0)	4.92 (125.0)	-	3.54 (90.0)	2.64 (67.0)	1.21 (30.7)	0.55 (14.0)	0.04 (1.0)	4-19	Rc1/4	1.57 (40.0)	2-M6 Depth 0.39 (10.0)
	SBB25OS-RFCT	25A RF Flange	5.00 (127.0)	-	-	7.17 (182.0)	1.30 (33.0)	4.13 (105.0)	4.92 (125.0)	-	3.54 (90.0)	2.64 (67.0)	1.21 (30.7)	0.55 (14.0)	0.04 (1.0)	4-19	Rc1/4	1.57 (40.0)	2-M6 Depth 0.39 (10.0)
	SBB15CS-WCT	15A Butt weld	7.87 (200.0)	1.97 (50.0)	-	6.61 (168.0)	0.94 (24.0)	3.74 (95.0)	0.85 (21.7)	0.06 (1.65)	-	-	-	-	-	-	Rc1/4	1.18 (30.0)	2-M6 Depth 0.39 (10.0)
	SBB20CS-WCT	20A Butt weld	8.3 (210.0)	1.97 (50.0)	-	7.17 (182.0)	1.10 (28.0)	3.74 (95.0)	1.07 (27.2)	0.06 (1.65)	-	-	-	-	-	-	Rc1/4	1.38 (35.0)	2-M6 Depth 0.39 (10.0)
	SBB25CS-WCT	25A Butt weld	8.66 (220.0)	1.97 (50.0)	-	8.35 (212.0)	1.30 (33.0)	4.13 (105.0)	1.34 (34.0)	0.06 (1.65)	-	-	-	-	-	-	Rc1/4	1.57 (40.0)	2-M6 Depth 0.39 (10.0)
	SBB25OS-WCT	25A Butt weld	8.66 (220.0)	1.97 (50.0)	-	7.17 (182.0)	1.30 (33.0)	4.13 (105.0)	1.34 (34.0)	0.06 (1.65)	-	-	-	-	-	-	Rc1/4	1.57 (40.0)	2-M6 Depth 0.39 (10.0)

Note: For the flange type alone, when adding a purge port to the fitting, the face-to-face dimension (L) may change.  
For details, confirm with your sales representative.



# IBC/IBD/IBE

**Bellows Valves**  
Large-size Straight Type

The IBC/IBD/IBE series, like the SBB series, consist of larger pipe size bellows valves that, while having a compact design, high Cv value, and high durability, are premised on use in supply lines.

## Features

- ⊙ KITZ SCT's Y shape structure yields higher Cv than conventional S shape structure.
- ⊙ The inner surfaces of the IBC/IBD valves are uniformly polished whole-surface cylindrical grinding.
- ⊙ Because of their screw-sleeve structure with built-in bearing, the IBE valves require less torque on the handle for easy operation.
- ⊙ Adopted a seat structure to reduce gas pooling and particle shedding.
- ⊙ With the IBC series, by setting the air supply inlet on the top of the actuator, there is no concern over piping direction.
- ⊙ With the IBD series, realization of more compact design through positioning the actuator on the side.
- ⊙ Purge port options available for the Inlet, Outlet, or Both.

## Specifications

Model		IBC			IBD			IBE					
Model (size)		32A	40A	50A	65A	80A	100A	125A	150A	200A	250A	300A	
Cv		21.0	30.0	51.0	89.0	127.0	205.0	329.0	473.0	1117.0	1739.0	2608.0	
Wetted Area Volume		368cm <sup>3</sup>	440cm <sup>3</sup>	980cm <sup>3</sup>	1710cm <sup>3</sup>	2910cm <sup>3</sup>	5890cm <sup>3</sup>	11310cm <sup>3</sup>	19290cm <sup>3</sup>	45700cm <sup>3</sup>	71100cm <sup>3</sup>	131260cm <sup>3</sup>	
Maximum Operating Pressure		Butt Weld, OPEN State 142psig(0.98MPa (G))											
Fluid Temperature	Manual	-10~100°C											
	Pneumatic	-10°C~80°C			-								
Atmospheric Temperature		-10°C~60°C											
Leak Rates	Across the Seat He Leak Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)											
	Inboard He Leak Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)											
Actuation Pressure		72~101psig (0.5~0.7MPa (G))			-								
Cycle Life		10,000 cycles (N2 charged, In-house Test)											

## Product Grade

Specifications		IBC Series		IBD Series		IBE Series	
Grade		STD	EP (electro polished)	STD	EP (electro polished)	STD	EP (electro polished)
Material		SCS16A				SCS16A (125A~150A) SUS316L (200A~300A)	
Surface Roughness	Body Inner Only	Rz 6.0 μm/236.22μin	≤ Ra0.13μm/5μin	Rz 6.0 μm/236.22μin	≤ Ra0.13μm/5μin	Rz 6.0 μm/236.22μin (125A~150A)	Rz 12.0 μm (200A~300A) ≤ Ra0.13μm/5μin
Cleaning		Degreasing + Precision Cleaning					
Packaging		Single Bagged Package	Double Bagged Package	Single Bagged Package	Double Bagged Package	Single Bagged Package	Double Bagged Package

## Precautions

- ① IBC/IBD/IBE Series cannot be used with reactive or corrosive gases, nor with any liquids.
- ② The valves are not guaranteed to function if their exterior is submerged inside a vacuum.



## Product Code Table

Model	Size	Operation Method	Valve Shape	Connection Method	Bonnet Gasket material	Disk Material	Purge Port	Grade + Body Material
IBC	32	M	Y3	W	C	T	IP	EP-316L
IBC-type bellows Seal valve		32: 32A 40: 40A	Manual	Y-type Mold	W: Butt Weld RF: RF Flange	C: PCTFE PTFE	Not Displayed: Without Purge Port IP: 1st OP: 2nd PP: Both	STD-316L : Mechanical polish + SUS316L EP-316L : Electro polish + SUS316L

Note: Please ask to the sales representative about handle color.  
Note: Inch size butt weld also available.

## IBC 32A-40A Dimensions

Unit: inch (mm)

Model	Type	Connection	L	E	H	A	D	d	t
	IBC32MY3-WCT	32A Butt Weld	10.63 (270.0)	2.17 (55.0)	7.87 (200.0)	4.72 (120.0)	1.68 (42.7)	1.55 (39.4)	0.06 (1.65)
	IBC40MY3-WCT	40A Butt Weld	10.63 (270.0)	2.17 (55.0)	7.87 (200.0)	4.72 (120.0)	1.91 (48.6)	1.78 (45.3)	0.06 (1.65)



### Product Code Table

Note: Please ask to the sales representative about handle color.

<b>Model</b> IBD	<b>Size</b> 50	<b>Operation</b> M	<b>Valve Shape</b> Y3	<b>Connection</b> W	<b>Bonnet Gasket Material</b> C	<b>Disk Material</b> T	<b>Purge Port</b> IP	<b>Grade + Body Material</b> EP-316L
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IBD-type bellows Seal valve    50:50A 65:65A 80:80A 100:100A    M: Manual    Y-type Mold    W:Butt Weld RF:RF Flange    C:PC TFE    PTFE    Not Displayed: Without Purge Port IP:1st OP:2nd PP:Both    STD-316L : Mechanical Polish + SUS316L EP-316L : Electro Polish + SUS316L

### Dimensions

Unit: inch (mm)

Model	Type	Connection	L	E	H	A	D	d	t
	IBD50MY3-WCT	50A Butt Weld	13.39 (340.0)	2.36 (60.0)	10.47 (266.0)	5.51 (140.0)	2.38 (60.5)	2.25 (57.2)	0.06 (1.65)
	IBD65MY3-WCT	65A Butt Weld	14.96 (380.0)	2.36 (60.0)	11.69 (297.0)	6.30 (160.0)	3.00 (76.3)	2.84 (72.1)	0.08 (2.10)
	IBD80MY3-WCT	80A Butt Weld	16.54 (420.0)	2.36 (60.0)	14.80 (376.0)	7.87 (200.0)	3.51 (89.1)	3.34 (84.9)	0.08 (2.10)
	IBD100MY3-WCT	100A Butt Weld	20.47 (520.0)	3.15 (80.0)	16.18 (411.0)	8.86 (225.0)	4.50 (114.3)	4.33 (110.1)	0.08 (2.10)

### Product Code Table

Note: Please ask to the sales representative about handle color.

<b>Model</b> IBE	<b>Size</b> 125	<b>Operation Method</b> M	<b>Valve Shape</b> Y3	<b>Connection Method</b> W	<b>Bonnet Gasket Material</b> C	<b>Disk Material</b> T	<b>Purge Port</b> IP	<b>Grade + Body Material</b> EP-316L
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IBE-type bellows Seal valve    125:125A 150:150A    M: Manual    Y-type Mold    W: Butt Weld RF: RF Flange    C: PCTFE    PTFE    Not Displayed: Without Purge Port IP: 1st OP: 2nd PP: Both    STD-316L : Mechanical Polish + SUS316L EP-316L : Electro Polish + SUS316L

### Dimensions

Unit: inch (mm)

Model	Type	Connection	L	E	H	A	D	d	t
	IBE125MY3-WCT	125A Butt Weld	24.41 (620.0)	3.94 (100.0)	23.39 (594.0)	11.81 (300.0)	5.50 (139.8)	5.28 (134.2)	0.11 (2.8)
	IBE150MY3-WCT	150A Butt Weld	28.35 (720.0)	4.33 (110.0)	26.89 (683.0)	13.78 (350.0)	6.50 (165.2)	6.28 (159.6)	0.11 (2.8)

### Product Code Table

Note: Please ask to the sales representative about handle color.

<b>Model</b> IBE	<b>Size</b> 200	<b>Operation</b> M	<b>Valve Shape</b> Y2	<b>Connection</b> W	<b>Bonnet Gasket Material</b> C	<b>Disk Material</b> T	<b>Purge Port</b> IP	<b>Grade + Body Material</b> EP-316L
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IBE-type bellows Seal valve    200:200A 250:250A 300:300A    M: Manual    Y-type Steel Pipe Weld    W: Butt Weld RF: RF Flange    C: PCTFE    PTFE    Not Displayed: Without Purge Port IP: 1st OP: 2nd PP: Both    STD-316L : Mechanical Polish + SUS316L EP-316L : Electro Polish + SUS316L

### IBE 200A-250A-300A Dimensions

Unit: inch (mm)

Model	Type	Connection Joint	L	E	H	A	D	d	t
	IBE200MY2-WCT	200A Butt Weld	35.43 (900.0)	4.33 (110.0)	36.51 (927.3)	15.75 (400.0)	8.52 (216.3)	8.20 (208.3)	0.16 (4.0)
	IBE250MY2-WCT	250A Butt Weld	43.31 (1100.0)	5.31 (135.0)	42.09 (1069.0)	17.72 (450.0)	10.53 (267.4)	10.21 (259.4)	0.16 (4.0)
	IBE300MY2-WCT	300A Butt Weld	52.76 (1340.0)	6.93 (176.0)	49.65 (1261.0)	19.69 (500.0)	12.54 (318.5)	12.19 (309.5)	0.18 (4.5)



### Product Code Table

<b>Model</b> IBD	<b>Size</b> 32	<b>Operation</b> C	<b>Valve Shape</b> Y3	<b>Connection</b> W	<b>Gasket Material</b> C	<b>Disk Material</b> T	<b>Purge Port</b> IP	<b>Grade + Body Material</b> EP-316L
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IBC-type bellows Seal valve    32:32A 40:40A    C: Normally Closed    Y-type Mold    W:Butt Weld RF:RF Flange    C:PCTFE    PTFE    Not Displayed: Without Purge Port IP:Inlet OP:Outlet PP:Both    STD-316L : Mechanical Polish + SUS316L EP-316L : Electro Polish + SUS316L

### Dimensions

Unit: inch (mm)

Model	Type	Connection	L	E	H	A	D	P	d	t
	IBC32CY3-WCT	32A Butt Weld	10.63 (270.0)	2.17 (55.0)	11.46 (291.0)	3.94 (100.0)	1.68 (42.7)	Rc1/4	1.55 (39.4)	0.06 (1.65)
	IBC40CY3-WCT	40A Butt Weld	10.63 (270.0)	2.17 (55.0)	11.46 (291.0)	3.94 (100.0)	1.91 (48.6)	Rc1/4	1.78 (45.3)	0.06 (1.65)

### Product Code Table

<b>Model</b> IBD	<b>Size</b> 50	<b>Operation</b> C	<b>Valve Shape</b> Y3	<b>Connection</b> W	<b>Gasket Material</b> C	<b>Disk Material</b> T	<b>Purge Port</b> IP	<b>Grade + Body Material</b> EP-316L
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IBD-type bellows Seal valve    50:50A    C: Normally Closed    Y-type Mold    W:Butt Weld RF:RF Flange    C:PCTFE    PTFE    Not Displayed: Without Purge Port IP:Inlet OP:Outlet PP:Both    STD-316L : Mechanical Polish + SUS316L EP-316L : Electro Polish + SUS316L

### Dimensions

Unit: inch (mm)

Model	Type	Connection	L	E	H	A	D	P	d	t
	IBD50CY3-WCT	50A Butt Weld	13.39 (340.0)	2.36 (60.0)	16.65 (423.0)	4.96 (126.0)	2.38 (60.5)	Rc1/4	2.25 (57.2)	0.06 (1.65)

# BZD

## Clean Butterfly Valves

The BZD series valves are semiconductor-grade butterfly valves that are based on conventional industrial butterfly valves but were perfected by applying KITZ SCT's original cleaning technology.

### ■ Features

- The valve body and the parts in the wetted area are a wafer-shaped industrial butterfly valve made of stainless steel. The parts in the wetted area are polished and undergo oil-free processing in order to minimize particle accumulation and adhesion.
- Because the valves adopt a double eccentric structure in which the stem's center of rotation deviates slightly from the disk seal surface as well as the center of the disk (pipe), there is no contact between the disk and seat ring when the valve is fully open, which prevents deformation of the seat and excessive abrasion to ensure a high level of sealing capability.
- Giving more width to the disk and seat ring seal surfaces improves the sealing capability, and the valves can be operated with a small opening/closing torque because excess swaging is not necessary.
- The seat material is durable PTFE. In addition, cracking, peeling, or excessive abrasion will not occur in the seat ring because it has a double eccentric structure with fully uniform seal contact pressure, appropriate swaging force, etc., forming a structure that will withstand long-term use.
- Use of the gears in the actuation mechanism requires only small amount of force. It also takes up less footprint than conventional lever operated valves.
- A pneumatic actuator can be mounted by using a bracket and connector.

### ■ Specifications

Size	50A	65A	80A	100A	125A	150A	200A	250A	300A	350A	400A	
Cv Value	90° Open	83	175	255	460	722	1180	2240	3660	5640	7060	9390
	60° Open	54	112	164	295	462	756	1140	2350	3610	4520	6010
	45° Open	33	69	101	182	285	465	883	1450	2230	2790	3700
	30° Open	17	36	52	94	147	240	455	743	1150	1440	1910
Maximum Operating Pressure	142psig (0.98MPa(G))											
Fluid Temperature	-10~80°C											
Atmospheric Temperature	-10°C~60°C											
Fluid Used	Inert gas (Not compatible with active gas or corrosive gas.)											
Cycle Life	10,000 cycles											

### ■ Product Grade

Grade	STD
Material	SCS13A, SCS14A, SCS16A
Surface Roughness	≤ 150A / Rz 6.0 μm ≥ 200A / ≤ Rz 12.0 μm
Cleaning	Degreasing + Precision cleaning
Packaging	Double bagged package

### ■ Standard Materials

Body	SCS13A (SCS14A, SCS16A)*1
------	---------------------------

\*1 SCS13A: equivalent to SUS304, SCS14A: SUS316L equivalent  
SCS16A: SUS316L equivalent

### ■ Precautions

- ① The BZD Series cannot be used with reactive or corrosive gases, nor with any liquids.
- ② The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ③ The flow direction for these valves is restricted. Mount in accordance with the arrow on the product. Use with back pressure is not possible.



### ■ Product Code Table

Model	Size	Operation	Valve shape	Connection	Body Gasket material	Seat material	Custom specifications	Grade + Body material
BZD	50	M	S	RF	X	T	Technical number	STD-304
Clean Butterfly valve	50:50A 65:65A 80:80A 100:100A 125:125A 150:150A 200:200A 250:250A 300:300A 350:350A 400:400A	M: Manual	Straight	RF: RF flange	X: not provided (During RF)	PTFE	Blank: Standard Product	STD-304 : 304-equivalent (SCS 13A) STD-316 : 316-equivalent (SCS 14A) STD-316L : 316-equivalent (SCS 16A)

### ■ Dimensions

Unit: inch (mm)

Model	Type	Connection	D	H	E	F	A	C	B	G
	BZD65MS-RFXT	JIS 10K-65ARF Flange	8.54 (217.0)	12.48 (317.0)	6.22 (158.0)	1.81 (46.0)	5.51 (140.0)	4.53 (115.0)	2.56 (65.0)	5.51 (140.0)
	BZD80MS-RFXT	JIS 10K-80ARF Flange	10.63 (270.0)	14.21 (361.0)	7.95 (202.0)	1.81 (46.0)	6.69 (170.0)	4.96 (126.0)	3.07 (78.0)	5.91 (150.0)
	BZD100MS-RFXT	JIS 10K-100ARF Flange	10.65 (270.5)	15.20 (386.0)	7.99 (203.0)	2.05 (52.0)	6.69 (170.0)	5.75 (146.0)	3.86 (98.0)	6.89 (175.0)
	BZD125MS-RFXT	JIS 10K-125ARF Flange	11.57 (294.0)	17.50 (444.5)	8.66 (220.0)	2.20 (56.0)	7.87 (200.0)	7.13 (181.0)	4.84 (123.0)	8.86 (225.0)
	BZD150MS-RFXT	JIS 10K-150ARF Flange	12.32 (313.0)	18.84 (478.5)	8.66 (220.0)	2.20 (56.0)	7.87 (200.0)	8.31 (211.0)	5.83 (148.0)	9.45 (240.0)
	BZD200MS-RFXT	JIS 10K-200ARF Flange	16.22 (412.0)	24.76 (629.0)	12.20 (310.0)	2.80 (71.0)	12.20 (310.0)	10.12 (257.0)	7.76 (197.0)	11.42 (290.0)

# Ultra High Purity Fittings

## FITTING

### Reliable enough to handle high-purity gas KITZ-SCT's series of fittings

In the IT era, semiconductor-related products are becoming more advanced at an accelerated pace and the requirements placed on gas piping system materials have become more diverse.

KITZ-SCT offers a wide range supply of UHP fittings to accommodate high-purity gases and meets the needs of the application precisely. The products presented here are the CVC (clean vacuum coupling) series of mechanically welded joints, the SCM (Super-Clean Micro Fittings), SCL (Super-Clean Long Fittings), and SCF (super-clean fitting) series of primarily weld fittings. All product groups are high-reliability, high-quality products that are based on each type of semiconductor-use piping material and underwent a rigorous production process. Can accommodate high-pressure certified products. Please contact our sales representative for details.

#### ■ CVC (Clean Vacuum Couplings)

Gland .....	48
Nut .....	49
Gasket .....	50
Union .....	51
Double Union .....	52
Manifold .....	54

#### ■ SCM/SCL (Automatic Welded Fittings)

SCM Super-clean Micro Fittings .....	56
SCL Super-clean Long Fittings .....	58

#### ■ SCF (Automatic Welded Fittings)

Superclean Fittings .....	59
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#### ■ SQ (Super Quartz Lock Fittings)

Super Quartz Lock Fittings .....	66
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#### ■ IF (IF Flange)

IF Flange .....	67
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CVC



SCM/SCL



SCF

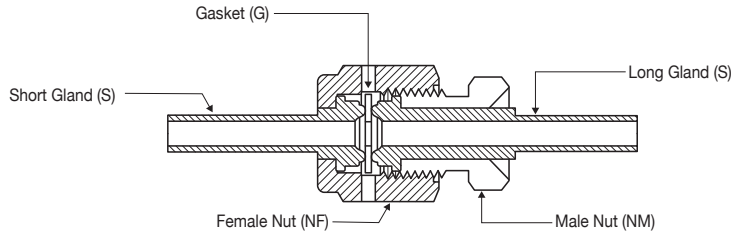
# CVC

## Clean Vacuum Coupling

Mechanical Metal Gasket  
Surface Seal Coupling

KITZ SCT's CVC fittings are fittings with mechanical metal gasket sealing surface. KITZ SCT's unique electropolishing and cleaning, testing, and packaging are done in a clean room. This makes them suitable for use in UHP applications.

● The CVC fittings have the following component parts and features.



- (1) Female Nut (NF)      (2) Gland (S)      (3) Gasket (G)      (2) Gland (S)      (4) Male Nut (NM)

- (1) Female nut (NF): The female threading is silverplated to prevent galling and seizing for reliable tightening. In addition, the leak test ports (two locations) are positioned above the gasket line for easy verification of gasket installation and leak testing.
- (2) Gland (S): Finished to a smooth inner surface by KITZ SCT's unique surface finish techniques including electropolishing.
- (3) Gasket (G): A standard nickel gasket provides excellent seal with the sleeve from tightening.
- (4) Male nut (NM): The use of rolled threading gives the male nuts strength and enables reliable connections.

### Product Code Table

Model	Size	Type of Product		Sleeve Dimensions	Space	Grade + Material			
CVC	4	S		28	<input type="checkbox"/>	STD 316L			
CVC Metal Gasket Surface Seal Fittings	2	1/8"	Gland	S	Gland	1/8"	12	316	Unpolished + SUS316
	4	1/4"		SB	Blind Gland		22	STD 316	Mechanical Polished Finish + SUS316
	6	3/8"		□S	Reducing Gland		27	STD 316L	Mechanical Polished Finish + SUS316L
	8	1/2"	Nut	NF	Female Nut	1/4"	15	EP 316	Electro Polished Finish + SUS316L
	12	3/4"		NM	Male Nut		28	EP 316L	Electro Polished Finish + SUS316L
				NSM	Male Short Nut		30.5	SEP 316LE	Electro Polished Finish + SUS316L (Double Melt Material)
				NFH	Female Nut (High-flow)	3/8"	43		
				NMH	Male Nut (High-flow)		16		
				NBF	Female Blind Nut		28		
				NBM	Male Blind Nut		45		
			Gasket	G	Gasket	1/2"	16		
				RG	Retainer Gasket		28		
				BG	Blind Gasket		45		
		Union	UM	Male Union	3/4"	52			
			UB	Bulkhead Union					
			UBS	Bulkhead Union (Tube End)					
			UF	Female Union					
			UE	Union Elbow					
			UT	Union Tee					
			UC	Union Cross					
		Double Union	USFW	Double Female Union					
			UEFW	Doubled Female Union Elbow					
			UTFW	Double Female Union Tee					
			UCFW	Double Female Union Cross					
			USMW	Double Male Union					
			UEMW	Double Male Union Elbow					
			UTMW	Double Male Union Tee					
			UCMW	Double Male Union Cross					
		Manifold	ME	Manifold Elbow					
			MT	Manifold Tee					

Gasket only*	
NI	Electro Polished Finish + Pure nickel
316LE	Electro Polished Finish + SUS316LE (Double Melt Material)

\*Gasket of 316LE:1/4", 1/2" are available  
Note: There is a space between the grade and the material.

## Product Grade

Grade	STD	EP	SEP
Material	SUS316, SUS316L, SUS316LE (Double melt material)		
Surface Roughness	≤ Ra 0.5 μm / 20 μin	≤ Ra 0.13 μm / 5 μin	
Polish	Mechanical Polished	Electro Polished	
Cleaning	Degreasing + Precision cleaning		
Packaging *1	Single bagged package	Double bagged package	

\*1 All gaskets are single bagged package.

Note: Max. temperature and pressure may be referred to the table and graph below.

## Production Range Table

			SUS316			SUS316L		SUS316LE	NI
			Un-polished	STD	EP	STD	EP	SEP	EP
Gland	S	Gland							
	SB	Blind Gland	×	×	×	○	○	○	×
	□S	Reducing Gland							
Nut	NF	Female Nut							
	NM	Male Nut							
	NSM	Male Short Nut							
	NFH	Female Nut (High-flow)	○	×	×	×	×	×	×
	NMH	Male Nut (High-flow)							
	NBF	Female Blind Nut							
	NBM	Male Blind Nut							
Gasket	G	Gasket							
	RG	Retainer Gasket	×	×	×	×	×	○	○
	BG	Blind Gasket							
	BG-L□	Orifice Gasket							
Union	UM	Male Union	×	○	○	Optional	Optional	×	×
	UF	Female Union	○	×	×	×	×	×	×
	UB	Bulkhead Union	×	○	Optional	×	×	×	×
	UBS	Bulkhead Union (Tube End)	×	×	×	○	○	Optional	×
	UE	Union Elbow							
	UT	Union Tee	×	×	×	○	○	○	×
	UC	Union Cross							
Double union	USFW	Double Female Union							
	UEFW	Doubled Female Union Elbow							
	UTFW	Double Female Union Tee							
	UCFW	Double Female Union Cross	×	×	×	○	○	○	×
	USMW	Double Male Union							
	UEMW	Double Male Union Elbow							
	UTMW	Double Male Union Tee							
UCMW	Double Male Union Cross								
Manifold	ME	Manifold Elbow	×	×	×	○	○	○	×
	MT	Manifold Tee							

\*Gasket of 316LE:1/4", 1/2" are available

Note: Polish designator for the nuts, female unions, and gaskets are omitted from the model number for simplification purpose.

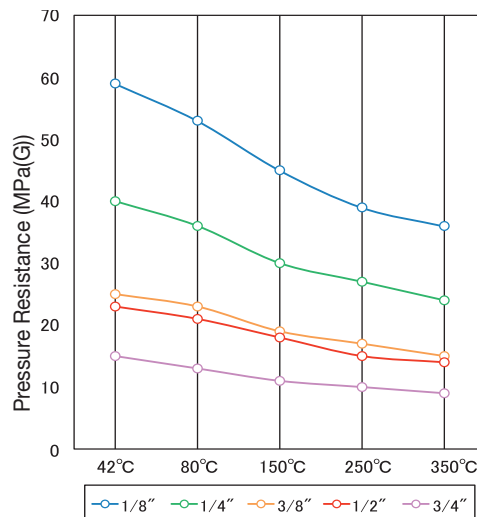
## Temperature and Pressure Resistance

Sleeve Size			Maximum Operating Pressure (MPa(G))				
Size	Outer Diameter	Thickness	42°C	80°C	150°C	250°C	350°C
1/8"	3.18	0.7	59	53	45	39	36
1/4"	6.35	1	40	36	30	27	24
3/8"	9.53	1	25	23	19	17	15
1/2"	12.7	1.24	23	21	18	15	14
3/4"	19.05	1.24	15	13	11	10	9


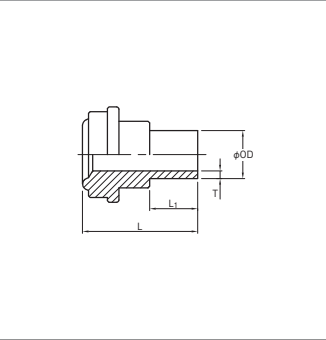
[note] 1. Max Pressure in the table are calculated by each wall thickness.


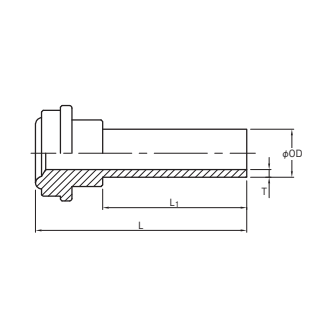
2. Temperature above 300°C, durability for re-assembly tend to decrease.


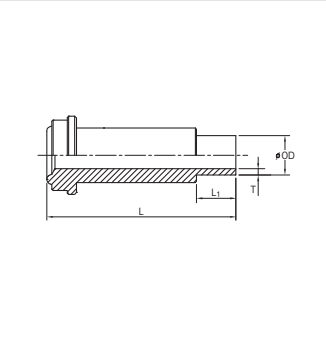
### CVC Temperature and Pressure Resistance


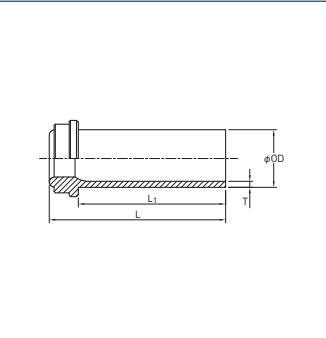



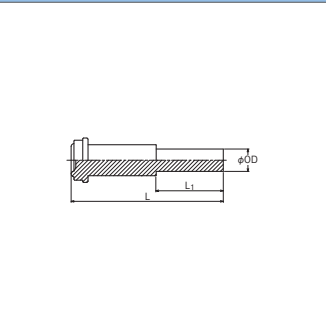


CVC Gland, for use with Female Nut		Type	Size	OD	T	L	L <sub>1</sub>
		CVC2-S12	1/8"	0.125 (3.18)	0.028 (0.70)	0.480 (12.20)	0.276 (7.00)
		CVC4-S15	1/4"	0.250 (6.35)	0.039 (1.00)	0.598 (15.20)	0.250 (6.35)
		CVC6-S16	3/8"	0.375 (9.53)	0.039 (1.00)	0.650 (16.50)	0.323 (8.20)
		CVC8-S16	1/2"	0.500 (12.70)	0.049 (1.24)	0.650 (16.50)	0.323 (8.20)


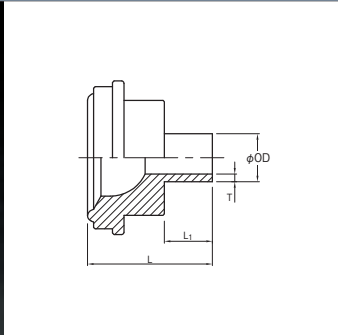
CVC Gland, for use with Female Nut		Type	Size	OD	T	L	L <sub>1</sub>
		CVC2-S27	1/8"	0.125 (3.18)	0.028 (0.70)	1.079 (27.40)	0.750 (19.05)
		CVC4-S28	1/4"	0.250 (6.35)	0.039 (1.00)	1.098 (27.90)	0.750 (19.05)
		CVC6-S28	3/8"	0.375 (9.53)	0.039 (1.00)	1.122 (28.50)	0.750 (19.05)
		CVC8-S28	1/2"	0.500 (12.70)	0.049 (1.24)	1.122 (28.50)	0.750 (19.05)


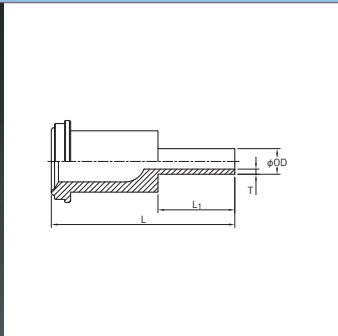
CVC Gland, for use with Male Nut		Type	Size	OD	T	L	L <sub>1</sub>
		CVC2-S22	1/8"	0.125 (3.18)	0.028 (0.70)	0.866 (22.00)	0.276 (7.00)
		CVC4-S30.5	1/4"	0.250 (6.35)	0.040 (1.00)	1.200 (30.50)	0.250 (6.35)
		CVC4-S43	1/4"	0.250 (6.35)	0.039 (1.00)	1.701 (43.20)	0.750 (19.05)
		CVC6-S45	3/8"	0.375 (9.53)	0.039 (1.00)	1.791 (45.50)	0.750 (19.05)
		CVC8-S45	1/2"	0.500 (12.70)	0.049 (1.24)	1.791 (45.50)	0.750 (19.05)
		CVC12-S52	3/4"	0.750 (19.05)	0.049 (1.24)	2.031 (51.60)	0.750 (19.05)


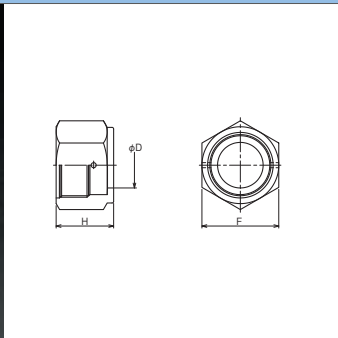
CVC Reducing Gland, High Flow Type		Type	Size	OD	T	L	L <sub>1</sub>
		CVC4-6S15	1/4"×3/8"	0.375 (9.53)	0.039 (1.00)	0.610 (15.50)	0.421 (10.70)
		CVC4-6S28	1/4"×3/8"	0.375 (9.53)	0.039 (1.00)	1.130 (28.70)	0.941 (23.90)
		CVC4-6S31	1/4"×3/8"	0.375 (9.53)	0.039 (1.00)	1.220 (31.00)	1.031 (26.20)
		CVC4-6S43	1/4"×3/8"	0.375 (9.53)	0.039 (1.00)	1.701 (43.20)	1.512 (38.40)


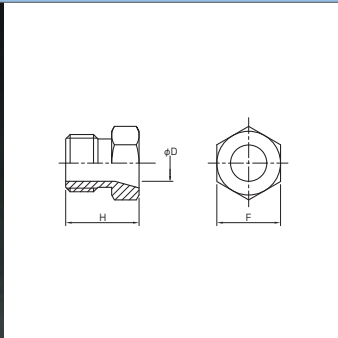
CVC Blind Gland		Type	Size	OD	L	L <sub>1</sub>
		CVC2-SB22	1/8"	0.125 (3.18)	0.866 (22.00)	0.276 (7.00)
		CVC4-SB28	1/4"	0.250 (6.35)	1.098 (27.90)	0.750 (19.05)
		CVC4-SB43	1/4"	0.250 (6.35)	1.701 (43.20)	0.750 (19.05)
		CVC8-SB45	1/2"(3/8")	0.500 (12.70)	1.791 (45.50)	0.750 (19.05)


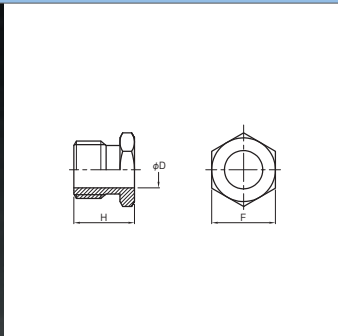



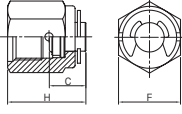
CVC Reducing Gland, for use with Female Nut		Type	Size	OD	T	L	L <sub>1</sub>
		CVC4-2S15	1/4"×1/8"	0.125 (3.18)	0.028 (0.70)	0.598 (15.20)	0.250 (6.35)
		CVC4-2S28	1/4"×1/8"	0.125 (3.18)	0.028 (0.70)	1.098 (27.90)	0.628 (15.95)
		CVC4-2S30.5	1/4"×1/8"	0.125 (3.18)	0.028 (0.70)	1.200 (30.50)	0.250 (6.35)
		CVC8-4S16	1/2"×1/4"	0.250 (6.35)	0.039 (1.00)	0.650 (16.50)	0.250 (6.35)
		CVC8-4S28	1/2"×1/4"	0.250 (6.35)	0.039 (1.00)	1.122 (28.50)	0.750 (19.05)


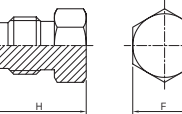
CVC Reducing Gland, for use with Male Nut		Type	Size	OD	T	L	L <sub>1</sub>
		CVC4-2S43	1/4"×1/8"	0.125 (3.18)	0.028 (0.70)	1.701 (43.20)	0.750 (19.05)
		CVC8-4S45	1/2"×1/4"	0.250 (6.35)	0.039 (1.00)	1.791 (45.50)	0.750 (19.05)


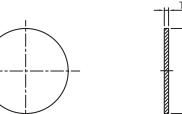
CVC Female Nut		Type	Size	D	H	F 2 surface width
		CVC2-NF	1/8"	0.205 (5.20)	0.531 (13.50)	0.433 (11.00)
		CVC4-NF	1/4"	0.354 (9.00)	0.815 (20.70)	0.748 (19.00)
		CVC4-NF-H	1/4"	0.382 (9.70)	0.815 (20.70)	0.748 (19.00)
		CVC8-NF	1/2" (3/8")	0.610 (15.50)	0.886 (22.50)	1.063 (27.00)
		CVC12-NF	3/4"	0.890 (22.60)	1.122 (28.50)	1.500 (38.10)

CVC Male Nut		Type	Size	D	H	F 2 surface width
		CVC2-NM	1/8"	0.205 (5.20)	0.500 (12.70)	0.374 (9.50)
		CVC4-NM	1/4"	0.354 (9.00)	0.717 (18.20)	0.622 (15.80)
		CVC4-NM-H	1/4"	0.382 (9.70)	0.717 (18.20)	0.622 (15.80)
		CVC8-NM	1/2" (3/8")	0.610 (15.50)	0.811 (20.60)	0.937 (23.80)
		CVC12-NM	3/4"	0.890 (22.60)	1.000 (25.40)	1.315 (33.40)


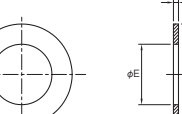
CVC Male Short Nut		Type	Size	D	H	F 2 surface width
		CVC4-NSM	1/4"	0.354 (9.00)	0.591 (15.00)	0.622 (15.80)
		CVC8-NSM	1/2" (3/8")	0.610 (15.50)	0.657 (16.70)	0.937 (23.80)


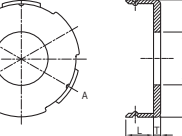
CVC Female Blind Nut		Type	Size	C	H	F 2 surface width
		CVC2-NBF	1/8"	0.315 (8.00)	0.638 (16.20)	0.433 (11.00)
		CVC4-NBF	1/4"	0.441 (11.20)	0.941 (23.90)	0.748 (19.00)
		CVC8-NBF	1/2" (3/8")	0.449 (11.40)	1.012 (25.70)	1.063 (27.00)
		CVC12-NBF	3/4"	0.528 (13.40)	1.276 (32.40)	1.500 (38.10)


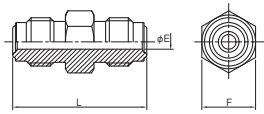
CVC Male Blind Nut		Type	Size	H	F 2 surface width
		CVC2-NBM	1/8"	0.618 (15.70)	0.374 (9.50)
		CVC4-NBM	1/4"	0.921 (23.40)	0.622 (15.80)
		CVC8-NBM	1/2" (3/8")	1.079 (27.40)	0.937 (23.80)
		CVC12-NBM	3/4"	1.429 (36.30)	1.315 (33.40)


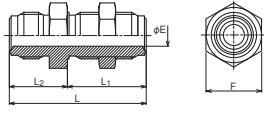
CVC Blind Gasket		Type	Size	T	D
		CVC2-BG	1/8"	0.020 (0.50)	0.250 (6.35)
		CVC4-BG	1/4"	0.031 (0.80)	0.469 (11.90)
		CVC8-BG	1/2" (3/8")	0.031 (0.80)	0.780 (19.80)
		CVC12-BG	3/4"	0.031 (0.80)	1.134 (28.80)


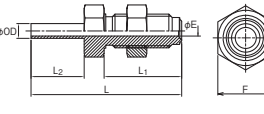
Note: Orifice gaskets of each size can be manufactured. For further inquiries, please consult your local sales representative.


