

TK-FUJIKIN Valves

Semiconductor / Ultra High Purity Products



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Semiconductor / Ultra High Purity Products

LOW PRESSURE DIAPHRAGM VALVE



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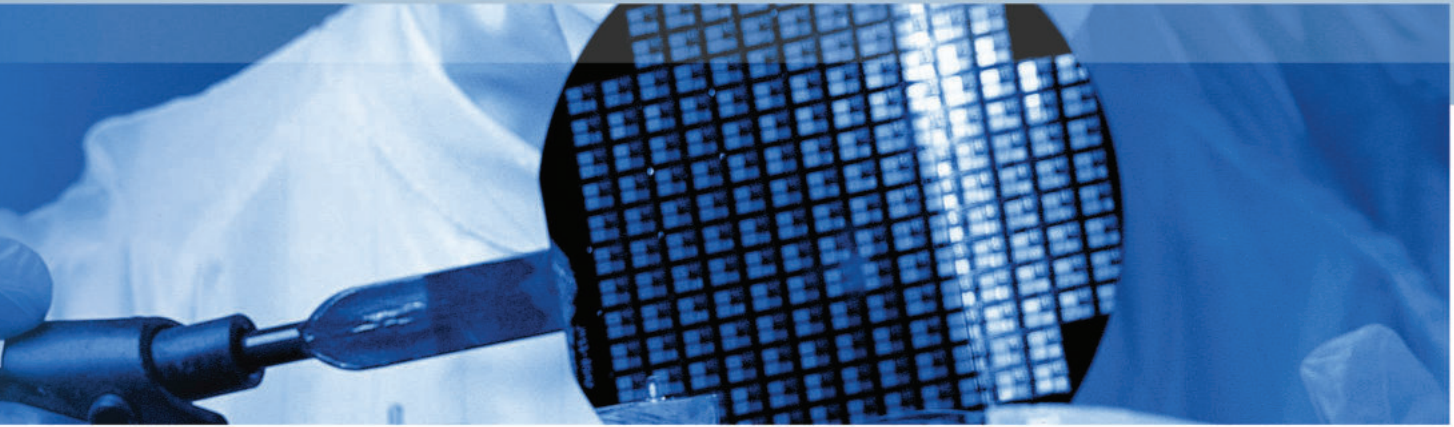
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PRODUCTION FLOW



CAREFULLY SELECTED MATERIALS

Selecting and standardizing a highly clean material reduced non-metallic inclusions and outgases. Further, production of VAR material that is highly resistant to corrosion and Hastelloy® C-22™ material are even made possible.

HIGH PRECISION MACHINING PROCESS

Using fully automatic, high precision, high-speed CNC Machining center and lathe, a precision machining process is established. With high precision locating, automatic dimensional calculation and automatic compensation, an unattended, labor-reduced production process is made possible.

ULTRA-HIGH CLEANING PROCESS

Using TKF unique technology for super cleanliness, passivation treatment by means of special electropolishing, etc. is applied to the smooth machined surface before polishing process. This enables to form a highly corrosion-resistant and super clean surface structure.

CLEAN WELDING

Clean welding method is made available by using a high speed, full-automatic orbital welding machine. Using a sealed inner and outer manostat gauge in the clean room, inner pressure is controlled with hyper pure inert-gas so that the totally clean welding technology can fully contribute to realization of the flat bead condition, etc..

ULTRA PRECISION CLEANING

An automatic processing line including ultra pure hot water with resistivity of more than 17MΩcm has been established in the clean room. The best possible cleaning condition is achieved here prior to the assembly.

ASSEMBLY IN THE CLEAN ROOM

Production staffs fully acquainted with the special assembling method are dedicated to the assembly process in the certified clean room.

CLEAN PACKING

Packing is carried out at the certified clean room with inner vacuum seal method. In this way, mixing-in of foreign particles at the time of packing is extensively reduced to its minimum.