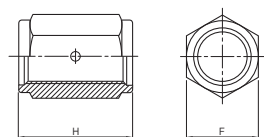
CVC Gasket		Type	Size	E	T	D
		CVC2-G	1/8"	0.091 (2.30)	0.020 (0.50)	0.250 (6.35)
		CVC4-G	1/4"	0.220 (5.60)	0.031 (0.80)	0.469 (11.90)
		CVC8-G	1/2" (3/8")	0.441 (11.20)	0.031 (0.80)	0.780 (19.80)
		CVC12-G	3/4"	0.669 (17.00)	0.031 (0.80)	1.134 (28.80)


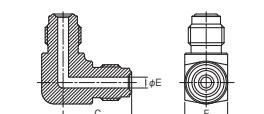
CVC Retainer Gasket		Type	Size	E	T	L	D
		CVC4-RG-NI	1/4"	0.240 (6.10)	0.031 (0.80)	0.118 (3.00)	0.488 (12.40)
		CVC4-RG-LE		0.220 (5.60)	0.031 (0.80)	0.118 (3.00)	0.488 (12.40)
		CVC8-RG-NI	1/2"	0.453 (11.50)	0.031 (0.80)	0.118 (3.00)	0.780 (19.80)
		CVC8-RG-LE		0.453 (11.50)	0.031 (0.80)	0.118 (3.00)	0.780 (19.80)


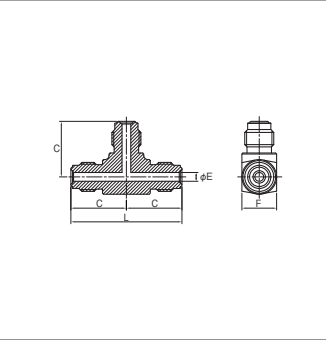
CVC Male Union		Type	Size	E	L	F 2surfacewidth
		CVC2-UM	1/8"	0.071 (1.80)	1.130 (28.70)	0.374 (9.50)
		CVC4-UM	1/4"	0.169 (4.30)	1.551 (39.40)	0.622 (15.80)
		CVC8-UM	1/2" (3/8")	0.402 (10.20)	1.839 (46.70)	0.937 (23.80)


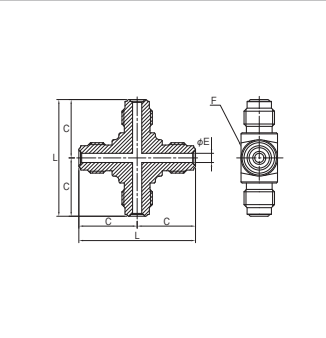
CVC Bulkhead Union		Type	Size	E	L	L <sub>1</sub>	L <sub>2</sub>	F2 surfacewidth	Panel hole diameter	Panel thickness (Max)
		CVC2-UB	1/8"	0.071 (1.80)	1.693 (43.00)	1.004 (25.50)	0.689 (17.50)	0.433 (11.00)	0.354 (9.00)	0.236 (6.00)
		CVC4-UB	1/4"	0.169 (4.30)	2.228 (56.60)	1.299 (33.00)	0.929 (23.60)	0.748 (19.00)	0.579 (14.70)	0.433 (11.00)
		CVC8-UB	1/2" (3/8")	0.402 (10.20)	2.571 (65.30)	1.480 (37.60)	1.091 (27.70)	1.063 (27.00)	0.890 (22.60)	0.866 (22.00)


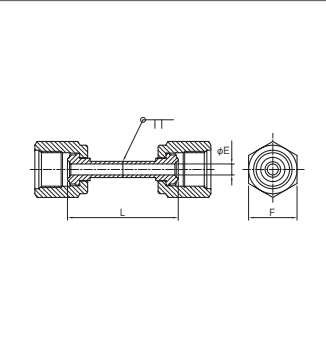
CVC Bulkhead Union (Tube End)		Type	Size	OD	E	L	L <sub>1</sub>	L <sub>2</sub>	F2 surfacewidth	Panel hole diameter	Panel thickness (Max)
		CVC4-UBS28	1/4"	0.250 (6.35)	0.169 (4.30)	2.358 (59.90)	1.299 (33.00)	0.750 (19.05)	0.748 (19.00)	0.579 (14.70)	0.433 (11.00)
		CVC6-UBS28	3/8"	0.375 (9.53)	0.295 (7.50)	2.571 (65.30)	1.480 (37.60)	0.750 (19.05)	1.063 (27.00)	0.890 (22.60)	0.866 (22.00)
		CVC8-UBS28	1/2" (3/8")	0.500 (12.70)	0.402 (10.20)	2.571 (65.30)	1.480 (37.60)	0.750 (19.05)	1.063 (27.00)	0.890 (22.60)	0.866 (22.00)


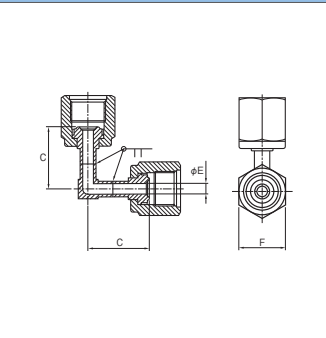
CVC Female Union		Type	Size	H	F 2surfacewidth
		CVC2-UF	1/8"	0.661 (16.80)	0.433 (11.00)
		CVC4-UF	1/4"	1.189 (30.20)	0.748 (19.00)
		CVC8-UF	1/2" (3/8")	1.311 (33.30)	1.063 (27.00)


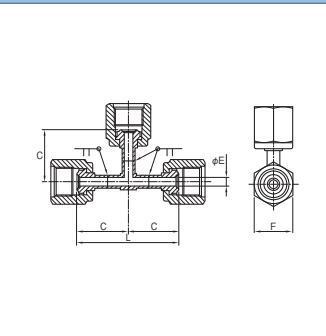
CVC Union Elbow		Type	Size	E	C	F 2surfacewidth
		CVC2-UE	1/8"	0.071 (1.80)	0.890 (22.60)	0.433 (11.00)
		CVC4-UE	1/4"	0.171 (4.35)	1.071 (27.20)	0.669 (17.00)
		CVC8-UE	1/2" (3/8")	0.402 (10.22)	1.449 (36.80)	0.984 (25.00)


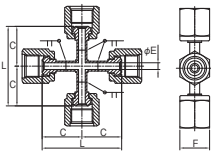
CVC Union Tee		Type	Size	E	L	C	F 2 surface width
		CVC2-UT	1/8"	0.071 (1.80)	1.780 (45.20)	0.890 (22.60)	0.433 (11.00)
		CVC4-UT	1/4"	0.171 (4.35)	2.142 (54.40)	1.071 (27.20)	0.669 (17.00)
		CVC8-UT	1/2" (3/8")	0.402 (10.22)	2.898 (73.60)	1.449 (36.80)	0.984 (25.00)


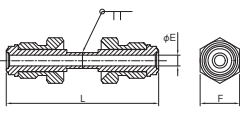
CVC Double Union Cross		Type	Size	E	L	C	F 2 surface width
		CVC2-UC	1/8"	0.071 (1.80)	1.780 (45.20)	0.890 (22.60)	0.433 (11.00)
		CVC4-UC	1/4"	0.171 (4.35)	2.142 (54.40)	1.071 (27.20)	0.669 (17.00)
		CVC8-UC	1/2" (3/8")	0.402 (10.22)	2.898 (73.60)	1.449 (36.80)	0.984 (25.00)


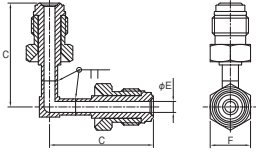
CVC Double Female Union		Type	Size	E	L	F 2 surface width
		CVC2-USFW	1/8"	0.071 (1.80)	1.142 (29.00)	0.433 (11.00)
		CVC4-USFW	1/4"	0.171 (4.35)	1.709 (43.40)	0.748 (19.00)
		CVC8-USFW	1/2" (3/8")	0.402 (10.20)	1.850 (47.00)	1.063 (27.00)


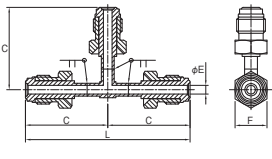
CVC Double Female Union Elbow		Type	Size	E	C	F 2 surface width
		CVC2-UEFW	1/8"	0.071 (1.80)	0.886 (22.50)	0.433 (11.00)
		CVC4-UEFW	1/4"	0.171 (4.35)	1.000 (25.40)	0.748 (19.00)
		CVC8-UEFW	1/2" (3/8")	0.402 (10.20)	1.173 (29.80)	1.063 (27.00)


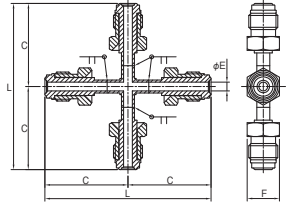
CVC Double Female Union Tee		Type	Size	E	L	C	F 2 surface width
		CVC2-UTFW	1/8"	0.071 (1.80)	1.772 (45.00)	0.886 (22.50)	0.433 (11.00)
		CVC4-UTFW	1/4"	0.171 (4.35)	2.000 (50.80)	1.000 (25.40)	0.748 (19.00)
		CVC8-UTFW	1/2" (3/8")	0.402 (10.20)	2.346 (59.60)	1.173 (29.80)	1.063 (27.00)

CVC Double Female Union Cross		Type	Size	E	L	C	F 2 surface width
		CVC2-UCFW	1/8"	0.071 (1.80)	1.772 (45.00)	0.886 (22.50)	0.433 (11.00)
		CVC4-UCFW	1/4"	0.171 (4.35)	2.000 (50.80)	1.000 (25.40)	0.748 (19.00)
		CVC8-UCFW	1/2" (3/8")	0.402 (10.20)	2.346 (59.60)	1.173 (29.80)	1.063 (27.00)

CVC Double Male Union		Type	Size	E	L	F 2 surface width
		CVC2-USMW	1/8"	0.071 (1.80)	1.732 (44.00)	0.374 (9.50)
		CVC4-USMW	1/4"	0.171 (4.35)	2.402 (61.00)	0.622 (15.80)
		CVC8-USMW	1/2" (3/8")	0.402 (10.20)	2.520 (64.00)	0.937 (23.80)

CVC Double Male Union Elbow		Type	Size	E	C	F 2 surface width
		CVC2-UEMW	1/8"	0.071 (1.80)	1.274 (32.35)	0.374 (9.50)
		CVC4-UEMW	1/4"	0.171 (4.35)	1.600 (40.65)	0.622 (15.80)
		CVC8-UEMW	1/2" (3/8")	0.402 (10.20)	1.783 (45.30)	0.937 (23.80)

CVC Double Male Union Tee		Type	Size	E	L	C	F 2 surface width
		CVC2-UTMW	1/8"	0.071 (1.80)	2.547 (64.70)	1.274 (32.35)	0.374 (9.50)
		CVC4-UTMW	1/4"	0.171 (4.35)	3.201 (81.30)	1.600 (40.65)	0.622 (15.80)
		CVC8-UTMW	1/2" (3/8")	0.402 (10.20)	3.567 (90.60)	1.783 (45.30)	0.937 (23.80)

CVC Double Male Union Cross		Type	Size	E	L	C	F 2 surface width
		CVC2-UCMW	1/8"	0.071 (1.80)	2.547 (64.70)	1.274 (32.35)	0.374 (9.50)
		CVC4-UCMW	1/4"	0.171 (4.35)	3.201 (81.30)	1.600 (40.65)	0.622 (15.80)
		CVC8-UCMW	1/2" (3/8")	0.402 (10.20)	3.567 (90.60)	1.783 (45.30)	0.937 (23.80)

Ultra High Purity Valves


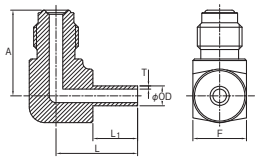
Ultra High Purity Fittings


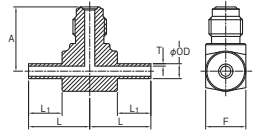
Vacuum Components

PFA Valves

PFA Weld Fittings

Antistatic Unit

CVC Manifold Elbow		Type	Size	OD	T	L	L <sub>1</sub>	A	F 2 surface width
		CVC4-ME	1/4"	0.250 (6.35)	0.039 (1.00)	0.984 (25.00)	0.524 (13.30)	1.071 (27.20)	0.669 (17.00)

CVC Manifold Tee		Type	Size	OD	T	L	L <sub>1</sub>	A	F 2 surface width
		CVC4-MT	1/4"	0.250 (6.35)	0.039 (1.00)	0.984 (25.00)	0.524 (13.30)	1.071 (27.20)	0.669 (17.00)



# SCM

Super-clean Micro Fittings  
Weld Fittings

# SCL

Super-clean Long Fittings  
Weld Fittings

## ■ Features

- ⊙ Double melt material is available as an option for use in UHP piping in order to suppress gas emissions.
- ⊙ Surface roughness Ra 0.13 μm or less achieved by electropolishing.
- ⊙ Compact shapes save piping spaces.
- ⊙ The neck (straight pipe section) enables high quality weld by using automatic orbital welder.

## ■ Features

- ⊙ Surface roughness Ra 0.13 μm or less achieved by electropolishing.
- ⊙ When installing manifold piping, the long straight pipe sections enable less work (one welding spot not needed) because additional pipe will not be necessary.
- ⊙ The neck (straight pipe section) enables high quality weld by using orbital welder.

## ■ Product Code Table


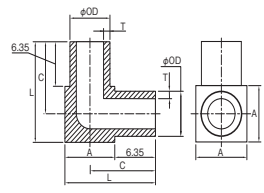
Model <b>SCM</b>	Space <input type="checkbox"/>	Size Large Diameter: <b>4</b> Small Diameter: <b>0</b>	Type of Product <b>E</b>	Custom Specifications <b>-P0413</b>	Grade + Material <b>STD 316L</b>																																			
SCM SCL Weld Fittings		<table border="1"> <tr><td>0</td><td>Same diameter as main line</td></tr> <tr><td>2</td><td>1/8"</td></tr> <tr><td>4</td><td>1/4"</td></tr> <tr><td>6</td><td>3/8"</td></tr> <tr><td>8</td><td>1/2"</td></tr> <tr><td>12</td><td>3/4"</td></tr> </table>	0	Same diameter as main line	2	1/8"	4	1/4"	6	3/8"	8	1/2"	12	3/4"	<table border="1"> <tr><td>E</td><td>Elbow</td></tr> <tr><td>T</td><td>Tee</td></tr> <tr><td>R</td><td>Reducer</td></tr> <tr><td>AT</td><td>Angle Tee</td></tr> <tr><td>C</td><td>Cross</td></tr> <tr><td>RT</td><td>Reducing Tee</td></tr> </table>	E	Elbow	T	Tee	R	Reducer	AT	Angle Tee	C	Cross	RT	Reducing Tee	<table border="1"> <tr><td>Space</td><td>Standard Item</td></tr> <tr><td>-P1304*</td><td rowspan="2">The length of the straight pipe part will differ depending on the placement. (6.35,21mm)</td></tr> <tr><td>-P0413*</td></tr> </table> <p>* Only SCM can be made for -P1304 and -P0413.</p>	Space	Standard Item	-P1304*	The length of the straight pipe part will differ depending on the placement. (6.35,21mm)	-P0413*	<table border="1"> <tr><td>STD 316L</td><td>Mechanical Polished + SUS316L</td></tr> <tr><td>EP 316L</td><td>Electro Polished + SUS316L</td></tr> <tr><td>SEP 316LE</td><td>Electro Polished + SUS316LE (Double Melt Material)</td></tr> </table> <p>Note: There is a space between the grade and the material.</p>	STD 316L	Mechanical Polished + SUS316L	EP 316L	Electro Polished + SUS316L	SEP 316LE	Electro Polished + SUS316LE (Double Melt Material)
0	Same diameter as main line																																							
2	1/8"																																							
4	1/4"																																							
6	3/8"																																							
8	1/2"																																							
12	3/4"																																							
E	Elbow																																							
T	Tee																																							
R	Reducer																																							
AT	Angle Tee																																							
C	Cross																																							
RT	Reducing Tee																																							
Space	Standard Item																																							
-P1304*	The length of the straight pipe part will differ depending on the placement. (6.35,21mm)																																							
-P0413*																																								
STD 316L	Mechanical Polished + SUS316L																																							
EP 316L	Electro Polished + SUS316L																																							
SEP 316LE	Electro Polished + SUS316LE (Double Melt Material)																																							


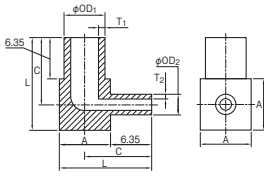
## ■ Product Grade


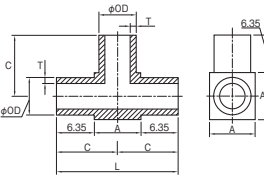
Grade	STD	EP	SEP
Material	SUS316L, SUS316LE (Double melt Material)		
Surface Roughness	Ra 0.5 μm / 20 μin	Ra 0.13 μm / 5 μin	
Polish	Mechanical Polished	Electro Polished	
Cleaning	Degreasing + Precision cleaning		
Packaging	Single bagged package	Double bagged package	


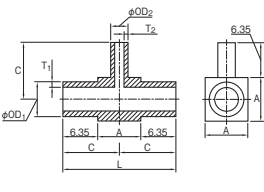
## ■ Production Range Table


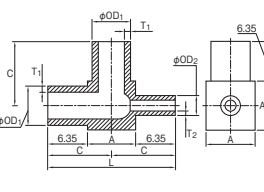
Type of Product	SUS316L		SUS316LE
	STD	EP	SEP
SCM	○	○	○
SCL	○	○	Option


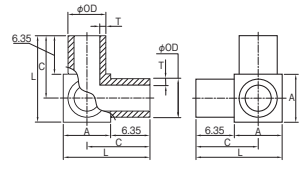
SCM 90° elbow		Type	Size	OD	T	C	A	L
		SCM 20E	1/8"	0.125 (3.18)	0.028 (0.70)	0.406 (10.32)	0.313 (7.94)	0.563 (14.29)
		SCM 40E	1/4"	0.250 (6.35)	0.039 (1.00)	0.406 (10.32)	0.313 (7.94)	0.563 (14.29)
		SCM 60E	3/8"	0.375 (9.53)	0.039 (1.00)	0.469 (11.91)	0.438 (11.12)	0.688 (17.47)
		SCM 80E	1/2"	0.500 (12.70)	0.049 (1.24)	0.531 (13.50)	0.563 (14.29)	0.813 (20.64)


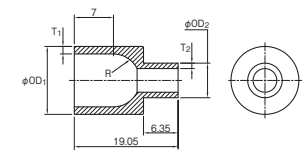
SCM 90° Reducing Elbow		Type	Size	OD <sub>1</sub>	T <sub>1</sub>	OD <sub>2</sub>	T <sub>2</sub>	C	A	L
		SCM 42E	1/4"×1/8"	0.250 (6.35)	0.039 (1.00)	0.125 (3.18)	0.028 (0.70)	0.406 (10.32)	0.313 (7.94)	0.563 (14.29)
		SCM 62E	3/8"×1/8"	0.375 (9.53)	0.039 (1.00)	0.125 (3.18)	0.028 (0.70)	0.469 (11.91)	0.438 (11.12)	0.688 (17.47)
		SCM 64E	3/8"×1/4"	0.375 (9.53)	0.039 (1.00)	0.250 (6.35)	0.039 (1.00)	0.469 (11.91)	0.438 (11.12)	0.688 (17.47)
		SCM 82E	1/2"×1/8"	0.500 (12.70)	0.049 (1.24)	0.125 (3.18)	0.028 (0.70)	0.531 (13.50)	0.563 (14.29)	0.813 (20.64)
		SCM 84E	1/2"×1/4"	0.500 (12.70)	0.049 (1.24)	0.250 (6.35)	0.039 (1.00)	0.531 (13.50)	0.563 (14.29)	0.813 (20.64)
		SCM 86E	1/2"×3/8"	0.500 (12.70)	0.049 (1.24)	0.375 (9.53)	0.039 (1.00)	0.531 (13.50)	0.563 (14.29)	0.813 (20.64)


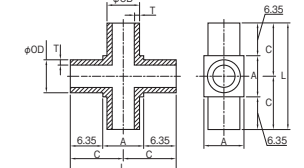
SCM Straight Tee		Type	Size	OD	T	C	A	L
		SCM 20T	1/8"	0.125 (3.18)	0.028 (0.70)	0.406 (10.32)	0.313 (7.94)	0.813 (20.64)
		SCM 40T	1/4"	0.250 (6.35)	0.039 (1.00)	0.406 (10.32)	0.313 (7.94)	0.813 (20.64)
		SCM 60T	3/8"	0.375 (9.53)	0.039 (1.00)	0.469 (11.91)	0.438 (11.12)	0.938 (23.82)
		SCM 80T	1/2"	0.500 (12.70)	0.049 (1.24)	0.531 (13.50)	0.563 (14.29)	1.063 (27.00)


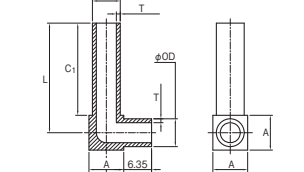
SCM Reducing Tee		Type	Size	OD <sub>1</sub>	T <sub>1</sub>	OD <sub>2</sub>	T <sub>2</sub>	C	A	L
		SCM 42T	1/4"×1/8"	0.250 (6.35)	0.039 (1.00)	0.125 (3.18)	0.028 (0.70)	0.406 (10.32)	0.313 (7.94)	0.813 (20.64)
		SCM 62T	3/8"×1/8"	0.375 (9.53)	0.039 (1.00)	0.125 (3.18)	0.028 (0.70)	0.469 (11.91)	0.438 (11.12)	0.938 (23.82)
		SCM 64T	3/8"×1/4"	0.375 (9.53)	0.039 (1.00)	0.250 (6.35)	0.039 (1.00)	0.469 (11.91)	0.438 (11.12)	0.938 (23.82)
		SCM 82T	1/2"×1/8"	0.500 (12.70)	0.049 (1.24)	0.125 (3.18)	0.028 (0.70)	0.531 (13.50)	0.563 (14.29)	1.063 (27.00)
		SCM 84T	1/2"×1/4"	0.500 (12.70)	0.049 (1.24)	0.250 (6.35)	0.039 (1.00)	0.531 (13.50)	0.563 (14.29)	1.063 (27.00)
		SCM 86T	1/2"×3/8"	0.500 (12.70)	0.049 (1.24)	0.375 (9.53)	0.039 (1.00)	0.531 (13.50)	0.563 (14.29)	1.063 (27.00)


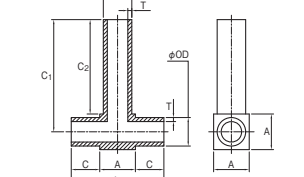
SCM Reducing Tee		Type	Size	OD <sub>1</sub>	T <sub>1</sub>	OD <sub>2</sub>	T <sub>2</sub>	C	A	L
		SCM 42RT	1/4"×1/8"	0.250 (6.35)	0.039 (1.00)	0.125 (3.18)	0.028 (0.70)	0.406 (10.32)	0.313 (7.94)	0.813 (20.64)
		SCM 62RT	3/8"×1/8"	0.375 (9.53)	0.039 (1.00)	0.125 (3.18)	0.028 (0.70)	0.469 (11.91)	0.438 (11.12)	0.938 (23.82)
		SCM 64RT	3/8"×1/4"	0.375 (9.53)	0.039 (1.00)	0.250 (6.35)	0.039 (1.00)	0.469 (11.91)	0.438 (11.12)	0.938 (23.82)
		SCM 82RT	1/2"×1/8"	0.500 (12.70)	0.049 (1.24)	0.125 (3.18)	0.028 (0.70)	0.531 (13.50)	0.563 (14.29)	1.063 (27.00)
		SCM 84RT	1/2"×1/4"	0.500 (12.70)	0.049 (1.24)	0.250 (6.35)	0.039 (1.00)	0.531 (13.50)	0.563 (14.29)	1.063 (27.00)
		SCM 86RT	1/2"×3/8"	0.500 (12.70)	0.049 (1.24)	0.375 (9.53)	0.039 (1.00)	0.531 (13.50)	0.563 (14.29)	1.063 (27.00)

SCM Angle Tee		Type	Size	OD	T	C	A	L
		SCM 20AT	1/8"	0.125 (3.18)	0.028 (0.70)	0.406 (10.32)	0.313 (7.94)	0.563 (14.29)
		SCM 40AT	1/4"	0.250 (6.35)	0.039 (1.00)	0.406 (10.32)	0.313 (7.94)	0.563 (14.29)
		SCM 60AT	3/8"	0.375 (9.53)	0.039 (1.00)	0.469 (11.91)	0.438 (11.12)	0.688 (17.47)
		SCM 80AT	1/2"	0.500 (12.70)	0.049 (1.24)	0.531 (13.50)	0.563 (14.29)	0.813 (20.64)

SCM Reducer		Type	Size	OD <sub>1</sub>	T <sub>1</sub>	OD <sub>2</sub>	T <sub>2</sub>	R
		SCM 42R	1/4"×1/8"	0.250 (6.35)	0.039 (1.00)	0.125 (3.18)	0.028 (0.70)	0.085 (2.15)
		SCM 62R	3/8"×1/8"	0.375 (9.53)	0.039 (1.00)	0.125 (3.18)	0.028 (0.70)	0.148 (3.75)
		SCM 64R	3/8"×1/4"	0.375 (9.53)	0.039 (1.00)	0.250 (6.35)	0.039 (1.00)	0.148 (3.75)
		SCM 82R	1/2"×1/8"	0.500 (12.70)	0.049 (1.24)	0.125 (3.18)	0.028 (0.70)	0.201 (5.10)
		SCM 84R	1/2"×1/4"	0.500 (12.70)	0.049 (1.24)	0.250 (6.35)	0.039 (1.00)	0.201 (5.10)
		SCM 86R	1/2"×3/8"	0.500 (12.70)	0.049 (1.24)	0.375 (9.53)	0.039 (1.00)	0.201 (5.10)

SCM Cross		Type	Size	OD	T	C	A	L
		SCM 20C	1/8"	0.125 (3.18)	0.028 (0.70)	0.406 (10.32)	0.313 (7.94)	0.813 (20.64)
		SCM 40C	1/4"	0.250 (6.35)	0.039 (1.00)	0.406 (10.32)	0.313 (7.94)	0.813 (20.64)
		SCM 60C	3/8"	0.375 (9.53)	0.039 (1.00)	0.469 (11.91)	0.438 (11.12)	0.938 (23.82)
		SCM 80C	1/2"	0.500 (12.70)	0.049 (1.24)	0.531 (13.50)	0.563 (14.29)	1.063 (27.00)

SCM Different-length Elbow		Type	Size	OD	T	A	C	C <sub>1</sub>	L
		SCM 40E-P0413	1/4"	0.250 (6.35)	0.039 (1.00)	0.313 (7.94)	0.406 (10.32)	0.827 (21.00)	0.984 (25.00)

SCM Different-length Tee		Type	Size	OD	T	A	C	C <sub>1</sub>	C <sub>2</sub>	L
		SCM 40T-P0413	1/4"	0.250 (6.35)	0.039 (1.00)	0.313 (7.94)	0.250 (6.35)	0.984 (25.00)	0.827 (21.00)	0.813 (20.64)

Ultra High Purity Valves


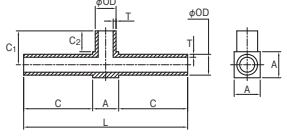
Ultra High Purity Fittings


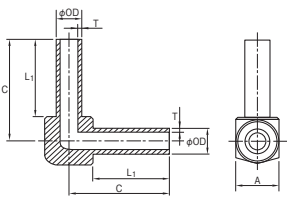
Vacuum Components


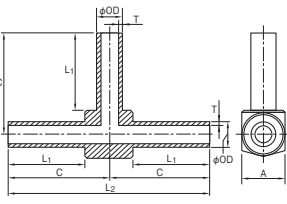
PFA Valves


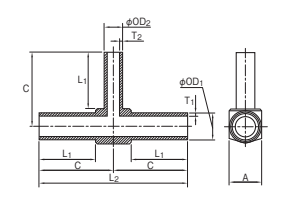
PFA Weld Fittings


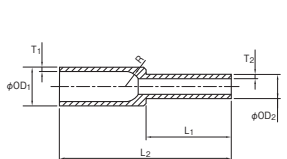
Antistatic Unit

SCM Different-length Tee		Type	Size	OD	T	A	C	C <sub>1</sub>	C <sub>2</sub>	L
		SCM 40T-P1304	1/4"	0.250 (6.35)	0.039 (1.00)	0.313 (7.94)	0.828 (21.03)	0.406 (10.32)	0.250 (6.35)	1.969 (50.00)

SCL 90° Elbow		Type	Size	OD	T	C	A	L <sub>1</sub>
		SCL 40E	1/4"	0.250 (6.35)	0.039 (1.00)	0.984 (25.00)	0.433 (11.00)	0.750 (19.05)
		SCL 60E	3/8"	0.375 (9.53)	0.039 (1.00)	0.984 (25.00)	0.433 (11.00)	0.750 (19.05)
		SCL 80E	1/2"	0.500 (12.70)	0.049 (1.24)	1.142 (29.00)	0.669 (17.00)	0.750 (19.05)
		SCL 120E	3/4"	0.750 (19.05)	0.049 (1.24)	1.732 (44.00)	0.866 (22.00)	1.299 (33.00)

SCL Straight Tee		Type	Size	OD	T	C	A	L <sub>1</sub>	L <sub>2</sub>
		SCL 40T	1/4"	0.250 (6.35)	0.039 (1.00)	0.984 (25.00)	0.433 (11.00)	0.750 (19.05)	1.969 (50.00)
		SCL 60T	3/8"	0.375 (9.53)	0.039 (1.00)	0.984 (25.00)	0.433 (11.00)	0.750 (19.05)	1.969 (50.00)
		SCL 80T	1/2"	0.500 (12.70)	0.049 (1.24)	1.142 (29.00)	0.669 (17.00)	0.750 (19.05)	2.283 (58.00)
		SCL 120T	3/4"	0.750 (19.05)	0.049 (1.24)	1.732 (44.00)	0.866 (22.00)	1.299 (33.00)	3.465 (88.00)

SCL Reducing Tee		Type	Size	OD <sub>1</sub>	T <sub>1</sub>	OD <sub>2</sub>	T <sub>2</sub>	C	A	L <sub>1</sub>	L <sub>2</sub>
		SCL 64T	3/8"×1/4"	0.375 (9.53)	0.039 (1.00)	0.250 (6.35)	0.039 (1.00)	0.984 (25.00)	0.433 (11.00)	0.750 (19.05)	1.969 (50.00)
		SCL 84T	1/2"×1/4"	0.500 (12.70)	0.049 (1.24)	0.250 (6.35)	0.039 (1.00)	1.142 (29.00)	0.669 (17.00)	0.750 (19.05)	2.283 (58.00)
		SCL 86T	1/2"×3/8"	0.500 (12.70)	0.049 (1.24)	0.375 (9.53)	0.039 (1.00)	1.142 (29.00)	0.669 (17.00)	0.750 (19.05)	2.283 (58.00)
		SCL 124T	3/4"×1/4"	0.750 (19.05)	0.049 (1.24)	0.250 (6.35)	0.039 (1.00)	1.732 (44.00)	0.866 (22.00)	1.299 (33.00)	3.465 (88.00)
		SCL 126T	3/4"×3/8"	0.750 (19.05)	0.049 (1.24)	0.375 (9.53)	0.039 (1.00)	1.732 (44.00)	0.866 (22.00)	1.299 (33.00)	3.465 (88.00)
		SCL 128T	3/4"×1/2"	0.750 (19.05)	0.049 (1.24)	0.500 (12.70)	0.049 (1.24)	1.732 (44.00)	0.866 (22.00)	1.299 (33.00)	3.465 (88.00)

SCL Reducer		Type	Size	OD <sub>1</sub>	T <sub>1</sub>	OD <sub>2</sub>	T <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>
		SCL 64R	3/8"×1/4"	0.375 (9.53)	0.039 (1.00)	0.250 (6.35)	0.039 (1.00)	0.750 (19.05)	1.575 (40.00)
		SCL 84R	1/2"×1/4"	0.500 (12.70)	0.049 (1.24)	0.250 (6.35)	0.039 (1.00)	0.750 (19.05)	1.575 (40.00)
		SCL 86R	1/2"×3/8"	0.500 (12.70)	0.049 (1.24)	0.375 (9.53)	0.039 (1.00)	0.750 (19.05)	1.575 (40.00)
		SCL 124R	3/4"×1/4"	0.750 (19.05)	0.049 (1.24)	0.250 (6.35)	0.039 (1.00)	0.750 (19.05)	2.165 (55.00)
		SCL 126R	3/4"×3/8"	0.750 (19.05)	0.049 (1.24)	0.375 (9.53)	0.039 (1.00)	0.750 (19.05)	2.165 (55.00)
		SCL 128R	3/4"×1/2"	0.750 (19.05)	0.049 (1.24)	0.500 (12.70)	0.049 (1.24)	0.750 (19.05)	2.165 (55.00)

# SCF

## Super-clean Fittings

Weld Fittings

### ■ Features

- Welded fittings for high-purity gas supply.
- Double melt material is available as an option for use in UHP piping in order to suppress gas emissions.
- Surface roughness of Ra 0.13 μm or less achieved by electropolishing.
- Compact shapes save piping spaces.
- The neck (straight pipe section) and the tube end enable high quality weld by using automatic orbital welder.
- Please contact the sales representative for sizes, flanges, etc., not listed in the catalog.

### ■ Product Code Table

Product Name <b>SCF</b>	Space	Type of Product <b>90E</b>	Space	Size (Same Diameter) <b>100A</b>	Space	Thickness (Same Diameter) <b>5S</b>	Space	Grade + Material <b>BA 316L</b>																																																																																																																															
SCF Weld Fittings		<table border="1"> <tr><td>90E</td><td>90° Elbow</td></tr> <tr><td>T</td><td>Tee</td></tr> <tr><td>RC</td><td>Concentric Reducer</td></tr> <tr><td>LAP(L)</td><td>Lap</td></tr> </table> <p>* Please ask us about product classes other than those listed above.</p>	90E	90° Elbow	T	Tee	RC	Concentric Reducer	LAP(L)	Lap		<table border="1"> <tr><th colspan="2">Size (Different Diameters)</th></tr> <tr><td><b>100A</b></td><td><b>× 1/4</b></td></tr> <tr><td>(Large Diameter Side)</td><td>(Small Diameter Side)</td></tr> </table> <table border="1"> <thead> <tr><th>Notation</th><th>Nominal Diameter</th><th>Outer Diameter</th></tr> </thead> <tbody> <tr><td>1/4</td><td>1/4"</td><td>6.35mm</td></tr> <tr><td>3/8</td><td>3/8"</td><td>9.53mm</td></tr> <tr><td>1/2</td><td>1/2"</td><td>12.7mm</td></tr> <tr><td>3/4</td><td>3/4"</td><td>19.05mm</td></tr> <tr><td>1</td><td>1"</td><td>25.4mm</td></tr> <tr><td>10A</td><td>10A</td><td>17.3mm</td></tr> <tr><td>15A</td><td>15A</td><td>21.7mm</td></tr> <tr><td>20A</td><td>20A</td><td>27.2mm</td></tr> <tr><td>25A</td><td>25A</td><td>34.0mm</td></tr> <tr><td>32A</td><td>32A</td><td>42.7mm</td></tr> <tr><td>40A</td><td>40A</td><td>48.6mm</td></tr> <tr><td>50A</td><td>50A</td><td>60.5mm</td></tr> <tr><td>65A</td><td>65A</td><td>76.3mm</td></tr> <tr><td>80A</td><td>80A</td><td>89.1mm</td></tr> <tr><td>100A</td><td>100A</td><td>114.3mm</td></tr> </tbody> </table>	Size (Different Diameters)		<b>100A</b>	<b>× 1/4</b>	(Large Diameter Side)	(Small Diameter Side)	Notation	Nominal Diameter	Outer Diameter	1/4	1/4"	6.35mm	3/8	3/8"	9.53mm	1/2	1/2"	12.7mm	3/4	3/4"	19.05mm	1	1"	25.4mm	10A	10A	17.3mm	15A	15A	21.7mm	20A	20A	27.2mm	25A	25A	34.0mm	32A	32A	42.7mm	40A	40A	48.6mm	50A	50A	60.5mm	65A	65A	76.3mm	80A	80A	89.1mm	100A	100A	114.3mm		<table border="1"> <tr><th colspan="3">Thickness (Different Diameter)</th></tr> <tr><td><b>5S</b></td><td><b>× 1.0T</b></td><td></td></tr> <tr><td>(Large Diameter Side)</td><td>(Small Diameter Side)</td><td></td></tr> </table> <p>* When the thicknesses are the same, the small-diameter side is omitted.</p> <table border="1"> <thead> <tr><th>Notation</th><th>Nominal Diameter</th><th>Thickness</th></tr> </thead> <tbody> <tr><td>1.0T</td><td>1/4"</td><td>1.0mm</td></tr> <tr><td>1.0T</td><td>3/8"</td><td>1.0mm</td></tr> <tr><td>1.24T</td><td>1/2"</td><td>1.24mm</td></tr> <tr><td>1.24T</td><td>3/4"</td><td>1.24mm</td></tr> <tr><td>1.65T</td><td>1"</td><td>1.65mm</td></tr> <tr><td>5S</td><td>10A</td><td>1.2mm</td></tr> <tr><td>5S</td><td>15A</td><td>1.65mm</td></tr> <tr><td>5S</td><td>20A</td><td>1.65mm</td></tr> <tr><td>5S</td><td>25A</td><td>1.65mm</td></tr> <tr><td>5S</td><td>32A</td><td>1.65mm</td></tr> <tr><td>5S</td><td>40A</td><td>1.65mm</td></tr> <tr><td>5S</td><td>50A</td><td>1.65mm</td></tr> <tr><td>5S</td><td>65A</td><td>2.1mm</td></tr> <tr><td>5S</td><td>80A</td><td>2.1mm</td></tr> <tr><td>5S</td><td>100A</td><td>2.1mm</td></tr> </tbody> </table>	Thickness (Different Diameter)			<b>5S</b>	<b>× 1.0T</b>		(Large Diameter Side)	(Small Diameter Side)		Notation	Nominal Diameter	Thickness	1.0T	1/4"	1.0mm	1.0T	3/8"	1.0mm	1.24T	1/2"	1.24mm	1.24T	3/4"	1.24mm	1.65T	1"	1.65mm	5S	10A	1.2mm	5S	15A	1.65mm	5S	20A	1.65mm	5S	25A	1.65mm	5S	32A	1.65mm	5S	40A	1.65mm	5S	50A	1.65mm	5S	65A	2.1mm	5S	80A	2.1mm	5S	100A	2.1mm		<table border="1"> <tr><td>BA 316L</td><td>Mechanical Polished + SUS316L</td></tr> <tr><td>EP 316L</td><td>Electro Polished + SUS316L</td></tr> <tr><td>SEP</td><td>Electro Polished + SUS316LE</td></tr> <tr><td>316LE</td><td>(Double Melt Material)</td></tr> </table> <p>Note: There is a space between the grade and the material.</p>	BA 316L	Mechanical Polished + SUS316L	EP 316L	Electro Polished + SUS316L	SEP	Electro Polished + SUS316LE	316LE	(Double Melt Material)
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1.0T	1/4"	1.0mm																																																																																																																																					
1.0T	3/8"	1.0mm																																																																																																																																					
1.24T	1/2"	1.24mm																																																																																																																																					
1.24T	3/4"	1.24mm																																																																																																																																					
1.65T	1"	1.65mm																																																																																																																																					
5S	10A	1.2mm																																																																																																																																					
5S	15A	1.65mm																																																																																																																																					
5S	20A	1.65mm																																																																																																																																					
5S	25A	1.65mm																																																																																																																																					
5S	32A	1.65mm																																																																																																																																					
5S	40A	1.65mm																																																																																																																																					
5S	50A	1.65mm																																																																																																																																					
5S	65A	2.1mm																																																																																																																																					
5S	80A	2.1mm																																																																																																																																					
5S	100A	2.1mm																																																																																																																																					
BA 316L	Mechanical Polished + SUS316L																																																																																																																																						
EP 316L	Electro Polished + SUS316L																																																																																																																																						
SEP	Electro Polished + SUS316LE																																																																																																																																						
316LE	(Double Melt Material)																																																																																																																																						

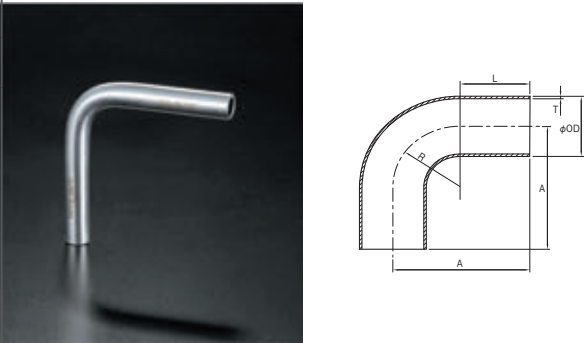
### ■ Product Grade

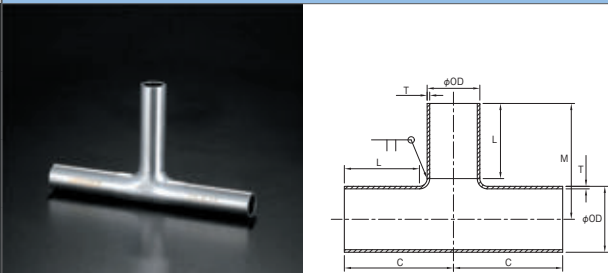
Grade	BA	EP	SEP
Material	SUS316L, SUS316LE (Double melt material)		
Surface Roughness	≤ Ra 0.5 μm / 20 μin	≤ Ra 0.13 μm / 5 μin	
Polish	Mechanical Polished	Electro Polished	
Cleaning	Degreasing + Precision cleaning		
Post-cleaning Environment	Class10		
Packaging	Single bagged package	Double bagged package	

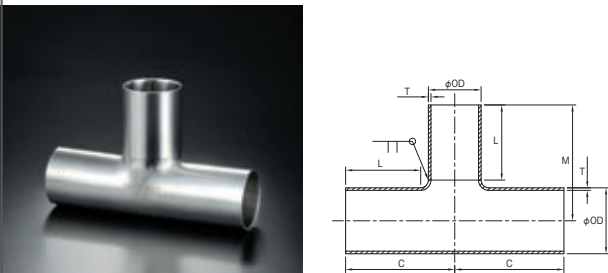
### ■ Production Range Table

Size	SUS316L		SUS316LE
	BA	EP	SEP
1/4"~1/2"	○	×	○
3/4"~1"	○	○	×
10A~100A	○	○	×

Note: Please ask the sales representatives for sizes other than those noted above.

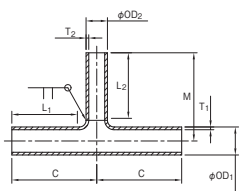
SCF 90° Elbow		Type	Size	OD	T	R	A	L
	SCF 90E 1/4	1/4"	0.250 (6.35)	0.039 (1.00)	0.375 (9.53)	1.575 (40.00)	1.142 (29.00)	
	SCF 90E 3/8	3/8"	0.375 (9.53)	0.039 (1.00)	0.563 (14.30)	1.772 (45.00)	1.142 (29.00)	
	SCF 90E 1/2	1/2"	0.500 (12.70)	0.049 (1.24)	0.602 (15.30)	1.969 (50.00)	1.142 (29.00)	
	SCF 90E 3/4	3/4"	0.750 (19.05)	0.049 (1.24)	0.750 (19.05)	2.362 (60.00)	1.417 (36.00)	
	SCF 90E 1	1"	1.000 (25.40)	0.065 (1.65)	1.000 (25.40)	2.559 (65.00)	1.417 (36.00)	
	SCF 90E 10A	10A	0.681 (17.30)	0.047 (1.20)	0.681 (17.30)	2.362 (60.00)	1.142 (29.00)	
	SCF 90E 15A	15A	0.854 (21.70)	0.065 (1.65)	0.854 (21.70)	2.559 (65.00)	1.417 (36.00)	
	SCF 90E 20A	20A	1.071 (27.20)	0.065 (1.65)	1.071 (27.20)	2.756 (70.00)	1.417 (36.00)	
	SCF 90E 25A	25A	1.339 (34.00)	0.065 (1.65)	1.339 (34.00)	2.953 (75.00)	1.417 (36.00)	
	SCF 90E 32A	32A	1.681 (42.70)	0.065 (1.65)	1.681 (42.70)	3.543 (90.00)	1.811 (46.00)	
	SCF 90E 40A	40A	1.913 (48.60)	0.065 (1.65)	1.913 (48.60)	3.937 (100.00)	1.811 (46.00)	
	SCF 90E 50A	50A	2.382 (60.50)	0.065 (1.65)	2.382 (60.50)	4.528 (115.00)	1.811 (46.00)	
	SCF 90E 65A	65A	3.004 (76.30)	0.083 (2.10)	3.004 (76.30)	5.512 (140.00)	2.008 (51.00)	
	SCF 90E 80A	80A	3.508 (89.10)	0.083 (2.10)	3.508 (89.10)	5.906 (150.00)	2.008 (51.00)	
	SCF 90E 100A	100A	4.500 (114.30)	0.083 (2.10)	4.500 (114.30)	6.890 (175.00)	2.008 (51.00)	
	SCF 90E 125A	125A	5.504 (139.80)	0.110 (2.80)	7.500 (190.50)	10.236 (260.00)	2.362 (60.00)	
SCF 90E 150A	150A	6.504 (165.20)	0.110 (2.80)	9.000 (228.60)	11.811 (300.00)	2.362 (60.00)		

SCF Tee : Tube Size		Type	Size	OD	T	C	M	L
	SCF T 1/4	1/4"	0.250 (6.35)	0.039 (1.00)	1.378 (35.00)	1.378 (35.00)	0.984 (25.00)	
	SCF T 3/8	3/8"	0.375 (9.53)	0.039 (1.00)	1.535 (39.00)	1.535 (39.00)	0.984 (25.00)	
	SCF T 1/2	1/2"	0.500 (12.70)	0.049 (1.24)	1.575 (40.00)	1.575 (40.00)	0.984 (25.00)	
	SCF T 3/4	3/4"	0.750 (19.05)	0.049 (1.24)	2.165 (55.00)	2.165 (55.00)	1.417 (36.00)	
	SCF T 1	1"	1.000 (25.40)	0.065 (1.65)	2.165 (55.00)	2.165 (55.00)	1.417 (36.00)	

SCF Tee : Pipe Size		Type	Size	OD	T	C	M	L
	SCF T 10A	10A	0.681 (17.30)	0.047 (1.20)	1.969 (50.00)	1.969 (50.00)	1.378 (35.00)	
	SCF T 15A	15A	0.854 (21.70)	0.065 (1.65)	2.165 (55.00)	2.165 (55.00)	1.417 (36.00)	
	SCF T 20A	20A	1.071 (27.20)	0.065 (1.65)	2.165 (55.00)	2.165 (55.00)	1.417 (36.00)	
	SCF T 25A	25A	1.339 (34.00)	0.065 (1.65)	2.362 (60.00)	2.362 (60.00)	1.417 (36.00)	
	SCF T 32A	32A	1.681 (42.70)	0.065 (1.65)	2.953 (75.00)	2.953 (75.00)	1.811 (46.00)	
	SCF T 40A	40A	1.913 (48.60)	0.065 (1.65)	3.150 (80.00)	3.150 (80.00)	1.811 (46.00)	
	SCF T 50A	50A	2.382 (60.50)	0.065 (1.65)	3.346 (85.00)	3.346 (85.00)	1.811 (46.00)	
	SCF T 65A	65A	3.004 (76.30)	0.083 (2.10)	3.937 (100.00)	3.937 (100.00)	2.008 (51.00)	
	SCF T 80A	80A	3.508 (89.10)	0.083 (2.10)	4.134 (105.00)	4.134 (105.00)	2.008 (51.00)	
	SCF T 100A	100A	4.500 (114.30)	0.083 (2.10)	4.724 (120.00)	4.724 (120.00)	2.008 (51.00)	
	SCF T 125A	125A	5.504 (139.80)	0.110 (2.80)	7.874 (200.00)	7.874 (200.00)	2.362 (60.00)	
	SCF T 150A	150A	6.504 (165.20)	0.110 (2.80)	8.661 (220.00)	8.661 (220.00)	2.362 (60.00)	



SCF Tee (Reducing)



Type	Size	OD <sub>1</sub>	OD <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	C	M	L <sub>1</sub>	L <sub>2</sub>
SCF T 3/8X1/4	3/8"x1/4"	0.375 (9.53)	0.250 (6.35)	0.039 (1.00)	0.039 (1.00)	1.535 (39.00)	1.535 (39.00)	0.984 (25.00)	0.984 (25.00)
SCF T 1/2X1/4	1/2"x1/4"	0.500 (12.70)	0.250 (6.35)	0.049 (1.24)	0.039 (1.00)	1.575 (40.00)	1.575 (40.00)	0.984 (25.00)	0.984 (25.00)
SCF T 1/2X3/8	1/2"x3/8"	0.500 (12.70)	0.375 (9.53)	0.049 (1.24)	0.039 (1.00)	1.575 (40.00)	1.575 (40.00)	0.984 (25.00)	0.984 (25.00)
SCF T 3/4X1/4	3/4"x1/4"	0.750 (19.05)	0.250 (6.35)	0.049 (1.24)	0.039 (1.00)	1.969 (50.00)	1.969 (50.00)	1.417 (36.00)	1.142 (29.00)
SCF T 3/4X3/8	3/4"x3/8"	0.750 (19.05)	0.375 (9.53)	0.049 (1.24)	0.039 (1.00)	1.969 (50.00)	1.969 (50.00)	1.417 (36.00)	1.142 (29.00)
SCF T 3/4X1/2	3/4"x1/2"	0.750 (19.05)	0.500 (12.70)	0.049 (1.24)	0.049 (1.24)	1.969 (50.00)	1.969 (50.00)	1.417 (36.00)	1.142 (29.00)
SCF T 1X1/4	1"x1/4"	1.000 (25.40)	0.250 (6.35)	0.065 (1.65)	0.039 (1.00)	1.969 (50.00)	1.969 (50.00)	1.417 (36.00)	1.142 (29.00)
SCF T 1X3/8	1"x3/8"	1.000 (25.40)	0.375 (9.53)	0.065 (1.65)	0.039 (1.00)	1.969 (50.00)	1.969 (50.00)	1.417 (36.00)	1.142 (29.00)
SCF T 1X1/2	1"x1/2"	1.000 (25.40)	0.500 (12.70)	0.065 (1.65)	0.049 (1.24)	1.969 (50.00)	1.969 (50.00)	1.417 (36.00)	1.142 (29.00)
SCF T 1X3/4	1"x3/4"	1.000 (25.40)	0.750 (19.05)	0.065 (1.65)	0.049 (1.24)	2.165 (55.00)	2.165 (55.00)	1.417 (36.00)	1.417 (36.00)
SCF T 10AX1/4	10A x 1/4"	0.681 (17.30)	0.250 (6.35)	0.047 (1.20)	0.039 (1.00)	1.969 (50.00)	1.772 (45.00)	1.417 (36.00)	1.142 (29.00)
SCF T 10AX3/8	10A x 3/8"	0.681 (17.30)	0.375 (9.53)	0.047 (1.20)	0.039 (1.00)	1.969 (50.00)	1.772 (45.00)	1.417 (36.00)	0.984 (25.00)
SCF T 10AX1/2	10A x 1/2"	0.681 (17.30)	0.500 (12.70)	0.047 (1.20)	0.049 (1.24)	1.969 (50.00)	1.772 (45.00)	1.417 (36.00)	1.142 (29.00)
SCF T 15AX1/4	15A x 1/4"	0.854 (21.70)	0.250 (6.35)	0.065 (1.65)	0.039 (1.00)	1.969 (50.00)	1.969 (50.00)	1.417 (36.00)	1.142 (29.00)
SCF T 15AX3/8	15A x 3/8"	0.854 (21.70)	0.375 (9.53)	0.065 (1.65)	0.039 (1.00)	1.969 (50.00)	1.969 (50.00)	1.417 (36.00)	1.142 (29.00)
SCF T 15AX1/2	15A x 1/2"	0.854 (21.70)	0.500 (12.70)	0.065 (1.65)	0.049 (1.24)	1.969 (50.00)	1.969 (50.00)	1.417 (36.00)	1.142 (29.00)
SCF T 15AX3/4	15A x 3/4"	0.854 (21.70)	0.750 (19.05)	0.065 (1.65)	0.049 (1.24)	2.165 (55.00)	2.165 (55.00)	1.417 (36.00)	1.417 (36.00)
SCF T 20AX1/4	20A x 1/4"	1.071 (27.20)	0.250 (6.35)	0.065 (1.65)	0.039 (1.00)	1.969 (50.00)	1.969 (50.00)	1.417 (36.00)	1.142 (29.00)
SCF T 20AX3/8	20A x 3/8"	1.071 (27.20)	0.375 (9.53)	0.065 (1.65)	0.039 (1.00)	1.969 (50.00)	1.969 (50.00)	1.417 (36.00)	1.142 (29.00)
SCF T 20AX1/2	20A x 1/2"	1.071 (27.20)	0.500 (12.70)	0.065 (1.65)	0.049 (1.24)	1.969 (50.00)	1.969 (50.00)	1.417 (36.00)	1.142 (29.00)
SCF T 20AX3/4	20A x 3/4"	1.071 (27.20)	0.750 (19.05)	0.065 (1.65)	0.049 (1.24)	2.165 (55.00)	2.165 (55.00)	1.417 (36.00)	1.417 (36.00)
SCF T 20AX15A	20A x 15A	1.071 (27.20)	0.854 (21.70)	0.065 (1.65)	0.065 (1.65)	2.165 (55.00)	2.165 (55.00)	1.417 (36.00)	1.417 (36.00)
SCF T 25AX1/4	25A x 1/4"	1.339 (34.00)	0.250 (6.35)	0.065 (1.65)	0.039 (1.00)	1.969 (50.00)	2.165 (55.00)	1.417 (36.00)	1.142 (29.00)
SCF T 25AX3/8	25A x 3/8"	1.339 (34.00)	0.375 (9.53)	0.065 (1.65)	0.039 (1.00)	1.969 (50.00)	2.165 (55.00)	1.417 (36.00)	1.142 (29.00)
SCF T 25AX1/2	25A x 1/2"	1.339 (34.00)	0.500 (12.70)	0.065 (1.65)	0.049 (1.24)	1.969 (50.00)	2.165 (55.00)	1.417 (36.00)	1.142 (29.00)
SCF T 25AX3/4	25A x 3/4"	1.339 (34.00)	0.750 (19.05)	0.065 (1.65)	0.049 (1.24)	2.362 (60.00)	2.362 (60.00)	1.417 (36.00)	1.417 (36.00)
SCF T 25AX15A	25A x 15A	1.339 (34.00)	0.854 (21.70)	0.065 (1.65)	0.065 (1.65)	2.362 (60.00)	2.362 (60.00)	1.417 (36.00)	1.417 (36.00)
SCF T 25AX20A	25A x 20A	1.339 (34.00)	1.071 (27.20)	0.065 (1.65)	0.065 (1.65)	2.362 (60.00)	2.362 (60.00)	1.417 (36.00)	1.417 (36.00)
SCF T 32AX1/4	32A x 1/4"	1.681 (42.70)	0.250 (6.35)	0.065 (1.65)	0.039 (1.00)	2.362 (60.00)	2.362 (60.00)	1.811 (46.00)	1.142 (29.00)
SCF T 32AX3/8	32A x 3/8"	1.681 (42.70)	0.375 (9.53)	0.065 (1.65)	0.039 (1.00)	2.362 (60.00)	2.362 (60.00)	1.811 (46.00)	1.142 (29.00)
SCF T 32AX1/2	32A x 1/2"	1.681 (42.70)	0.500 (12.70)	0.065 (1.65)	0.049 (1.24)	2.362 (60.00)	2.362 (60.00)	1.811 (46.00)	1.142 (29.00)
SCF T 32AX3/4	32A x 3/4"	1.681 (42.70)	0.750 (19.05)	0.065 (1.65)	0.049 (1.24)	2.756 (70.00)	2.756 (70.00)	1.811 (46.00)	1.417 (36.00)
SCF T 32AX15A	32A x 15A	1.681 (42.70)	0.854 (21.70)	0.065 (1.65)	0.065 (1.65)	2.756 (70.00)	2.756 (70.00)	1.811 (46.00)	1.417 (36.00)
SCF T 32AX20A	32A x 20A	1.681 (42.70)	1.071 (27.20)	0.065 (1.65)	0.065 (1.65)	2.756 (70.00)	2.756 (70.00)	1.811 (46.00)	1.417 (36.00)
SCF T 32AX25A	32A x 25A	1.681 (42.70)	1.339 (34.00)	0.065 (1.65)	0.065 (1.65)	2.756 (70.00)	2.756 (70.00)	1.811 (46.00)	1.417 (36.00)
SCF T 40AX1/4	40A x 1/4"	1.913 (48.60)	0.250 (6.35)	0.065 (1.65)	0.039 (1.00)	2.362 (60.00)	2.362 (60.00)	1.811 (46.00)	1.142 (29.00)

Ultra High Purity Valves

Ultra High Purity Fittings

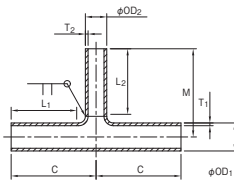
Vacuum Components

PFA Valves


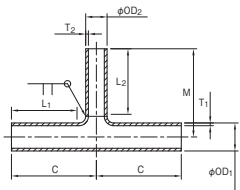
PFA Weld Fittings


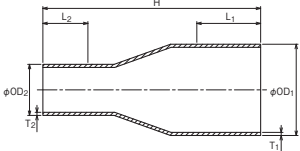
Artistic Unit


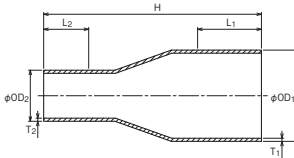
## SCF Tee (Reducing)


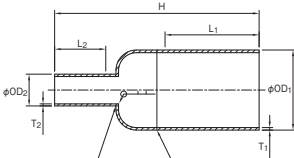



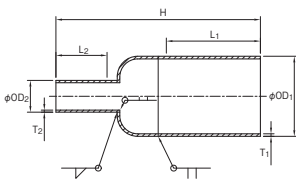
Type	Size	OD <sub>1</sub>	OD <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	C	M	L <sub>1</sub>	L <sub>2</sub>
SCF T 40AX3/8	40A×3/8"	1.913 (48.60)	0.375 (9.53)	0.065 (1.65)	0.039 (1.00)	2.362 (60.00)	2.362 (60.00)	1.811 (46.00)	1.142 (29.00)
SCF T 40AX1/2	40A×1/2"	1.913 (48.60)	0.500 (12.70)	0.065 (1.65)	0.049 (1.24)	2.362 (60.00)	2.362 (60.00)	1.811 (46.00)	1.142 (29.00)
SCF T 40AX3/4	40A×3/4"	1.913 (48.60)	0.750 (19.05)	0.065 (1.65)	0.049 (1.24)	2.756 (70.00)	2.756 (70.00)	1.811 (46.00)	1.417 (36.00)
SCF T 40AX15A	40A×15A	1.913 (48.60)	0.854 (21.70)	0.065 (1.65)	0.065 (1.65)	2.756 (70.00)	2.756 (70.00)	1.811 (46.00)	1.417 (36.00)
SCF T 40AX20A	40A×20A	1.913 (48.60)	1.071 (27.20)	0.065 (1.65)	0.065 (1.65)	2.756 (70.00)	2.756 (70.00)	1.811 (46.00)	1.417 (36.00)
SCF T 40AX25A	40A×25A	1.913 (48.60)	1.339 (34.00)	0.065 (1.65)	0.065 (1.65)	2.756 (70.00)	2.756 (70.00)	1.811 (46.00)	1.417 (36.00)
SCF T 40AX32A	40A×32A	1.913 (48.60)	1.681 (42.70)	0.065 (1.65)	0.065 (1.65)	3.150 (80.00)	3.150 (80.00)	1.811 (46.00)	1.811 (46.00)
SCF T 50AX1/4	50A×1/4"	2.382 (60.50)	0.250 (6.35)	0.065 (1.65)	0.039 (1.00)	2.362 (60.00)	2.559 (65.00)	1.811 (46.00)	1.142 (29.00)
SCF T 50AX3/8	50A×3/8"	2.382 (60.50)	0.375 (9.53)	0.065 (1.65)	0.039 (1.00)	2.362 (60.00)	2.559 (65.00)	1.811 (46.00)	1.142 (29.00)
SCF T 50AX1/2	50A×1/2"	2.382 (60.50)	0.500 (12.70)	0.065 (1.65)	0.049 (1.24)	2.362 (60.00)	2.559 (65.00)	1.811 (46.00)	1.142 (29.00)
SCF T 50AX3/4	50A×3/4"	2.382 (60.50)	0.750 (19.05)	0.065 (1.65)	0.049 (1.24)	2.756 (70.00)	2.953 (75.00)	1.811 (46.00)	1.417 (36.00)
SCF T 50AX15A	50A×15A	2.382 (60.50)	0.854 (21.70)	0.065 (1.65)	0.065 (1.65)	2.756 (70.00)	2.953 (75.00)	1.811 (46.00)	1.417 (36.00)
SCF T 50AX20A	50A×20A	2.382 (60.50)	1.071 (27.20)	0.065 (1.65)	0.065 (1.65)	2.756 (70.00)	2.953 (75.00)	1.811 (46.00)	1.417 (36.00)
SCF T 50AX25A	50A×25A	2.382 (60.50)	1.339 (34.00)	0.065 (1.65)	0.065 (1.65)	2.756 (70.00)	2.953 (75.00)	1.811 (46.00)	1.417 (36.00)
SCF T 50AX32A	50A×32A	2.382 (60.50)	1.681 (42.70)	0.065 (1.65)	0.065 (1.65)	3.150 (80.00)	3.346 (85.00)	1.811 (46.00)	1.811 (46.00)
SCF T 50AX40A	50A×40A	2.382 (60.50)	1.913 (48.60)	0.065 (1.65)	0.065 (1.65)	3.150 (80.00)	3.346 (85.00)	1.811 (46.00)	1.811 (46.00)
SCF T 65AX1/4	65A×1/4"	3.004 (76.30)	0.250 (6.35)	0.083 (2.10)	0.039 (1.00)	2.559 (65.00)	2.953 (75.00)	2.008 (51.00)	1.142 (29.00)
SCF T 65AX3/8	65A×3/8"	3.004 (76.30)	0.375 (9.53)	0.083 (2.10)	0.039 (1.00)	2.559 (65.00)	2.953 (75.00)	2.008 (51.00)	1.142 (29.00)
SCF T 65AX1/2	65A×1/2"	3.004 (76.30)	0.500 (12.70)	0.083 (2.10)	0.049 (1.24)	2.559 (65.00)	2.953 (75.00)	2.008 (51.00)	1.142 (29.00)
SCF T 65AX3/4	65A×3/4"	3.004 (76.30)	0.750 (19.05)	0.083 (2.10)	0.049 (1.24)	2.953 (75.00)	3.346 (85.00)	2.008 (51.00)	1.417 (36.00)
SCF T 65AX15A	65A×15A	3.004 (76.30)	0.854 (21.70)	0.083 (2.10)	0.065 (1.65)	2.953 (75.00)	3.346 (85.00)	2.008 (51.00)	1.417 (36.00)
SCF T 65AX20A	65A×20A	3.004 (76.30)	1.071 (27.20)	0.083 (2.10)	0.065 (1.65)	2.953 (75.00)	3.346 (85.00)	2.008 (51.00)	1.417 (36.00)
SCF T 65AX25A	65A×25A	3.004 (76.30)	1.339 (34.00)	0.083 (2.10)	0.065 (1.65)	2.953 (75.00)	3.346 (85.00)	2.008 (51.00)	1.417 (36.00)
SCF T 65AX32A	65A×32A	3.004 (76.30)	1.681 (42.70)	0.083 (2.10)	0.065 (1.65)	3.543 (90.00)	3.740 (95.00)	2.008 (51.00)	1.811 (46.00)
SCF T 65AX40A	65A×40A	3.004 (76.30)	1.913 (48.60)	0.083 (2.10)	0.065 (1.65)	3.543 (90.00)	3.740 (95.00)	2.008 (51.00)	1.811 (46.00)
SCF T 65AX50A	65A×50A	3.004 (76.30)	2.382 (60.50)	0.083 (2.10)	0.065 (1.65)	3.543 (90.00)	3.740 (95.00)	2.008 (51.00)	1.811 (46.00)
SCF T 80AX1/4	80A×1/4"	3.508 (89.10)	0.250 (6.35)	0.083 (2.10)	0.039 (1.00)	2.559 (65.00)	3.150 (80.00)	2.008 (51.00)	1.142 (29.00)
SCF T 80AX3/8	80A×3/8"	3.508 (89.10)	0.375 (9.53)	0.083 (2.10)	0.039 (1.00)	2.559 (65.00)	3.150 (80.00)	2.008 (51.00)	1.142 (29.00)
SCF T 80AX1/2	80A×1/2"	3.508 (89.10)	0.500 (12.70)	0.083 (2.10)	0.049 (1.24)	2.559 (65.00)	3.150 (80.00)	2.008 (51.00)	1.142 (29.00)
SCF T 80AX3/4	80A×3/4"	3.508 (89.10)	0.750 (19.05)	0.083 (2.10)	0.049 (1.24)	2.953 (75.00)	3.543 (90.00)	2.008 (51.00)	1.417 (36.00)
SCF T 80AX15A	80A×15A	3.508 (89.10)	0.854 (21.70)	0.083 (2.10)	0.065 (1.65)	2.953 (75.00)	3.543 (90.00)	2.008 (51.00)	1.417 (36.00)
SCF T 80AX20A	80A×20A	3.508 (89.10)	1.071 (27.20)	0.083 (2.10)	0.065 (1.65)	2.953 (75.00)	3.543 (90.00)	2.008 (51.00)	1.417 (36.00)
SCF T 80AX25A	80A×25A	3.508 (89.10)	1.339 (34.00)	0.083 (2.10)	0.065 (1.65)	2.953 (75.00)	3.543 (90.00)	2.008 (51.00)	1.417 (36.00)
SCF T 80AX32A	80A×32A	3.508 (89.10)	1.681 (42.70)	0.083 (2.10)	0.065 (1.65)	3.543 (90.00)	3.937 (100.00)	2.008 (51.00)	1.811 (46.00)
SCF T 80AX40A	80A×40A	3.508 (89.10)	1.913 (48.60)	0.083 (2.10)	0.065 (1.65)	3.543 (90.00)	3.937 (100.00)	2.008 (51.00)	1.811 (46.00)
SCF T 80AX50A	80A×50A	3.508 (89.10)	2.382 (60.50)	0.083 (2.10)	0.065 (1.65)	3.543 (90.00)	3.937 (100.00)	2.008 (51.00)	1.811 (46.00)


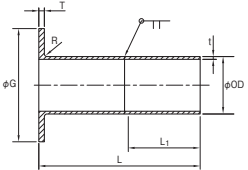
SCF Tee (Reducing)		Type	Size	OD <sub>1</sub>	OD <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	C	M	L <sub>1</sub>	L <sub>2</sub>
 	SCF T 80AX65A	80A×65A	3.508 (89.10)	3.004 (76.30)	0.083 (2.10)	0.083 (2.10)	3.937 (100.00)	4.134 (105.00)	2.008 (51.00)	2.008 (51.00)	
	SCF T 100AX1/4	100A×1/4"	4.500 (114.30)	0.250 (6.35)	0.083 (2.10)	0.039 (1.00)	2.559 (65.00)	3.740 (95.00)	2.008 (51.00)	1.142 (29.00)	
	SCF T 100AX3/8	100A×3/8"	4.500 (114.30)	0.375 (9.53)	0.083 (2.10)	0.039 (1.00)	2.559 (65.00)	3.740 (95.00)	2.008 (51.00)	1.142 (29.00)	
	SCF T 100AX1/2	100A×1/2"	4.500 (114.30)	0.500 (12.70)	0.083 (2.10)	0.049 (1.24)	2.559 (65.00)	3.740 (95.00)	2.008 (51.00)	1.142 (29.00)	
	SCF T 100AX3/4	100A×3/4"	4.500 (114.30)	0.750 (19.05)	0.083 (2.10)	0.049 (1.24)	2.953 (75.00)	3.937 (100.00)	2.008 (51.00)	1.417 (36.00)	
	SCF T 100AX15A	100A×15A	4.500 (114.30)	0.854 (21.70)	0.083 (2.10)	0.065 (1.65)	2.953 (75.00)	3.937 (100.00)	2.008 (51.00)	1.417 (36.00)	
	SCF T 100AX20A	100A×20A	4.500 (114.30)	1.071 (27.20)	0.083 (2.10)	0.065 (1.65)	2.953 (75.00)	3.937 (100.00)	2.008 (51.00)	1.417 (36.00)	
	SCF T 100AX25A	100A×25A	4.500 (114.30)	1.339 (34.00)	0.083 (2.10)	0.065 (1.65)	2.953 (75.00)	3.937 (100.00)	2.008 (51.00)	1.417 (36.00)	
	SCF T 100AX32A	100A×32A	4.500 (114.30)	1.681 (42.70)	0.083 (2.10)	0.065 (1.65)	3.543 (90.00)	4.331 (110.00)	2.008 (51.00)	1.811 (46.00)	
	SCF T 100AX40A	100A×40A	4.500 (114.30)	1.913 (48.60)	0.083 (2.10)	0.065 (1.65)	3.543 (90.00)	4.331 (110.00)	2.008 (51.00)	1.811 (46.00)	
	SCF T 100AX50A	100A×50A	4.500 (114.30)	2.382 (60.50)	0.083 (2.10)	0.065 (1.65)	3.543 (90.00)	4.331 (110.00)	2.008 (51.00)	1.811 (46.00)	
	SCF T 100AX65A	100A×65A	4.500 (114.30)	3.004 (76.30)	0.083 (2.10)	0.083 (2.10)	4.134 (105.00)	4.724 (120.00)	2.008 (51.00)	2.008 (51.00)	
	SCF T 100AX80A	100A×80A	4.500 (114.30)	3.508 (89.10)	0.083 (2.10)	0.083 (2.10)	4.134 (105.00)	4.724 (120.00)	2.008 (51.00)	2.008 (51.00)	

SCF Reducer		Type	Size	OD <sub>1</sub>	OD <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	H	L <sub>1</sub>	L <sub>2</sub>
 	SCF RC 3/8X1/4	3/8"×1/4"	0.375 (9.53)	0.250 (6.35)	0.039 (1.00)	0.039 (1.00)	2.953 (75.00)	0.984 (25.00)	0.984 (25.00)	
	SCF RC 1/2X1/4	1/2"×1/4"	0.500 (12.70)	0.250 (6.35)	0.049 (1.24)	0.039 (1.00)	2.953 (75.00)	0.984 (25.00)	0.984 (25.00)	
	SCF RC 1/2X3/8	1/2"×3/8"	0.500 (12.70)	0.375 (9.53)	0.049 (1.24)	0.039 (1.00)	2.953 (75.00)	0.984 (25.00)	0.984 (25.00)	
	SCF RC 3/4X1/4	3/4"×1/4"	0.750 (19.05)	0.250 (6.35)	0.049 (1.24)	0.039 (1.00)	3.937 (100.00)	1.417 (36.00)	0.984 (25.00)	
	SCF RC 3/4X3/8	3/4"×3/8"	0.750 (19.05)	0.375 (9.53)	0.049 (1.24)	0.039 (1.00)	3.937 (100.00)	1.417 (36.00)	0.984 (25.00)	
	SCF RC 3/4X1/2	3/4"×1/2"	0.750 (19.05)	0.500 (12.70)	0.049 (1.24)	0.039 (1.00)	3.937 (100.00)	1.417 (36.00)	0.984 (25.00)	
	SCF RC 15AX3/8	15A×3/8"	0.854 (21.70)	0.375 (9.53)	0.065 (1.65)	0.039 (1.00)	4.331 (110.00)	1.417 (36.00)	0.984 (25.00)	
	SCF RC 15AX1/2	15A×1/2"	0.854 (21.70)	0.500 (12.70)	0.065 (1.65)	0.039 (1.00)	4.331 (110.00)	1.417 (36.00)	0.984 (25.00)	
	SCF RC 20AX3/8	20A×3/8"	1.071 (27.20)	0.375 (9.53)	0.065 (1.65)	0.039 (1.00)	4.724 (120.00)	1.417 (36.00)	0.984 (25.00)	
	SCF RC 20AX1/2	20A×1/2"	1.071 (27.20)	0.500 (12.70)	0.065 (1.65)	0.039 (1.00)	4.724 (120.00)	1.417 (36.00)	0.984 (25.00)	
	SCF RC 20AX15A	20A×15A	1.071 (27.20)	0.854 (21.70)	0.065 (1.65)	0.065 (1.65)	4.724 (120.00)	1.417 (36.00)	1.417 (36.00)	
	SCF RC 25AX1/2	25A×1/2"	1.339 (34.00)	0.500 (12.70)	0.065 (1.65)	0.049 (1.24)	4.921 (125.00)	1.417 (36.00)	0.984 (25.00)	
	SCF RC 25AX15A	25A×15A	1.339 (34.00)	0.854 (21.70)	0.065 (1.65)	0.065 (1.65)	4.921 (125.00)	1.417 (36.00)	1.417 (36.00)	
	SCF RC 25AX20A	25A×20A	1.339 (34.00)	1.071 (27.20)	0.065 (1.65)	0.065 (1.65)	4.921 (125.00)	1.417 (36.00)	1.417 (36.00)	
	SCF RC 32AX15A	32A×15A	1.681 (42.70)	0.854 (21.70)	0.065 (1.65)	0.065 (1.65)	5.472 (139.00)	1.811 (46.00)	1.417 (36.00)	
	SCF RC 32AX20A	32A×20A	1.681 (42.70)	1.071 (27.20)	0.065 (1.65)	0.065 (1.65)	5.472 (139.00)	1.811 (46.00)	1.417 (36.00)	
	SCF RC 32AX25A	32A×25A	1.681 (42.70)	1.339 (34.00)	0.065 (1.65)	0.065 (1.65)	5.472 (139.00)	1.811 (46.00)	1.417 (36.00)	
	SCF RC 40AX20A	40A×20A	1.913 (48.60)	1.071 (27.20)	0.065 (1.65)	0.065 (1.65)	5.984 (152.00)	1.811 (46.00)	1.417 (36.00)	
	SCF RC 40AX25A	40A×25A	1.913 (48.60)	1.339 (34.00)	0.065 (1.65)	0.065 (1.65)	5.984 (152.00)	1.811 (46.00)	1.417 (36.00)	
	SCF RC 40AX32A	40A×32A	1.913 (48.60)	1.681 (42.70)	0.065 (1.65)	0.065 (1.65)	6.378 (162.00)	1.811 (46.00)	1.417 (36.00)	
	SCF RC 50AX20A	50A×20A	2.382 (60.50)	1.071 (27.20)	0.065 (1.65)	0.065 (1.65)	6.457 (164.00)	1.811 (46.00)	1.417 (36.00)	
	SCF RC 50AX25A	50A×25A	2.382 (60.50)	1.339 (34.00)	0.065 (1.65)	0.065 (1.65)	6.457 (164.00)	1.811 (46.00)	1.417 (36.00)	

SCF Reducer		Type	Size	OD <sub>1</sub>	OD <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	H	L <sub>1</sub>	L <sub>2</sub>
 		SCF RC 50AX32A	50A×32A	2.382 (60.50)	1.681 (42.70)	0.065 (1.65)	0.065 (1.65)	6.850 (174.00)	1.811 (46.00)	1.811 (46.00)
		SCF RC 50AX40A	50A×40A	2.382 (60.50)	1.913 (48.60)	0.065 (1.65)	0.065 (1.65)	6.850 (174.00)	1.811 (46.00)	1.811 (46.00)
		SCF RC 65AX32A	65A×32A	3.004 (76.30)	1.681 (42.70)	0.083 (2.10)	0.065 (1.65)	7.559 (192.00)	2.008 (51.00)	1.811 (46.00)
		SCF RC 65AX40A	65A×40A	3.004 (76.30)	1.913 (48.60)	0.083 (2.10)	0.065 (1.65)	7.559 (192.00)	2.008 (51.00)	1.811 (46.00)
		SCF RC 65AX50A	65A×50A	3.004 (76.30)	2.382 (60.50)	0.083 (2.10)	0.065 (1.65)	7.559 (192.00)	2.008 (51.00)	1.811 (46.00)
		SCF RC 80AX32A	80A×32A	3.508 (89.10)	1.681 (42.70)	0.083 (2.10)	0.065 (1.65)	7.559 (192.00)	2.008 (51.00)	1.811 (46.00)
		SCF RC 80AX40A	80A×40A	3.508 (89.10)	1.913 (48.60)	0.083 (2.10)	0.065 (1.65)	7.559 (192.00)	2.008 (51.00)	1.811 (46.00)
		SCF RC 80AX50A	80A×50A	3.508 (89.10)	2.382 (60.50)	0.083 (2.10)	0.065 (1.65)	7.559 (192.00)	2.008 (51.00)	1.811 (46.00)
		SCF RC 80AX65A	80A×65A	3.508 (89.10)	3.004 (76.30)	0.083 (2.10)	0.083 (2.10)	7.756 (197.00)	2.008 (51.00)	2.008 (51.00)
		SCF RC 100AX40A	100A×40A	4.500 (114.30)	1.913 (48.60)	0.083 (2.10)	0.065 (1.65)	8.071 (205.00)	2.008 (51.00)	1.811 (46.00)
		SCF RC 100AX50A	100A×50A	4.500 (114.30)	2.382 (60.50)	0.083 (2.10)	0.065 (1.65)	8.071 (205.00)	2.008 (51.00)	1.811 (46.00)
		SCF RC 100AX65A	100A×65A	4.500 (114.30)	3.004 (76.30)	0.083 (2.10)	0.083 (2.10)	8.268 (210.00)	2.008 (51.00)	2.008 (51.00)
		SCF RC 100AX80A	100A×80A	4.500 (114.30)	3.508 (89.10)	0.083 (2.10)	0.083 (2.10)	8.268 (210.00)	2.008 (51.00)	2.008 (51.00)

SCF Reducer		Type	Size	OD <sub>1</sub>	OD <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	H	L <sub>1</sub>	L <sub>2</sub>
 		SCF RC 32AX1/4	32A×1/4"	1.681 (42.70)	0.250 (6.35)	0.065 (1.65)	0.039 (1.00)	4.646 (118.00)	1.811 (46.00)	1.142 (29.00)
		SCF RC 32AX3/8	32A×3/8"	1.681 (42.70)	0.375 (9.53)	0.065 (1.65)	0.039 (1.00)	4.646 (118.00)	1.811 (46.00)	1.142 (29.00)
		SCF RC 32AX1/2	32A×1/2"	1.681 (42.70)	0.500 (12.70)	0.065 (1.65)	0.049 (1.24)	4.646 (118.00)	1.811 (46.00)	1.142 (29.00)
		SCF RC 32AX3/4	32A×3/4"	1.681 (42.70)	0.750 (19.05)	0.065 (1.65)	0.049 (1.24)	4.921 (125.00)	1.811 (46.00)	1.417 (36.00)
		SCF RC 40AX1/4	40A×1/4"	1.913 (48.60)	0.250 (6.35)	0.065 (1.65)	0.039 (1.00)	4.646 (118.00)	1.811 (46.00)	1.142 (29.00)
		SCF RC 40AX3/8	40A×3/8"	1.913 (48.60)	0.375 (9.53)	0.065 (1.65)	0.039 (1.00)	4.646 (118.00)	1.811 (46.00)	1.142 (29.00)
		SCF RC 40AX1/2	40A×1/2"	1.913 (48.60)	0.500 (12.70)	0.065 (1.65)	0.049 (1.24)	4.646 (118.00)	1.811 (46.00)	1.142 (29.00)
		SCF RC 40AX3/4	40A×3/4"	1.913 (48.60)	0.750 (19.05)	0.065 (1.65)	0.049 (1.24)	4.921 (125.00)	1.811 (46.00)	1.417 (36.00)
		SCF RC 40AX15A	40A×15A	1.913 (48.60)	0.854 (21.70)	0.065 (1.65)	0.065 (1.65)	4.921 (125.00)	1.811 (46.00)	1.417 (36.00)
		SCF RC 50AX1/4	50A×1/4"	2.382 (60.50)	0.250 (6.35)	0.065 (1.65)	0.039 (1.00)	4.646 (118.00)	1.811 (46.00)	1.142 (29.00)
		SCF RC 50AX3/8	50A×3/8"	2.382 (60.50)	0.375 (9.53)	0.065 (1.65)	0.039 (1.00)	4.646 (118.00)	1.811 (46.00)	1.142 (29.00)
		SCF RC 50AX1/2	50A×1/2"	2.382 (60.50)	0.500 (12.70)	0.065 (1.65)	0.049 (1.24)	4.646 (118.00)	1.811 (46.00)	1.142 (29.00)
		SCF RC 50AX3/4	50A×3/4"	2.382 (60.50)	0.750 (19.05)	0.065 (1.65)	0.049 (1.24)	4.921 (125.00)	1.811 (46.00)	1.417 (36.00)
		SCF RC 50AX15A	50A×15A	2.382 (60.50)	0.854 (21.70)	0.065 (1.65)	0.065 (1.65)	4.921 (125.00)	1.811 (46.00)	1.417 (36.00)
		SCF RC 65AX1/4	65A×1/4"	3.004 (76.30)	0.250 (6.35)	0.083 (2.10)	0.039 (1.00)	4.843 (123.00)	2.008 (51.00)	1.142 (29.00)
		SCF RC 65AX3/8	65A×3/8"	3.004 (76.30)	0.375 (9.53)	0.083 (2.10)	0.039 (1.00)	4.843 (123.00)	2.008 (51.00)	1.142 (29.00)
		SCF RC 65AX1/2	65A×1/2"	3.004 (76.30)	0.500 (12.70)	0.083 (2.10)	0.049 (1.24)	4.843 (123.00)	2.008 (51.00)	1.142 (29.00)
		SCF RC 65AX3/4	65A×3/4"	3.004 (76.30)	0.750 (19.05)	0.083 (2.10)	0.049 (1.24)	5.118 (130.00)	2.008 (51.00)	1.417 (36.00)
		SCF RC 65AX15A	65A×15A	3.004 (76.30)	0.854 (21.70)	0.083 (2.10)	0.065 (1.65)	5.118 (130.00)	2.008 (51.00)	1.417 (36.00)
		SCF RC 65AX20A	65A×20A	3.004 (76.30)	1.071 (27.20)	0.083 (2.10)	0.065 (1.65)	5.118 (130.00)	2.008 (51.00)	1.417 (36.00)
		SCF RC 65AX25A	65A×25A	3.004 (76.30)	1.339 (34.00)	0.083 (2.10)	0.065 (1.65)	5.118 (130.00)	2.008 (51.00)	1.417 (36.00)
		SCF RC 80AX1/4	80A×1/4"	3.508 (89.10)	0.250 (6.35)	0.083 (2.10)	0.039 (1.00)	5.315 (135.00)	2.008 (51.00)	1.142 (29.00)

SCF Reducer		Type	Size	OD <sub>1</sub>	OD <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	H	L <sub>1</sub>	L <sub>2</sub>
		SCF RC 80AX3/8	80A×3/8"	3.508 (89.10)	0.375 (9.53)	0.083 (2.10)	0.039 (1.00)	5.315 (135.00)	2.008 (51.00)	1.142 (29.00)
		SCF RC 80AX1/2	80A×1/2"	3.508 (89.10)	0.500 (12.70)	0.083 (2.10)	0.049 (1.24)	5.315 (135.00)	2.008 (51.00)	1.142 (29.00)
		SCF RC 80AX3/4	80A×3/4"	3.508 (89.10)	0.750 (19.05)	0.083 (2.10)	0.049 (1.24)	5.591 (142.00)	2.008 (51.00)	1.417 (36.00)
		SCF RC 80AX15A	80A×15A	3.508 (89.10)	0.854 (21.70)	0.083 (2.10)	0.065 (1.65)	5.591 (142.00)	2.008 (51.00)	1.417 (36.00)
		SCF RC 80AX20A	80A×20A	3.508 (89.10)	1.071 (27.20)	0.083 (2.10)	0.065 (1.65)	5.591 (142.00)	2.008 (51.00)	1.417 (36.00)
		SCF RC 80AX25A	80A×25A	3.508 (89.10)	1.339 (34.00)	0.083 (2.10)	0.065 (1.65)	5.591 (142.00)	2.008 (51.00)	1.417 (36.00)
		SCF RC 100AX1/4	100A×1/4"	4.500 (114.30)	0.250 (6.35)	0.083 (2.10)	0.039 (1.00)	6.181 (157.00)	2.008 (51.00)	1.142 (29.00)
		SCF RC 100AX3/8	100A×3/8"	4.500 (114.30)	0.375 (9.53)	0.083 (2.10)	0.039 (1.00)	6.181 (157.00)	2.008 (51.00)	1.142 (29.00)
		SCF RC 100AX1/2	100A×1/2"	4.500 (114.30)	0.500 (12.70)	0.083 (2.10)	0.049 (1.24)	6.181 (157.00)	2.008 (51.00)	1.142 (29.00)
		SCF RC 100AX3/4	100A×3/4"	4.500 (114.30)	0.750 (19.05)	0.083 (2.10)	0.049 (1.24)	6.457 (164.00)	2.008 (51.00)	1.417 (36.00)
		SCF RC 100AX15A	100A×15A	4.500 (114.30)	0.854 (21.70)	0.083 (2.10)	0.065 (1.65)	6.457 (164.00)	2.008 (51.00)	1.417 (36.00)
		SCF RC 100AX20A	100A×20A	4.500 (114.30)	1.071 (27.20)	0.083 (2.10)	0.065 (1.65)	6.457 (164.00)	2.008 (51.00)	1.417 (36.00)
		SCF RC 100AX25A	100A×25A	4.500 (114.30)	1.339 (34.00)	0.083 (2.10)	0.065 (1.65)	6.457 (164.00)	2.008 (51.00)	1.417 (36.00)
		SCF RC 100AX32A	100A×32A	4.500 (114.30)	1.681 (42.70)	0.083 (2.10)	0.065 (1.65)	6.850 (174.00)	2.008 (51.00)	1.811 (46.00)

SCF Lap Joint		Type	Size	OD	T	t	L	G	L <sub>1</sub>	R
		SCF LAP (L) 15A	15A	0.854 (21.70)	0.083 (2.10)	0.065 (1.65)	2.559 (65.00)	2.008 (51.00)	1.575 (40.00)	0.118 (3.00)
		SCF LAP (L) 20A	20A	1.071 (27.20)	0.083 (2.10)	0.065 (1.65)	2.559 (65.00)	2.205 (56.00)	1.575 (40.00)	0.118 (3.00)
		SCF LAP (L) 25A	25A	1.339 (34.00)	0.110 (2.80)	0.065 (1.65)	3.346 (85.00)	2.638 (67.00)	1.575 (40.00)	0.118 (3.00)
		SCF LAP (L) 32A	32A	1.681 (42.70)	0.110 (2.80)	0.065 (1.65)	3.740 (95.00)	2.992 (76.00)	1.969 (50.00)	0.157 (4.00)
		SCF LAP (L) 40A	40A	1.913 (48.60)	0.110 (2.80)	0.065 (1.65)	3.740 (95.00)	3.189 (81.00)	1.969 (50.00)	0.157 (4.00)
		SCF LAP (L) 50A	50A	2.382 (60.50)	0.110 (2.80)	0.065 (1.65)	3.740 (95.00)	3.780 (96.00)	1.969 (50.00)	0.157 (4.00)
		SCF LAP (L) 65A	65A	3.004 (76.30)	0.118 (3.00)	0.083 (2.10)	3.937 (100.00)	4.567 (116.00)	2.165 (55.00)	0.197 (5.00)
		SCF LAP (L) 80A	80A	3.508 (89.10)	0.118 (3.00)	0.083 (2.10)	3.937 (100.00)	4.961 (126.00)	2.165 (55.00)	0.197 (5.00)
		SCF LAP (L) 100A	100A	4.500 (114.30)	0.118 (3.00)	0.083 (2.10)	3.937 (100.00)	5.945 (151.00)	2.165 (55.00)	0.197 (5.00)



# SQ

## Super Quartz Lock Fittings

KITZ SCT Super Quartz Lock fitting for quartz chamber/reactor is highly safety and repeatable fitting.

### ■ Features

- Sealing reliability for glass tubing and metal tubing through the utilization of dual O-ring. (Disunion • Corotation Prevention)
- Fluorine resin coated washer is installed to prevents the O-ring from co-rotation when tightening the nut or O-ring from falling off.
- Keeping high sealing ability in repeatable use.
- Stopper keeps consistency of tightening amount and prevents damage to the quartz tube by over tightening.
- More so than our conventional products, SQ Fittings can be used in a clean room environment, because of our Super Precision Cleaning Process.

### ■ Specifications

Quartz Size	$\phi$ 10	$\phi$ 12
Operating Pressure	VAC ~ 1atm	
Fluid Temperature	-10~150°C	

### ■ Product grade

Grade	EP
Body	SUS316L
Surface Roughness	$\leq$ Ra 0.13 $\mu$ m / 5 $\mu$ in
Polish	Electro Polished
Cleaning	Degreasing + Precision Cleaning
Packaging	Single Bagged Package



### ■ Product Code Table

Model <b>SQ</b>	Quartz Tubing <b>10</b>	O-ring <b>A</b>	SUS Tube Size <b>4W</b>	O-ring Material <b>F</b>
SQ Fitting	10: $\phi$ 10 12: $\phi$ 12	A: Dual O-ring	4W:1/4"	Fluorine Rubber

### ■ Dimensions

Unit: inch (mm)

Model	Type	Quart Tube Size $\phi$ OD <sub>1</sub>	SUS Tube Size $\phi$ OD <sub>2</sub>	L	A	B	C	$\phi$ D	$\phi$ d	t	E
	SQ10A-4W-F	0.39 (10.0)	0.25 (6.35)	1.34 (34.0)	0.28 (7.0)	0.39 (10.0)	0.47 (12.0)	0.94 (24.0)	0.79 (20.0)	0.04 (1.0)	0.67 (17.0)
	SQ12A-4W-F	0.47 (12.0)									0.75 (19.0)

Note: Please ask to the sales representative for othe size.



# IF

## IF Flange

### ■ Features

- Exclusion of the resin packing seal for high purity gas systems. By utilizing a nickel gasket, an air tight seal is achieved. In addition, it is not only corrosion resistant, but resistant to corrosive gas as well.
- It is most suitable for large flow systems. Sizes 10A~80A correspond to the sizing standards of bulk gas delivery supply for the liquid crystal and solar battery industries.
- Piping construction improvement. The gasket fixed pin can be used as a temporary stop, thus preventing the gasket from falling off at the time of the construction.
- By utilizing the rotatable flange, construction is easy even in confined spaces.  
Wide temperature rating -200~450°C

### ■ Specifications

Size	10A	20A	25A	32A	40A	50A	65A	80A
Maximum Operating Pressure	1.4×10 <sup>-10</sup> ~145psig (1×10 <sup>-6</sup> Pa~1MPa (G))							
Leak Rate	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)							
Fluid Temperature	-200°C~450°C (The fluid temperature range depends on our calculated value)							

### ■ Product grade

Grade (Flange Only)		STD	EP
Material		Flange/SUS316L	
		Rotatable Flange/SUS304	
		Gasket/NLCB (Nickel 201)	
		Gasket Fixed Pin/A5056	
		Bolt, Nut, Washer/SUS304 *	
Surface Roughness		≤ Rz 12 μm ≤ Ra 3.2 μm / 126 μin	≤ Rz 0.7 μm ≤ Ra 0.13 μm / 5 μin
		Degreasing + Precision cleaning	
Cleaning	Flange, Gasket, Gasket Fixed Pin	Degreasing + Precision cleaning	
	Rotatable Flange	Degreasing	
	Bolt, Nut, Washer	No Cleaning	
Packaging	Flange	Single Bagged Package	Double Bagged Package
	Rotatable Flange	Single Bagged Package	
	Gasket	Double Bagged Package	
	Gasket Fixed Pin	Single Bagged Package	
	Bolt, Nut, Washer	Single Bagged Package	

\*1 Please use lubricant when sticking occurs.