SELECTION GUIDE

No.	GAS NAME		TK-FUJIKIN					
			VALVE					
			BODY		SEAT			GASKET
			SUS	HAS	PCTFE	PFA	PTFE	NIKEL
1	ARGON	Ar	o	o	o	o	o	o
2	ARSINE	AsH3	o	x	o	o	o	x
3	DIBORANE	B2H6	o	o	o	o	o	-
4	BORONTRICHLORIDE	BCl3	o	o	o	-	o	o
5	HALOCARBON-116 HEXAFLUOROETHANE	C2F6	o	o	o	o	o	o
6	Ethene, Ethylene	C2H4	o	o	o	-	o	-
7	PERFLUOROPROPANE	C3F8	o	o	o	-	o	-
8	Sifren® 46 Hexafluorobutadiene	C4F6	-	o	-	-	o	-
9	Octafluorocyclobutane	C4F8	o	o	-	-	o	-
10	Octafluorocyclopentene	C5F8	-	o	-	-	o	-
11	Tetrafluoromethane	CF4	o	o	-	o	o	-
12	Difluoromethane	CH2F2	-	o	-	o	o	-
13	Methyl Fluoride	CH3F	o	o	-	-	o	-
14	Methane	CH4	o	o	o	o	o	-
15	Trifluoromethane	CHF3	o	o	-	o	o	-
16	Chlorine	Cl2	o	o	o	o	o	x
17	Chlorotrifluoromethane	ClF3	-	o	-	-	o	-
18	Trifluoromethane	CO	o	o	-	o	o	-
19	Carbon Dioxide	CO2	o	o	o	o	o	x
20	Deuterium	D2	o	o	o	-	o	-
21	≤20% Fluorine	≤20%F2	-	o	-	-	o	-
22	Germane	GeH4	o	o	-	-	o	-
23	Hydrogen Bromide	HBr	o	o	-	-	o	-
24	Hydrogen Chloride	HCl	x	o	o	o	o	o
25	Helium	He	o	o	o	o	o	o
26	AMMONIA	NH3	o	o	o	o	o	-
27	Nitrogen	N2	o	o	o	o	o	o
28	Nitrous Oxide	N2O	o	o	o	o	o	o
29	Nitrogen Trifluoride	NF3	o	o	-	o	o	-
30	Nitrogen Monoxide	NO	o	o	-	-	o	-
31	Oxygen	O2	o	o	o	o	o	o
32	Phosphene	PH3	o	o	o	-	o	x
33	Sulfur Hexafluoride	SF6	o	o	o	-	o	-
34	Disilane	Si2H6	o	o	-	-	o	-
35	Silicon Tetrafluoride	SiF4	x	o	o	-	o	-
36	Dichlorosilane	SiH2Cl2	x	o	o	o	o	-
37	Silane	SiH4	o	o	o	o	o	o
38	Trichlorosilane	SiHCl3	o	o	o	o	o	-
39	Sulfur Dioxide	SO2	o	o	o	o	o	x
40	Tungsten Hexafluoride	WF6	x	o	-	o	o	-
41	Xenon	Xe	o	o	o	o	o	o

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LOW PRESSURE MANUAL DIAPHRAGM VALVE

STD TYPE

FEATURES

- Reduced inner capacity
- Electropolished, D.I. water cleaned, assembled, tested and packaged in a certified clean room
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Permanently heat code laser marked; material traceable to original mill certificate of test
- Hastelloy® C-22™ and custom configurations available upon request

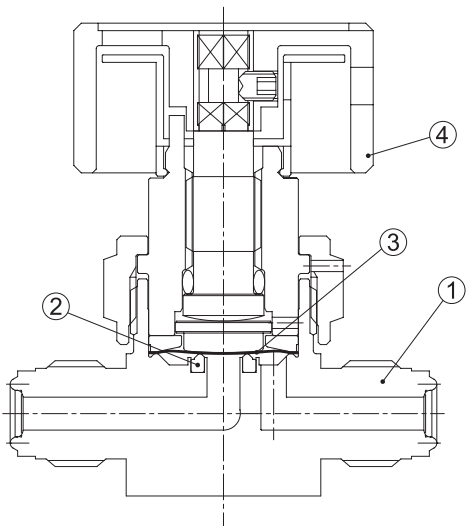


MAJOR SPECIFICATIONS

Size	1/4"	3/8", 1/2"	3/4"
Cv Value	0.3	0.7	0.7
Orifice Size	4.5mm	7mm	7mm
Max. Working Pressure (G.)	1MPa		
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C		
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻² Torr Holding Time ≥ 30 sec.			
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻² Torr Holding Time ≥ 1 min.			
Particle Inspection (EP only)	No count		
Pressure : 60~80psi N ₂ Gas			
Sample Volume : 1CFM 0.1µm and Larger			

PRODUCT GRADE

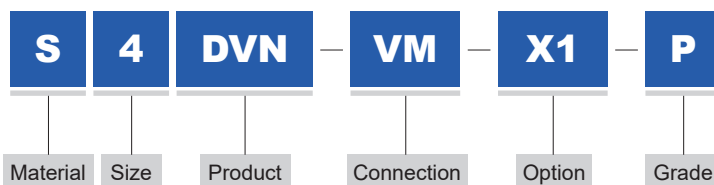
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Handle	Aluminum

ORDERING INFORMATION



MATERIAL	SIZE	CONNECTION	OPTION	GRADE
S 316L Stainless Steel	4 1/4"	VM MFS Male ×47	Constant Bleed ø0.3	AP AP Grade
D 316L Stainless Steel VAR	6 3/8"	VF MFS Female ×59	Constant Bleed ø0.6	BLANK BA Grade
4S 304 Stainless Steel	8 1/2"	SW Lok		P EP Grade
	12 3/4"	TW Butt Weld		

MODEL	CONNECTION	SIZE	A	B	C	D	F	G	H
	MFS Male	1/4"	57	11	64.3	40	26	25.4	
		3/8"	76.2	16	76.8	40	37	28	
		1/2"	76.2	16	76.8	40	37	28	
		3/4"	122	22	82.8	40	37	28	
	MFS Female	1/4"	70.6	11	64.3	40	26	25.4	
		3/8"	83	16	76.8	40	37	28	
		1/2"	83	16	76.8	40	37	28	
		3/4"	122	22	82.8	40	37	28	
	Lok	1/4"	69.5	11	64.3	40	26	25.4	55
		3/8"	82.5	16	76.8	40	37	28	68
		1/2"	91	16	76.8	40	37	28	70
		3/4"	106	22	82.8	40	37	28	84
	Butt Weld	1/4"	54	11	64.3	40	26	25.4	
		3/8"	69	16	76.8	40	37	28	
		1/2"	69	16	76.8	40	37	28	
		3/4"	150	22	82.8	40	37	28	

LOW PRESSURE MANUAL DIAPHRAGM VALVE

FORGED BODY TYPE**FEATURES**

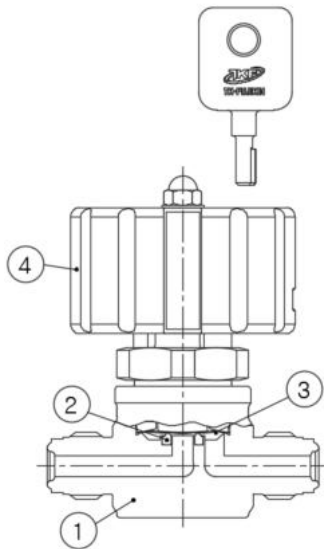
- Forged body using round bar stock
- Low internal volume
- Minimal particle generation
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Permanently heat code laser marked; material traceable to original mill certificate of test
- Hastelloy® C-22™ and custom configurations available upon request
- Locking Function of Key Type

**MAJOR SPECIFICATIONS**

Size	1/4"	3/8", 1/2"
Cv Value	0.3	0.7
Orifice Size	4.4mm	7mm
Max. Working Pressure (G.)	1MPa	
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C	
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 30 sec.		
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 1 min.		
Particle Inspection (EP only)	No count	
Pressure : 60~80psi N ₂ Gas		
Sample Volume : 1CFM		
0.1µm and Larger		

PRODUCT GRADE

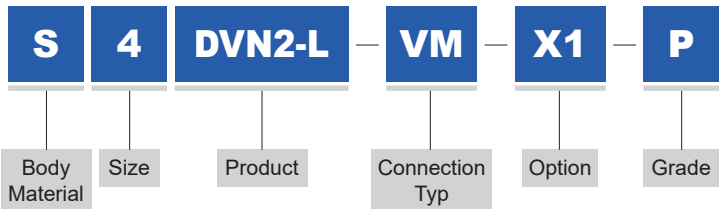
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 25µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Handle	ABS

ORDERING INFORMATION



MATERIAL		SIZE		CONNECTION		GRADE	
S	316L Stainless Steel	4	1/4"	VM	MFS Male	AP	AP Grade
D	316L Stainless Steel VAR	6	3/8"	VF	MFS Female	BLANK	BA Grade
4S	304 Stainless Steel	8	1/2"	SW	Lok	P	EP Grade
				TW	Butt Weld		

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G
	MFS Male	1/4"	58	11	74	42	17	28	
		3/8"	76	16	84.2	42	28	38	
		1/2"	76	16	84.2	42	28	38	
	MFS Female	1/4"	78	11	74	42	17	28	
		3/8"	104.6	16	84.2	42	28	38	
		1/2"	104.6	16	84.2	42	28	38	
	Lok	1/4"	55	11	74	42	17	28	69.3
		3/8"	68	16	84.2	42	28	38	82.5
		1/2"	70	16	84.2	42	28	38	90.2
	Butt Weld	1/4"	58	11	74	42	17	28	
		3/8"	72	16	84.2	42	28	38	
		1/2"	72	16	84.2	42	28	38	

MANUAL DIAPHRAGM VALVE

LOCKING TYPE

FEATURES

- Quick, quarter-turn actuation
- Lockable in the CLOSED position for safety
- Low internal volume
- Minimal particle generation
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Permanently heat code laser marked; material traceable to original mill certificate of test.
- Hastelloy® C-22TM and custom configurations available upon request

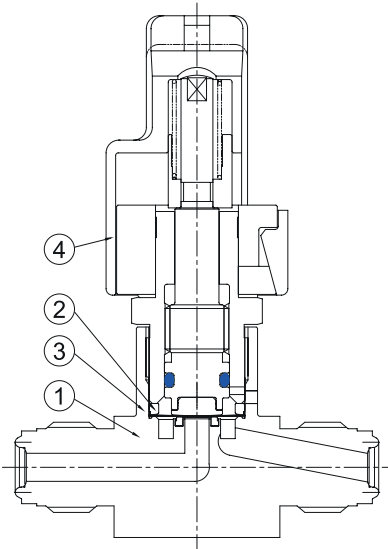


MAJOR SPECIFICATIONS

Size	1/4"	1/2"
Cv Value	0.3	0.5
Orifice Size	4.5mm	7.0mm
Max. Working Pressure (G.)	1MPa	
Max. Working Temp.	-10°C ~ 80°C	
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 30 sec.		
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 1 min.		
Particle Inspection (EP only)	No count	
Pressure : 60~80psi N ₂ Gas		
Sample Volume : 1CFM		
0.1µm and Larger		