### ■ Product Code Table



IF Flange Set (Flange 2x, Rotatable Flange 2x, Gasket 1x, Gasket Fixed Pin 2x, Bolt, Nut, Washer 1x each)

Model	Size	Space	Grade + Body Material
VP-IF	10	SET	EP-316L
IF Flange Set	10:10A 15:15A 20:20A 25:25A 32:32A 40:40A 50:50A 65:65A 80:80A		STD-316L :Mechanical Polish + SUS316L EP-316L :Electro Polish + SUS316L

Rotatable Flange, Blank Flange, Gasket

Model	Size	Type
IF	10	RAF
IF Flange	10:10A 15:15A 20:20A 25:25A 32:32A 40:40A 50:50A 65:65A 80:80A	Rotatable Flange RAF Blank Flange BLF Gasket NIG

### Flange

Model	Size	Thickness & Connection	Length	Space	Grade + Body Material																														
IF	10	5S W	L109.5		EP-316L																														
IF Flange	10:10A 15:15A 20:20A 25:25A 32:32A 40:40A 50:50A 65:65A 80:80A	<table border="1"> <thead> <tr> <th>Title</th> <th>Size</th> <th>Outer Diameter</th> </tr> </thead> <tbody> <tr><td>5S</td><td>10A</td><td>1.2mm</td></tr> <tr><td>5S</td><td>15A</td><td>1.65mm</td></tr> <tr><td>5S</td><td>20A</td><td>1.65mm</td></tr> <tr><td>5S</td><td>25A</td><td>1.65mm</td></tr> <tr><td>5S</td><td>32A</td><td>1.65mm</td></tr> <tr><td>5S</td><td>40A</td><td>1.65mm</td></tr> <tr><td>5S</td><td>50A</td><td>1.65mm</td></tr> <tr><td>5S</td><td>65A</td><td>2.1mm</td></tr> <tr><td>5S</td><td>80A</td><td>2.1mm</td></tr> </tbody> </table>	Title	Size	Outer Diameter	5S	10A	1.2mm	5S	15A	1.65mm	5S	20A	1.65mm	5S	25A	1.65mm	5S	32A	1.65mm	5S	40A	1.65mm	5S	50A	1.65mm	5S	65A	2.1mm	5S	80A	2.1mm	W:Butt Weld Total Length: 109.5mm		STD-316L :Mechanical Polish + SUS316L EP-316L :Electro Polish + SUS316L
Title	Size	Outer Diameter																																	
5S	10A	1.2mm																																	
5S	15A	1.65mm																																	
5S	20A	1.65mm																																	
5S	25A	1.65mm																																	
5S	32A	1.65mm																																	
5S	40A	1.65mm																																	
5S	50A	1.65mm																																	
5S	65A	2.1mm																																	
5S	80A	2.1mm																																	

### Gasket Fixed Pin

Model	Type
IF	PIN
IF Flange	Gasket Fixed Pin

## Flange Dimensions

Unit: inch (mm)

Model	Type	Size	A	B	C	D	E	L	L <sub>1</sub>	t
	IF10-5SW	10A	1.34 (34.0)	1.10 (28.0)	0.63 (16.0)	0.68 (17.3)	0.87 (22.0)	4.31 (109.5)	3.19 (81.0)	0.05 (1.20)
	IF15-5SW	15A	1.50 (38.0)	1.26 (32.0)	0.79 (20.0)	0.85 (21.7)	1.02 (26.0)	4.31 (109.5)	3.11 (79.0)	0.06 (1.65)
	IF20-5SW	20A	1.69 (43.0)	1.46 (37.0)	0.98 (25.0)	1.07 (27.2)	1.22 (31.0)	4.31 (109.5)	3.07 (78.0)	0.06 (1.65)
	IF25-5SW	25A	2.05 (52.0)	1.81 (46.0)	1.34 (34.0)	1.34 (34.0)	1.57 (40.0)	4.31 (109.5)	2.95 (75.0)	0.06 (1.65)
	IF32-5SW	32A	2.36 (60.0)	2.13 (54.0)	1.65 (42.0)	1.68 (42.7)	1.89 (48.0)	4.31 (109.5)	2.91 (74.0)	0.06 (1.65)
	IF40-5SW	40A	2.60 (66.0)	2.36 (60.0)	1.89 (48.0)	1.91 (48.6)	2.13 (54.0)	4.31 (109.5)	2.87 (73.0)	0.06 (1.65)
	IF50-5SW	50A	3.07 (78.0)	2.83 (72.0)	2.36 (60.0)	2.38 (60.5)	2.60 (66.0)	4.31 (109.5)	2.80 (71.0)	0.06 (1.65)
	IF65-5SW	65A	3.82 (97.0)	3.58 (91.0)	3.03 (77.0)	3.00 (76.3)	3.27 (83.0)	4.31 (109.5)	2.56 (65.0)	0.08 (2.10)
	IF80-5SW	80A	4.33 (110.0)	4.09 (104.0)	3.54 (90.0)	3.51 (89.1)	3.78 (96.0)	4.31 (109.5)	2.52 (64.0)	0.08 (2.10)

## Rotatable Flange Dimensions

Unit: inch (mm)

Model	Type	Size	A	T	B	N-φH	C	D	S
	IF10-RAF	10A	2.40 (61.0)	0.59 (15.0)	1.81 (46.0)	6-φ0.28 (6-φ7)	1.34 (34.0)	0.91 (23.0)	0.43 (11.0)
	IF15-RAF	15A	2.72 (69.0)	0.67 (17.0)	1.97 (50.0)	6-φ0.35 (6-φ9)	1.50 (38.0)	1.06 (27.0)	0.47 (12.0)
	IF20-RAF	20A	3.15 (80.0)	0.75 (19.0)	2.24 (57.0)	6-φ0.43 (6-φ11)	1.69 (43.0)	1.26 (32.0)	0.55 (14.0)
	IF25-RAF	25A	3.70 (94.0)	0.79 (20.0)	2.68 (68.0)	6-φ0.51 (6-φ13)	2.05 (52.0)	1.61 (41.0)	0.59 (15.0)
	IF32-RAF	32A	4.09 (104.0)	0.83 (21.0)	3.07 (78.0)	8-φ0.43 (8-φ11)	2.36 (60.0)	1.93 (49.0)	0.63 (16.0)
	IF40-RAF	40A	4.17 (106.0)	0.87 (22.0)	3.15 (80.0)	8-φ0.43 (8-φ11)	2.60 (66.0)	2.17 (55.0)	0.67 (17.0)
	IF50-RAF	50A	4.80 (122.0)	0.94 (24.0)	3.70 (94.0)	8-φ0.51 (8-φ13)	3.07 (78.0)	2.64 (67.0)	0.75 (19.0)
	IF65-RAF	65A	6.02 (153.0)	1.14 (29.0)	4.69 (119.0)	8-φ0.71 (8-φ18)	3.82 (97.0)	3.31 (84.0)	0.91 (23.0)
	IF80-RAF	80A	6.54 (166.0)	1.18 (30.0)	5.20 (132.0)	8-φ0.71 (8-φ18)	4.33 (110.0)	3.82 (97.0)	0.94 (24.0)

## Blank Flange Dimensions

Unit: inch (mm)

Model	Type	Size	A	T	B	N-φH	C
	IF10-BLF	10A	2.40 (61.0)	0.59 (15.0)	1.81 (46.0)	6-φ0.28 (6-φ7)	1.34 (34.0)
	IF15-BLF	15A	2.72 (69.0)	0.67 (17.0)	1.97 (50.0)	6-φ0.35 (6-φ9)	1.50 (38.0)
	IF20-BLF	20A	3.15 (80.0)	0.75 (19.0)	2.24 (57.0)	6-φ0.43 (6-φ11)	1.69 (43.0)
	IF25-BLF	25A	3.70 (94.0)	0.79 (20.0)	2.68 (68.0)	6-φ0.51 (6-φ13)	2.05 (52.0)
	IF32-BLF	32A	4.09 (104.0)	0.83 (21.0)	3.07 (78.0)	8-φ0.43 (8-φ11)	2.36 (60.0)
	IF40-BLF	40A	4.17 (106.0)	0.87 (22.0)	3.15 (80.0)	8-φ0.43 (8-φ11)	2.60 (66.0)
	IF50-BLF	50A	4.80 (122.0)	0.94 (24.0)	3.70 (94.0)	8-φ0.51 (8-φ13)	3.07 (78.0)
	IF65-BLF	65A	6.02 (153.0)	1.14 (29.0)	4.69 (119.0)	8-φ0.71 (8-φ18)	3.82 (97.0)
	IF80-BLF	80A	6.54 (166.0)	1.18 (30.0)	5.20 (132.0)	8-φ0.71 (8-φ18)	4.33 (110.0)

## Gasket Dimensions

Unit: inch (mm)

Model	Type	Size	A	T	B	C
	IF10-NIG	10A	1.34 (34.0)	0.11 (2.8)	0.63 (16.0)	1.10 (28.0)
	IF15-NIG	15A	1.50 (38.0)	0.11 (2.8)	0.79 (20.0)	1.26 (32.0)
	IF20-NIG	20A	1.69 (43.0)	0.11 (2.8)	0.98 (25.0)	1.46 (37.0)
	IF25-NIG	25A	2.05 (52.0)	0.11 (2.8)	1.34 (34.0)	1.81 (46.0)
	IF32-NIG	32A	2.36 (60.0)	0.11 (2.8)	1.65 (42.0)	2.13 (54.0)
	IF40-NIG	40A	2.60 (66.0)	0.11 (2.8)	1.89 (48.0)	2.36 (60.0)
	IF50-NIG	50A	3.07 (78.0)	0.11 (2.8)	2.36 (60.0)	2.83 (72.0)
	IF65-NIG	65A	3.82 (97.0)	0.11 (2.8)	3.03 (77.0)	3.58 (91.0)
	IF80-NIG	80A	4.33 (110.0)	0.11 (2.8)	3.54 (90.0)	4.09 (104.0)

## Gasket Fixed Pin

Unit: inch (mm)

Model	Type	A	B	C	D
	IF-PIN	0.12 (3.0)	0.3 (7.5)	0.06 (1.5)	0.08 (2.0)
		10A~80A			

# Vacuum Components

## VACUUM VALVE

### KITZ SCT's vacuum valves suitable for vacuum application

In semiconductor and liquid-crystal production equipment, the gases supplied to the process chamber react over the wafer due to the plasma or heat, and then they are forcefully expelled by a vacuum pump.

KITZ SCT's vacuum valves enable long-term, stable durability under such severe conditions. In addition, for reactive gases, heating the valve from the inside of the bellows achieves uniformity of temperature which prevents byproducts inside the valve and realizes high sealing ability over a long period of use.

■ <b>IVB/IVBL</b> Vacuum Isolation Valves .....	70
■ <b>IVBH</b> Heated Vacuum Isolation Valves .....	73
■ <b>IVB/IVBL/IVBH</b> Heated Vacuum Isolation Valve with Slow Exhaust Valve .....	75
■ <b>IVBH-CO15</b> PID Controlled Digital Temperature Controller for IVBH Series .....	80
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PCA Series .....	89
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■ <b>UXG/LG</b> Vacuum Gate Valves .....	91



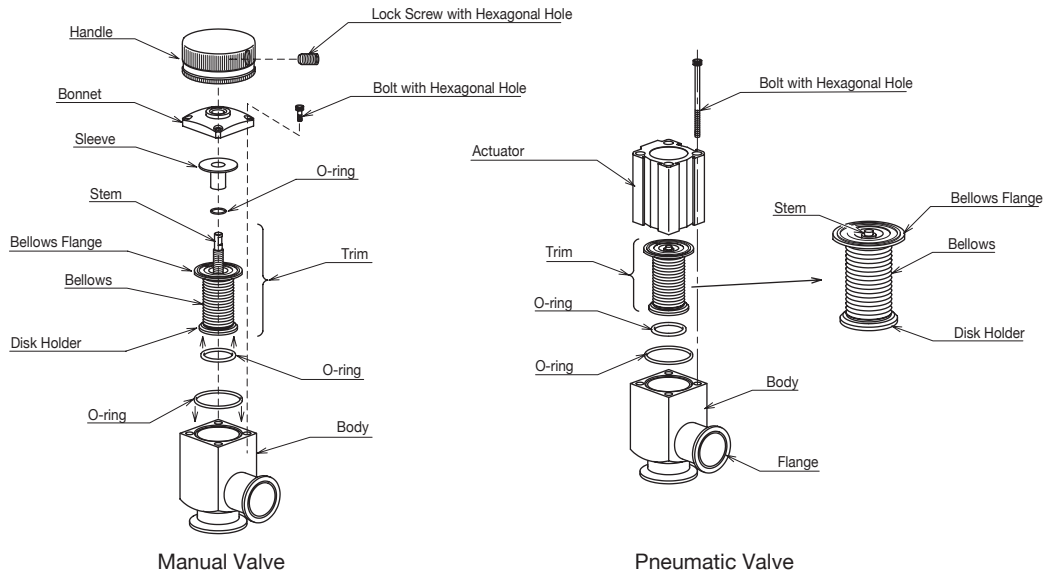
# IVB/IVBL

## Vacuum Isolation Valves

These vacuum valves have bodies made of SUS304 achieving high durability and cost reduction.

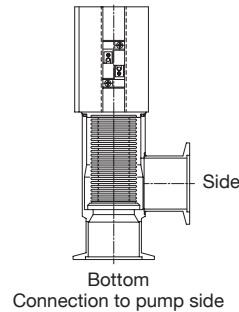
### Features

- ① The IVB and IVBL series realize lower cost and easy-to-maintain simple structure by reducing the number of component parts.
- ② By adopting a stainless steel body (SUS304), a wide range of gases can be handled with excellent corrosion resistance.
- ③ These valves have high seal performance due to their bellows seal structure.
- ④ The IVB series realizes lower cost by utilizing a square-shaped body.
- ⑤ The IVBL series realize large conductance performance due to their adoption of a burring process.



### \* Precautions during connection

The flow direction of the vacuum valves is designed so that the pump can be connected either to the side or bottom, but, depending on the velocity of the fluid passing through the valve, the lifetime of the bellows may decrease markedly if connected to the side. We recommend connecting the vacuum pump to the bottom side.



### Specifications

Fluid Temperature	-15~100°C (maximum 70°C for actuator)	
Pressure Range	1.4x10 <sup>-10</sup> ~29 psia (1x10 <sup>-6</sup> ~2x10 <sup>5</sup> Pa (abs) [0.1MPa (G)])	
Standard Materials	Body/SUS304	
	Bellows/SUS316L	
	Actuator/A6063 (built-in magnet for magnetic proximity switch) Seat/fluorine rubber *Other materials not listed may be available.	
Bellows Durability	Actual results more than 1M cycles (in vacuum) (the bellows cycle life drops when it is used on the pressurized side).	
Actuation Pressure	58~101 psig (0.4~0.7MPa (G))	
Leak Rates	Across the Seat	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)
	Inboard He Leak Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)

	IVB Series				IVBL Series			
	15A	25A	40A	50A	50A	65A	80A	100A
Orifice (mm)	0.63 (16)	0.91 (23)	1.10 (28)	1.50 (38)	1.89 (48)	2.36 (60)	2.76 (70)	3.78 (96)
Valve Lift (mm)	0.39 (10)	0.47 (12)	0.59 (15)	0.79 (20)	0.79 (20)	1.18 (30)	1.18 (30)	1.57 (40)
Conductance (ℓ/s)	5	11	28	42	60	95	125	320
Cylinder Volume NC/NO (cc)	9	13	16	33	56	136	136	295
Cylinder Volume DA (cc)	9	13	16	33	56	50	50	112

### Precautions

- ① The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ② For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.

## Product Code Table

Model	Size	Operation	Valve Shape	Connection (Seat Side)	Connection (OUT Side)	Seat Material	Custom Specifications	Accessories	Accessories	RoHS
IVB	40	C	A	VF	G	F	Specific code	SO	PE	(RS)

IVB: Square Shaped Bellows Valve  
IVBL: Round Shaped Bellows Valve

15:15A  
25:25A  
40:40A  
50:50A  
65S:65A  
80S:80A  
100S:100A

M: Manual  
C: Normally Closed  
D: Double Acting  
O: Normally Open

A: Angle Type  
Y: Y-shape Straight  
Z: Z-shape Inline

NW: ISO KF Flange  
VF: JIS VF Flange  
VG: JIS VG Flange  
CF: ConFlat Flange  
MF: ISO MF Flange

Same Cases As (Seat Side) Omitted  
F: JIS VF Flange  
G: JIS VG Flange

Fluorine Rubber

Standard Products Are Omitted

Not Shown: No Switch  
SO: With Switch On the Open Position  
SC: With Switch On the Closed Position  
W: With Open and Closed Position

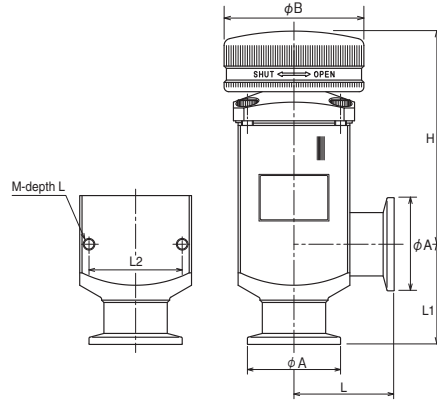
Not Shown: With PD31L3 Switch  
PE: With PE33L3 Switch

(RS): RoHS Compliant Product

\*1 The accessories switch is an option only for the pneumatic type.  
Note: We handle materials and shapes other than those noted.



### IVB Series (15A-50A) Manual Type

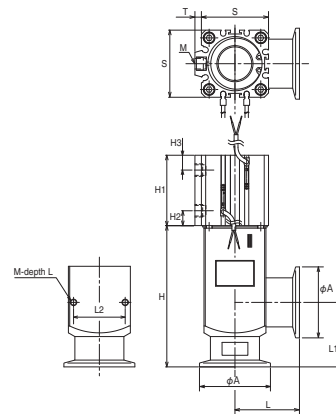


Unit: inch (mm)

Type	Connection	A	B	L	L <sub>1</sub>	L <sub>2</sub>	H	M-depth L
IVB15MA-NWF	NW16	1.18 (30.0)	2.13 (54.0)	1.54 (39.0)	1.54 (39.0)	1.26 (32.0)	3.48 (88.5)	M4-6
IVB25MA-NWF	NW25	1.57 (40.0)	2.36 (60.0)	1.69 (43.0)	1.69 (43.0)	1.57 (40.0)	3.66 (93.0)	M5-8
IVB40MA-NWF	NW40	2.17 (55.0)	2.36 (60.0)	1.97 (50.0)	1.97 (50.0)	1.57 (40.0)	3.92 (99.5)	M5-8
IVB50MA-NWF	NW50	2.95 (75.0)	2.91 (74.0)	2.76 (70.0)	2.76 (70.0)	1.97 (50.0)	4.25 (108.0)	M5-8



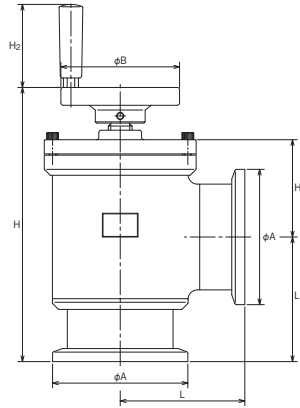
### IVB Series (15A-50A) Pneumatic Type



Unit: inch (mm)

Type	Connection	A	L	L <sub>1</sub>	L <sub>2</sub>	M-depth L	H	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	S	T	M
IVB15DA-NWF	NW16	1.18 (30.0)	1.54 (39.0)	1.54 (39.0)	1.26 (32.0)	M4-6	3.52 (89.5)	1.69 (43.0)	0.43 (11.0)	0.31 (8.0)	1.77 (45.0)	0.18 (4.5)	Rc 1/8
IVB25DA-NWF	NW25	1.57 (40.0)	1.69 (43.0)	1.69 (43.0)	1.57 (40.0)	M5-8	3.78 (96.0)	2.15 (54.5)	0.45 (11.5)	0.45 (11.5)	2.05 (52.0)	0.20 (5.0)	Rc 1/8
IVB40DA-NWF	NW40	2.17 (55.0)	1.97 (50.0)	1.97 (50.0)	1.57 (40.0)	M5-8	4.31 (109.5)	2.15 (54.5)	0.45 (11.5)	0.45 (11.5)	2.05 (52.0)	0.20 (5.0)	Rc 1/8
IVB50DA-NWF	NW50	2.95 (75.0)	2.76 (70.0)	2.76 (70.0)	1.97 (50.0)	M5-8	5.35 (136.0)	2.38 (60.5)	0.47 (12.0)	0.47 (12.0)	2.52 (64.0)	0.28 (7.0)	Rc 1/4
IVB15CA-NWF	NW16	1.18 (30.0)	1.54 (39.0)	1.54 (39.0)	1.26 (32.0)	M4-6	3.52 (89.5)	2.68 (68.0)	0.43 (11.0)	-	1.77 (45.0)	0.18 (4.5)	Rc 1/8
IVB25CA-NWF	NW25	1.57 (40.0)	1.69 (43.0)	1.69 (43.0)	1.57 (40.0)	M5-8	3.78 (96.0)	3.13 (79.5)	0.45 (11.5)	-	2.05 (52.0)	0.20 (5.0)	Rc 1/8
IVB40CA-NWF	NW40	2.17 (55.0)	1.97 (50.0)	1.97 (50.0)	1.57 (40.0)	M5-8	4.31 (109.5)	3.13 (79.5)	0.45 (11.5)	-	2.05 (52.0)	0.20 (5.0)	Rc 1/8
IVB50CA-NWF	NW50	2.95 (75.0)	2.76 (70.0)	2.76 (70.0)	1.97 (50.0)	M5-8	5.35 (136.0)	3.76 (95.5)	0.47 (12.0)	-	2.52 (64.0)	0.28 (7.0)	Rc 1/4
IVB15OA-NWF	NW16	1.18 (30.0)	1.54 (39.0)	1.54 (39.0)	1.26 (32.0)	M4-6	3.52 (89.5)	2.68 (68.0)	-	0.31 (8.0)	1.77 (45.0)	0.18 (4.5)	Rc 1/8
IVB25OA-NWF	NW25	1.57 (40.0)	1.69 (43.0)	1.69 (43.0)	1.57 (40.0)	M5-8	3.78 (96.0)	2.93 (74.5)	-	0.45 (11.5)	2.05 (52.0)	0.20 (5.0)	Rc 1/8
IVB40OA-NWF	NW40	2.17 (55.0)	1.97 (50.0)	1.97 (50.0)	1.57 (40.0)	M5-8	4.31 (109.5)	2.93 (74.5)	-	0.45 (11.5)	2.05 (52.0)	0.20 (5.0)	Rc 1/8
IVB50OA-NWF	NW50	2.95 (75.0)	2.76 (70.0)	2.76 (70.0)	1.97 (50.0)	M5-8	5.35 (136.0)	3.76 (95.5)	-	0.47 (12.0)	2.52 (64.0)	0.28 (7.0)	Rc 1/4

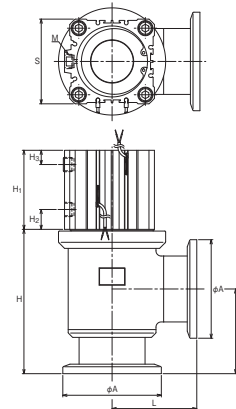
### IVBL Series (50A-100A) Manual Type



Unit: inch (mm)

Type	Connection	A	B	L	L <sub>1</sub>	H	H <sub>1</sub>	H <sub>2</sub>
IVBL50MA-NWF	NW50	2.95 (75.0)	3.15 (80.0)	2.76 (70.0)	2.76 (70.0)	7.05 (179.0)	2.56 (65.0)	1.57 (40.0)
IVBL65MA-NWF	NW63	3.43 (87.0)	3.94 (100.0)	3.46 (88.0)	3.46 (88.0)	8.31 (211.0)	2.87 (73.0)	1.57 (40.0)
IVBL80MA-NWF	NW80	4.49 (114.0)	3.94 (100.0)	4.13 (105.0)	4.13 (105.0)	9.33 (237.0)	3.23 (82.0)	1.57 (40.0)
IVBL100MA-NWF	NW100	5.28 (134.0)	4.92 (125.0)	5.12 (130.0)	5.12 (130.0)	11.30 (287.0)	3.98 (101.0)	2.17 (55.0)

### IVBL Series (50A-100A) Pneumatic Type



Unit: inch (mm)

Type	Connection	A	L	L <sub>1</sub>	H	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	S	M
IVBL50SCA-NWF	NW50	2.95 (75.0)	2.76 (70.0)	2.76 (70.0)	4.96 (126.0)	2.80 (71.0)	0.77 (19.5)	-	3.03 (77.0)	Rc 1/4
IVBL65SCA-NWF	NW63	3.43 (87.0)	3.46 (88.0)	3.46 (88.0)	5.98 (152.0)	3.60 (91.5)	0.91 (23.0)	-	3.86 (98.0)	Rc 3/8
IVBL80SCA-NWF	NW80	4.49 (114.0)	3.86 (98.0)	3.86 (98.0)	6.57 (167.0)	3.60 (91.5)	0.91 (23.0)	-	3.86 (98.0)	Rc 3/8
IVBL100SCA-NWF	NW100	5.28 (134.0)	5.12 (130.0)	5.12 (130.0)	8.74 (222.0)	4.25 (108.0)	0.98 (25.0)	-	4.61 (117.0)	Rc 3/8
IVBL50SDA-NWF	NW50	2.95 (75.0)	2.76 (70.0)	2.76 (70.0)	4.96 (126.0)	2.80 (71.0)	0.77 (19.5)	0.57 (14.5)	3.03 (77.0)	Rc 1/4
IVBL65SDA-NWF	NW63	3.43 (87.0)	3.46 (88.0)	3.46 (88.0)	6.30 (160.0)	3.03 (77.0)	0.75 (19.0)	0.47 (12.0)	2.52 (64.0)	Rc 1/4
IVBL80SDA-NWF	NW80	4.49 (114.0)	3.86 (98.0)	3.86 (98.0)	6.93 (176.0)	3.03 (77.0)	0.75 (19.0)	0.47 (12.0)	2.52 (64.0)	Rc 1/4
IVBL100SDA-NWF	NW100	5.28 (134.0)	5.12 (130.0)	5.12 (130.0)	9.06 (230.0)	3.58 (91.0)	0.77 (19.5)	0.57 (14.5)	3.03 (77.0)	Rc 1/4



# IVBH

## Heated Vacuum Isolation Valve

The IVBH series vacuum valves have built-in spiral heaters that follow the movement of the bellows, and the valve and the bellows can be heated with the valve in either the open or closed state. These valves eliminate cold spots because heat is applied not only from an external heater but also from the inside of the bellows, which will reduce byproduct buildup. The internal and external heaters have individual channels and can heat independently to an arbitrary temperatures up to 180°C. In addition, a magnetic proximity open/close switch, and thermostat are available as options.

### ■ Features

- ⊙ Because of the internal heater, byproduct adhesion to the O-ring seal surface is reduced, and long-term seal performance can be maintained.
- ⊙ Buildup on the bellows surface is reduced, so there will be less residue fallout when the bellows moves, resulting in minimal particle generation.
- ⊙ Reduced buildup getting caught in the bellows surface, resulting in higher durability bellows.(1 million cycles, actual results)
- ⊙ The connecting flanges are chosen from variety of industry standard fittings, including ISO/KF, JIS VF/VG, ConFlat flange, and ISO MF connections.
- ⊙ Electrical wires for the heater, thermocouples, thermostat (optional), and proximity sensor (optional) may be furnished with user specified connectors.
- ⊙ In addition, special specifications, such as unique brackets, non-standard face-to-face dimension, special flanges, special materials (body, bellows, seal materials), and air fittings can be accommodated.

### ■ Specifications

Maximum Heating Temperature	Controller set temperature: NC/max 180°C, DA/max 180°C (External heater: Max 150°C, internal heater: max 180°C) Actuator: Max 70°C * Please choose an actuator fitting and gasket material to match the heating temperature. * The maximum heating temperature will vary depending on the type of valve. For details, please ask to the sales representatives.		
Temperature Control Method	Temperature controller with K-type thermocouple		
Pressure Range	1.4x10 <sup>-10</sup> ~29 psia (1x10 <sup>-6</sup> ~2x10 <sup>5</sup> Pa (abs) [0.1MPa (G)])		
Standard Materials	Body/SUS304		
	Bellows/SUS316L		
	Actuator/A6063 (magnet for magnetic proximity switch built-in) Seat/fluorine rubber *Other materials not listed may be available.		
Bellows/internal Heater Durability	Actual results from more than 1,000,000 cycles (internal vacuum state) in an electrified state (the bellows durability performance drops when it is used on the pressurized side).		
Actuation Pressure	58~101 psig ( 0.4~0.7MPa (G))		
Allowable Leakage	Across the Seat He Leak Rates	≤ 1x10 <sup>-9</sup> sccs (≤ 1x10 <sup>-10</sup> Pa·m <sup>3</sup> /s)	
	Inboard He Leak Rates	≤ 1x10 <sup>-9</sup> sccs (≤ 1x10 <sup>-10</sup> Pa·m <sup>3</sup> /s)	

Size	IVBH Series				
	25A	40A	50A	80A	100A
Orifice (inch(mm))	0.91 (23.0)	1.57 (40.0)	1.89 (48.0)	2.76 (70.0)	3.78 (96.0)
Valve Lift (inch(mm))	0.47 (12.0)	0.79 (20.0)	0.98 (25.0)	1.18 (30.0)	1.57 (40.0)
Conductance (ℓ /s)	11.0	38.0	65.0	135.0	320.0
Heater Voltage (AC V)	100.0	100.0	100.0	100.0	100.0 / 200.0
Internal Heater Power (W)	80.0	106.0	106.0	120.0	172.0 / 212.0
External Heater Power (W)	80.0	120.0	120.0	250.0	354.0 / 300.0
Cylinder Volume (cc) (NC/NO)	13	56	70	136	295
Cylinder Volume (cc) (DA)	-	21	26	50	112
Heater Cord Length (ft(m))	16.4 (5)	16.4 (5)	16.4 (5)	9.8 (3)	9.8 (3)

### ■ Precautions

- ① The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ② For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.

## Product Code Table

Model	Size	Operation	Valve Shape	Connection (Seat Side)	Connection	Seat Material	Custom Specifications	Accessories	Accessories	RoHS
IVBH	40	C	A	VF	G	F	Specific Code	SO	PE	(RS)

Bellows Seal Hot Valve

25:25A  
40:40A  
50:50A  
80S:80A  
100S:100A

C: Normally Closed  
D: Double Acting  
O: Normally Open

A: Angle Type  
Y: Y-shape Straight  
Z: Z-shape Inline

NW: ISO KF Flange  
VF: JIS VF Flange  
VG: JIS VG Flange  
CF: ConFlat Flange  
MF: ISO MF Flange

Same Cases As (Seat Side) Omitted  
F: JIS VF Flange  
G: JIS VG Flange

Fluorine Rubber

Standard Products are Omitted

Not Shown: No Switch  
SO: With Switch On the Open Position  
SC: With Switch On the Closed Position  
W: With Open and Closed Position

Not Shown: With PD31L3 Switch  
PE: With PE33L3 Switch

Not Shown: Not RoHS Compliant Product (RS): RoHS Compliant Product

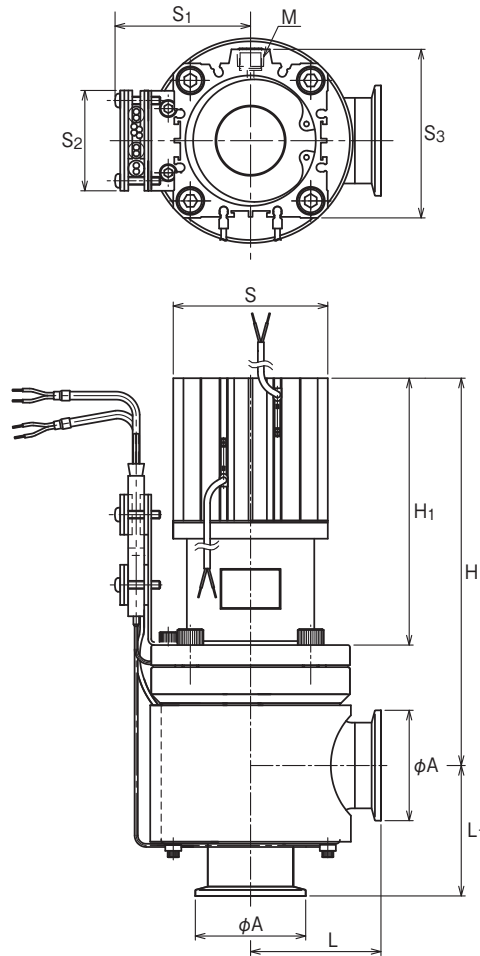
\* We handle materials and shapes other than those noted.

\* A thermostat can be attached to an external heater to prevent eddy heating.

\* Confirm the specifications for the heater, thermocouple and thermostat cable connectors with the sales representative.



### IVBH Series (25A-100A) Pneumatic Type



Unit: inch (mm)

Type	Diameter of Opening	A	L	L <sub>1</sub>	H	H <sub>1</sub>	S	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	M
IVBH25CA-NWF	NW25	1.57 (40.0)	1.97 (50.0)	1.97 (50.0)	6.57 (167.0)	4.06 (103.0)	2.05 (52.0)	1.95 (49.5)	2.17 (55.0)	2.24 (57.0)	Rc 1/8
IVBH40CA-NWF	NW40	2.17 (55.0)	2.56 (65.0)	2.56 (65.0)	7.60 (193.0)	5.24 (133.0)	3.03 (77.0)	2.70 (68.5)	2.17 (55.0)	3.31 (84.0)	Rc 1/4
IVBH50CA-NWF	NW50	2.95 (75.0)	2.76 (70.0)	2.76 (70.0)	7.99 (203.0)	5.43 (138.0)	3.03 (77.0)	2.60 (66.0)	2.17 (55.0)	3.31 (84.0)	Rc 1/4
IVBH80SCA-NWF	NW80	4.49 (114.0)	3.86 (98.0)	3.86 (98.0)	9.51 (241.5)	6.44 (163.5)	3.86 (98.0)	3.19 (81.0)	2.17 (55.0)	4.09 (104.0)	Rc 3/8
IVBH100SCA-NWF	NW100	5.28 (134.0)	5.12 (130.0)	5.12 (130.0)	12.52 (318.0)	8.54 (217.0)	4.61 (117.0)	3.78 (96.0)	2.17 (55.0)	4.86 (123.5)	Rc 3/8
IVBH40DA-NWF	NW40	2.17 (55.0)	2.56 (65.0)	2.56 (65.0)	4.74 (120.5)	2.38 (60.5)	2.05 (52.0)	2.70 (68.5)	2.17 (55.0)	2.24 (57.0)	Rc 1/8
IVBH50DA-NWF	NW50	2.95 (75.0)	2.76 (70.0)	2.76 (70.0)	5.14 (130.5)	2.58 (65.5)	2.05 (52.0)	2.70 (68.5)	2.17 (55.0)	2.24 (57.0)	Rc 1/8
IVBH80SDA-NWF	NW80	4.49 (114.0)	3.86 (98.0)	3.86 (98.0)	5.89 (149.5)	2.81 (71.5)	2.52 (64.0)	3.21 (81.5)	2.17 (55.0)	2.80 (71.0)	Rc 1/4
IVBH100SDA-NWF	NW100	5.28 (134.0)	5.12 (130.0)	5.12 (130.0)	7.28 (185.0)	3.43 (87.0)	3.03 (77.0)	3.82 (97.0)	2.17 (55.0)	3.31 (84.0)	Rc 1/4

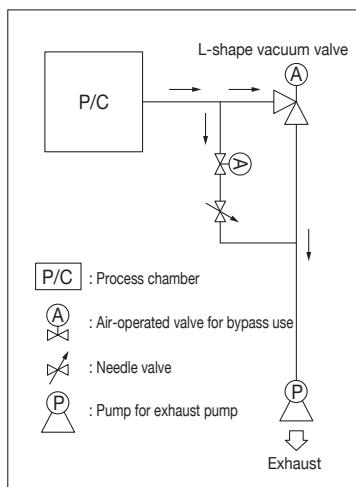
# IVB/IVBL/IVBH

## Heated Vacuum Isolation Valve with Slow Exhaust Valve

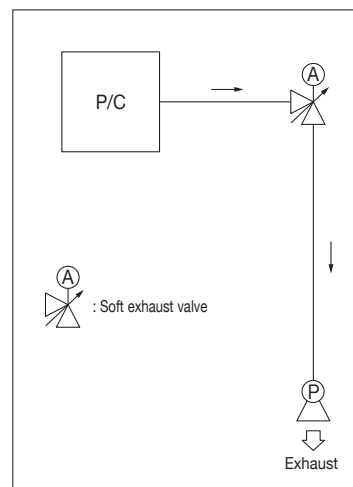
The IVB\_X, VX series keep particles that are produced inside the chamber from rising. By controlling the integrated bypass valve before opening the main valve, it suppresses abrupt pressure fluctuation that occur when exhausting from air to vacuum, or when going back from vacuum to air. Fixed flow bypass valves and variable flow bypass valves are available. These bypass valves are compatible with all IVB, IVBL, and IVBH series valves except for the 15A size.

### ■ Features

- ① They help achieve reduced cost and space saving by integrating the conventional slow bypass line to the main valve.
- ② VX type bypass valve can change the conductance to reach optimal exhaust speed. Please refer to the table below for the adjustable range.
- ③ By selecting high temperature resistant materials, these bypass valves can be used with IVBH series vacuum isolation valves in heated condition.
- ④ Depending on the model of the vacuum isolation valve, multiple bypass valves can be attached. Please ask the sales representatives for details.



Conventional piping layout



Piping layout after use of soft exhaust valve

### ■ Specifications

The valve specifications are the same as those of the main valve on which the bypass valve is based.

\* However, if you choose to use a PCTFE seat with the bypass valve, the across the seat He leak rates will be  $1 \times 10^{-9}$  Pa m<sup>3</sup>/s or less.

#### Bypass valve specifications

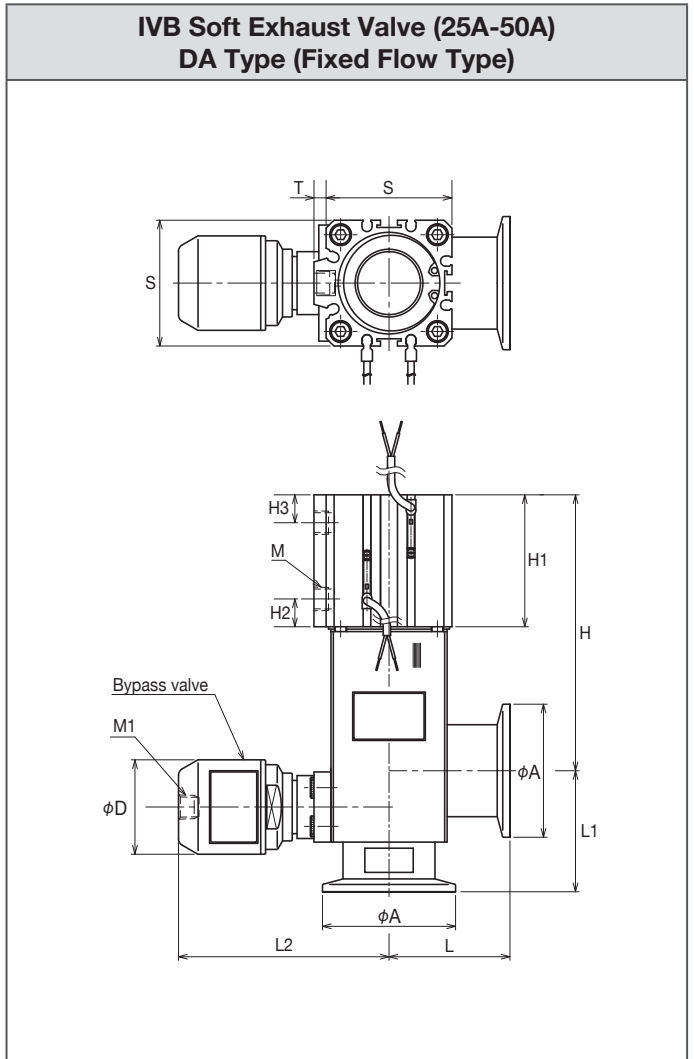
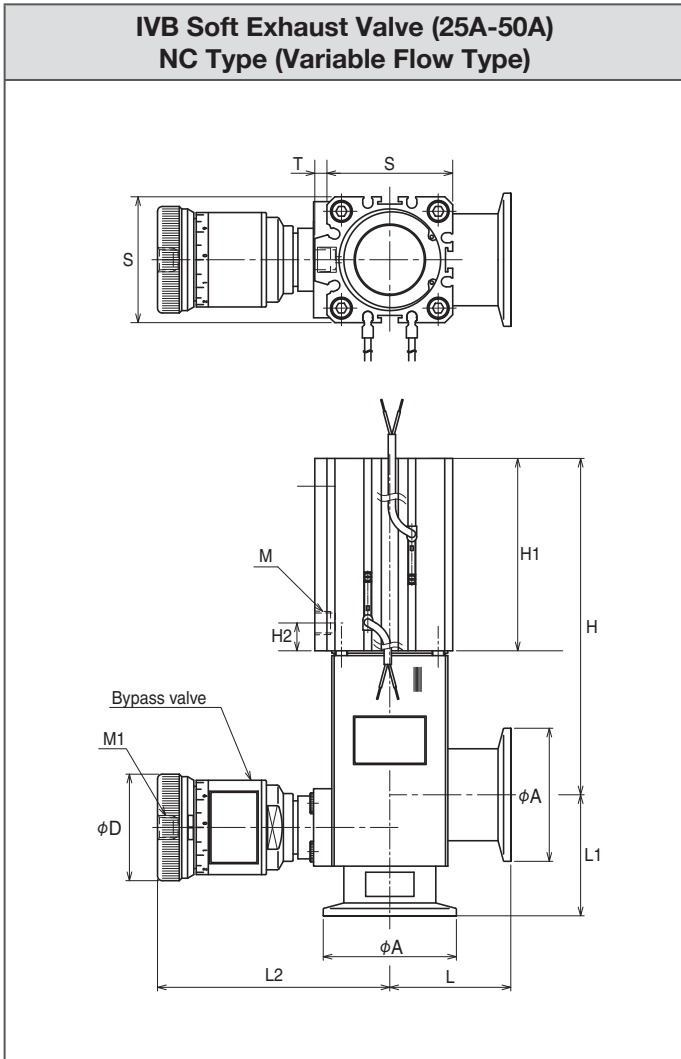
Type	Fixed Flow Type NC				Variable Flow Type NC			
	Fluorine rubber		PCTFE		Fluorine rubber		PCTFE	
Seat								
Size	1/4"	1/2"	1/4"	1/2"	1/4"	1/2"	1/4"	1/2"
Cv	0.3	0.85	0.3	0.85	0.03~0.28	0.05~0.74	0.03~0.28	0.05~0.74
Valve Lift	0.039 (1.00)	0.059 (1.50)	0.039 (1.00)	0.059 (1.50)	0.039 (1.00)	0.059 (1.50)	0.039 (1.00)	0.059 (1.50)
Actuation Pressure	58~101 psig (0.4~0.7MPa (G))							

### ■ Precautions

- ① The variable flow bypass valves have a structure that adjusts the lift of the bellows' ON/OFF valve to control the flow; therefore the set amount of flow may vary according to your usage conditions.
- ② The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ③ For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.

## Product Code Table

<b>Model</b> IVB	<b>Size</b> 40	<b>Main Valve Operation</b> D	<b>Bypass Valve Operation</b> VX	<b>Bypass Valve Seat</b> F	<b>Bypass Valve Size</b> 8	<b>Valve Shape</b> A	<b>Main Valve Connection (Seat Side)</b> VF	<b>Main Valve Connection</b> G	<b>Main Valve Seat</b> F	<b>Custom Specifications</b> Specific Code	<b>Accessories</b> SO	<b>Accessories</b> PE	<b>RoHS</b> (RS)
IVB: Square Shaped Bellows Valve IVBL: Round Shaped Bellows Valve IVBH: Bellows Seal Hot Valve	25:25A 40:40A 50:50A 65S:65A 80S:80A 100S:100A	Not Shown: Normally Closed D: Double Acting O: Normally Open	VX: Variable Flow X: Fixed Flow	Not Shown: PCTFE F: Fluorine Rubber	Not Shown: 1/4" Size 8: 1/2" Size	A: Angle Type Y: Y-shape Straight	NW: ISO KF Flange VF: JIS VF Flange VG: JIS VG Flange CF: ConFlat Flange MF: ISO MF Flange	Cases Same As Seat Side Are Omitted. F: JIS VF Flange G: JIS VG Flange	Fluorine Rubber	Standard Products Are Omitted	Not Shown: No Switch SO: With Switch on the Open Position SC: With Switch on the Closed Position W: With Open and Closed Position	Not Shown: With PD31L3 Switch PE: With PE33L3 Switch	Not Shown: Not RoHS Compliant (RS): RoHS Compliant Product



## Dimensions

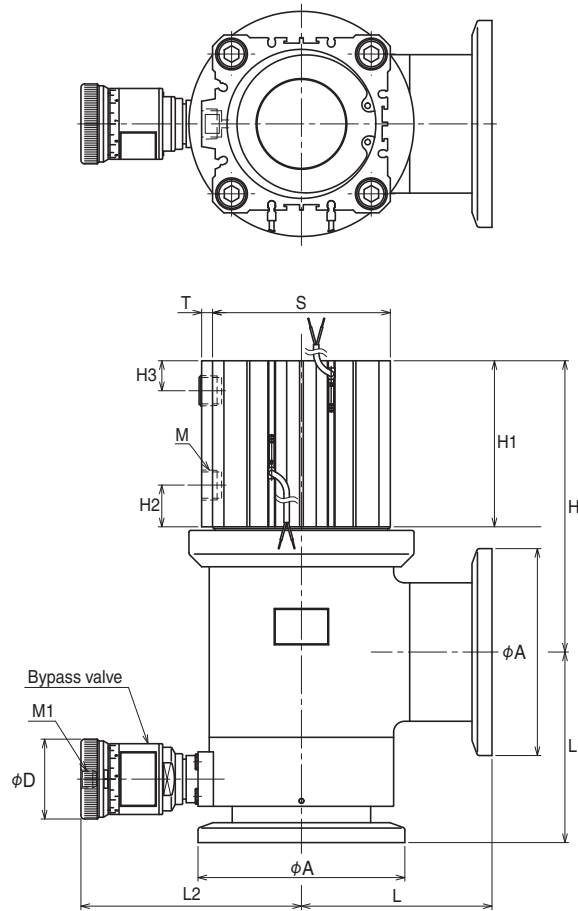
Unit: inch (mm)

Type	Diameter of Opening	A	L	L <sub>1</sub>	H	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	M	S	T
IVB25 (V) X (F) (8) A-NWF	NW25	1.57 (40.0)	1.69 (43.0)	1.69 (43.0)	5.22 (132.5)	3.13 (79.5)	0.45 (11.5)	-	Rc 1/8	2.05 (52.0)	0.20 (5.0)
IVB40 (V) X (F) (8) A-NWF	NW40	2.17 (55.0)	1.97 (50.0)	1.97 (50.0)	5.47 (139.0)	3.13 (79.5)	0.45 (11.5)	-	Rc 1/8	2.05 (52.0)	0.20 (5.0)
IVB50 (V) X (F) (8) A-NWF	NW50	2.95 (75.0)	2.76 (70.0)	2.76 (70.0)	6.42 (163.0)	3.76 (95.5)	0.47 (12.0)	-	Rc 1/4	2.52 (64.0)	0.28 (7.0)
IVB25D (V) X (F) (8) A-NWF	NW25	1.57 (40.0)	1.69 (43.0)	1.69 (43.0)	4.25 (108.0)	2.15 (54.5)	0.45 (11.5)	0.45 (11.5)	Rc 1/8	2.05 (52.0)	0.20 (5.0)
IVB40D (V) X (F) (8) A-NWF	NW40	2.17 (55.0)	1.97 (50.0)	1.97 (50.0)	4.51 (114.5)	2.15 (54.5)	0.45 (11.5)	0.45 (11.5)	Rc 1/8	2.05 (52.0)	0.20 (5.0)
IVB50D (V) X (F) (8) A-NWF	NW50	2.95 (75.0)	2.76 (70.0)	2.76 (70.0)	5.04 (128.0)	2.38 (60.5)	0.47 (12.0)	0.47 (12.0)	Rc 1/4	2.52 (64.0)	0.28 (7.0)

## Dimensions

Type	Size	Fixed Flow X Series				Variable Flow VX Series			
		1/4"		1/2"		1/4"		1/2"	
Seat material		Fluorine Rubber	PCTFE	Fluorine Rubber	PCTFE	Fluorine Rubber	PCTFE	Fluorine Rubber	PCTFE
L <sub>2</sub>	25A	3.17 (80.5)		-	-	3.52 (89.5)		3.78 (96.0)	
	40A	3.17 (80.5)		3.43 (87.0)	3.50 (89.0)	3.52 (89.5)		3.78 (96.0)	
	50A	3.37 (85.5)		3.62 (92.0)	3.70 (94.0)	3.72 (94.5)		3.98 (101.0)	
D		1.54 (39.0)		1.89 (48.0)		1.73 (44.0)		2.13 (54.0)	
M <sub>1</sub>		Rc 1/8							

## IVBL Vacuum Isolation Valves with Bypass (65A-100A) Pneumatic Type (Variable Flow Type)



### ■ Dimensions

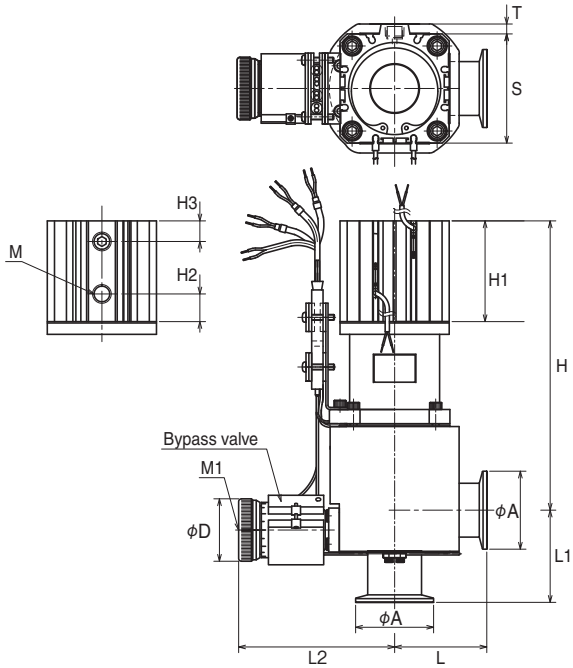
Unit: inch (mm)

Type	End Connection	A	L	L <sub>1</sub>	H	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	M	S	T
IVBL65S (V) X (F) (8) A-NWF	NW63	3.43 (87.0)	3.86 (98.0)	3.86 (98.0)	5.98 (152.0)	3.60 (91.5)	0.91 (23.0)	-	Rc 3/8	3.86 (98.0)	0.24 (6.0)
IVBL80S (V) X (F) (8) A-NWF	NW80	4.49 (114.0)	3.86 (98.0)	3.86 (98.0)	6.57 (167.0)	3.60 (91.5)	0.91 (23.0)	-	Rc 3/8	3.86 (98.0)	0.24 (6.0)
IVBL100S (V) X (F) (8) A-NWF	NW100	5.28 (134.0)	5.12 (130.0)	5.12 (130.0)	8.74 (222.0)	4.25 (108.0)	0.98 (25.0)	-	Rc 3/8	4.61 (117.0)	0.26 (6.50)
IVBL65SD (V) X (F) (8) A-NWF	NW63	3.43 (87.0)	3.86 (98.0)	3.86 (98.0)	6.30 (160.0)	3.03 (77.0)	0.75 (19.0)	0.35 (9.0)	Rc 1/4	2.52 (64.0)	0.28 (7.0)
IVBL80SD (V) X (F) (8) A-NWF	NW80	4.49 (114.0)	3.86 (98.0)	3.86 (98.0)	6.93 (176.0)	3.03 (77.0)	0.75 (19.0)	0.35 (9.0)	Rc 1/4	2.68 (68.0)	0.28 (7.0)
IVBL100SD (V) X (F) (8) A-NWF	NW100	5.28 (134.0)	5.12 (130.0)	5.12 (130.0)	9.06 (230.0)	3.58 (91.0)	0.77 (19.5)	0.43 (11.0)	Rc 1/4	3.03 (77.0)	0.28 (7.0)

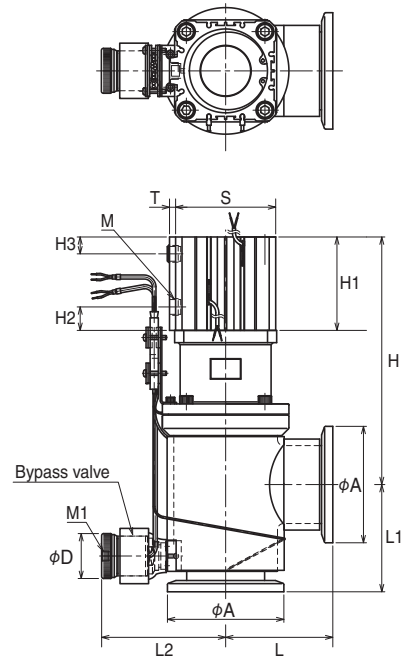
### ■ Dimensions

Type		Fixed Flow X Series				Variable Flow VX Series				
		1/4"		1/2"		1/4"		1/2"		
Size		Fluorine Rubber	PCTFE	Fluorine Rubber	PCTFE	Fluorine Rubber	PCTFE	Fluorine Rubber	PCTFE	
L <sub>2</sub>	65A	3.96 (100.5)	-	4.43 (112.5)	4.51 (114.5)	-	-	4.78 (121.5)	4.84 (123.0)	
	80A	-	-	4.43 (112.5)	4.51 (114.5)	-	-	4.78 (121.5)	4.84 (123.0)	
	100A	-	-	5.12 (130.0)	-	5.16 (131.0)	-	5.47 (139.0)	-	
D		1.54 (39.0)			1.89 (48.0)		1.73 (44.0)			2.13 (54.0)
M <sub>1</sub>		Rc 1/8								

**IVBH Vacuum Isolation Valves (40A and 50A)  
Pneumatic Type (Variable Flow Type)**



**IVBH Vacuum Isolation Valves (80A and 100A)  
Pneumatic Type (Variable Flow Type)**



**■ Dimensions**

Unit: inch (mm)

Type	Connection	A	L	L <sub>1</sub>	H	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	M	S	T
IVBH40 (V) XF (8) A-NWF	NW40	2.17 (55.0)	2.56 (65.0)	2.56 (65.0)	7.60 (193.0)	2.80 (71.0)	0.77 (19.5)	0.57 (14.5)	Rc 1/4	3.03 (77.0)	0.28 (7.0)
IVBH50 (V) XF (8) A-NWF	NW50	2.95 (75.0)	2.76 (70.0)	2.76 (70.0)	7.99 (203.0)	2.99 (76.0)	0.77 (19.5)	0.57 (14.5)	Rc 1/4	3.03 (77.0)	0.28 (7.0)
IVBH80S (V) XF (8) A-NWF	NW80	4.49 (114.0)	3.86 (98.0)	3.86 (98.0)	9.55 (242.5)	3.60 (91.5)	0.91 (23.0)	0.65 (16.5)	Rc 3/8	3.86 (98.0)	0.24 (6.0)
IVBH100S (V) XF (8) A-NWF	NW100	5.28 (134.0)	5.12 (130.0)	5.12 (130.0)	12.52 (318.0)	4.25 (108.0)	0.98 (25.0)	0.83 (21.0)	Rc 3/8	4.61 (117.0)	0.26 (6.5)
IVBH40D (V) XF (8) A-NWF	NW40	2.17 (55.0)	2.56 (65.0)	2.56 (65.0)	4.70 (119.5)	2.34 (59.5)	0.45 (11.5)	0.45 (11.5)	Rc 1/8	2.05 (52.0)	0.20 (5.0)
IVBH50D (V) XF (8) A-NWF	NW50	2.95 (75.0)	2.76 (70.0)	2.76 (70.0)	5.53 (140.5)	2.54 (64.5)	0.45 (11.5)	0.45 (11.5)	Rc 1/8	2.05 (52.0)	0.20 (5.0)
IVBH80SD (V) XF (8) A-NWF	NW80	4.49 (114.0)	3.86 (98.0)	3.86 (98.0)	5.89 (149.5)	2.78 (70.5)	0.47 (12.0)	0.47 (12.0)	Rc 1/4	2.52 (64.0)	0.16 (4.0)
IVBH100SD (V) XF (8) A-NWF	NW100	5.28 (134.0)	5.12 (130.0)	5.12 (130.0)	7.28 (185.0)	3.39 (86.0)	0.57 (14.5)	0.57 (14.5)	Rc 1/4	3.03 (77.0)	0.28 (7.0)

**■ Dimensions**

Unit: inch (mm)

Type	Fixed Flow X Series		Variable Flow VX Series	
Size	1/4"	1/2"	1/4"	1/2"
Seat Material	Fluorine rubber			
L <sub>2</sub>	40A	-	4.02 (102.0)	4.11 (104.5)
	50A	3.76 (95.5)	4.02 (102.0)	4.11 (104.5)
	80A	4.25 (108.0)	4.43 (112.5)	4.41 (112.0)
	100A	-	-	5.53 (140.5)
D	1.54 (39.0)		1.73 (44.0)	
M <sub>1</sub>	Rc 1/8			



## ■ Template for Determining the Right Specifications

### L-type Vacuum Bellows Valve Specifications

1: Valve size	=	15A-25A-40A-50A-65A-80A-100A
2: Connection	=	ISO-KF-MF(ISO)-VF/VG(Old JIS)-ICF-other
3: Valve shape	=	L-shape-Y-shape-Z-shape
4: Face-to-face dimensions	=	inch (mm)
5: Pressure Range	=	Standard = $1 \times 10^{-6}$ - $2 \times 10^5$ Pa(abs) [0.1 MPa(G)]
6: Valve differential pressure resistance	=	Standard = Within usage pressure range
7: Actuation	=	manual, pneumatic (normally closed, normally open, double acting)
8: Cycle life	=	number of times
9: Actuation Pressure	=	58-101 psig (0.4-0.7 MPa (G))
10: Material		
(1): Body	=	Standard = SUS304, Option = SUS316L, etc.
(2): Bonnet	=	Standard = SUS304
(3): Bellows flange, ring	=	Standard = SUS304, Option = Inconel, Hastelloy, etc.
(4): Bellows	=	Standard = SUS316, Option = Inconel, Hastelloy, etc.
(5): Gasket	=	Standard = Viton, Option = Karlez, etc.
11: Leak rate		
(1): External Inspection leak volume	=	Standard = $1 \times 10^{-10}$ Pa·m <sup>3</sup> /s or less
(2): Internal Inspection leak volume	=	Standard = $1 \times 10^{-10}$ Pa·m <sup>3</sup> /s or less
12: Usage environment	=	pressure, temperature
13: Conditions of parts that come into contact with gas	=	material, temperature, surface treatment designation, etc.
14: Bypass valve	=	yes or no
(1): Bypass valve size	=	1/4"-1/2"
(2): Bypass valve category	=	fixed or variable (variatic valve with flow adjustment)
(3): Bypass valve seat material	=	Recommendation = fluorine rubber, PCTFE, etc.
(4): Number of bypass valves	=	Max 3, depending on type of main valve
15: Around the heater	=	hot or room temperature
(1): Set temperature	=	inside ○○°C outside ○○°C
(2): Uniformity of heating	=	place, conditions ± note
(3): Number of channels	=	if not designated, we will choose.
(4): Heater category	=	if not designated, we will choose.
(5): Supply power source	=	standard = 100V
(6): Thermocouple type	=	if not designated, we will choose.
(7): Prevention of excessive temperature rise	=	with or without a thermostat, temperature, location, etc.
(8): Thermostat temperature	=	
(9): Thermostat category	=	automatic recovery, manual recovery, normally closed/open
(10): Bellows internal TC	=	1 or 2
(11): Insulating material	=	category, surface temperature limits, outgassing, particle conditions, etc.
(12): Heat cycle	=	timeframe, number of times, temperature (closed state 2 times per month, 200 → room temperature → 200, etc.)
(13): Temperature rising time	=	if not designated, we will choose.
(14): Connector processing	=	TC, heater, thermostat, sensor, etc.
18: With, without open/close sensor(s)	=	yes or no
(1): Number of sensors	=	1 open or close position, 2 both position
(2): Types of sensors	=	PD31L3 (contact point) PE33LE (contactless)
19: Shipping inspection items	=	
20: Required verification	=	
21: Other requests for specifications	=	

# IVBH-C015

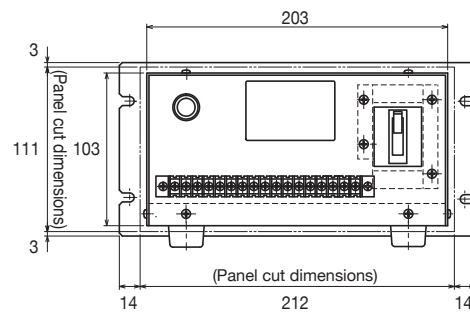
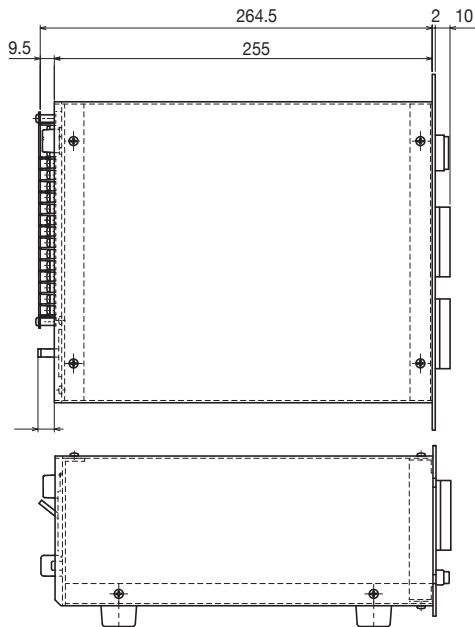
PID Controlled Digital Temperature Controller for IVBH Series

The IVBH-C015 is a digital temperature controller for use with the L-type heated vacuum isolation valve.

One controller is capable of simultaneously controlling the temperatures of both the internal heater and the external heater channels.

## Specifications

Temperature control range	: Room temperature-max 180°C
Temperature sensor	: K-type thermocouple
Heater rating	: AC 100V internal heater 400W/external heater 400W : AC 200V internal heater 800W/ external heater 800W
Power source	: AC 100V/200V
Warning signal output	: Heater malfunction reports 1a output for each heater (Reports heater disconnection and overheating)
Warning display	: A buzzer sounds and a lamp lights up when there is a heater disconnection or overheating malfunction. (Independent warnings for internal and external heaters; The buzzer can be turned off)
Safety mechanism	: Internal and external heaters can be individually interrupted when there is a heater malfunction Power interrupt function upon current surge or short
Operating environment	: 0-50°C, 45-85%RH
Open/close display	: Valve position detected by magnetic proximity switch



# For Open/Close Display Use Magnetic Proximity Switch

IVB Series Options

A magnetic proximity switch can be installed on the IVB, IVBL, and IVBH series pneumatic valves (NC, NO, DA) for detecting the open/close state of the valve.

PE33L3



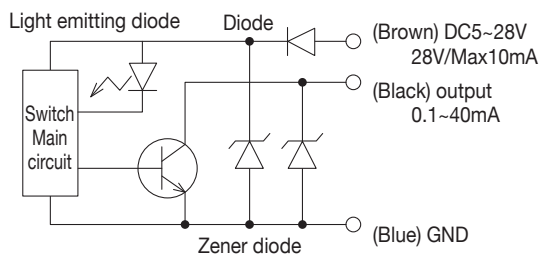
PD31L3



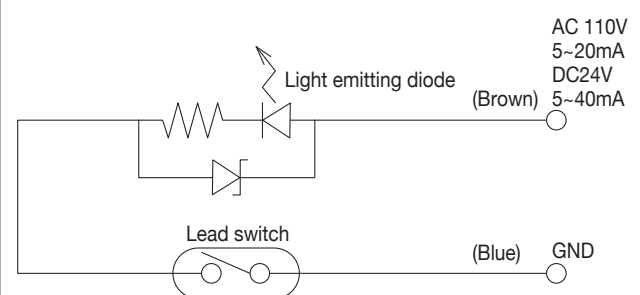
	Contactless Switch
Power Supply Voltage Range	DC5~28V
Load Voltage Range	DC: 28V or lower
Load Current Range	0.1~40mA
Internal Voltage Drop	0.5V or lower
Current Leakage	50 $\mu$ A or lower (DC24V)
Reaction Time	$\leq 1$ ms
Recovery Time	$\leq 1$ ms
Insulation Resistance	100 M $\Omega$ or more at DC500VM (between case and cord)
Voltage Resistance	AC 1500V 1 minute (between case and cord)
Shock Resistance	294m/s <sup>2</sup>
Vibration Resistance	Multiple amplitudes 1.5 mm, 10-55 Hz (2 hours in each of X, Y, and Z directions)
Ambient Temperature	0°C to +70°C (with no condensation)
Connection Method	PVC 0.15 mm <sup>2</sup> , 3 leads, outer diameter $\phi$ 2.6mm
Protective Structure	IP 67 (IEC standard), JIS C0920
Output Protection Circuit	Yes
Display Light	Red LED (lights when ON)
Compatible Loading	Small-scale relay, programmable controller

	Contact Point Switch
Load Voltage Range	DC: 24V, AC: 110V
Load Current Range	DC:5~40mA AC:5~20mA
Internal Voltage Drop	3V or lower
Current Leakage	0 $\mu$ A
Reaction Time	$\leq 1$ ms
Recovery Time	$\leq 1$ ms
Insulation Resistance	100 M $\Omega$ or more at DC500VM (between case and cord)
Voltage Resistance	AC 1500V 1 minute (between case and cord)
Shock Resistance	294m/s <sup>2</sup>
Vibration Resistance	Multiple amplitudes 1.5 mm, 10-55 Hz (2 hours in each of X, Y, and Z directions)
Ambient Temperature	0°C to +70°C (with no condensation)
Connection Method	PVC 0.2 mm <sup>2</sup> , 2 leads, outer diameter $\phi$ 2.6 mm
Protective Structure	IP 67 (IEC standard), JIS C0920
Display Light	Red LED (lights when ON)
Compatible Loading	Small-scale relay, programmable controller

Note) When using inductive loading (relays, etc.), be sure to attach a protective circuit (SK-100) I to the oad.



Magnetic proximity switch (PE33L3) with 3m cord



Magnetic proximity switch (PD31L3) with 3m cord

# BRW/BRWH

NW Flange Ball Valve  
Heated Ball Valve

BRW/BRWH is compact valve which has simple structure. It makes piping easily. A ball rotates 90 degrees with the stem as an axis in the body.

## ■ Features

- ⊙ BRW/BRWH has full-bore structure, and it makes high flow with low resistance.
- ⊙ BRW/BRWH can be disassembled and cleaned. Replacement of packing is also possible.
- ⊙ Removable mantle heater is available for BRWH.



▲ Heated Ball Valve with a Mantle Heater

## ■ Specifications

Fluid Temperature	Room temperature~+200°C
Maximum Heating Temperature (Heated Ball Valve)	25A : Manual 165°C, Pneumatic 160°C
	40A, 50A: Manual 180°C, Pneumatic 170°C
	Please contact our sales representative for details.
Pressure Range	VAC~-87 psia (VAC~6×10 <sup>5</sup> Pa (abs)) [0.5MPa (G)]
Standard Materials	Body/SUS304 Body-Flange/SCS13A
	Ball/SUS304
	Stem/SUS304
	Ball seat/HYPATITE PTFE®
Actuation Pressure	Packing-gasket/Kalrez 8900®
	58~101 psig (0.4~0.7MPa(G))

All brand names and product names are registered trademarks of their respective companies.

Size	BRW Series						BRWH Series		
	15A	25A	40A	50A	65A	100A	25A	40A	50A
Conductance (ℓ /s)	5	17	54	125	195	538	12	46	105

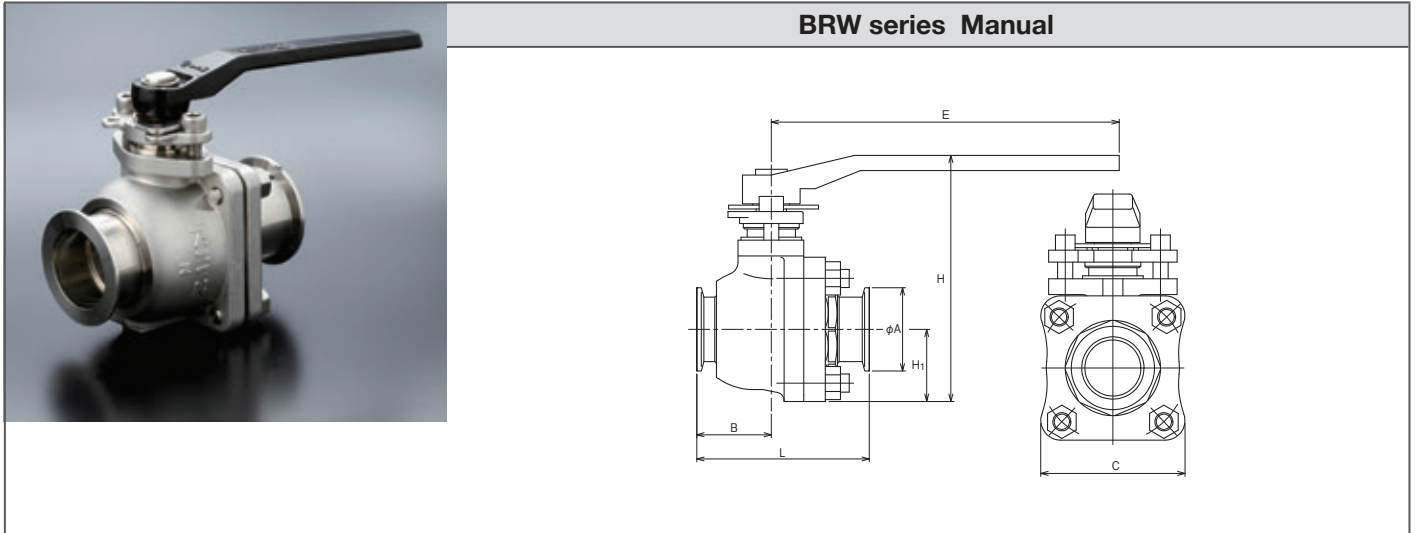
## ■ Precautions

- ① The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ② For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.
- ③ The ball valve has possibility to loosen at the outer axis seal, therefore, please re-tighten it periodically.
- ④ This valve is not suitable for use in location that require high durability, and high vacuum sealed.
- ⑤ This valve is oil free product. The ball sealing part and axis sealing part may deteriorate after several thousand openings and closings. Therefore sealing parts should be replaced new one periodically.

## Product Code Table

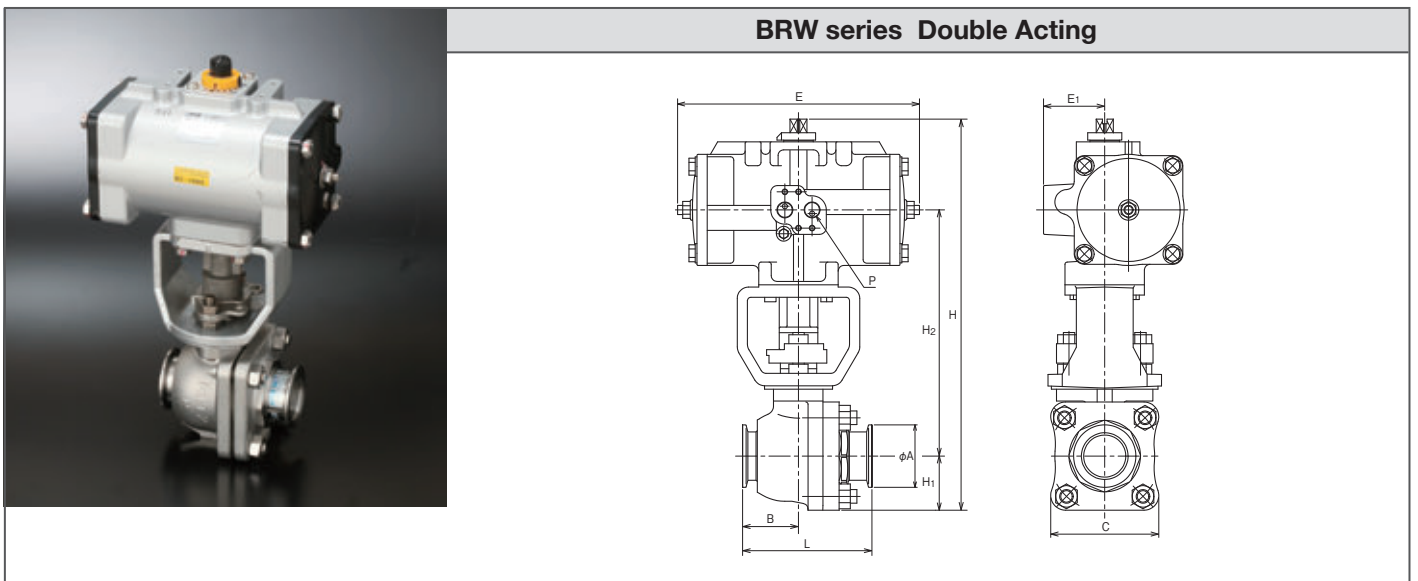
Model	Size	Operation	Valve Shape	Connection	Seat Material	Packing and Gasket Material	Option
<b>BRW</b>	<b>25</b>	<b>M</b>	<b>S</b>	<b>NW</b>	<b>H</b>	<b>T</b>	
BRW: Ball Valve BRWH: Heated Ball Valve	15:15A 25:25A 40:40A 50:50A 65:65A 100:100A	M: Manual D: Double Acting	S: Straight	NW: ISO KF Flange MF: ISO MF Flange *2	H: HYPATITE PTFE*	T: Kalrez 8900*	Not Shown: Standard M: With Mantle Heater *1

\*1 The size of 25A, 40A and 50A are available when the valve comes with mantle heater.  
\*2 Select ISO MF Flange if the flange size is 65A or 100A.



Unit: inch (mm)

Type	Connection	L	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	P	E	E <sub>1</sub>
BRW25MS-NWHT	NW25	3.390 (86.0)	6.299 (160.0)	1.437 (36.5)	-	1.575 (40.0)	1.496 (38.0)	2.870 (73.0)	-	6.300 (160.0)	-
BRW40MS-NWHT	NW40	4.490 (114.0)	6.420 (163.0)	1.890 (48.0)	-	2.170 (55.0)	1.929 (49.0)	3.74 (95.0)	-	9.060 (230.0)	-
BRW50MS-NWHT	NW50	4.760 (121.0)	6.850 (174.0)	2.130 (54.0)	-	2.950 (75.0)	2.19 (55.5)	4.21 (107.0)	-	9.060 (230.0)	-



Unit: inch (mm)

Type	Connection	L	H	H <sub>1</sub>	H <sub>2</sub>	A	B	C	P	E	E <sub>1</sub>
BRW25DS-NWHT	NW25	3.390 (86.0)	10.689 (271.5)	1.437 (36.5)	6.500 (165.0)	1.575 (40.0)	1.496 (38.0)	2.870 (73.0)	Rc1/4	4.21 (174.0)	1.969 (50.0)
BRW40DS-NWHT	NW40	4.490 (114.0)	13.580 (345.0)	1.890 (48.0)	8.540 (217.0)	2.170 (55.0)	1.929 (49.0)	3.74 (95.0)	Rc1/4	8.43 (214.0)	2.130 (54.0)
BRW50DS-NWHT	NW50	4.760 (121.0)	14.090 (358.0)	2.130 (54.0)	8.820 (224.0)	2.950 (75.0)	2.19 (55.5)	4.21 (107.0)	Rc1/4	8.43 (214.0)	2.130 (54.0)

# IVWF

## Vacuum Butterfly Valves

The IVWF series shutoff valves have a simple structure, and can be installed in the vacuum exhaust line of a semiconductor tools.

The valve shuts off flow when rotating the flapper type valve mechanism 90°.

### ■ Features

- These valves feature compact size and light weight due to their simple structure, and attaching one of these valves is easy.
- Minimal face-to-face dimension makes it easy to install in the tight space.
- The manual valves control the amount of flow by adjusting the degree of opening and can be set to an arbitrary degree of opening by fixing a lock screw.
- The structure of the throttle valves enables the degree of opening to be reproduced by graduations on the micrometer handle, and micro-adjustments is made possible by a differential screw mechanism.

### ■ Specifications

Size		25A	50A	80A	100A
Orifice Inch(mm)		φ1.30 (33.0)	φ2.02 (51.3)	φ3.07 (78.0)	φ3.94 (100.0)
Pressure Range		1.4×10 <sup>-10</sup> ~29psia (1×10 <sup>-9</sup> ~2×10 <sup>-9</sup> Pa (abs) [0.1MPa(G)])			
Maximum Pressure Differential at the Seat		14.6 psig (0.101 MPa(G)) (Positive / Back Pressure)			
Fluid Temperature		-15~100°C			
Leak Rates*	Across the Seat He Leak Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)			
	Inboard He Leak Rates	≤ 1×10 <sup>-9</sup> sccs (≤ 1×10 <sup>-10</sup> Pa·m <sup>3</sup> /s)			
Cycle Life*		Results of 100,000 cycles or more at atmospheric pressure (room temperature)			
Connection		Compatible with ISO KF flange, JIS VF/VG flange, and other standard connections			
Actuator Section (DA Type Pneumatic Valve Only)	Actuation Pressure	58~101 psig (0.4~0.7MPa (G))			
	Actuation	Double acting			
	Operating Temperature	-20~60°C			

\* Helium leak rates and cycle life of the products depend on the usage conditions. e.g. temp/media/pressure.

### ■ Product Code Table

Model	Size	Operation	Valve Model	Connection (Seat Side)	Connection	Seat Material	Custom Specifications	Proximity Switch	Proximity Switch Categories	Open/Close Display Plate※
IVWF	50	M	S	VF	G	F	Specific code	W	NR	OC
I-shape Vacuum Butterfly Valve	25:25A 50:50A 80:80A 100:100A	M: Manual SD: Double Acting F: Flow Control	Straight	NW: ISO KF Flange VF: JIS VF Flange VG: JIS VG Flange CF: ConFlat Flange	Same Cases As Seat Side Omitted F: JIS VF Flange G: JIS VG Flange	Fluorine Rubber	Standard Products Are Omitted	Not Displayed: No Switch SO:With Switch on Fully Open Side SC:With Switch on Fully Closed Side W:With Fully Open/fully Closed Switches	NR:PD31L3 Switch with Contacts (2 wires) NS:PE34L3 Contactless Switch (2 wires)	OC: With Open/Close Display Plate Not Shown: Without Open/Close Display Plate

\* We handle materials and shapes other than those noted.

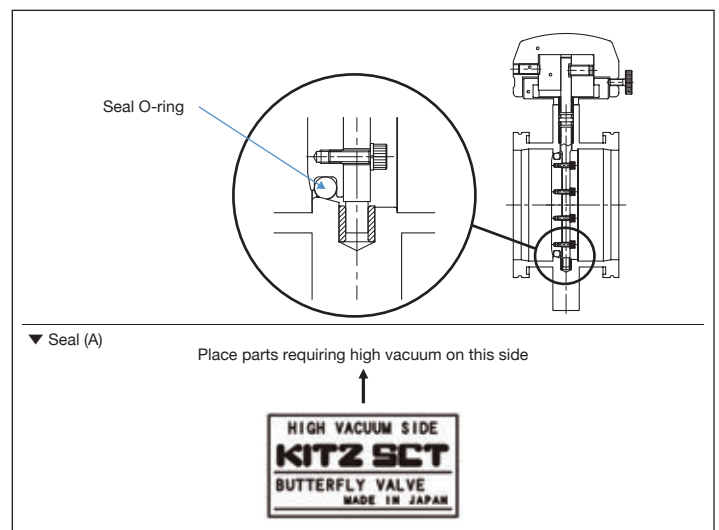
\* We also handle these valves with heaters attached as special order items. For details please ask to the sales representative.

※Pneumatic only

### ■ Precautions

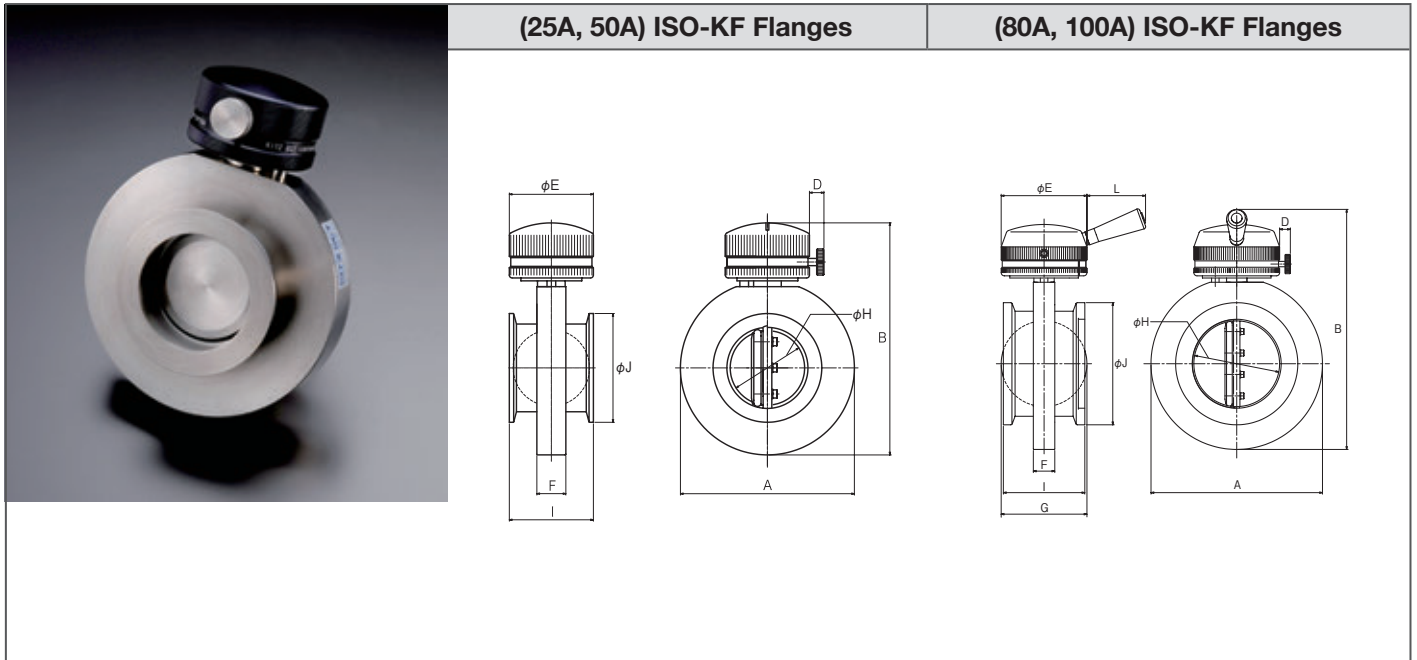
- ① The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- ② For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.
- ③ For atmospheric release applications, contact your sales representative.
- ④ Seal (A) affixed to the valve body shows the direction in which higher vacuum is retained during the process using the valve. Place the parts requiring high vacuum on the side marked "HIGH VACUUM SIDE". To maintain the chamber at high vacuum, place the chamber on the "HIGH VACUUM SIDE" and the pump on the opposite side.