PRODUCT GRADE

GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE
3	Diaphragm	Ni-Co Alloy
4	Handle	NYLON6

ORDERING INFORMATION

S
4
DVNL
-
VM
-
X1
-
P

Body Material
Size
Product
Connection Type
Option
Grade

MATERIAL		SIZE		CONNECTION		GRADE	
S	316L Stainless Steel	4	1/4"	VM	MFS Male	AP	AP Grade
D	316L Stainless Steel VAR	6	3/8"	VF	MFS Female	BLANK	BA Grade
4S	304 Stainless Steel	8	1/2"	SW	Lok	P	EP Grade
				TW	Butt Weld		

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G
	MFS Male	1/4"	57	11	89.6	28.5	26	25.4	-
		3/8"	76.2	16	102.3	28.5	37	28	-
		1/2"	76.2	16	102.3	28.5	37	28	-
	MFS Female	1/4"	70.6	11	89.6	28.5	26	25.4	-
		3/8"	83	16	102.3	28.5	37	28	-
		1/2"	83	16	102.3	28.5	37	28	-
	Lok	1/4"	69.5	11	89.6	28.5	26	25.4	55
		3/8"	82.5	16	102.3	28.5	37	28	68
		1/2"	91	16	102.3	28.5	37	28	70
	Butt Weld	1/4"	54	11	89.6	28.5	26	25.4	-
		3/8"	69	16	102.3	28.5	37	28	-
		1/2"	69	16	102.3	28.5	37	28	-

MANUAL DIAPHRAGM VALVE

IGS LOCKING TYPE

FEATURES

- Quick, quarter-turn actuation
- Lockable in the CLOSED position for safety
- Highly resistant to corrosion using nickel-cobalt alloy diaphragm
- Minimal particle generation
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Footprint and compact (footprint), to reduce the space required
- Assembly and lightweight for easy component

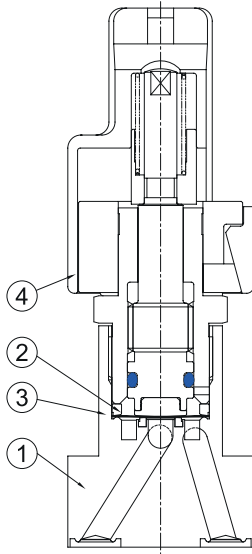


MAJOR SPECIFICATIONS

Size	1.125"	1.5"
Cv Value	0.3	0.3
Max. Working Pressure (G.)	1MPa	
Max. Working Temp.	-10°C ~ 80°C	
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 30 sec.		
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 1 min.		
Particle Inspection (EP only)	No count	
Pressure : 60~80psi N ₂ Gas		
Sample Volume : 1CFM		
0.1μm and Larger		

PRODUCT GRADE

GRADE	EP
Inner Surface Roughness	Ry ≤ 0.7μm 5 μinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel VAR
2	Seat	PCTFE
3	Diaphragm	Ni-Co Alloy
4	Handle	NYLON6

ORDERING INFORMATION

S
11
DVNL1
-
2W
-
X1
-
P

Body Material
Size
Product
Connection Type
Option
Grade

MATERIAL	SIZE	CONNECTION	GRADE
S 316L Stainless Steel	11 1.125"	2W 2 Port W-Seal	BLANK BA Grade
D 316L Stainless Steel VAR	15 1/5"	2C 2 Port C-Seal	P EP Grade

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G
	W-Seal	1.125"	10.9	10	28.5	82.8	14	-	-
		1.5"	15.1	13	39	85.8	17	-	-
	C-Seal	1.125"	10.9	10.9	28.5	82.8	14	-	-
			15.1	15.1	39	85.8	17	-	-

LOW PRESSURE MANUAL DIAPHRAGM VALVE

FORGED BODY TYPE**FEATURES**

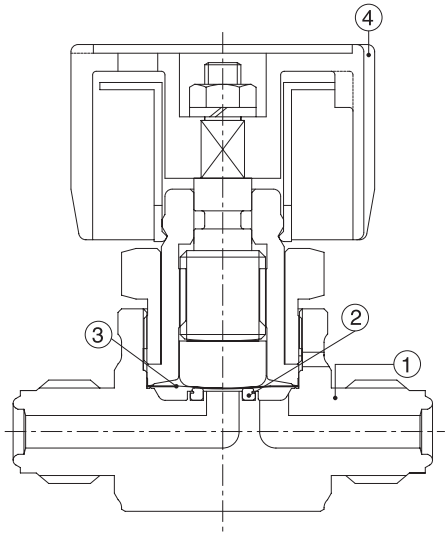
- Forged body using round bar stock
- Low internal volume
- Minimal particle generation
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Permanently heat code laser marked; material traceable to original mill certificate of test
- Hastelloy® C-22™ and custom configurations available upon request