### Installation direction





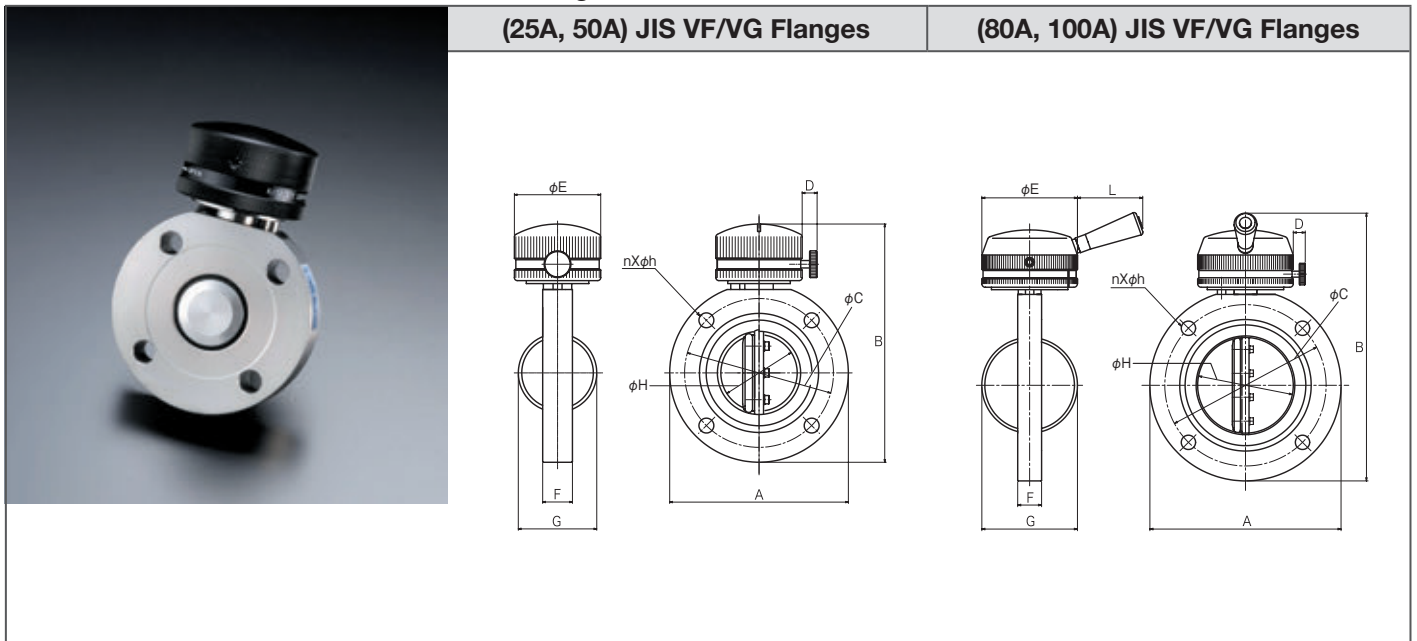
## IVWF Series Manual Valves ISO-KF Flanges



Unit: inch (mm)

Type	Connection	A	B	E	J	H	G	I	F	L	D
IVWF25MS-NW40	25A	3.54 (90.0)	5.12 (130.0)	2.28 (58.0)	2.17 (55.0)	1.30 (33.0)	-	2.28 (58.0)	0.79 (20.0)	-	0.39 (10.0)
IVWF50MS-NW	50A	4.72 (120.0)	6.30 (160.0)	2.28 (58.0)	2.95 (75.0)	2.02 (51.3)	-	2.28 (58.0)	0.79 (20.0)	-	0.39 (10.0)
IVWF80MS-NW	80A	6.30 (160.0)	8.86 (225.0)	3.15 (80.0)	4.49 (114.0)	3.07 (78.0)	3.15 (80.0)	2.99 (76.0)	0.79 (20.0)	2.17 (55.0)	0.39 (10.0)
IVWF100MS-NW	100A	7.28 (185.0)	9.84 (250.0)	3.15 (80.0)	5.28 (134.0)	3.94 (100.0)	4.02 (102.0)	2.95 (75.0)	0.79 (20.0)	2.17 (55.0)	0.39 (10.0)

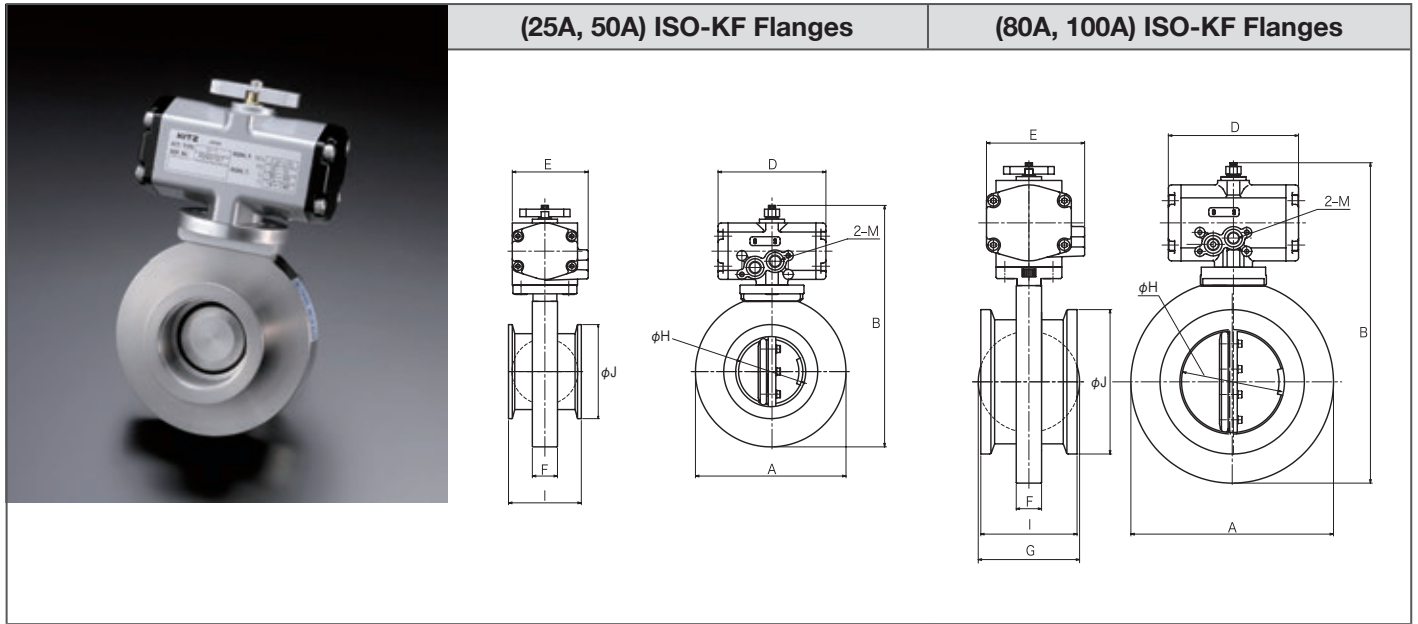
## IVWF Series Manual Valves JIS VF/VG Flanges



Unit: inch (mm)

Type	Connection	A	B	E	H	C	G	F	L	D	n x h
IVWF25MS-V□	25A	3.54 (90.0)	5.12 (130.0)	2.28 (58.0)	1.30 (33.0)	2.76 (70.0)	1.38 (35.0)	0.79 (20.0)	-	0.39 (10.0)	4 x 10
IVWF50MS-V□	50A	4.72 (120.0)	6.30 (160.0)	2.28 (58.0)	2.02 (51.3)	3.94 (100.0)	2.09 (53.0)	0.79 (20.0)	-	0.39 (10.0)	4 x 10
IVWF80MS-V□	80A	6.30 (160.0)	8.86 (225.0)	3.15 (80.0)	3.07 (78.0)	5.31 (135.0)	3.15 (80.0)	0.79 (20.0)	2.17 (55.0)	0.39 (10.0)	4 x 12
IVWF100MS-V□	100A	7.28 (185.0)	9.84 (250.0)	3.15 (80.0)	3.94 (100.0)	6.30 (160.0)	4.02 (102.0)	0.79 (20.0)	2.17 (55.0)	0.39 (10.0)	8 x 12

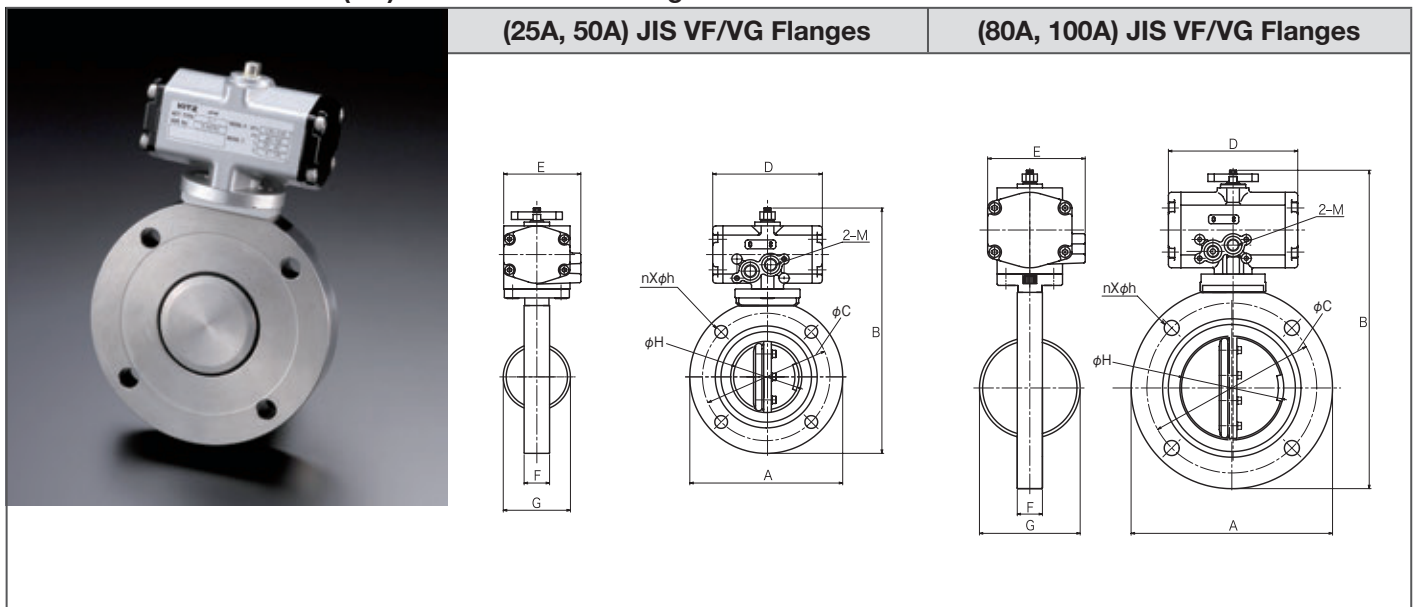
### ■ IWWF Series Pneumatic (DA) Valve ISO-KF VF/VG Flange



Unit: inch (mm)

Type	Connection	A	B	E	D	H	J	I	F	G	2-M
IWWF25SDS-NW40	25A	3.54 (90.0)	6.40 (162.5)	2.38 (60.5)	3.39 (86.0)	1.30 (33.0)	2.17 (55.0)	2.28 (58.0)	0.79 (20.0)	-	Rc 1/8
IWWF50SDS-NW	50A	4.72 (120.0)	7.58 (192.5)	2.38 (60.5)	3.39 (86.0)	2.02 (51.3)	2.95 (75.0)	2.28 (58.0)	0.79 (20.0)	-	Rc 1/8
IWWF80SDS-NW	80A	6.30 (160.0)	9.96 (253.0)	3.05 (77.5)	4.06 (103.0)	3.07 (78.0)	4.49 (114.0)	2.99 (76.0)	0.79 (20.0)	3.15 (80.0)	Rc 1/8
IWWF100SDS-NW	100A	7.28 (185.0)	10.94 (278.0)	3.05 (77.5)	4.06 (103.0)	3.94 (100.0)	5.28 (134.0)	2.95 (75.0)	0.79 (20.0)	4.02 (102.0)	Rc 1/8

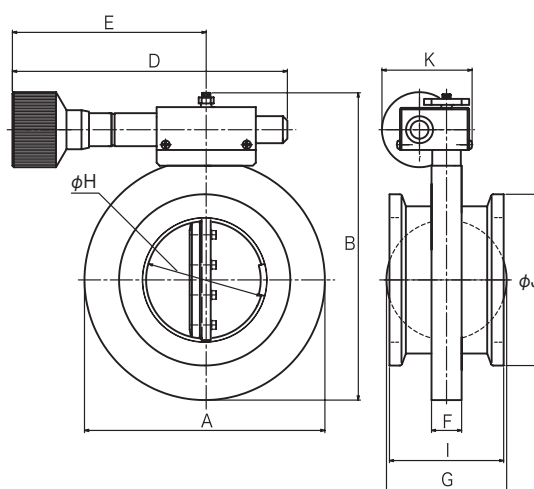
### ■ IWWF Series Pneumatic (DA) Valve JIS VF/VG Flange



Unit: inch (mm)

Type	Connection	A	B	E	D	H	C	F	G	2-M	n×h
IWWF25SDS-V□	25A	3.54 (90.0)	6.40 (162.5)	2.38 (60.5)	3.39 (86.0)	1.30 (33.0)	2.76 (70.0)	0.79 (20.0)	1.38 (35.0)	Rc 1/8	4×10
IWWF50SDS-V□	50A	4.72 (120.0)	7.58 (192.5)	2.38 (60.5)	3.39 (86.0)	2.02 (51.3)	3.94 (100.0)	0.79 (20.0)	2.09 (53.0)	Rc 1/8	4×10
IWWF80SDS-V□	80A	6.30 (160.0)	9.96 (253.0)	3.05 (77.5)	4.06 (103.0)	3.07 (78.0)	5.31 (135.0)	0.79 (20.0)	3.15 (80.0)	Rc 1/8	4×12
IWWF100SDS-V□	100A	7.28 (185.0)	10.94 (278.0)	3.05 (77.5)	4.06 (103.0)	3.94 (100.0)	6.30 (160.0)	0.79 (20.0)	4.02 (102.0)	Rc 1/8	8×12

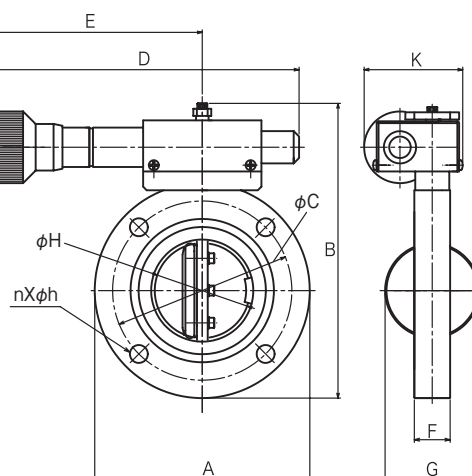
## IVWF Series Variable Flow Valve ISO-KF Flange



Unit: inch (mm)

Type	Connection	A	B	K	D	E	H	J	I	F	G
IVWF25FS-NW40	25A	3.54 (90.0)	4.33 (110.0)	2.17 (55.0)	7.20 (183.0)	5.08 (129.0)	1.30 (33.0)	2.17 (55.0)	2.28 (58.0)	0.79 (20.0)	-
IVWF50FS-NW	50A	4.72 (120.0)	6.46 (164.0)	2.17 (55.0)	7.20 (183.0)	5.08 (129.0)	2.02 (51.3)	2.95 (75.0)	2.28 (58.0)	0.79 (20.0)	-
IVWF80FS-NW	80A	6.30 (160.0)	8.07 (205.0)	2.36 (60.0)	7.20 (183.0)	5.08 (129.0)	3.07 (78.0)	4.49 (114.0)	2.99 (76.0)	0.79 (20.0)	3.15 (80.0)
IVWF100FS-NW	100A	7.28 (185.0)	9.02 (229.0)	2.36 (60.0)	7.20 (183.0)	5.08 (129.0)	3.94 (100.0)	5.28 (134.0)	2.95 (75.0)	0.79 (20.0)	4.02 (102.0)

## IVWF Series Variable Flow Valve JIS VF/VG Flange



Unit: inch (mm)

Type	Connection	A	B	K	D	E	H	C	F	G	n×h
IVWF25FS-V□	25A	3.54 (90.0)	5.28 (134.0)	2.17 (55.0)	7.20 (183.0)	5.08 (129.0)	1.30 (33.0)	2.76 (70.0)	0.79 (20.0)	1.38 (35.0)	4×10
IVWF50FS-V□	50A	4.72 (120.0)	6.46 (164.0)	2.17 (55.0)	7.20 (183.0)	5.08 (129.0)	2.02 (51.3)	3.94 (100.0)	0.79 (20.0)	2.09 (53.0)	4×10
IVWF80FS-V□	80A	6.30 (160.0)	8.07 (205.0)	2.36 (60.0)	7.20 (183.0)	5.08 (129.0)	3.07 (78.0)	5.31 (135.0)	0.79 (20.0)	3.15 (80.0)	4×12
IVWF100FS-V□	100A	7.28 (185.0)	9.02 (229.0)	2.36 (60.0)	7.20 (183.0)	5.08 (129.0)	3.94 (100.0)	6.30 (160.0)	0.79 (20.0)	4.02 (102.0)	8×12

## ■ Model Used for Determining Specifications

### Vacuum Butterfly Valve Specifications

1: Valve size	=	25A 50A 80A 100A
2: Actuation	=	Manual Penumatic (Double acting) Manual
3: Connection type	=	ISO-KF JIS-VF/VG, etc.
4: Seat material	=	Standard = fluorine rubber
5: Pressure Range	=	Standard = $1 \times 10^{-6}$ Pa(abs) ~ $2 \times 10^5$ Pa(abs) [0.1MPa(G)]
6: Valve seat differential pressure resistance	=	Standard = 0.101MPa(positive or negative pressure)
7: Permissible differential pressure for valve operation	=	Standard = $1.3 \times 10^3$ Pa (10Torr)
8: Cycle life	=	number of times
9: Actuation pressure (pneumatic valve)	=	58~101psig(0.4~0.7MPa(G))
10: Material		
(1): Body	=	Standard = SUS304
(2): Bonnet	=	Standard = SUS304 or A5056
(3): Flapper	=	Standard = SUS304
(4): Stem	=	Standard = SUS304
(5): O-ring	=	Standard = fluorine rubber
11: Leak rate		
(1): External Inspection leak volume	=	Standard = $1 \times 10^{-10}$ Pa·m <sup>3</sup> /s or less
(2): Internal Inspection leak volume	=	Standard = $1 \times 10^{-10}$ Pa·m <sup>3</sup> /s or less
12: Usage environment	=	pressure, temperature
13: Conditions of parts that come into contact with gas	=	material, temperature, surface treatment designation, etc.
14: With, without open/close sensor(s)	=	yes or no
(1): Number of sensors	=	MAX open/close 2 each
(2): Types of sensors	=	Standard = micro switch
15: Open/closed time	=	open/close time indicated/not indicated
16: Shipping inspection items	=	
17: Required verification	=	
18: Other requests for specifications	=	

# PCA

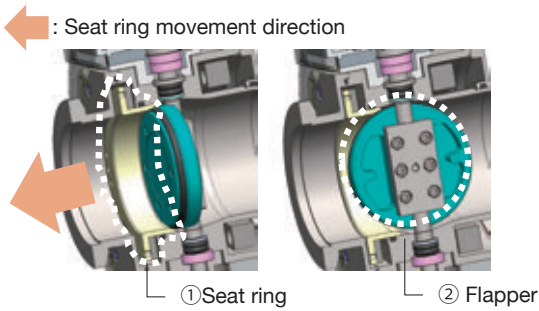
## APC Butterfly Valve

### Main features

- Valve that can be opened/closed and is capable of slow exhaust and pressure regulation.

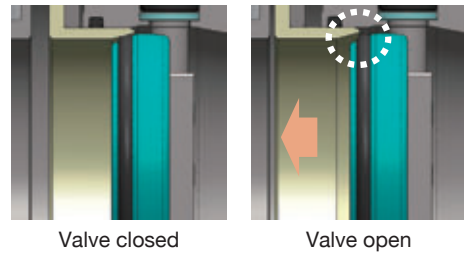
#### Valve open/close

- After the seat ring (1) moves forward, the flapper (2) rotates to open/close.



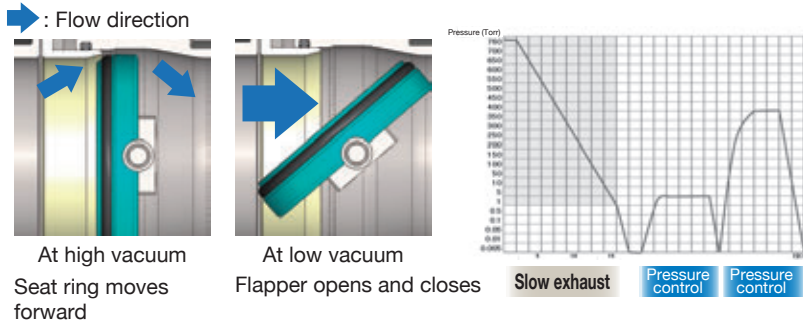
#### Slow exhaust

The seat ring moves in the direction of the arrow, which creates a gap between the seat ring and flapper and exhausts air.

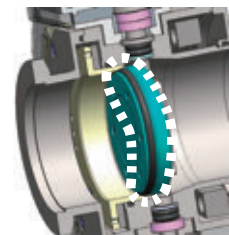


#### Pressure control

Wide range of pressure control from low to high vacuum with combination of our seat ring and flapper.



- New developed seat ring structure  
KITZ new seat ring structure prevents O-ring twisting and dislodging. Furthermore, our grease free flapper sealing minimizes contamination.
- High durability  
Increases durability by reducing the O-ring stress using our seat ring structure. Full open <-> Full close : 2 million cycles
- Reduce by-product adhesion with unique heating feature.  
Internal heater inside the flapper reduces by-products adhesion in the flow path drastically. (The internal heater is optional)



### Interface



- ① Display
- ② Power inlet
- ③ Communication interface
- ④ Service port
- ⑤ Sensor inlet
- ⑥ Micro connector terminal

The interface changes according to the communication format.  
The photo shows DeviceNet™.

## Main specifications

Maximum Operation Pressure	1x10 <sup>-6</sup> Pa~0.101MPa
Leak Rates (with FKM)	Across the Seat He Leak Test Rates: 5 x 10 <sup>-10</sup> Pa·m <sup>3</sup> /s or less Inboard He Leak Test Rates: 1 x 10 <sup>-8</sup> Pa·m <sup>3</sup> /s or less
Differential Pressure	0.101MPa
Response Time	Full open <-> Full close (Flapper + Seat ring): About 1 second
Cycle Life	2 million (Full open <-> Full close)*1
Atmospheric Temperature	5~50°C (41~122F)
Wetted Area Material	SUS316L
Material	Body, Flapper : 316L, Others : Aluminum, SUS304 equivalent Sealing (O-ring) : FKM
Power-supply Voltage	DC24V+10%-5% (3A MAX)
Network Interface	Analog, RS232C, Device Net, EtherCAT
Interface Connection	High Density subminiature D male connector 26P
Pressure Sensor Input	Max 3ch (0-5 V, 0-10 V)

\*1 150°C, Own test, actual result

\*2 In case of using Kalrez (R), set the heater temperature to 100°C or higher.

Flange size	40A	50A	65A	80A	100A
Conductance	23.1ℓ/s	36ℓ/s	66.0ℓ/s	181ℓ/s	342ℓ/s
Weight	11.9kg	12.2kg	13.5kg	13.8kg	15.8kg

Note: Calculated value in the molecular flow region when the valve is fully open. The conductance varies depending on the pressure.

Accessories

- Power inlet cable (5 meter (16.404 ft))
- Interface connector
- Sensor connector

## Option

UPS	Emergency shut off when power failure
Seal material (O-ring)	Kalrez 8900® *2

## Heater Power for Each Specification

Heater specifications	Heater specification symbol	Heater part	Heater Power [W]		
			50A	80A	100A
Thermostatic internal/external heater specifications	HH	Internal	-	60	60
		External	-	278	256
Internal/external heater specifications	HI	Internal	60	60	60
		External	160	330	300
External heater specifications	H	External	160	330	300

## Heater Specification Details

Heater specifications	Heater specification symbol	Applicable size	Seal material (Flapper O-ring)	Max set temperature [°C]	
				External	Internal
Internal/external heater high-temperature specifications	HH	80A, 100A	Kalrez 8900®	190	190
Internal/external heater specifications	HI	50A, 80A, 100A	Kalrez 8900®	180	180
			FKM	150	150
External heater specifications	H	50A, 80A, 100A	Kalrez 8900®	180	-
			FKM	150	-

Note: Ask our sales for other options.

## Product Code Table

Model	Body size	Flange			Network Interface	Controller	Heater	UPS
		Connection	Size	Seal Material				
PCA	50	NW	40	F	A	V	HI	U

50: 50A  
80: 80A  
100: 100A

NW: ISO-KF  
※JF: JIS VF-VG

Not Shown: Same as body

\*40: 40A \*1  
\*65: 65A \*2

O-ring material  
F: FKM  
\*KL8900:  
Kalrez 8900®

A: Analog  
R: RS232C  
D: DeviceNET™  
E: EtherCAT

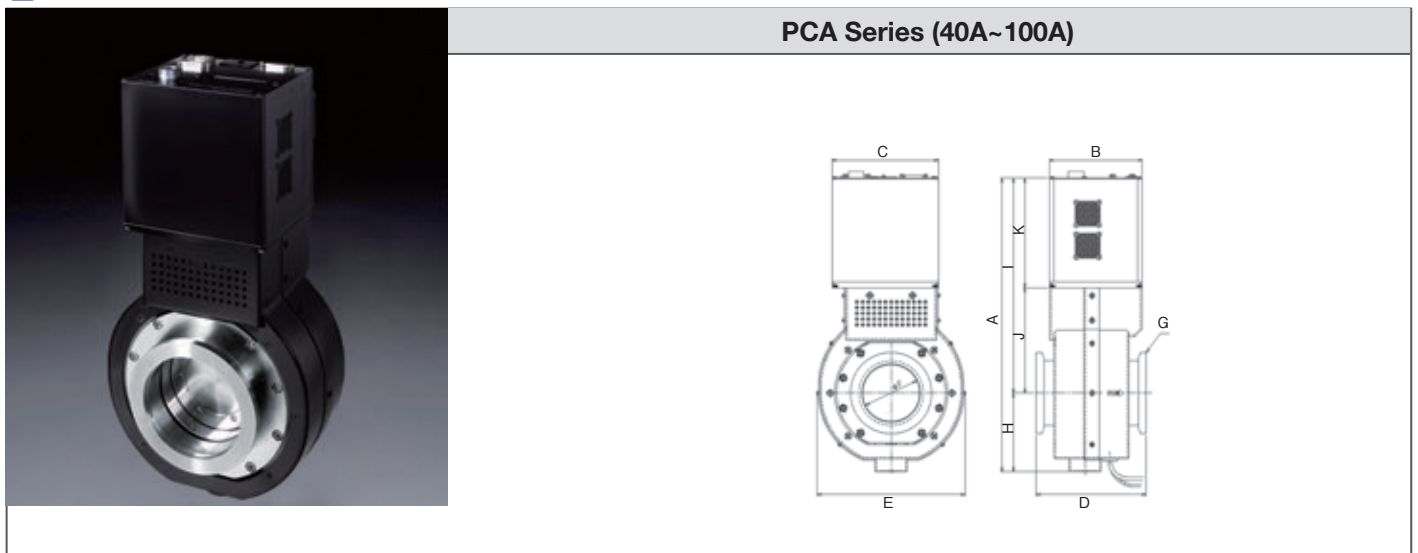
Not Shown: On the body  
\*V: Separated

None: Without Heater  
\*H: External Heater  
\*HI: External and Internal Heater  
\*HH: External and Internal Heater 190°C

Not shown: Without UPS  
\*U: With UPS

- \*1. Our 40A size uses our 50A body. Our 65A size uses 80A size body.  
\*2. Our 65A size uses 80A size body.  
Items with \*\*\* are optional.

## Product Code Table



Unit: inch (mm)

	A	B	C	D	E	F	G	H	I	J	K
40A	15.630 (397)	5.119 (130)	5.906 (150)	6.693 (170)	7.245 (184)	1.551 (39.4)	KF40 (KF40)	4.331 (110)	11.300 (287)	5.237 (133)	6.063 (154)
50A	15.630 (397)	5.119 (130)	5.906 (150)	6.693 (170)	7.245 (184)	1.969 (50)	KF50 (KF50)	4.331 (110)	11.300 (287)	5.237 (133)	6.063 (154)
65A	16.457 (418)	5.119 (130)	5.906 (150)	6.083 (154.5)	8.189 (208)	2.677 (70.2)	KF63 (KF63)	4.567 (116)	11.890 (302)	5.827 (148)	6.063 (154)
80A	16.457 (418)	5.119 (130)	5.906 (150)	6.083 (154.5)	8.189 (208)	3.150 (80)	KF80 (KF80)	4.567 (116)	11.890 (302)	5.827 (148)	6.063 (154)
100A	17.245 (438)	5.119 (130)	5.906 (150)	6.300 (160)	8.898 (226)	3.938 (100)	KF100 (KF100)	4.961 (126)	12.284 (312)	6.221 (158)	6.063 (154)

Note: No cable for no heater type.



# UXG/LG

## Vacuum Gate Valve

The UXG and LG series are gate valves developed for separating a semiconductor vacuum system's reactor from the transfer chamber. The valve bodies are made of aluminum, and the valves operate via double action pneumatic actuator. The heated gate valves not only heats the exterior using a conventional external heater but the built-in internal heater in the moving parts heats from the inside simultaneously, providing highly uniform heating performance. The body and valve body can be set to an arbitrary temperature up to a maximum 180°C.

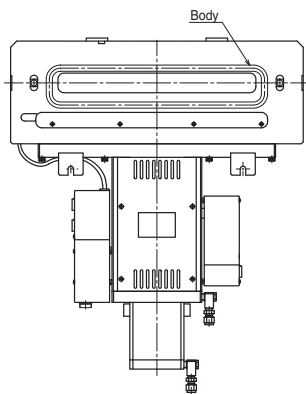
### Features

- Because the valve can be heated to high temperatures, it reduces contamination accumulation and adhesion to the seat so to greatly extend the maintenance period.
- The body heater and valve heater are in separate channels, so the internal and external temperatures can be set individually.
- Has a non-sliding structure that keeps particles from being generated during opening and closing operations.
- Equipped with a latch lock mechanism that keeps the valve closed during an emergency such as when the operating air pressure is lost.
- Fluorine rubber, KALREZ® \*1, Chemraz® \*2, or other materials for the gate O-ring is available depending on the fluid temperature and chemical characteristics of the fluid.

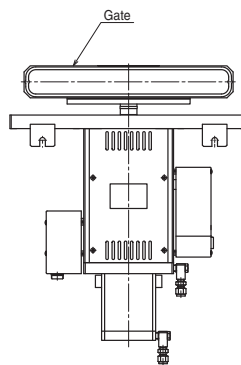
### Specifications

Size	12"(300mm type)
Pressure Range	1.4x10 <sup>-10</sup> ~29 psia (1x10 <sup>-6</sup> Pa~0.101 MPa (abs))
Valve Seat Differential Pressure Resistance	14.6 psig (0.101 MPa(G)) (Positive/Back pressure)
Bellows Pressure Resistance	2.9 psig (0.02MPa)
Permissible Differential Pressure for Valve Operation	1.3 KPa
Leak Rates	Across the Seat He Leak Rates
	Inboard He Leak Rates
$\leq 1 \times 10^{-9}$ sccs ( $\leq 1 \times 10^{-10}$ Pa·m <sup>3</sup> /s) (for 30 seconds at room temperature) $\leq 1 \times 10^{-4}$ sccs ( $\leq 1 \times 10^{-5}$ Pa·m <sup>3</sup> /s) (for 30 seconds at raised temperature)	
Allowable external leakage: $\leq 1 \times 10^{-9}$ sccs ( $\leq 1 \times 10^{-10}$ Pa·m <sup>3</sup> /s)	
Operation	Double action pneumatic cylinder
Actuation Pressure	72~101 psig (0.5~0.7MPa (G))
Actuation Reaction Time (Actuation Pressure 0.5 MPa(G))	0.8~2 s (orifice controlled) 1.5~2 s (speed control included)
Maximum Heater Temperature	180°C
Time To Reach Set Temperature	160°C (when the gate O-ring material is fluorine rubber) Reaches highest temperature setting within 1.5 hrs
Maximum Operating Temperature	210°C (heated type) 60°C (non-heated type)
Insulation Resistance	10 MΩ or more at DC 500V
Bellows Cycle Life	1 million cycles
Particle Performance (Target Value For Reference)	The number of particle sized larger than 0.1 μm to be no more than 0.3 on average *

\* Reference by own test: N2 supply 1cf/min, sampling 0.2 cf/min, open/close time 6 seconds/cycle



UXG: with body



LG: without body



\*1 KALREZ® is a trademark of DuPont Performance Elastomers Co.

\*2 Chemraz® is a trademark of Greene, Tweed & Co.

### Product Code Table

Model <b>UXG</b>	Gate Length (Opening Part) <b>12</b>	Gate Width (Opening Part) <b>32</b>	With/Without Heater <b>H</b>	Gate Seal Material <b>KL</b>	Model Number Technical Number
UXG: With Body LG: Without Body	12: 12" (for Use with 300mm Wafer)	32: 32mm 46: 46mm 50: 50mm	Not Shown: Without Heater H: With Heater	F: Fluorine Rubber KL: KALREZ® CM: CHEMRAZ®	Production Drawing Number

Note: We handle materials and shapes other than those noted.

### Precautions

- The valves are not guaranteed to function if their exterior is submerged inside a vacuum.
- For high temperature applications, please select appropriate material for air-fittings and tubes to assure proper performance.

## ■ Model Used for Determining Specifications

### Square Gate Valve Specifications

1: Valve size	=	12 inches
2: Dimensions of the opening part	=	horizontal x vertical mm
3: Body	=	with or without
4: Body dimensions	=	standard = 65 mm
5: Pressure Range	=	standard = $1 \times 10^{-6}$ Pa~0.101MPa (abs)
6: Valve seat differential pressure resistance	=	Standard = 0.101MPa (positive or negative pressure)
7: Permissible differential pressure for valve operation	=	Standard = $1.3 \times 10^3$ Pa (10Torr)
8: Cycle life	=	number of times
9: Actuation pressure	=	75~101 psig (0.5~0.7 MPa(G))
10: Material		
(1): Body	=	standard = A5052
(2): Bonnet	=	standard = SUS316
(3): Gate	=	standard = A5052
(4): Bellows	=	standard = AM350; Option= SUS, Inconel, Hastelloy, etc.
(5): O-ring	=	fluorine rubber-KALREZ®·Chemraz®
11: Leak rate		
(1): External Inspection leak volume	=	Standard = $1 \times 10^{-10}$ Pa·m <sup>3</sup> /s or less
(2): Internal Inspection leak volume	=	Standard = $1 \times 10^{-10}$ Pa·m <sup>3</sup> /s or less
12: Usage environment	=	pressure, temperature
13: Conditions of parts that come into contact with gas	=	material, temperature, surface treatment designation, etc.
14: Around the heater	=	hot or room temperature
(1): Set temperature	=	○○°C
(2): Uniformity of heating	=	place, conditions ± note
(3): Number of channels	=	if not designated, we will choose.
(4): Heater category	=	if not designated, we will choose.
(5): Supply power source	=	standard = 100V-200V
(6): Thermocouple type	=	if not designated, we will choose.
(7): Prevention of excessive temperature rise	=	with or without a thermostat, temperature, location, etc.
(8): Thermostat temperature	=	○○°C
(9): Thermostat category	=	automatic recovery, manual recovery, normally closed/open
(10): Valve body TC	=	standard = 1 (1 for monitoring the rise in temperature)
(11): Heater specifications, insulating material	=	category, surface temperature limits, outgassing, particle conditions, etc.
(12): Heat cycle	=	timeframe, number of times, temperature (closed state 2 times per month, 200 → room temperature → 200, etc.)
(13): Temperature rising time	=	if not designated, we will choose.
(14): Connector processing	=	TC, heater, thermostat, sensor, etc.
15: With, without open/close sensor(s)	=	yes or no
(1): Number of sensors	=	1 open or close position, 2 both position
(2): Types of sensors	=	Standard = micro switch
16: Open/closed time	=	standard = orifice control; Option = with speed controller
17: Gate lock (latch lock mechanism)	=	standard = CLOSE side only; Option= OPEN side
18: Shipping inspection items	=	
19: Required verification	=	
20: Other requests for specifications	=	

# PFA Valves

## PFA DIAPHRAGM VALVE

### KITZ SCT's PFA

### Diaphragm valve series for fluid handling system

Clean, high-reliability valves are required in the fluid handling of high-purity chemicals, ultrapure water, etc., at semiconductor and liquid-crystal display facilities.

In addition, as higher pressures have come to be used in those fluid handling systems in recent years, valves are required to have a high level of sealing performance with respect to both positive and back pressure.

The FCD series was developed to meet this need while considering user-friendliness.

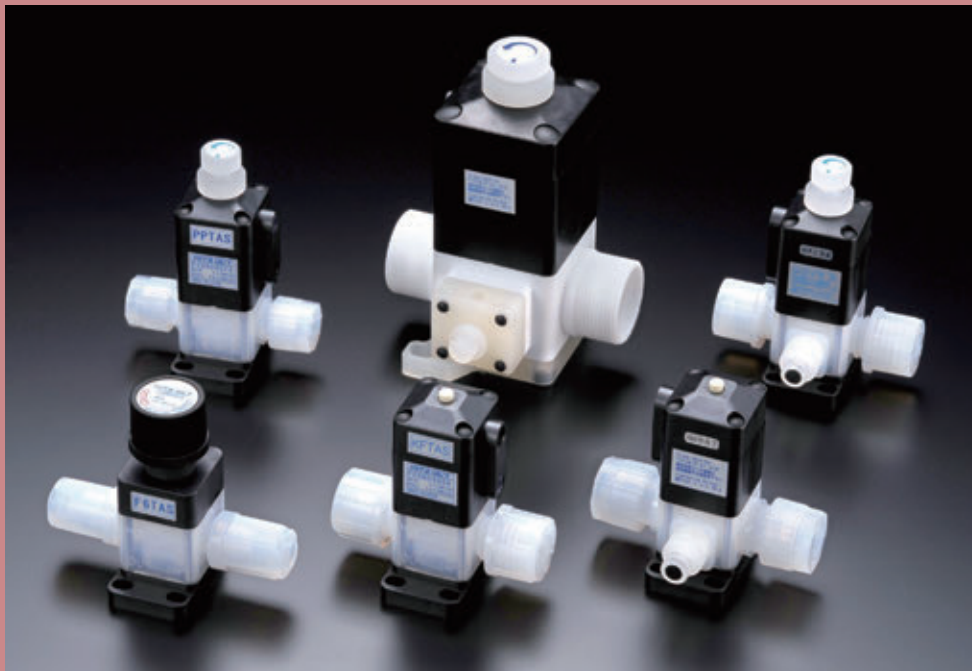
These valves are compact, the direction of the air supply inlet can be selected, and the base attachment part can be made with a longer hole. These are some of the specifications incorporated into these valves useful in making the valve attachment work more efficiently.

We also offer a piping system that merges those features together, by combining the valves with the TBN series of PFA tube fittings to realize a compact, leakproof fluid handling system.

KITZ SCT will answer all of your needs systems.

### ■ FCD (PFA Diaphragm Valves)

FCDN Manual Valves	95
FCDN Pneumatic Valves	98
FCDN Variable Flow Valves	101
FCDN Pneumatic Valves with Bypass	101
FCDN Variable Flow Valves with Bypass	101
FCDN Variable Flow Valves with Pneumatic Bypass	104
FCDN Suckback Valves	104
FCDT (Fluorine resin diaphragm Valve for 200°C)	105



# FCD






## PFA Diaphragm Valve

KITZ SCT's FCD series PFA valves are High reliability PFA valves for UHP fluid application.

FCD series meets the needs for high reliability and space saving in piping systems that require a high level of cleanliness.

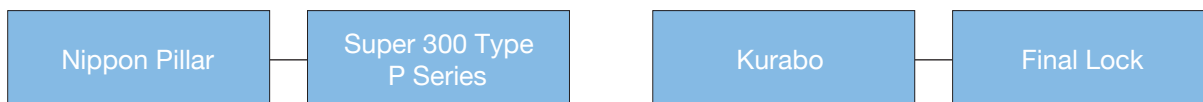
### Product Lineup

Products subject to customs control for export from Japan

Product code	Manual Valve FCDN□□MSN	Pneumatic Valve FCDN□□□S□			Pneumatic Valve								
					Variable Flow FCDN□□□F□			With Bypass FCDN□□□B□			Variable Flow + Bypass FCDN□□□X□		
External view													
Size		N.C.	N.O.	Double action	N.C.	N.O.	Double action	N.C.	N.O.	Double action	N.C.	N.O.	Double action
1/4"	○	○	○	○	○	○	○	-	-	-	-	-	-
3/8"	○	○	○	○	○	○	○	○	○	○	○	○	○
1/2"	○	○	○	○	○	○	○	○	○	○	○	○	○
3/4"	○	○	○	○	○	○	○	○	○	○	○	○	○
1"	○	○	○	○	○	○	○	○	○	○	○	○	○

○ denotes available products. \* Please refer to product codes on P. 95 and P. 98.

### Connection



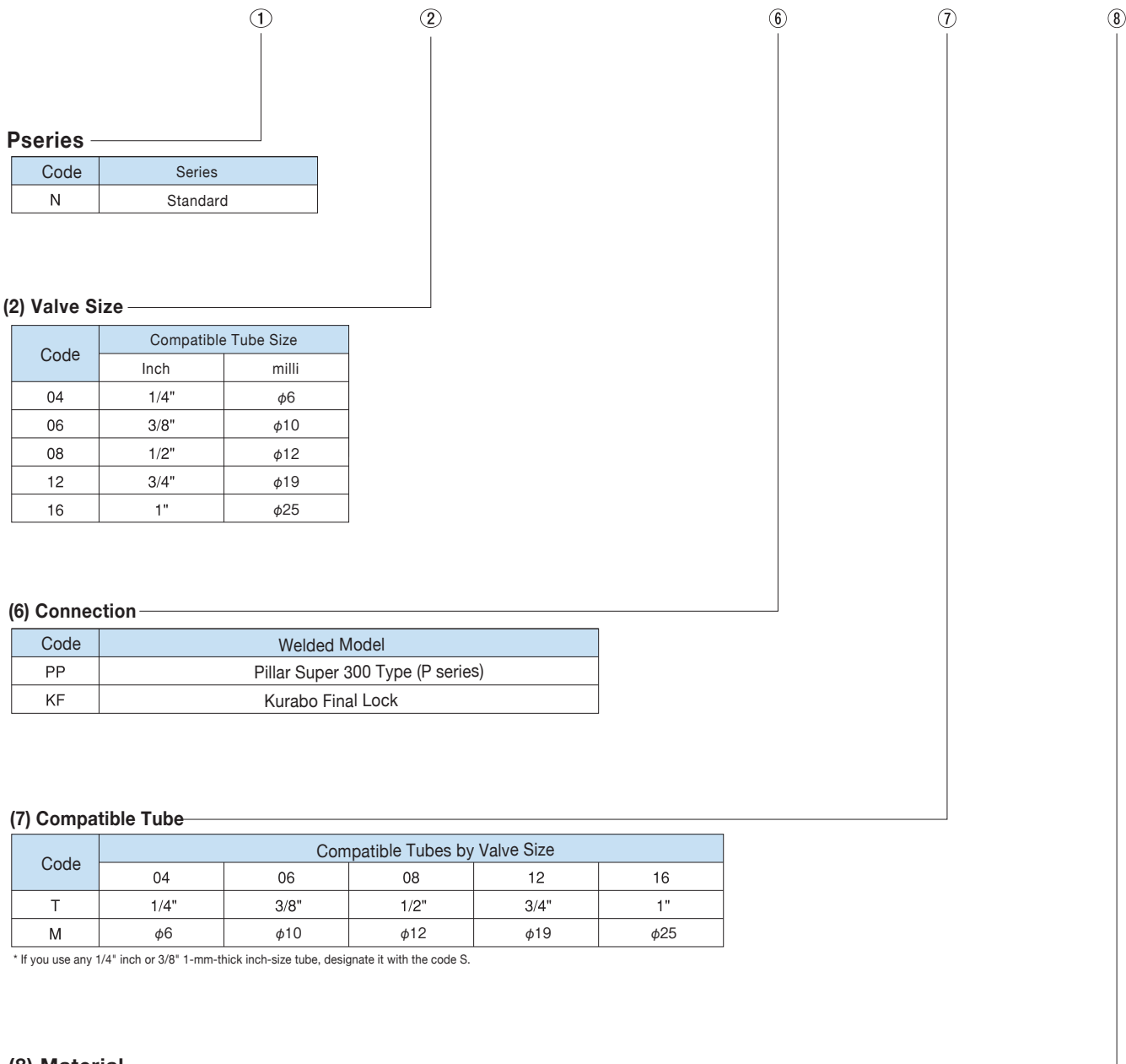
※ Please refer for other connection.

### Features

- High sealing performance  
Achieves sealing performance of 0.5MPa (positive pressure) and 0.4MPa (back pressure) with standard specifications.
- Easy confirmation of operation state  
The pneumatic valves have a standard open/close indicator which can be easily verified valve operation state.
- Improved design for versatile installation  
Direction of air supply port can be selected. Elongated mounting holes in baseplate. The valves incorporate specifications that facilitate installation of the valve and attachment of the supply air tube.
- High durability  
Ensures high reliability with unique diaphragm design that will withstand fatigue stress.
- High level of quality control in super clean manufacturing environment  
Performs precision cleaning in an ultrasonic washer, then another cleaning once more with warm DI water. Assembly, final inspection, and airtight double bagging all take place in a clean room.

# Manual Valve Model Selection Table

Model <b>FCD</b>	Series <b>N</b>	Valve Size <b>08</b>	Manual Valve Model <b>MSN</b>	End Connection <b>PP</b>	Compatible Tube <b>T</b>	Material 1 <b>A</b> 2 <b>S</b>
---------------------	--------------------	-------------------------	----------------------------------	-----------------------------	-----------------------------	--



## Series

Code	Series
N	Standard

## (2) Valve Size

Code	Compatible Tube Size	
	Inch	milli
04	1/4"	φ6
06	3/8"	φ10
08	1/2"	φ12
12	3/4"	φ19
16	1"	φ25

## (6) Connection

Code	Welded Model
PP	Pillar Super 300 Type (P series)
KF	Kurabo Final Lock

## (7) Compatible Tube

Code	Compatible Tubes by Valve Size				
	04	06	08	12	16
T	1/4"	3/8"	1/2"	3/4"	1"
M	φ6	φ10	φ12	φ19	φ25

\* If you use any 1/4" inch or 3/8" 1-mm-thick inch-size tube, designate it with the code S.

## (8) Material

Code (1 Digit)	Body	Diaphragm	Actuator / Base	O-ring Rubber Cap	Note
A	PFA	PTFE	PP/PPS	FKM	Standard
B	PFA	PTFE	PP/PPS	EPDM	—

Code (2 Digits)	Screw / Spring	Note
S	SUS	Standard
F	SUS Fluorine Resin Coating	—

# FCD Manual Valve

## Product Code Format

FCDN   MSN-

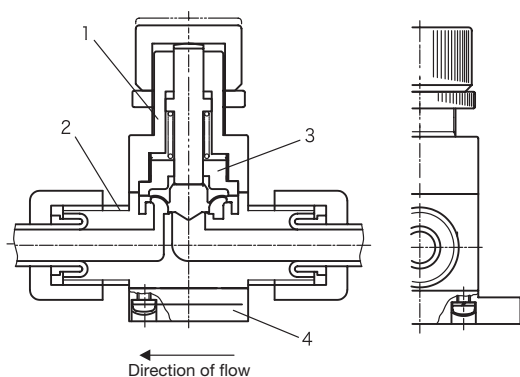
(Please refer to product code table on p.95 for details)



## Specifications

Valve Size		1/4"	3/8"	1/2"	3/4"	1"
Fluid Temperature		5~100°C				
Atmospheric Temperature		0~60°C				
Proof Pressure		1.2 MPa(G)				
Maximum Operating Pressure psig (MPa(G))	Positive Pressure	87 (0.6)	72 (0.5)	72 (0.5)	72 (0.5)	72 (0.5)
	Back Pressure	72 (0.5)	58 (0.4)	58 (0.4)	58 (0.4)	58 (0.4)
Allowable Leakage at Seat (cm <sup>3</sup> /min)		0 (with water)				
Orifice Diameter / inch (mm)		0.16 (4.0)	0.39 (10.0)	0.39 (10.0)	0.63 (16.0)	0.87 (22.0)
Cv		0.3	1.1	1.7	4.6	10

## Cutaway Drawing



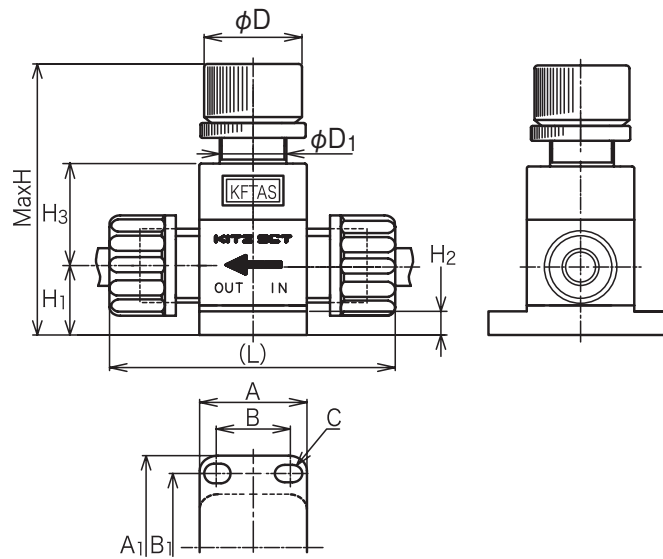
## Standard Components

No.	Part Name	Material
1	Actuator	PP/PPS
2	Body	PFA
3	Diaphragm	PTFE
4	Base	PPS

Note: To allow for panel mounting as well, the manual valve structure enables the handle to be removed if rotated far enough in the opening direction.