**MAJOR SPECIFICATIONS**

Size	1/4"	3/8", 1/2"	3/4"
Cv Value	0.3	0.7	0.7
Orifice Size	4.5mm	6.5mm	6.5mm
Max. Working Pressure (G.)	1MPa		
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C		
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻² Torr Holding Time ≥ 30 sec.			
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻² Torr Holding Time ≥ 1 min.			
Particle Inspection (EP only)	No count		
Pressure : 60~80psi N ₂ Gas			
Sample Volume : 1CFM 0.1µm and Larger			

PRODUCT GRADE

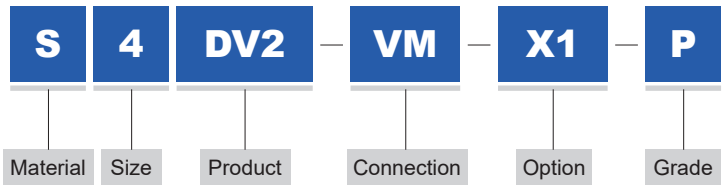
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Handle	ABS

ORDERING INFORMATION



MATERIAL	SIZE	CONNECTION	GRADE				
S	316L Stainless Steel	4	1/4"	VM	MFS Male	AP	AP Grade
D	316L Stainless Steel VAR	6	3/8"	VF	MFS Female	BLANK	BA Grade
4S	304 Stainless Steel	8	1/2"	SW	Lok	P	EP Grade
		12	3/4"	TW	Butt Weld		

MODEL	CONNECTION	SIZE	A	B	C	D	E	G	H
	MFS Male	1/4"	58	11	66	17	45	28	
		3/8"	76	16	77	28	45	38	
		1/2"	76	16	77	28	45	38	
		3/4"	122	22	85	28	45	38	
	MFS Female	1/4"	78	11	66	17	45	28	
		3/8"	104.6	16	77	28	45	38	
		1/2"	104.6	16	77	28	45	38	
		3/4"	122	22	85	28	45	38	
	Lok	1/4"	69.3	11	66	17	45	28	55
		3/8"	82.5	16	77	28	45	38	68
		1/2"	90.2	16	77	28	45	38	70
		3/4"	106	22	85	28	45	38	84
	Butt Weld	1/4"	135	11	66	17	45	28	
		3/8"	147	16	77	28	45	38	
		1/2"	147	16	77	28	45	38	
		3/4"	150	22	85	28	45	38	

LOW PRESSURE PNEUMATIC DIAPHRAGM VALVE

STD TYPE

FEATURES

- Reduced inner capacity
- Electropolished, D.I. water cleaned, assembled, tested and packaged in a certified clean room
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Permanently heat code laser marked; material traceable to original mill certificate of test
- Hastelloy® C-22™ and custom configurations available upon request



MAJOR SPECIFICATIONS

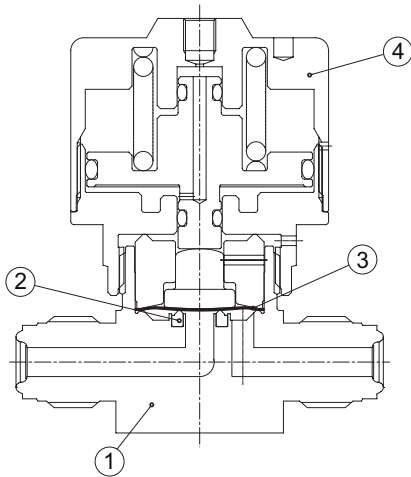
Size	1/4"	3/8", 1/2"	3/4"
Cv Value	0.3	0.7	0.7
Orifice Size	4.5mm	7mm	7mm
Max. Working Pressure (G.)	1MPa		
Operating Pressure (G.)	0.4 ~ 0.6MPa		
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C		
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻² Torr			
Holding Time ≥ 15 sec.			
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻² Torr			
Holding Time ≥ 1 min.			
Particle Inspection (EP only)	No count		
Pressure : 60~80psi N ₂ Gas			
Sample Volume : 1CFM			
0.1µm and Larger			

PRODUCT GRADE

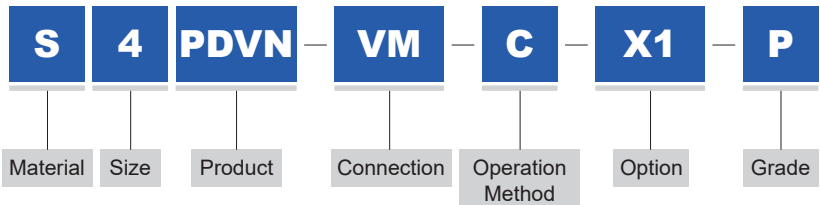
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Actuator	Aluminum



ORDERING INFORMATION



MATERIAL	SIZE	CONNECTION	OPERATION METHOD	OPTION	GRADE
S 316L Stainless Steel	4 1/4"	VM MFS Male	C Normally Close	×47 Constant Bleed ø0.3	AP AP Grade
D 316L Stainless Steel VAR	6 3/8"	VF MFS Female	O Normally Open	×59 Constant Bleed ø0.6	BLANK BA Grade
4S 304 Stainless Steel	8 1/2"	SW Lok			P EP Grade
	12 3/4"	TW Butt Weld			