## ■ Outside Drawing



## ■ Dimensions

Unit: inch (mm)

Size	Manual Valves (FCDN □ □ MSN-) Common Dimensions										
	A	B	A <sub>1</sub>	B <sub>1</sub>	C	MaxH	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	D	D <sub>1</sub>
1/4"	1.18 (30.0)	0.83 (21.0)	1.97 (50.0)	1.57 (40.0)	0.22x0.26 (5.5x6.5)	3.19 (81.0)	0.69 (17.5)	0.28 (7.0)	1.19 (30.2)	1.02 (26.0)	0.79 (20.0)
3/8"	1.42 (36.0)	0.96 (24.5)	2.44 (62.0)	1.97 (50.0)	0.26x0.35 (6.5x9.0)	3.66 (93.0)	0.91 (23.0)	0.31 (8.0)	1.33 (33.7)	1.26 (32.0)	0.87 (22.0)
1/2"	1.42 (36.0)	0.96 (24.5)	2.44 (62.0)	1.97 (50.0)	0.26x0.35 (6.5x9.0)	3.66 (93.0)	0.91 (23.0)	0.31 (8.0)	1.33 (33.7)	1.26 (32.0)	0.87 (22.0)
3/4"	1.89 (48.0)	1.22 (31.0)	3.31 (84.0)	2.52 (64.0)	0.33x0.45 (8.5x11.5)	4.49 (114.0)	1.08 (27.5)	0.35 (9.0)	1.66 (42.2)	1.50 (38.0)	1.10 (28.0)
1"	2.36 (60.0)	1.71 (43.5)	3.78 (96.0)	3.07 (78.0)	0.35x0.49 (9.0x12.5)	5.47 (139.0)	1.38 (35.0)	0.39 (10.0)	2.04 (51.7)	1.89 (48.0)	1.42 (36.0)

## ■ Dimensions

Unit: inch (mm)

Size	Connection Type: (6) Notation	
	PP	KF
	(L)	(L)
1/4"	2.68 (68.0)	2.76 (70.0)
3/8"	3.39 (86.0)	3.70 (94.0)
1/2"	3.70 (94.0)	3.78 (96.0)
3/4"	4.72 (120.0)	4.45 (113.0)
1"	5.75 (146.0)	5.31 (135.0)

Connection type KF: Kurabo Final Lock, PP: Pillar Super 300 type (P series)  
 \*Face-to-face dimension (L) may vary slightly depending on the position of the nut.  
 The dimensions will change depending on the state of tightening.

# Pneumatic Valve Selection Table

Model <b>FCD</b>	Series <b>N</b>	Valve Size <b>08</b>	Actuation Type <b>C</b>	Valve Function <b>S</b>	Actuator Air Port Method <b>A</b>	End Connection <b>PP</b>	Compatible Tube <b>T</b>	Material 1 <b>A</b> 2 <b>S</b>
---------------------	--------------------	-------------------------	----------------------------	----------------------------	--------------------------------------	-----------------------------	-----------------------------	---

## P Series

Code	Series
N	Standard

## (2) Valve Size

Code	Compatible Tube Size	
	Inch	milli
04	1/4"	φ6
06	3/8"	φ10
08	1/2"	φ12
12	3/4"	φ19
16	1"	φ25

## (3) Valve Actuation Type

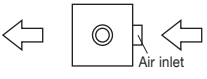

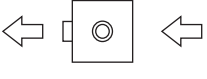
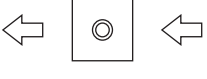
Code	Actuation Type
C	Pneumatic N.C.
O	Pneumatic N.O.
D	Pneumatic Multiple Operation

## (4) Valve Function

Code	Function
S	Standard
F	Variable Flow
B	With Bypass
X	Variable Flow with Bypass

\* For pneumatic valves with bypass and pneumatic valves with flow control + bypass, we do not handle the 1/4" valve size.  
(② when 04 is selected, ④:B,X cannot be selected.)

## (5) Direction of Operation Air Inlet

Code	Direction of Air Inlet
A	
B	
C	
D	

The above diagram shows the actuator as seen from above. ⇄: Direction of fluid flow

## (8) Material

Code (1 Digit)	Body	Diaphragm	Actuator Section Base	O-ring Rubber cap	Note
A	PFA	PTFE	PPS	FKM	Standard
B	PFA	PTFE	PPS	EPDM	—

Code (2 Digits)	Screw Spring	Note
S	SUS	Standard
F	SUS Fluorine Resin Coating	—

## (7) Compatible Tube

Code	Compatible Tubes by Valve Size				
	04	06	08	12	16
T	1/4"	3/8"	1/2"	3/4"	1"
M	φ6	φ10	φ12	φ19	φ25

\* If you use any 1/4" inch or 3/8" 1-mm-thick inch-size tube, designate it with the code S.

## (6) Welded Model

Code	Welded Model
PP	Pillar Super 300 Type (P series)
KF	Kurabo Final Lock

# FCD Pneumatic Valve

## Product Code Format

FCDN    S  -

(2) (3) (5) (6) (7) (8)

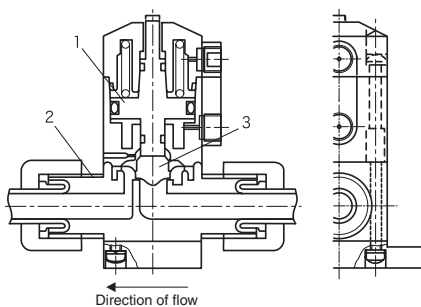
(Please refer to the products code table on P. 98 for details)



## Specifications

Valve Size		1/4"	3/8"	1/2"	3/4"	1"
Fluid Temperature (°C)		5~100				
Atmospheric Temperature (°C)		0~60				
Proof Pressure (MPa(G))		145 (1.0)				
Maximum Operating Pressure psig (MPa(G))	Positive Pressure	87 (0.6)	72 (0.5)	72 (0.5)	72 (0.5)	72 (0.5)
	Back Pressure	72 (0.5)	58 (0.4)	58 (0.4)	58 (0.4)	58 (0.4)
Allowable Leakage at Seat (cm <sup>3</sup> /min)		0 (with water)				
Orifice Diameter / inch (mm)		0.16 (4.0)	0.39 (10.0)	0.39 (10.0)	0.63 (16.0)	0.87 (22.0)
Cv		0.3	1.1	1.7	4.6	10
Actuation Type		NC/NO/ Double Action (DA)				
Actuation Pressure (MPa(G))		NC 0.4-0.6, NO/DA 0.4-0.5				
Operation Air Inlet		Rc 1/8 (Attach a resin R1/8 Fitting at 0.4-0.6N-m to the actuation air inlet port.)				

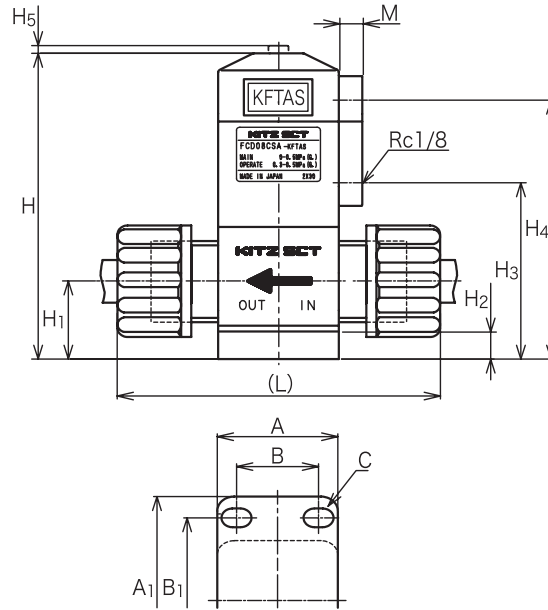
## Cutaway Drawing



## Standard Components

No.	Part Name	Material
1	Actuator	PPS
2	Body	PFA
3	Diaphragm	PTFE
4	Base	PPS

## ■ Outside Drawing



## ■ Dimensions

Unit: inch (mm)

Size	Pneumatic Valves (FCDN□□□S□-) Common Dimensions											
	A	B	A <sub>1</sub>	B <sub>1</sub>	C	H	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	H <sub>5</sub>	M
1/4"	1.18 (30.0)	0.83 (21.0)	1.97 (50.0)	1.57 (40.0)	0.22x0.26 (5.5x6.5)	3.03 (77.0)	0.69 (17.5)	0.28 (7.0)	1.66 (42.2)	2.55 (64.8)	0.05 (1.2)	0.26 (6.5)
3/8"	1.42 (36.0)	0.96 (24.5)	2.44 (62.0)	1.97 (50.0)	0.26x0.35 (6.5x9.0)	3.58 (91.0)	0.91 (23.0)	0.31 (8.0)	2.06 (52.2)	3.04 (77.2)	0.11 (2.7)	0.28 (7.0)
1/2"	1.42 (36.0)	0.96 (24.5)	2.44 (62.0)	1.97 (50.0)	0.26x0.35 (6.5x9.0)	3.58 (91.0)	0.91 (23.0)	0.31 (8.0)	2.06 (52.2)	3.04 (77.2)	0.11 (2.7)	0.28 (7.0)
3/4"	1.89 (48.0)	1.22 (31.0)	3.31 (84.0)	2.52 (64.0)	0.33x0.45 (8.5x11.5)	4.45 (113.0)	1.08 (27.5)	0.35 (9.0)	2.43 (61.7)	3.91 (99.2)	0.17 (4.2)	0.16 (4.0)
1"	2.36 (60.0)	1.71 (43.5)	3.78 (96.0)	3.07 (78.0)	0.35x0.49 (9.0x12.5)	5.31 (135.0)	1.38 (35.0)	0.39 (10.0)	3.00 (76.2)	4.74 (120.3)	0.22 (5.7)	0.16 (4.0)

## ■ Dimensions

Unit: inch (mm)

Size	Connection Type: (6) Notation	
	KF	PP
	(L)	(L)
1/4"	2.76 (70.0)	2.68 (68.0)
3/8"	3.70 (94.0)	3.39 (86.0)
1/2"	3.78 (96.0)	3.70 (94.0)
3/4"	4.45 (113.0)	4.72 (120.0)
1"	5.31 (135.0)	5.75 (146.0)

Connection type KF: Kurabo Final Lock, PP: Pillar Super 300 type (P series)  
 \* Face-to-face dimension (L) may vary slightly depending on the position of the nut.

# FCD Series Pneumatic Valves with Combined Functions

## Product Code Format

Variable Flow Valve

: FCDN□□□F□-□□□

Pneumatic Valve with Bypass

: FCDN□□□B□-□□□□□

Variable Flow Valve with Bypass:

FCDN□□□X□-□□□□□

(Please refer to the products code table on P. 98 for details)



## Features

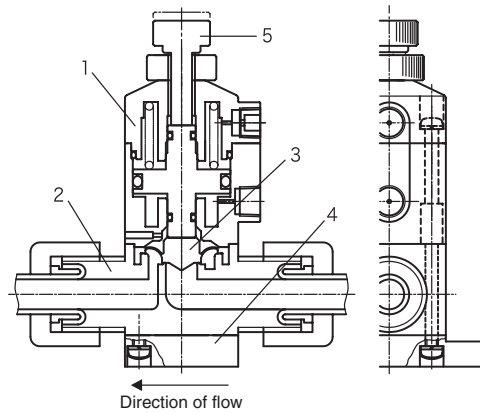
- Variable flow pneumatic valves  
Adjustable flow rate at full open position.
- Pneumatic valves with bypass  
Bypass flow path prevents fluid trapped in the valve. Adjustable bypass valve saves fluid consumption.
- Variable flow valve with bypass  
Multifunctional three-in-one valve: pneumatic valve, variable flow rate, & bypass channel.

## Specifications

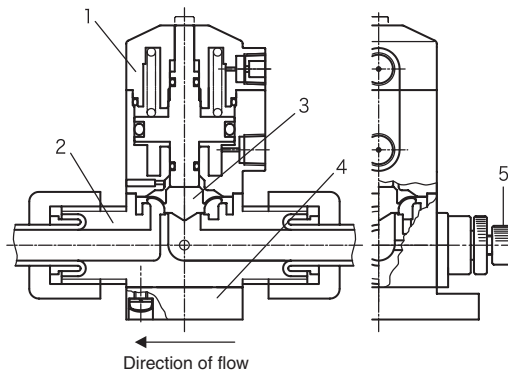
Valve Size		1/4"	3/8"	1/2"	3/4"	1"
Fluid Temperature (°C)		5~100				
Atmospheric Temperature (°C)		0~60				
Proof Pressure (MPa(G))		145 (1.0)				
Maximum Operating Pressure psig (MPa(G))	Positive Pressure	87 (0.6)	72 (0.5)	72 (0.5)	72 (0.5)	72 (0.5)
	Back Pressure	72 (0.5)	58 (0.4)	58 (0.4)	58 (0.4)	58 (0.4)
Allowable Leakage at Seat (cm <sup>3</sup> /min)		0 (with water)				
Orifice Diameter / inch (mm)		0.16 (4.0)	0.39 (10.0)	0.39 (10.0)	0.63 (16.0)	0.87 (22.0)
Cv		0.3	1.1	1.7	4.6	10
Bypass Part Orifice Diameter/Cv			φ3/0.27	φ3/0.27	φ3.6/0.32	φ3.6/0.32
Actuation Type		NC/NO/ Double Action (DA)				
Actuation Pressure (MPa(G))		NC 0.4-0.6, NO/DA 0.4-0.5				
Operation Air Inlet		Rc 1/8 (Attach a Resin R1/8 Fitting at 0.4-0.6N·m to the actuation air inlet port.)				

## ■ Cutaway Drawing

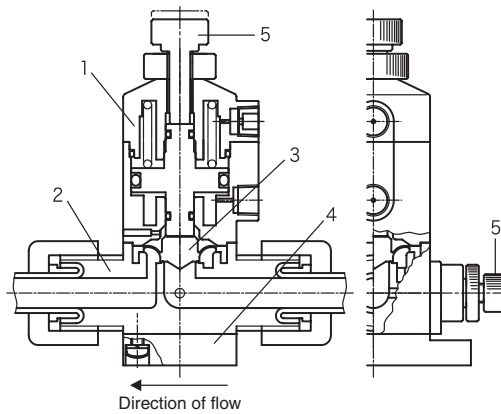
### Variable Flow Valves



### Pneumatic Valves with Bypass



### Variable Flow Valve with Bypass



### Standard Components

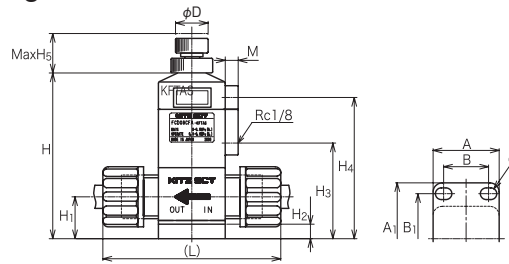
No.	Part Name	Material
1	Actuator section	PPS
2	Body	PFA
3	Diaphragm	PTFE
4	Base	PPS
5	Flow rate adjusting knob	PP



## FCDN Series Variable Flow Valves



### Outside Drawing



### Dimensions

Unit: inch (mm)

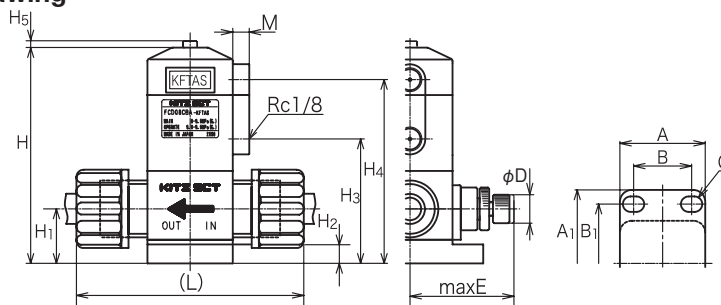
Size	Variable Flow Valves (FCDN□□□F□-)												
	A	B	A <sub>1</sub>	B <sub>1</sub>	C	H	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	Max H <sub>5</sub>	M	D
1/4"	1.18 (30.0)	0.83 (21.0)	1.97 (50.0)	1.57 (40.0)	0.22x0.26 (5.5x6.5)	3.03 (77.0)	0.69 (17.5)	0.28 (7.0)	1.66 (42.2)	2.55 (64.8)	0.78 (19.8)	0.26 (6.5)	0.63 (16.0)
3/8"	1.42 (36.0)	0.96 (24.5)	2.44 (62.0)	1.97 (50.0)	0.26x0.35 (6.5x9.0)	3.58 (91.0)	0.91 (23.0)	0.31 (8.0)	2.06 (52.2)	3.04 (77.2)	0.83 (21.2)	0.28 (7.0)	0.71 (18.0)
1/2"	1.42 (36.0)	0.96 (24.5)	2.44 (62.0)	1.97 (50.0)	0.26x0.35 (6.5x9.0)	3.58 (91.0)	0.91 (23.0)	0.31 (8.0)	2.06 (52.2)	3.04 (77.2)	0.83 (21.2)	0.28 (7.0)	0.71 (18.0)
3/4"	1.89 (48.0)	1.22 (31.0)	3.31 (84.0)	2.52 (64.0)	0.33x0.45 (8.5x11.5)	4.45 (113.0)	1.08 (27.5)	0.35 (9.0)	2.43 (61.7)	3.91 (99.2)	0.90 (22.9)	0.16 (4.0)	0.94 (24.0)
1"	2.36 (60.0)	1.71 (43.5)	3.78 (96.0)	3.07 (78.0)	0.35x0.49 (9.0x12.5)	5.31 (135.0)	1.38 (35.0)	0.39 (10.0)	3.00 (76.2)	4.74 (120.3)	1.04 (26.4)	0.16 (4.0)	1.10 (28.0)

Please refer to page 88 for the dimension "L"

## FCDN Series Valves with Bypass



### Outside Drawing



### Dimensions

Unit: inch (mm)

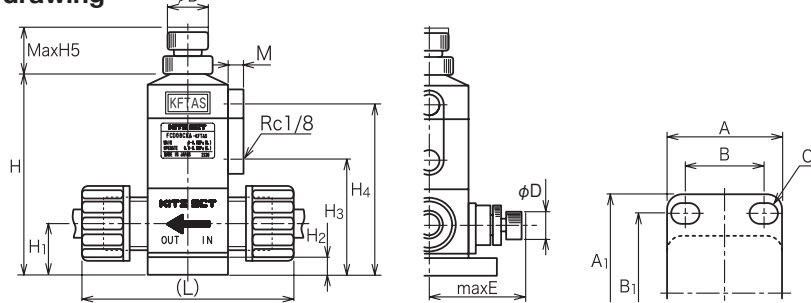
Size	Pneumatic Valves with Bypass (FCDN□□□B□-)													
	A	B	A <sub>1</sub>	B <sub>1</sub>	C	H	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	H <sub>5</sub>	M	D	max E
3/8"	1.42 (36.0)	0.96 (24.5)	2.44 (62.0)	1.97 (50.0)	0.26x0.35 (6.5x9.0)	3.58 (91.0)	0.91 (23.0)	0.31 (8.0)	2.06 (52.2)	3.04 (77.2)	0.11 (2.7)	0.28 (7.0)	0.47 (12.0)	1.73 (44.0)
1/2"	1.42 (36.0)	0.96 (24.5)	2.44 (62.0)	1.97 (50.0)	0.26x0.35 (6.5x9.0)	3.58 (91.0)	0.91 (23.0)	0.31 (8.0)	2.06 (52.2)	3.04 (77.2)	0.11 (2.7)	0.28 (7.0)	0.47 (12.0)	1.73 (44.0)
3/4"	1.89 (48.0)	1.22 (31.0)	3.31 (84.0)	2.52 (64.0)	0.33x0.45 (8.5x11.5)	4.45 (113.0)	1.08 (27.5)	0.35 (9.0)	2.43 (61.7)	3.91 (99.2)	0.17 (4.2)	0.16 (4.0)	0.55 (14.0)	2.07 (52.5)
1"	2.36 (60.0)	1.71 (43.5)	3.78 (96.0)	3.07 (78.0)	0.35x0.49 (9.0x12.5)	5.31 (135.0)	1.38 (35.0)	0.39 (10.0)	3.00 (76.2)	4.74 (120.3)	0.22 (5.7)	0.16 (4.0)	0.55 (14.0)	2.19 (55.5)

Please refer to page 88 for the dimension "L"

## FCDN Series Variable Flow Valve with Bypass



### Outside drawing



### Dimensions

Unit: inch (mm)

Size	Variable Flow Valve with Bypass (FCDN□□□X□-)														
	A	B	A <sub>1</sub>	B <sub>1</sub>	C	H	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	Max H <sub>5</sub>	M	D	D <sub>1</sub>	max E
3/8"	1.42 (36.0)	0.96 (24.5)	2.44 (62.0)	1.97 (50.0)	0.26x0.35 (6.5x9.0)	3.58 (91.0)	0.91 (23.0)	0.31 (8.0)	2.06 (52.2)	3.04 (77.2)	0.83 (21.2)	0.28 (7.0)	0.71 (18.0)	0.47 (12.0)	1.73 (44.0)
1/2"	1.42 (36.0)	0.96 (24.5)	2.44 (62.0)	1.97 (50.0)	0.26x0.35 (6.5x9.0)	3.58 (91.0)	0.91 (23.0)	0.31 (8.0)	2.06 (52.2)	3.04 (77.2)	0.83 (21.2)	0.28 (7.0)	0.71 (18.0)	0.47 (12.0)	1.73 (44.0)
3/4"	1.89 (48.0)	1.22 (31.0)	3.31 (84.0)	2.52 (64.0)	0.33x0.45 (8.5x11.5)	4.45 (113.0)	1.08 (27.5)	0.35 (9.0)	2.43 (61.7)	3.91 (99.2)	0.90 (22.9)	0.16 (4.0)	0.94 (24.0)	0.55 (14.0)	2.07 (52.5)
1"	2.36 (60.0)	1.71 (43.5)	3.78 (96.0)	3.07 (78.0)	0.35x0.49 (9.0x12.5)	5.31 (135.0)	1.38 (35.0)	0.39 (10.0)	3.00 (76.2)	4.74 (120.3)	1.04 (26.4)	0.16 (4.0)	1.10 (28.0)	0.55 (14.0)	2.19 (55.5)

Please refer to page 88 for the dimension "L"

# FCD Series with Special Functions

## Variable Flow Valves with Pneumatic Bypass Valve



The bypass valve can also be pneumatically operated.

- Space saving  
Enables switching between large flow and small flow with a single valve.  
Saving space on chemical supply lines, etc.
- Emergency cut off function  
Shut down both pneumatic valve and bypass valve.

### Size

Inch	3/8"	1/2"	3/4"	1"
Metric (mm)	φ10	φ12	φ19	φ25

### Fittings

Kurabo Industries	Final Lock
Nippon Pillar	Super 300 P Series
Other	Rc thread

## Suck Back Valves



- Suck-back function that prevents fluid from dripping off from the nozzle tip when the flow is stopped.
- Improving the quantitative precision in coating processes, chemical solution filling processes, etc.

### Valve Types

Type of Valve	Functions
Suck-back Valve	Suck back function only
Pneumatic Valve with Suck Back Valve	Suck back function & flow on/off

### Size

Inch	1/4"	3/8"	1/2"	3/4"
Metric (mm)	φ6	φ10	φ12	φ19

### Fittings

Kurabo Industries	Final Lock
Nippon Pillar	Super 300 P Series
Other	Rc thread

\* Please contact the sales representatives for details.

# FCDT (Fluorine resin diaphragm valve for 200°C)



## ■ Features

- ◎ Maximum fluid temperature up to 200°C.
- ◎ Open/close indicator for pneumatic valve is installed as standard feature.
- ◎ Padlock can be installed into manual valve handle to prevent human error.
- ◎ Toggle handle for manual valve has 3 steps and can hold at 2 position in between fully closed and fully open.

## ■ Standard Components

No.	Part Name	Material
1	Actuator	PVDF, PPS
2	Body	PTFE
3	Diaphragm	PTFE

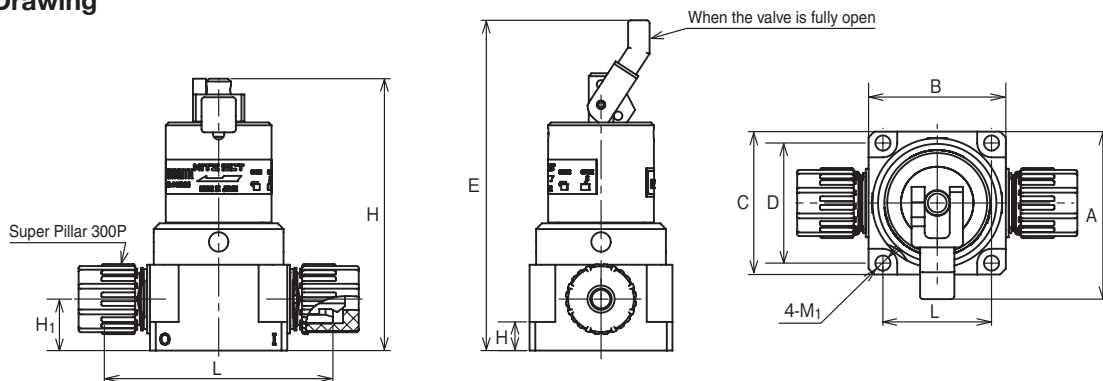
## ■ Specifications

Valve Size	FCDT06	FCDT08
Fluid Temperature	+20°C~+200°C	
Atmospheric Temperature	+20°C~+80°C	
Proof Pressure	0.5MPa(G)	
Pressure Range	Positive Pressure	0~29.01psig (0.2MPa(G))
	Back Pressure	0~14.50psig (0.1MPa(G))
Allowable Leakage at Seat(cm <sup>3</sup> /min)	0 (with water)	
Orifice Diameter (inch(mm))	φ9.6 (0.38)	
Cv	0.9	1.1
Actuation Type	Manual/N.C./N.O	
Actuation Pressure	N.C.:58.02~87.02psig (0.4~0.6MPa(G)), N.O.:65.27~79.77psig (0.45~0.55MPa(G))	
Operation Air Inlet	Rc1/8(Attach a resin R1/8 Fitting at0.4~0.6 N-m to the actuation air inlet port.)	

## ■ Product Code Table

Model	Series	Size	Actuation Type	Valve Function	Actuator Air Port Method	End Connection	Compatible Tube	Material
FCD	T	06	C	S	N	PP	T	JS
	200°C	06: 3/8" 08: 1/2"	C: Pneumatic valve N.C. O: Pneumatic valve N.O. M: Manual valve	S: Air Type T: Step-Toggle Type	N: Standard	Nippon Pillar Super 300 (P Series)	T: Inch M: Metric (mm)	

## ■ Outside Drawing



## ■ Dimensions

Size	FCDT											
	A	B	C	D	E	F	G	H	H <sub>1</sub>	L	M	M <sub>1</sub>
3/8"	2.32 (59.0)	1.89 (48.0)	1.97 (50.0)	1.65 (42.0)	4.57 (116.0)	0.39 (10.0)	3.74 (95.0)	0.71 (18.0)	3.15 (80.0)	1.26 (32.0)	1.50 (38.0)	φ0.21 (φ5.3)
1/2"	2.32 (59.0)	1.89 (48.0)	1.97 (50.0)	1.65 (42.0)	4.57 (116.0)	0.39 (10.0)	3.74 (95.0)	0.71 (18.0)	3.35 (85.0)	1.26 (32.0)	1.50 (38.0)	φ0.21 (φ5.3)

Unit: inch (mm)

## Precautions During Handling

### 1 General Cautionary Items

#### ⚠ Warnings

- ① Before use ] To prevent accidents, read the handling precautions and abide by the warnings and cautions given.
- ② Use the products within the ranges specified for it.
- ③ An engineer with sufficient knowledge and experience should take responsibility for selecting and operating the valve.
- ④ For safe usage, follow all group standards, laws, etc.
- ⑤ Do not break down, modify, or add to the product.
- ⑥ The valve is designed for usage under the circumstance of atmospheric pressure only.

### 2 Precautions to Take in Design and Selection

#### ⚠ Warnings

- ① In choosing a valve, adequately research the design of the overall system so that the valve will function safely and at full performance.
- ② Take functionality, suitability, usage conditions, etc., into account in selecting a valve that meets your objectives. And, appropriately attach and operate the valve.
- ③ When running a fluid through the circuit, install the bypass valve in the system so that it will not become a liquid-seal circuit.
- ④ Stay within the liquid pressure range, liquid temperature range, and ambient temperature usage range.
- ⑤ Ensure that there is enough space to do maintenance checks.
- ⑥ Fluorine resins are typically subject to permeation and penetration by gases and chemicals. In addition, they exhibit characteristics whereby the penetration and permeation typically increase in proportion to the temperature, pressure, area of contact, and time. Take those characteristics into account before choosing a fluorine resin, take adequate precautions immediately after using it, and perform frequent maintenance checks.
- ⑦ Fluorine resins do not react with most chemicals, but because there are chemicals with which they will react in an oxidative solution or reducing solution, take into account the characteristics before choosing a fluorine resin, take adequate precautions immediately after using it, and perform frequent maintenance checks.
- ⑧ Fluorine resins exhibit excellent resistance against chemicals, but to use a fluorine resin in a chemical, heated, physical, or combination environment, take into account the characteristics before choosing a fluorine resin, take adequate precautions immediately after using it, and perform frequent maintenance checks because chemical attack, sudden fluctuations in temperature and pressure, chemical or gas infiltration, and absorption or physical damage due to the interaction of these could occur, and there may be cases where a fluorine resin cannot be used satisfactorily.

### 3 Precautions to Take When Installing

#### ⚠ Cautions

- ① Break the seal, handle the component in a clean environment.  
These valves are filled with air tight double bagged package in a clean pack. Break the seal immediately before installing the component so as to minimize the exposure to air.
- ② Before connecting, blow air into the pipes or clean them to remove foreign matter on the inside of the pipes.
- ③ If there is the possibility of foreign matter getting mixed into the liquid, install a filter on the primary side of the valve that is appropriate for the circuit you are using.
- ④ Avoid directly touching with hands or breathing on parts that come into contact with liquid.  
Please do not subject a liquid contact part of the valve to any action causing particle adhesion because this part underwent an ultra-precision cleaning and was assembled in a clean room.
- ⑤ Please check the flow directions shown on the valve body and the flow direction of the pipes.
- ⑥ Use within specified ranges.
- ⑦ After attaching a fitting, check for leaks.
- ⑧ Lay out the pipes so as to avoid compression, bending or other stress to the valve.
- ⑨ Attach fittings according to the method recommended by the manufacturer.

### 4 Cautions to Take When Using the Valves

#### ⚠ Cautions

- ① Verify the compatibility of the valve with product materials, usage fluid and surrounding atmosphere before using the valve.
- ② Take care in handling the valves, because the valves are intended to be installed in a clean room and thus are precision-cleaned and clean-packed.
- ③ Do not overtighten the flow-adjustment and bypass-adjustment knobs.
- ④ Take sufficient precautions when using gas such as N<sub>2</sub> or air because such gas may cause leakage from a 1-cm<sup>3</sup>/min or smaller (air pressure) valves seat.

#### (1) Instructions When Using a Manual Valve

#### ⚠ Cautions

- ① Please open and close valves by hand.  
· Be careful not to apply excessive force to the valve with a tool, etc., because the valve could be damaged.
- ② To allow for panel mounting as well, the manual valve structure enables the handle to be removed if rotated far enough in the opening direction.

#### 📌 Notes

- ① Valve can be opened and closed by manipulating the handle manually.
- ② Turn the handle to the left to open the valve and to the right to close.

#### (2) Instructions for When Using an Pneumatic Valve

#### ⚠ Cautions

- ① Any attempt to screw an operating air pipe fitting into the operating air-pressure supply inlet must be performed while holding the cylinder to prevent /torque to the body.  
· Please set the torque when attaching operating air plate fittings to 0.4–0.6Nm.
- ② Please use clean air that does not contain any organic solvents, corrosive gas, etc., for the operating air.
- ③ Water hammering may occur due to some fluid pressure conditions. In most cases, the use of a speed controller, etc., to adjust the opening/closing speed can improve operation.  
If operation cannot be improved, please recheck the flow, pressure, and pipe conditions.

#### 📌 Notes

- ① Please use a resin R1.8" fitting for the operating air supply inlet.
- ② Please carefully seal operating air pipe fittings to prevent the leakage of operating air.
- ③ Please set an operating air pressure within an operation pressure range specified for each valve.
- ④ Please use air to open the ports that will not be pressurized beyond the operating pressure in the case of normally closed and normally open valves.

### 5 Maintenance Checks

#### ⚠ Warnings

- ① Please do not disassemble and reassemble the valve.  
· When the valve is disassembled and reassembled, valve performance cannot be maintained and in the worst case a life-threatening accident could occur.  
If a valve is to be disassembled, you do so at the customer's liability. Note that we do not take any responsibility for reduced valve performance or an accident caused during or after disassembly.
- ② When replacing a valve, please remove the residual chemicals and replace the residue with pure air, etc., first. Please take the following precautions because there will be a chemical atmosphere due to penetration into the top of the diaphragm (cylinder side).  
· Do not go near the leak port when the valve is operating.  
· Use corrosion-resistant gloves when touching the valve.
- ③ When not used for a long period of time, please do a test operation before using.
- ④ When handling a corrosive fluid, please do periodic maintenance.

### 6 Points of Caution When Exporting

#### ⚠ Cautions

- Since products listed in the catalog are considered strategic goods according to the Foreign Exchange and Foreign Trade Law, the export of these products requires an export license based on said Contact us for details.

Warnings signs in those items that require special attention in handling

The following warning signs are given in order to urge caution with those items that require particular attention in handling. Please read the explanations following the warning signs and follow the directions given.

**📌 Notes** Notes: Items requiring attention during installation and handling.

**⚠ Cautions** Caution: Items to pay attention to during installation and handling. In particular, valve safety and quality may be affected. More attention is required than with the above items.

**⚠ Warnings** Warning: Mistakes made during installation or handling could lead to a serious accident. Take adequate precautions because an accident could involve human life and not just affect the safety and quality of the valve.

# PFA Fittings

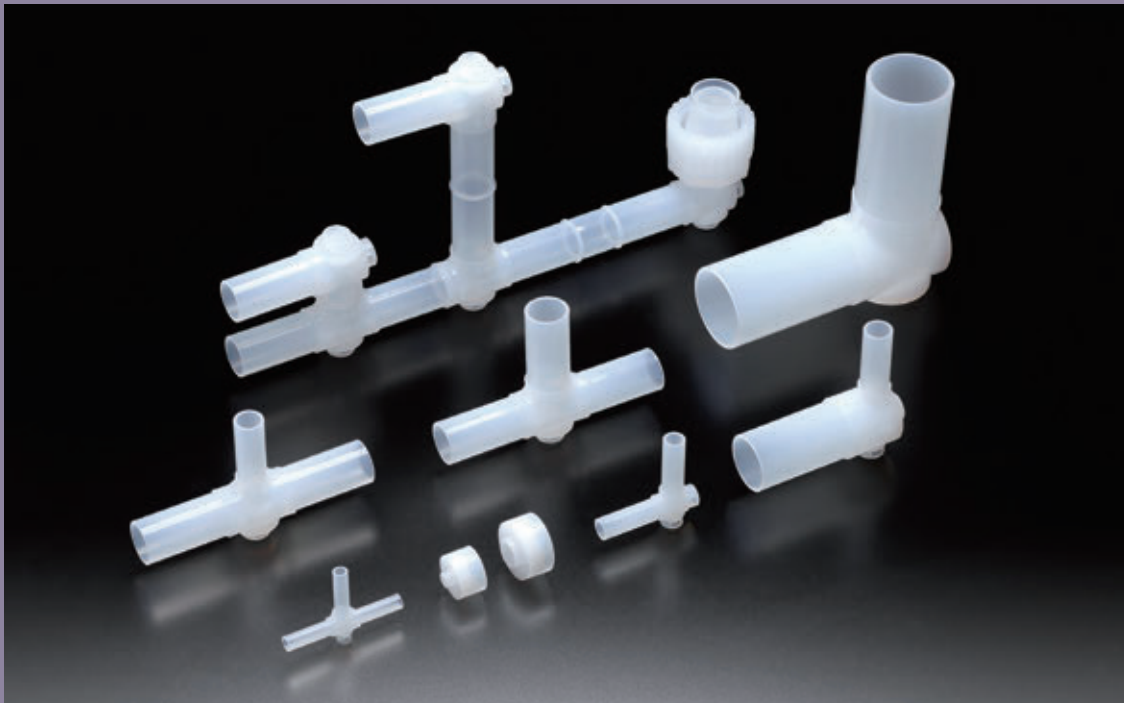
## TUBE BONDING FITTING

**A welded pipe system that clears high level requirements For a semiconductor production process piping**

We answer the high-level requirements for clean, leakproof, lightweight and compact piping for semiconductor fabrication processes with our welded pipe system.

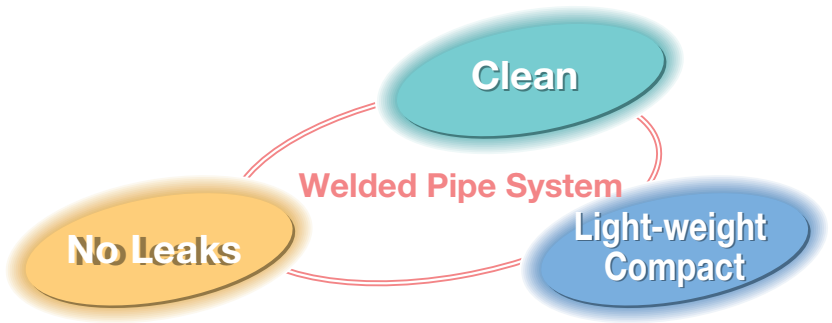
**TBN**  
TBN Welded fitting

108



# TBN

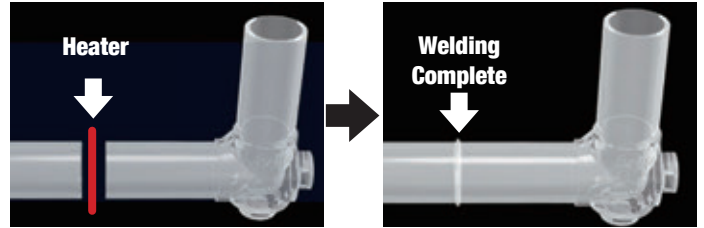
## Fittings for Welding



### ■ Features

#### No leak, Clean and Light-weight Compact

- Uncompromised sealing performance by butt-welding the fitting and tube end, There is no danger whatsoever of leakage or the need for re-tightening the fitting.
- Excellent particle count characteristics is achieved by eliminating moving parts from the fittings.
- The welded parts are stronger than the tube, so there will be no breakage or cracking of the welded parts.
- The high heat resistance enabled maximum operating temperature of 200°C, and there won't be any loosening or leakage due to the thermal cycle.
- Light weight and compact size save the piping space.

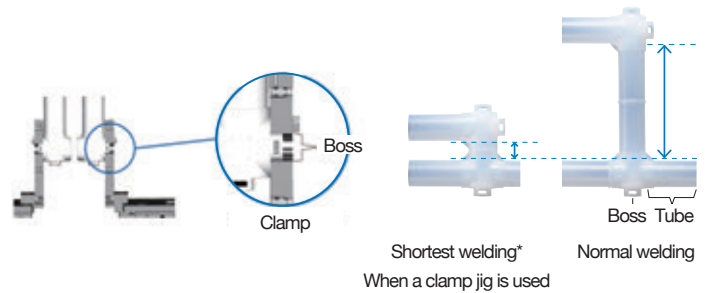


### ■ Ease of Short tubes welding

- The newly provided boss allows you to perform fusion welding on your own even with dimensions without a clamping allowance at the time of fusion welding, so that compact piping can be laid out.

\* The shortest cutting jigs and shortest fusion welding clamp jigs for PWM fusion welding machine are required.

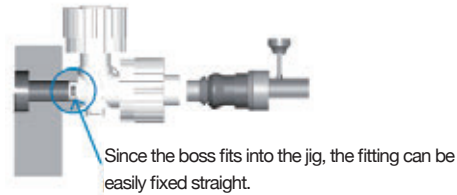
\* The shortest fusion welding cannot be applied to 1·1/2 because there is no boss.



### ■ Long sleeves for press fittings

- Due to the elongated tube portion, sleeve press-fitted type fittings can be directly worked, so that reduction in the working time and compact piping design can be realized.
- Since the posture at press-fit time is stabilized by clamping the boss portion with a press-fit jig, sleeves can be easily inserted straight and errors in working can be prevented.

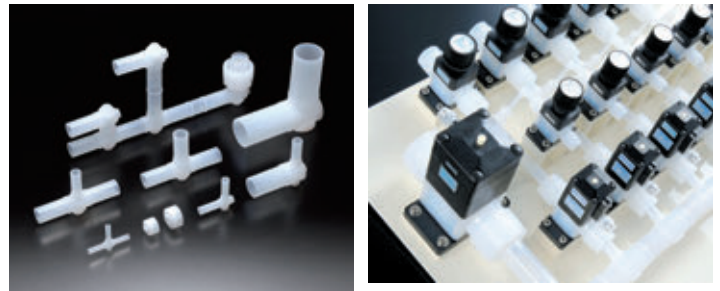
\* The press-fit jig should be prepared by customers.



### ■ TBN Piping Kit

We also offer PFA pipe manifolds consisting of TBN fittings and PFA tubes welded together.

We handle the production of standard kit patterns (arbitrarily designated dimensions) as well as the production of special-order piping kits based on the customer's designated drawings. Please contact the sales representatives for details.



### ■ Specifications

Material	PFA (perfluoroalkoxy copolymer resin)							
Maximum Operating Temperature	+200°C							
Maximum Operating Pressure	Nominal diameter (inch)	1·1/2	1·1/4	1	3/4	1/2	3/8	1/4
	+20°C (MPa(G))	0.4	0.6	0.4	0.6	0.9	1.0	1.0
	+200°C (MPa(G))	0.15	0.26	0.15	0.26	0.39	0.43	0.43

PFA fittings and weld points have higher pressure resistance than that of PFA tubes. The following maximum operating pressures are for reference. Please use these fittings within the pressure rating of the PFA tubes that you use.