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G
	MFS Male	1/4"	57	11	64.3	40	26	25.4	
		3/8"	76.2	16	83.8	55	37	28	
		1/2"	76.2	16	83.8	55	37	28	
		3/4"	122	22	89.8	55	37	28	
	MFS Female	1/4"	70.6	11	64.3	40	26	25.4	
		3/8"	83	16	83.8	55	37	28	
		1/2"	83	16	83.8	55	37	28	
		3/4"	122	22	89.8	55	37	28	
	Lok	1/4"	69.5	11	64.3	40	26	25.4	55
		3/8"	82.5	16	83.8	55	37	28	68
		1/2"	91	16	83.8	55	37	28	70
		3/4"	106	22	89.8	55	37	28	84
	Butt Weld	1/4"	54	11	64.3	40	26	25.4	
		3/8"	69	16	83.8	55	37	28	
		1/2"	69	16	83.8	55	37	28	
		3/4"	150	22	89.8	55	37	28	

LOW PRESSURE PNEUMATIC DIAPHRAGM VALVE

HIGH DURABILITY TYPE**FEATURES**

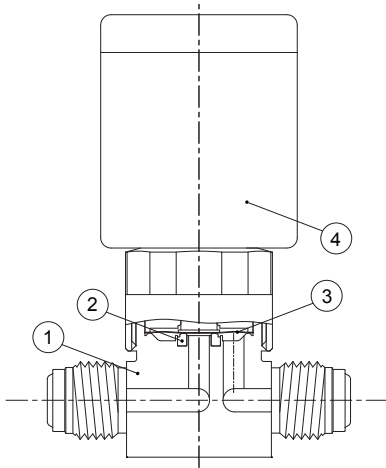
- Ultra high cycle life with high-speed actuation
- Cv range from 0.27
- Up to 392°F (200°C) capability with thermal actuators
- Permanently heat code laser marked;
material traceable to original millcertificate of test

**MAJOR SPECIFICATIONS**

Size	1/4"
Cv Value	0.27
Orifice Size	4mm
Max. Working Pressure (G.)	1MPa
Operating Pressure (G.)	0.35~0.6MPa
Max. Working Temp.	STANDARD : 0°C ~ 120°C
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s
Test Pressure ≤ 1×10 ⁻² Torr	
Holding Time ≥ 15 sec.	
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s
Test Pressure ≤ 1×10 ⁻² Torr	
Holding Time ≥ 1 min.	
Particle Inspection (EP only)	No count
Pressure : 60~80psi N ₂ Gas	
Sample Volume : 1CFM	
0.1μm and Larger	

PRODUCT GRADE

GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40μm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0μm 10 μinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7μm 5 μinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR
2	Seat	PFA
3	Diaphragm	Ni-Co Alloy
4	Actuator	Aluminum

ORDERING INFORMATION

S	4	HDPDV	VM	C	H	X1	P
Material	Size	Product	Connection	Operation Method	Option1	Option2	Grade

MATERIAL	SIZE	CONNECTION	OPERATION METHOD	OPTION	GRADE
S 316L Stainless Steel	4 1/4"	VM MFS Male	C Normally Close	S Position Sensor	P EP Grade
D 316L Stainless Steel VAR		VF MFS Female TW Butt Weld			

STANDARD MODEL	CONNECTION	SIZE	A	B	C	D	E	F
	MFS Male	1/4"	58.4	11.2	86	38	28	25.4
	MFS Female	1/4"	70.6	11.2	86	38	28	25.4
	Butt Weld	1/4"	44.2	11.2	86	38	28	25.4

THERMAL MODEL	CONNECTION	SIZE	A	B	C	D	E	F
	MFS Male	1/4"	58.4	11.2	114	38	28	25.4
	MFS Female	1/4"	70.6	11.2	114	38	28	25.4
	Butt Weld	1/4"	44.2	11.2	114	38	28	25.4

LOW PRESSURE MANUAL BLOCK DIAPHRAGM VALVE

STD TYPE

FEATURES

- Space-saving
- Minimal dead space
- Out-gas free
- Minimal particle generation
- Permanently heat code laser marked; material traceable to original mill certificate of test
- Electropolished, D.I. water cleaned, assembled, tested and packed in a certified clean room



MAJOR SPECIFICATIONS

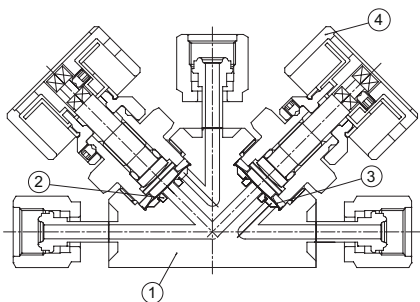
Size	1/4"	3/8", 1/2"
Cv Value	0.3	0.7
Orifice Size	4.5mm	7mm
Max. Working Pressure (G.)	1MPa	
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C	
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 30 sec.		
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 1 min.		
Particle Inspection (EP only)	No count	
Pressure : 60~80psi N ₂ Gas		
Sample Volume : 1CFM		
0.1µm and Larger		

PRODUCT GRADE

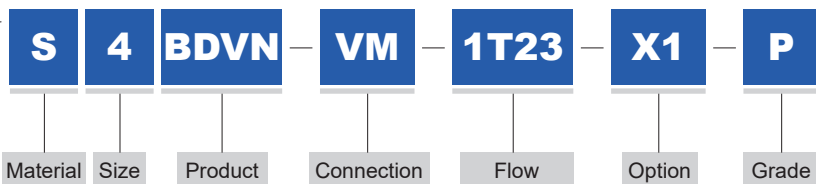
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Handle	Aluminum



ORDERING INFORMATION



MATERIAL		SIZE		CONNECTION		FLOW	GRADE	
S	316L Stainless Steel	4	1/4"	VF	MFS Female	1T25	AP	AP Grade
D	316L Stainless Steel VAR	8	1/2"			5T12	BLANK	BA Grade
						1T23	P	EP Grade
						3T12		

MODEL	FLOW	MODEL	FLOW	MODEL	FLOW	MODEL	FLOW
	1T25		1T23		5T12		3T12

MODEL	FLOW	SIZE	A	B	C	D	E	F	G	H
	1T25	1/4"	21.8	11	74.4	53.8	126.7	64	15	40
		1/2"	23	16	90.2	71.5	145	82	20	55
	1T23	1/4"	21.8	11	74.4	34.8	126.7	64	15	40
		1/2"	23	16	90.2	41	145	82	20	55

LOW PRESSURE PNEUMATIC BLOCK DIAPHRAGM VALVE

STD TYPE

FEATURES

- Space-saving
- Minimal dead space
- Minimal particle generation
- Permanently heat code laser marked; material traceable to original mill certificate of test
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Electropolished, D.I. water cleaned, assembled, tested and packed in a certified clean room



MAJOR SPECIFICATIONS

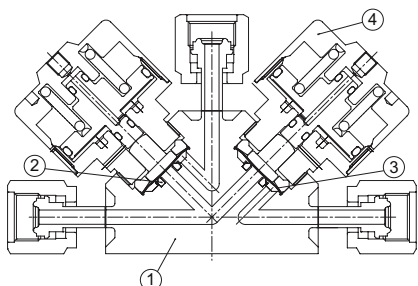
Size	1/4"
Cv Value	0.3
Orifice Size	4.5mm
Max. Working Pressure (G.)	1MPa
Operating Pressure (G.)	0.4 ~ 0.6MPa
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C
Internal Leakage Allowance (He)	
Test Pressure ≤ 1×10 ⁻² Torr	1×10 ⁻¹⁰ Pa · m ³ /s
Holding Time ≥ 15 sec.	
External Leakage Allowance (He)	
Test Pressure ≤ 1×10 ⁻² Torr	1×10 ⁻¹⁰ Pa · m ³ /s
Holding Time ≥ 1 min.	
Particle Inspection (EP only)	
Pressure : 60~80psi N ₂ Gas	No count
Sample Volume : 1CFM	
0.1μm and Larger	

PRODUCT GRADE

GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40μm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0μm 10 μinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7μm 5 μinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Actuator	Aluminum



ORDERING INFORMATION

S
4
PBDVN
VM
1T23
C
X1
P

Material
Size
Product
Connection
Flow
Operation Method
Option
Grade

MATERIAL	SIZE	CONNECTION	FLOW	OPERATION METHOD	GRADE
S 316L Stainless Steel	4 1/4"	VF MFS Female	1T25	C Normally Close	AP AP Grade
D 316L Stainless Steel VAR			5T12	O Normally Open	BLANK BA Grade
			1T23		P EP Grade
			3T12		

MODEL	FLOW	MODEL	FLOW	MODEL	FLOW	MODEL	FLOW
	1T25		1T23		5T12		3T12

MODEL	FLOW	SIZE	A	B	C	D	E	F	G	H
	1T25	1/4"	21.8	11	70.4	53.8	118.7	64	15	40
	1T23	1/4"	21.8	11	70.4	34.8	118.7	64	15	40

LOW PRESSURE MANUAL DIAPHRAGM VALVE

SHUTOFF TYPE

FEATURES

- Shutoff type handle operation
- Low internal volume
- Minimal particle generation
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Handle colors available upon request
- Lockable in the CLOSED position for safety

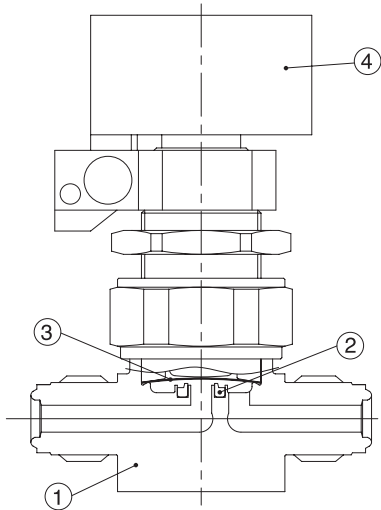


MAJOR SPECIFICATIONS

Size	1/4"	3/8", 1/2"	3/4"
Cv Value	0.3	0.7	0.7
Orifice Size	3.5mm	7mm	7mm
Max. Working Pressure (G.)	1MPa		
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C		
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻² Torr			
Holding Time ≥ 15 sec.			
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻² Torr			
Holding Time ≥ 1 min.			
Particle Inspection (EP only)	No count		
Pressure : 60~80psi N ₂ Gas			
Sample Volume : 1CFM			
0.1µm and Larger			