### ■ Product Code Table


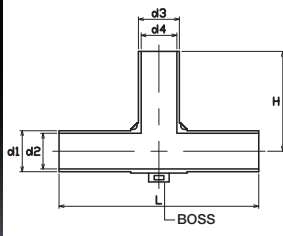
Model	Type of Product	Size
TBN	T	1 × 1 × 1


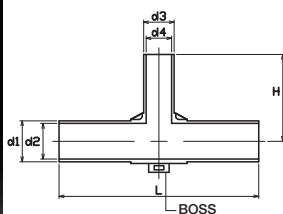
TBN : TBN Fittings  
TBRS : TBN Reducing Fittings


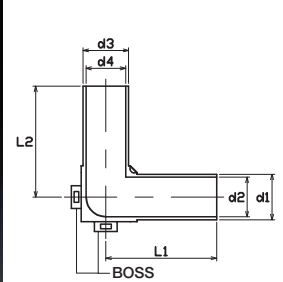
T: Tee  
L: Elbow  
Not shown :  
In case of TBRS chosen


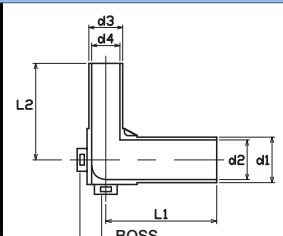
Application Tube  
Nominal Diameter


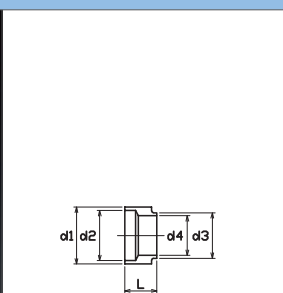


■ Tee		Parts No.	d1	d2	d3	d4	L	H	A	a	BOSS
		TBNT-1 · 1/2×1 · 1/2×1 · 1/2	1.50 (38.10)	1.33 (33.70)	1.50 (38.10)	1.33 (33.70)	7.24 (184)	3.62 (92)	1.10 (28)	2.52 (64)	-
		TBNT-1 · 1/4×1 · 1/4×1 · 1/4	1.25 (31.80)	1.10 (28.00)	1.25 (31.80)	1.10 (28.00)	5.87 (149)	2.93 (74.5)	0.79 (20)	2.15 (54.5)	φ1.25 (φ31.80)
		TBNT-1×1×1	1.00 (25.40)	0.87 (22.20)	1.00 (25.40)	0.87 (22.20)	4.88 (124)	2.44 (62)	0.69 (17.5)	1.75 (44.5)	φ0.50 (φ12.70)
		TBNT-3/4×3/4×3/4	0.75 (19.05)	0.62 (15.85)	0.75 (19.05)	0.62 (15.85)	4.06 (103)	2.03 (51.5)	0.59 (15)	1.44 (36.5)	φ0.50 (φ12.70)
		TBNT-1/2×1/2×1/2	0.50 (12.70)	0.38 (9.70)	0.50 (12.70)	0.38 (9.70)	3.15 (80)	1.57 (40)	0.39 (10)	1.18 (30)	φ0.50 (φ12.70)
		TBNT-3/8×3/8×3/8	0.37 (9.52)	0.26 (6.52)	0.37 (9.52)	0.26 (6.52)	2.72 (69)	1.36 (34.5)	0.30 (7.5)	1.06 (27)	φ0.37 (φ9.52)
		TBNT-1/4×1/4×1/4	0.25 (6.35)	0.17 (4.35)	0.25 (6.35)	0.17 (4.35)	2.05 (52)	1.02 (26)	0.24 (6)	0.79 (20)	φ0.25 (φ6.35)

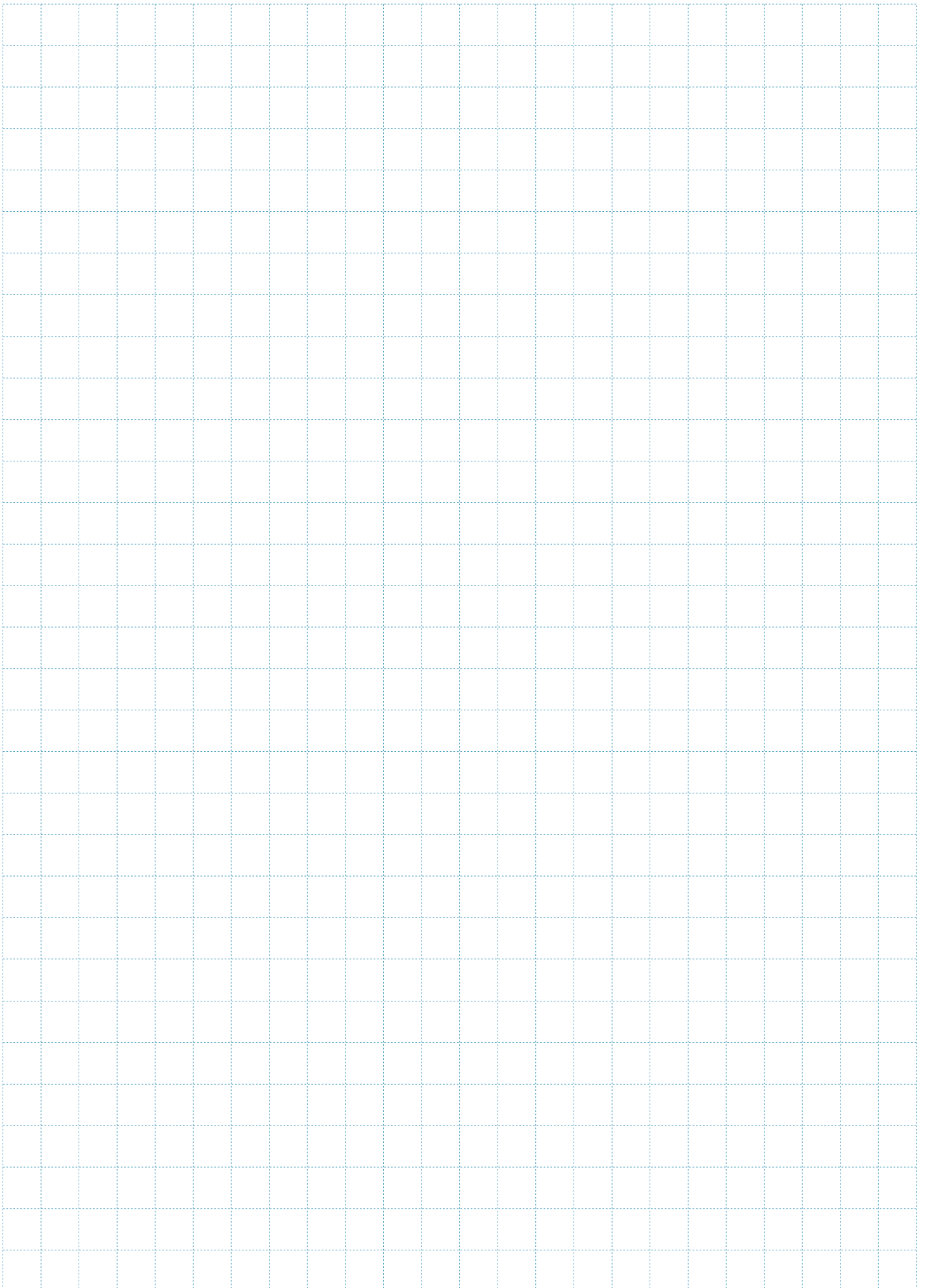
■ Reducing Tee		Parts No.	d1	d2	d3	d4	L	H	A	B	a	b	BOSS
		TBNT-1 · 1/4×1×1 · 1/4	1.25 (31.8)	1.10 (28)	1 (25.4)	0.87 (22.2)	5.87 (149)	2.30 (58.5)	0.79 (20)	0.79 (20)	2.15 (54.5)	1.52 (38.5)	φ1.25 (φ31.80)
		TBNT-1×3/4×1	1.00 (25.40)	0.87 (22.20)	0.75 (19.05)	0.62 (15.85)	4.88 (124)	2.13 (54)	0.69 (17.5)	0.69 (17.5)	1.75 (44.5)	1.44 (36.5)	φ0.50 (φ12.70)
		TBNT-1×1/2×1	1.00 (25.40)	0.87 (22.20)	0.50 (12.70)	0.37 (9.50)	4.88 (124)	1.87 (47.5)	0.69 (17.5)	0.69 (17.5)	1.75 (44.5)	1.18 (30)	φ0.50 (φ12.70)
		TBNT-3/4×1/2×3/4	0.75 (19.05)	0.62 (15.85)	0.50 (12.70)	0.38 (9.70)	4.06 (103)	1.77 (45)	0.59 (15)	0.59 (15)	1.44 (36.5)	1.18 (30)	φ0.50 (φ12.70)

■ Elbow		Parts No.	d1	d2	d3	d4	L	A	a	BOSS	
		TBNL-1 · 1/2×1 · 1/2	1.50 (38.10)	1.33 (33.70)	1.50 (38.10)	1.33 (33.70)	3.62 (92)	1.10 (28)	2.52 (64)	-	
		TBNL-1 · 1/4×1 · 1/4	1.25 (31.80)	1.10 (28.00)	1.25 (31.80)	1.10 (28.00)	2.93 (74.5)	2.09 (53)	0.79 (20)	2.15 (54.5)	φ1.25 (φ31.80)
		TBNL-1×1	1.00 (25.40)	0.87 (22.20)	1.00 (25.40)	0.87 (22.20)	2.44 (62)	1.75 (44.5)	0.69 (17.5)	1.75 (44.5)	φ0.50 (φ12.70)
		TBNL-3/4×3/4	0.75 (19.05)	0.62 (15.85)	0.75 (19.05)	0.62 (15.85)	2.03 (51.5)	1.44 (36.5)	0.59 (15)	1.44 (36.5)	φ0.50 (φ12.70)
		TBNL-1/2×1/2	0.50 (12.70)	0.38 (9.70)	0.50 (12.70)	0.38 (9.70)	1.57 (40)	1.18 (30)	0.39 (10)	1.18 (30)	φ0.50 (φ12.70)
		TBNL-3/8×3/8	0.37 (9.52)	0.26 (6.52)	0.37 (9.52)	0.26 (6.52)	1.36 (34.5)	1.06 (27)	0.30 (7.5)	1.06 (27)	φ0.37 (φ9.52)
		TBNL-1/4×1/4	0.25 (6.35)	0.17 (4.35)	0.25 (6.35)	0.17 (4.35)	1.02 (26)	0.79 (20)	0.24 (6)	0.79 (20)	φ0.25 (φ6.35)

■ Reducing Elbow		Parts No.	d1	d2	d3	d4	L1	L2	A	B	a	b	BOSS
		TBNL-1×3/4	1.00 (25.40)	0.87 (22.20)	0.75 (19.05)	0.62 (15.85)	2.44 (62)	2.13 (54)	0.69 (17.5)	0.69 (17.5)	1.75 (44.5)	1.44 (36.5)	φ0.50 (φ12.70)
		TBNL-1×1/2	1.00 (25.40)	0.87 (22.20)	0.50 (12.70)	0.37 (9.50)	2.44 (62)	1.87 (47.5)	0.69 (17.5)	0.69 (17.5)	1.75 (44.5)	1.18 (30)	φ0.50 (φ12.70)
		TBNL-3/4×1/2	0.75 (19.05)	0.62 (15.85)	0.50 (12.70)	0.37 (9.50)	2.03 (51.5)	1.77 (45)	0.59 (15)	0.59 (15)	1.44 (36.5)	1.18 (30)	φ0.50 (φ12.70)

■ Reducer		Parts No.	d1	d2	d3	d4	L	A
		TBRS-1 · 1/4×1	1.25 (31.8)	1.10 (28)	1.00 (25.4)	0.87 (22.2)	0.71 (18)	0.59 (15)
		TBRS-1×3/4	1.00 (25.4)	0.87 (22.2)	0.75 (19.05)	0.62 (15.85)	0.59 (15)	0.47 (12)
		TBRS-1×1/2	1.00 (25.4)	0.87 (22.2)	0.50 (12.7)	0.38 (9.7)	0.59 (15)	0.47 (12)
		TBRS-1×3/8	1.00 (25.4)	0.87 (22.2)	0.37 (9.52)	0.26 (6.52)	0.59 (15)	0.47 (12)
		TBRS-1×1/4	1.00 (25.4)	0.87 (22.2)	0.25 (6.35)	0.16 (3.95)	0.59 (15)	0.47 (12)
		TBRS-3/4×1/2	0.75 (19.05)	0.62 (15.85)	0.50 (12.7)	0.38 (9.7)	0.59 (15)	0.47 (12)
		TBRS-3/4×3/8	0.75 (19.05)	0.62 (15.85)	0.37 (9.52)	0.26 (6.52)	0.59 (15)	0.47 (12)
		TBRS-3/4×1/4	0.75 (19.05)	0.62 (15.85)	0.25 (6.35)	0.16 (3.95)	0.59 (15)	0.47 (12)
		TBRS-1/2×3/8	0.50 (12.7)	0.38 (9.7)	0.37 (9.52)	0.26 (6.52)	0.59 (15)	0.47 (12)
		TBRS-1/2×1/4	0.50 (12.7)	0.38 (9.7)	0.25 (6.35)	0.16 (3.95)	0.59 (15)	0.47 (12)
		TBRS-3/8×1/4	0.37 (9.52)	0.26 (6.52)	0.25 (6.35)	0.16 (3.95)	0.59 (15)	0.47 (12)

memo



Series flow rate

0.2MΩ·cm  
0.2兆欧·厘米

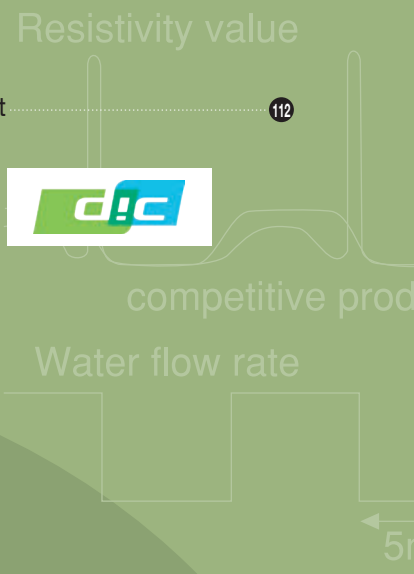


# Antistatic Unit eFLOW

## KITZ-SCT's wet systems that meet users' needs

KITZ-SCT designs and produces all types of wet equipment to meet users' needs. We offer high-reliability equipment because of our original technology, special-purpose clean room, and inspection facilities, among other things.

**eFLOW**  
Antistatic Unit



# eFLOW

## Antistatic Unit



The eFLOW® Series is an apparatus to control the resistivity of the DI water by supplying the CO2 through a "hollow fiber gas permeable membrane" developed by DIC Corp.

### ■ Features

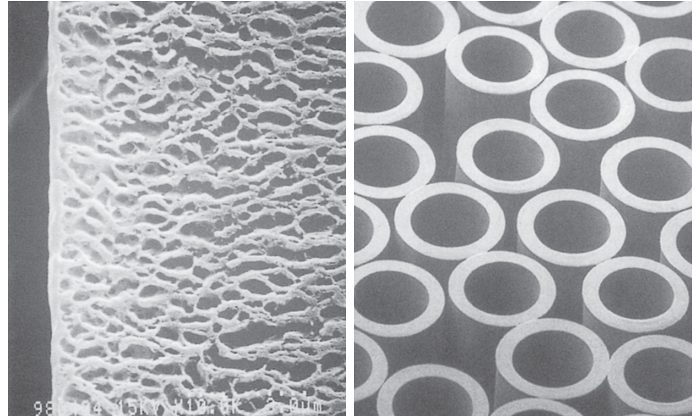
- ⊙ A low failure rate achieved due to mechanism without complicated control.
- ⊙ A unique piping layout provides stable resistivity value and enables easy control of the resistivity.
- ⊙ Long life of the CO2 aeration module (Guaranteed for five years, made by KITZ SCT)

### ■ Effects

- ⊙ Prevents redeposition of contaminants due to static electricity
- ⊙ Prevents electrostatic destruction of substrate pattern

### ■ Effective field/use

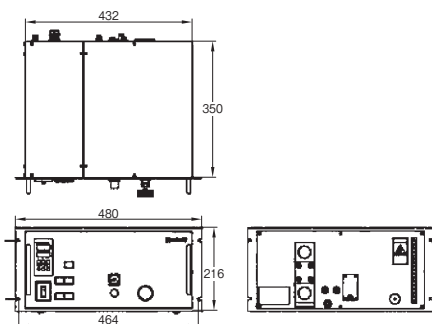
Field	Use
LSI LCD	photomask/reticle cleaning
	Scrubber cleaning
	High-pressure jet cleaning
	Cleaning in the dicing process
	Cell cleaning



### Panel Mount Type (P Series)



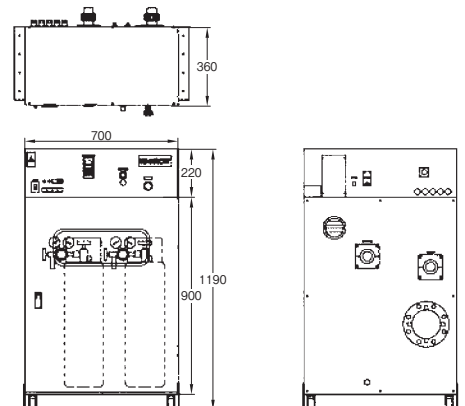
The P Series can be installed on a rack in accordance with the EIA (Electronic Industries Alliance) standard. The 1AP model uses metal-free parts for all wetted areas. The 2 AP model can be metal-free for all wetted areas as an option.



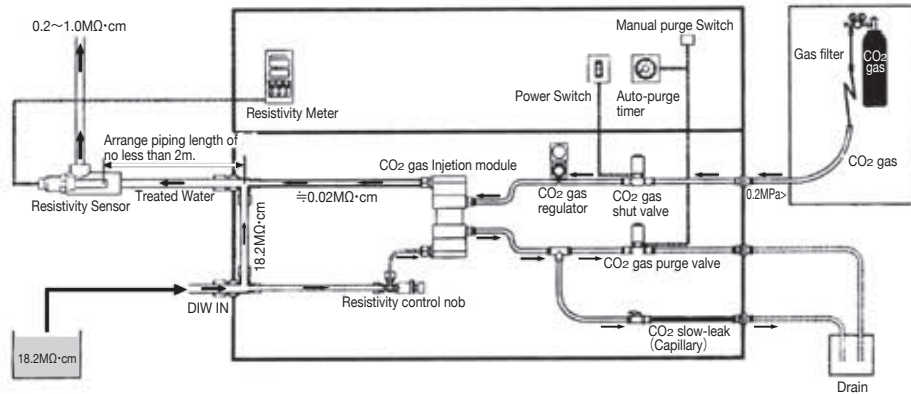
### Cabinet Type (C Series)



The C Series has a cabinet with a capacity for two CO2 cylinders. There is a built-in specific resistance sensor in the cabinet, enabling connection to water pipes to the point of use directly from eFLOW.



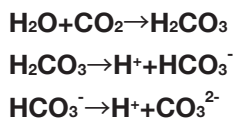
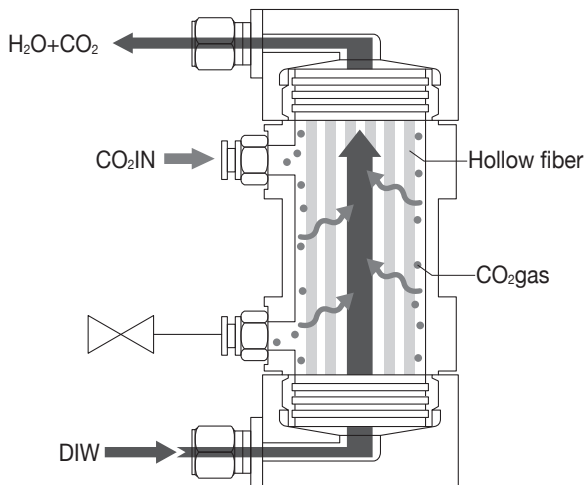
## Device Principles



The specific resistance value of DI water can be adjusted by regulating the mixing ratio of CO<sub>2</sub> saturated water and ultra DI water generated by the CO<sub>2</sub> dissolution module (see the picture below).

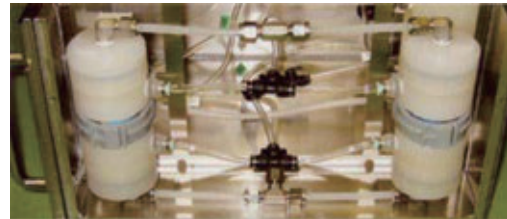
## CO<sub>2</sub> Dissolution Principles

### CO<sub>2</sub> Dissolution Module (Internal Circulation) Made by DIC



While DI water flows through the inside the hollow fibers in the module, CO<sub>2</sub> gas penetrates the DI water from outside the hollow fiber membrane. The dissolved CO<sub>2</sub> ionizes in DI water, providing conductivity to DI water to remove static electricity.

Using the fine hollow fiber bundle, the surface area required for the CO<sub>2</sub> dissolution can be obtained efficiently.



(eFLOW 2AP,2AC eFLOW 3AP,3AC)



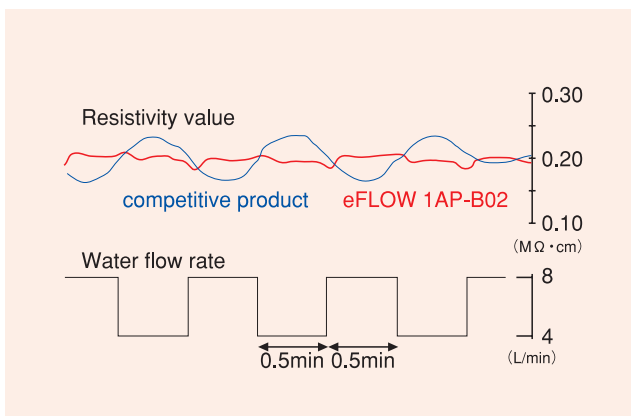
(eFLOW 1AP,1AC)

The eFLOW 2A and 3A models are equipped with two carbon dioxide dissolution modules.

## Behavior of Resistivity Value During Flow Rate Fluctuation

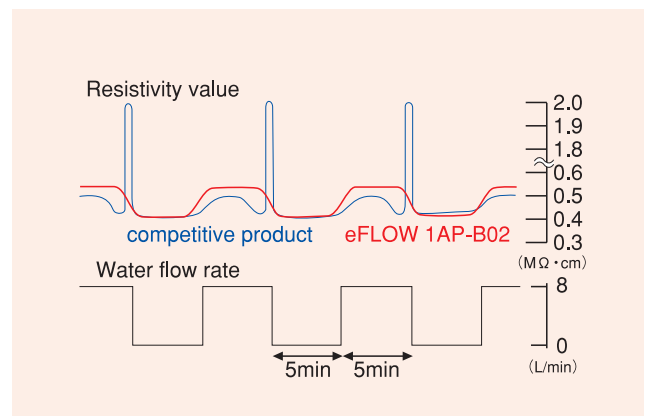
### Example of Scrubber Cleaning

Scrubber cleaning sample  
4L/min (0.5min) ↔ 8L/min (0.5min)



### Example of Dicing

Dicing process sample  
0L/min (5min) ↔ 8L/min (5min)

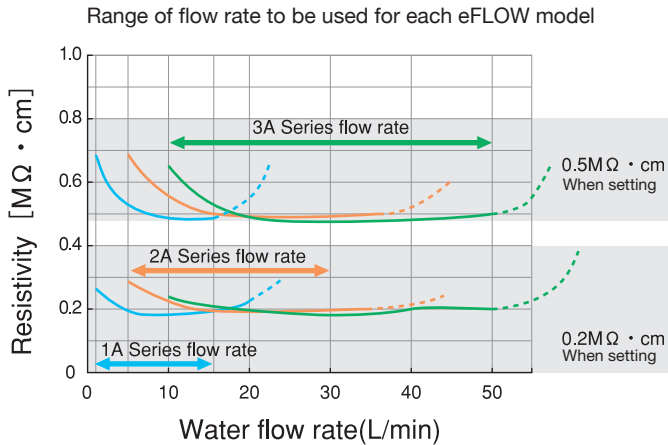


\* The resistivity performance during flow rate fluctuation is not guaranteed.

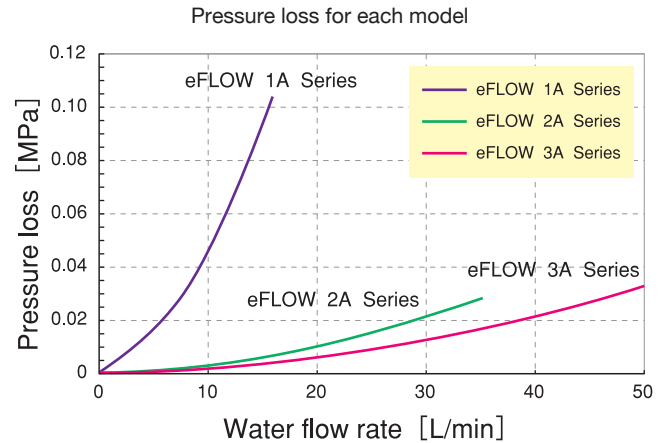
\* The graphs provided are for reference only. The performance and characteristics may vary with operating conditions.

## Performance, Characteristics

### Range of flow Rate to be Used for Each eFLOW Model



### Pressure Loss for Each Model



\* The resistivity performance during flow rate fluctuation is not guaranteed.

\* The graphs provided are for reference only. The performance and characteristics may vary with operating conditions.

## Specifications

Unit: eFLOW®	Panel mount type			Cabinet type		
Type	1AP-B02	2AP-B01	3AP-B01	1AC-P201	2AC-P201	3AC-P201
Range of Treated Water Flow Rate [L/min]	1~16	5~30	10~50	1~16	5~30	10~50
Connection Size	$\phi 12mm$	Rc1"PP		Rc3/4" PVC union	Rc1" PVC union	
Module	1 PF-001L-NA (1 module)	2 PF-001L-ND2s (2 modules)	2 PF-001L-ND3s (3 modules)	1 PF-001L-NA (1 module)	2 PF-001L-ND2s (2 modules)	2 PF-001L-ND3s (3 modules)
Range of Resistivity Settings	0.2~1.0 ( $M\Omega$ )*(1)					
Stability During Constant Flow Rate	Within $\pm 15\%$ (stability during flow rate fluctuation not guaranteed)					
Operating Fluid	Supply water: RO water or better, supply gas: CO <sub>2</sub> gas (99.5% or higher purity) Dry air or N <sub>2</sub> gas for drying * No other fluids may be used.					
Supply Water Temperature and Pressure Range	20~30 ( $^{\circ}C$ ) 0.1~0.3 (MPa(G)) Max. 0.5 (MPa(G))					
CO <sub>2</sub> Gas Supply	Supplied from the utility on the user side			Can be outfitted with two CO <sub>2</sub> gas tanks (optional) $\phi 140$ (5 kg capacity) or $\phi 175$ (7 kg capacity)		
CO <sub>2</sub> Gas Supply Pressure	Less than 0.2 MPa (Outlet pressure of the CO <sub>2</sub> tank for cabinet type)					
Range of CO <sub>2</sub> Gas Settings	0.05~0.15 MPa (the pressure set on the eFLOW front panel)					
Operating Environment and Storage Temperature	20~30 ( $^{\circ}C$ ) 10~40 ( $^{\circ}C$ ) (cannot be frozen)					
Power Supply Specifications and Power Consumption	Single-phase AC 100-240V 50/60 Hz Maximum 100VA					
Warning	Upper and lower limits of resistivity value, power supply monitor: Warning lamp, buzzer (with reset switch)			Upper and lower limits of resistivity value, power supply monitor, water leak detection: Warning lamp, buzzer (with reset switch)		
External Output	Warning: relay contact (c contact) capacity AC 220V DC 24V 3 A (load resistance) Transmitted output: 4~20 mA maximum load resistance 900 $\Omega$ insulated output					
External Dimensions	W432×D350×H199.5[mm] (BOX part) W480×H216×t3[mm] (panel part) Does not include protuberance			W600×D360×H1120[mm] (BOX part) W600×H900[mm] (opening part) Does not include protuberance		
Material	Hair-lined SS panel			SS Baked-on panint finish		
Weight	About 9 kg			About 100 kg		
Fastening Methods	Can be attached to EIA-standard rack			L-angle caster (with adjuster)		
Resistivity Meter	HE480-R (AC) (AC100~240V) Manufactured by HORIBA Advanced Techno Co., Ltd.					
Resistivity Sensor	ERD-001C-T (titanium electrode) external installation Install 2 m downstream on the pipe from eFLOW			ERD-001C-T (titanium electrode) Already installed in the case (built-in)		
Equipments	Comes with CO <sub>2</sub> slow leak (hollow fiber capillary) valve					
	CO <sub>2</sub> gas auto purge (timer controlled), manual purge (pushbutton switch)					
	-			Carbon dioxide filter (0.01 $\mu m$ )		
Options	-			Water leak sensor (reflective)		
	-			CO <sub>2</sub> gas pressure sensor, warning light		

\* (1) Please contact the sales representatives for settings below 0.2  $M\Omega \cdot cm$ . Settings of 1.0  $M\Omega \cdot cm$  or higher are possible, but accuracy is not guaranteed.



# Product Name Index

\* O denotes size number.

□ denotes actuation type (C for normally closed, O for normally open).

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KD□□□S-VFC	5
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KD□□KCS-WM	10
KD□□KOS-VFM	10
KD□□KOS-WM	10
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KD□□QLS-VC	11
KD□□QLS-VFC	11
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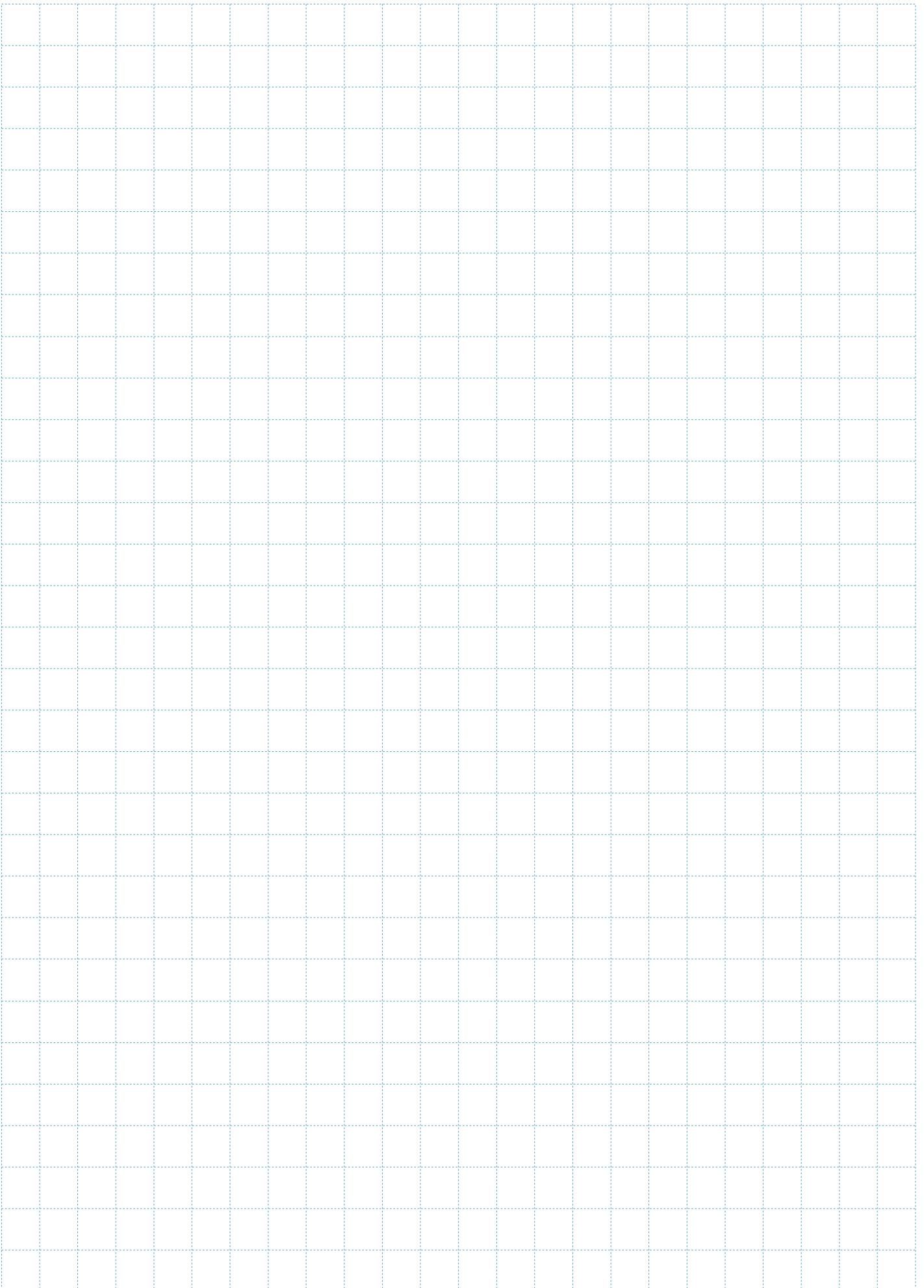
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RD□□CSH-SC	22
RD□□CSH-SC-1484	22
RD□□CSH-VC	22
RD□□CSH-VC-971	22
RD□□CSH-VFC	22
RD□□CSH-VFC-1371	22
RD□□CSH-WC	22
RD□□CSH-WC-1408	22
RD□□CSI-SC	22
RD□□CSI-VC	22
RD□□CSI-VC-972	22
RD□□CSI-VFC	22
RD□□CSI-VFC-1295	22
RD□□CSI-WC	22
RD□□CSI-WC-1571	22
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RD□□MSH-SC	21
RD□□MSH-VC	21
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## S

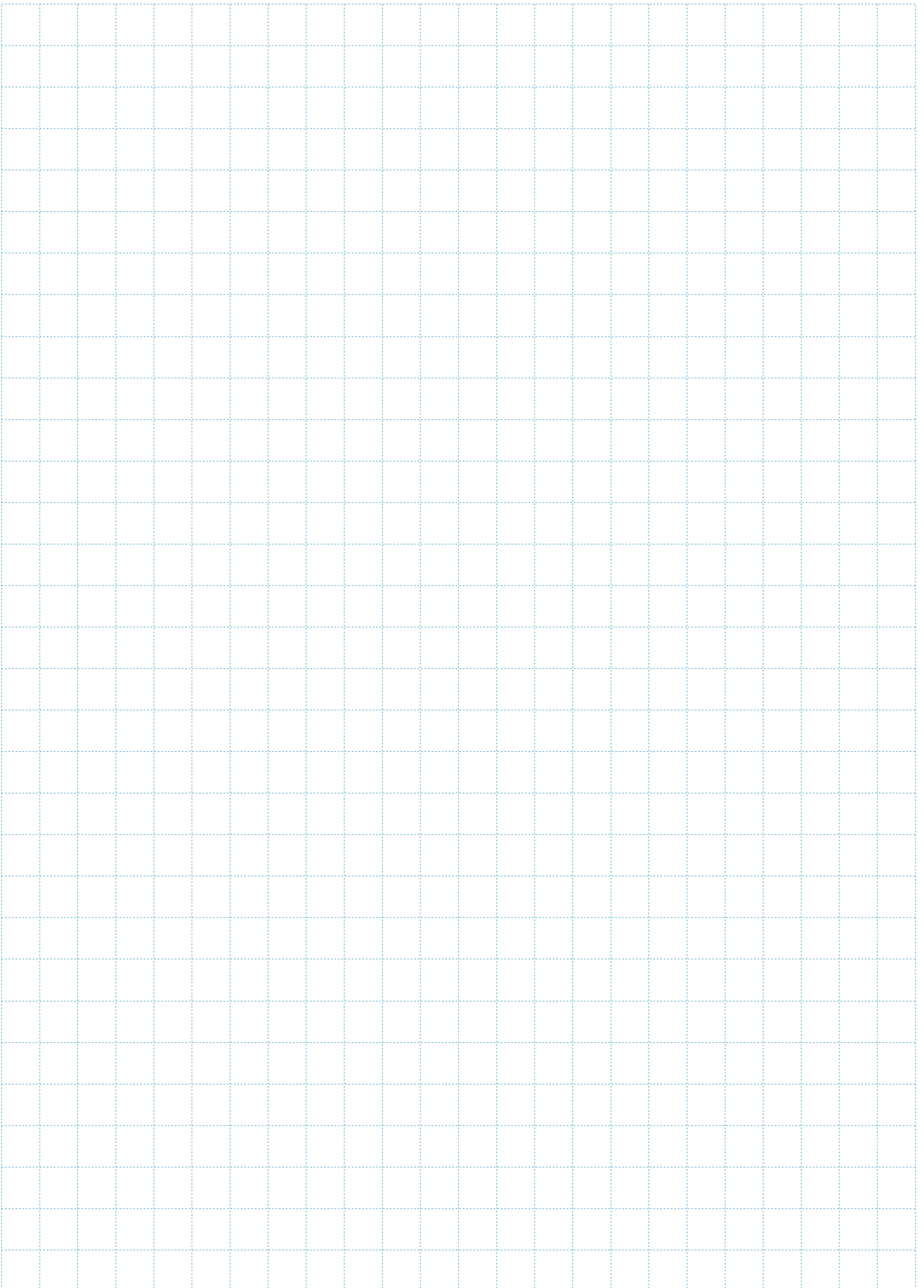
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SBB25CS-UCT-14	41
SBB25OS-RFCT	41
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SBB□□MS-RFCT	41
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SCF 90E □	60
SCF LAP(L) □	65
SCF RC □	63-65
SCF T □	60-63
SCL □E	58
SCL □OR	58
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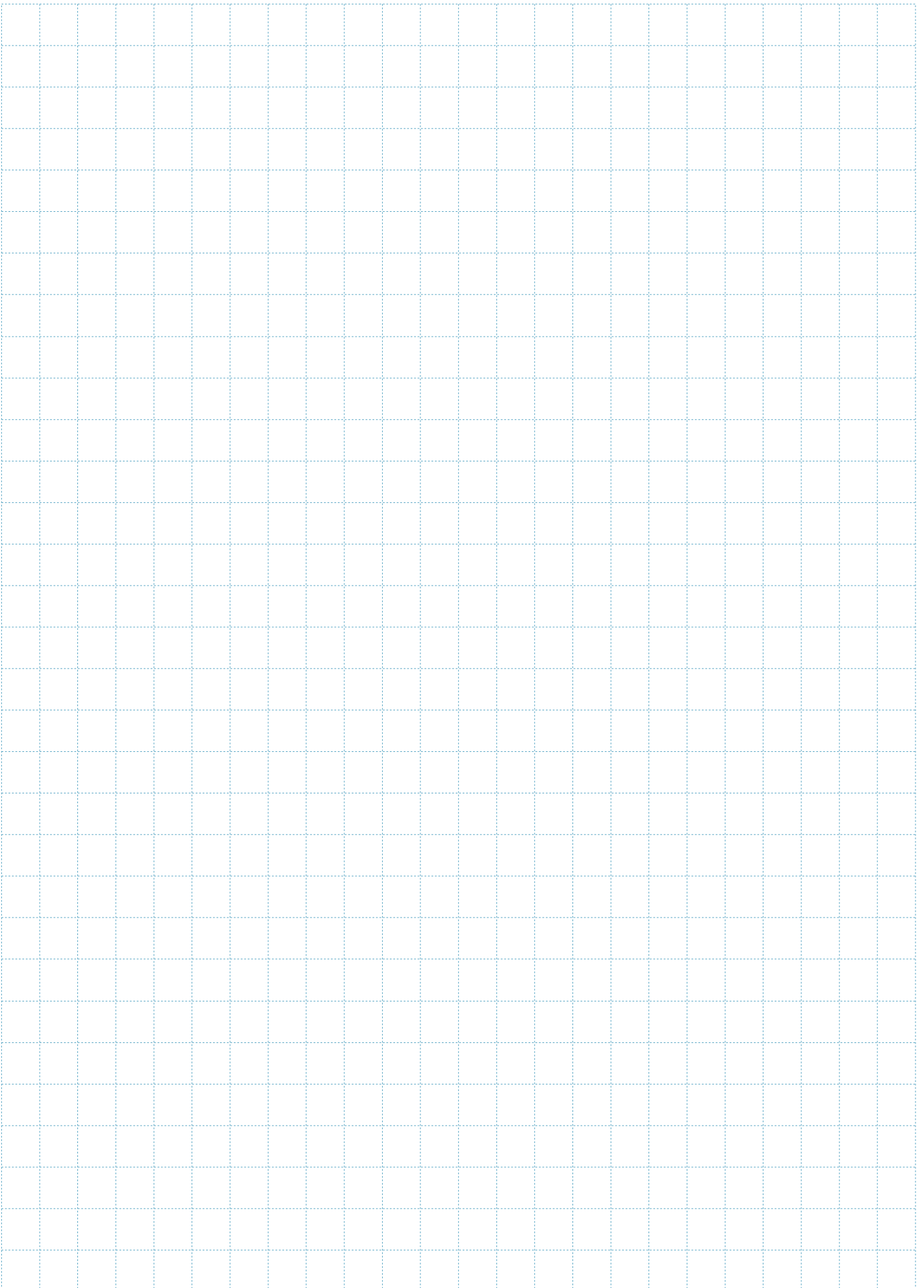
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## Product Warranty

### (1) Warranty Term

One year after purchase. For any malfunction of a product purchased from KITZ SCT that occurs during the warranty term as a result of failure, at the time of delivery, to fulfill the specifications intended, KITZ SCT will repair or replace the product at no charge.

### (2) Range of Warranty

The warranty is limited to our products that were produced at and delivered from our Nitta SC Plant.

Regardless of the warranty term, this warranty does not cover troubles or accidents, or any customer's opportunity loss, lost profit, secondary damage or damage to anything other than our products, as well as replacement work, readjustment of local machinery or equipment or trial operation by the customer.

Safety management associated with the use of a product purchased from KITZ SCT and peripheral equipment will be the responsibility of the user.

### [Exclusions]

The warranty does not cover any of the following cases, even if it occurs during the term of the warranty.

- 1) Cases where failure occurs resulting from the replacement (maintenance) of parts by a person other than a KITZ SCT engineer.
- 2) Cases where failure occurs due to a natural disaster or force majeure.
- 3) Cases where failure occurs due to misuse of the product or not taking the required precautions in handling the product.
- 4) Cases where the product is used or stored in an unsuitable environment.
- 5) Cases where the product is used for purposes other than the designated objectives, the product is used at a range exceeding the range of conditions specified in the design, or a purchased product is modified.
- 6) Cases where corrosion and failure occurs due to external factors or a corrosive liquid.
- 7) Any other case judged to be outside of the responsibility of KITZ SCT.

## Sales Offices

■ Tokyo Head Office	JRE Omori Station Higashiguchi Bldg. 3F, 1-5-1 Omorikita, Ota-ku, Tokyo 143-0016, Japan TEL.81-3-6404-2171 FAX.81-3-6404-2172
■ Osaka Sales Office	3F MG Amagasaki Ekimae Bldg. 21 Misono-Cho, Amagasaki-City, Hyogo-Pref, 660-0861, Japan TEL.81-6-6413-4177 FAX.81-6-6413-4188
Nagoya Branch Office	Marunouchi One Bldg. 6th Floor, 1-9-16, Marunouchi, Naka-ku, Nagoya-shi, Aichi-Pref, 460-0002 TEL.81-52-221-0885 FAX.81-6-6413-4188
Toyama Branch Office	Toyama Denki Bldg. 216, 3-1 Sakurabashidori, Toyama-shi, 930-0004, Toyama TEL.81-76-486-8181 FAX.81-76-486-8101
■ Kyusyu Sales Office	Z·S Fukuoka Bldg. 4F, 3-4-2 Higashiie, Hakata-ku, Fukuoka-City, Fukuoka-Pref, 812-0007, Japan TEL.81-92-483-0185 FAX.81-92-483-0186
Kumamoto Branch Office	A-5, 369 Bldg., 1775-2, Kikoji, Kikuchi-shi, Kumamoto-Pref, 861-1315 TEL.81-968-24-3105 FAX.81-968-24-3106

## Plants

■ Nitta SC Plant	150-2 Nittakane-Cho, Ota-City, Gunma-Pref, 370-0352, Japan TEL.81-276-60-9600 FAX.81-276-60-9330
■ KITZ SCT Corporation of Kunshan	8-3, No. 3 Road, Export Processing A Zone, Kunshan Jiangsu 215300, China TEL.86-512-5735-0700 FAX.86-512-5735-7500
└ KITZ SCT Corporation of Kunshan Branch Plant	Bldg. 9, No. 68, Taoyuen Rd., Export Processing B Zone, Kunshan Jiangsu 215300, China

## Overseas Offices

■ KITZ SCT America Corporation	5201 Great America Parkway, Suite 238, Santa Clara, CA 95054, USA TEL.1-408-747-5546 FAX.1-408-747-5726
■ KITZ SCT Corporation Taiwan Representative Office	3F-1, No.38, Beida Rd., East Dist., Hsinchu City, Taiwan (R.O.C.) TEL.886-3-542-0110 FAX.886-3-542-0551
■ KITZ SCT CORPORATION OF KUNSHAN, Shanghai Branch Company	Room 1610B, Building A, China Overseas Center, No. 2, 699 Tongchuan Road, Putuo District, Shanghai, P.R.China, 200333 TEL.86-21-5243-5025 FAX.86-21-6439-1257





General Product Catalogue

**KITZ SCT**  

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**KITZ SCT Corporation**

<https://www.kitzsct.com/>