PRODUCT GRADE

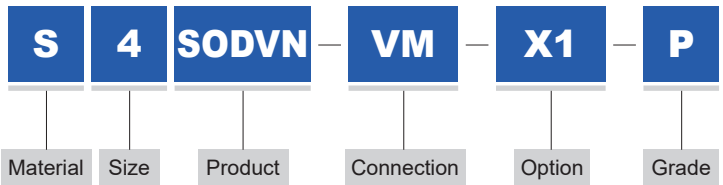
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Handle	Nylon

ORDERING INFORMATION



MATERIAL	SIZE	CONNECTION	OPTION	GRADE
S 316L Stainless Steel	4 1/4"	VM MFS Male	×87 Locking	AP AP Grade
D 316L Stainless Steel VAR	6 3/8"	VF MFS Female	×27 Lock Nut	BLANK BA Grade
4S 304 Stainless Steel	8 1/2"	SW Lok		P EP Grade
	12 3/4"	TW Butt Weld		

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G	H	J	K
	MFS Male	1/4"	57	11	77.1	37	24	26	25.4	5	20.5	
		3/8"	76.2	16	105.2	50	31.6	37	28	10	24.5	
		1/2"	76.2	16	105.2	50	31.6	37	28	10	24.5	
		3/4"	122	22	111.2	50	31.6	37	28	10	24.5	
	MFS Female	1/4"	70.6	11	77.1	37	24	26	25.4	5	20.5	
		3/8"	83	16	105.2	50	31.6	37	28	10	24.5	
		1/2"	83	16	105.2	50	31.6	37	28	10	24.5	
		3/4"	122	22	111.2	50	31.6	37	28	10	24.5	
	Lok	1/4"	69.5	11	77.1	37	24	26	25.4	5	20.5	55
		3/8"	82.5	16	105.2	50	31.6	37	28	10	24.5	68
		1/2"	91	16	105.2	50	31.6	37	28	10	24.5	70
		3/4"	106	22	111.2	50	31.6	37	28	10	24.5	84
	Butt Weld	1/4"	54	11	77.1	37	24	26	25.4	5	20.5	
		3/8"	69	16	105.2	50	31.6	37	28	10	24.5	
		1/2"	69	16	105.2	50	31.6	37	28	10	24.5	
		3/4"	150	22	111.2	50	31.6	37	28	10	24.5	

LOW PRESSURE MANUAL DIAPHRAGM VALVE

SHUTOFF TYPE

FEATURES

- Shutoff type handle operation
- Low internal volume
- Minimal particle generation
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Handle colors available upon request
- Lockable in the CLOSED position for safety

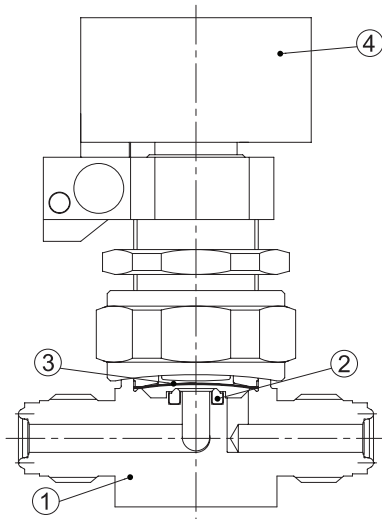


MAJOR SPECIFICATIONS

Size	1/4"	3/8", 1/2"
Cv Value	0.3	0.7
Orifice Size	3.5mm	6.5mm
Max. Working Pressure (G.)	1MPa	
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C	
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 15 sec.		
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 1 min.		
Particle Inspection (EP only)	No count	
Pressure : 60~80psi N ₂ Gas		
Sample Volume : 1CFM		
0.1µm and Larger		

PRODUCT GRADE

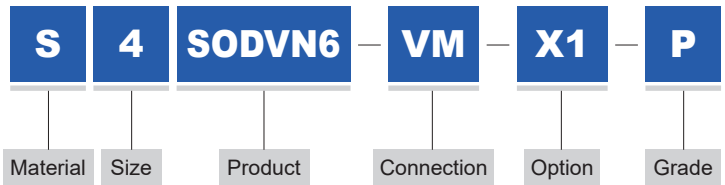
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Handle	Nylon

ORDERING INFORMATION



MATERIAL	SIZE	CONNECTION	OPTION	GRADE
S 316L Stainless Steel	4 1/4"	VM MFS Male	×87 Locking	AP AP Grade
D 316L Stainless Steel VAR	6 3/8"	VF MFS Female	×27 Lock Nut	BLANK BA Grade
4S Stainless Steel 304	8 1/2"	SW Lok		P EP Grade

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G	H	J	K
	MFS Male	1/4"	57	14.3	80.4	37	24	26	25.4	7	20.5	
		3/8"	76.2	11.1	100.3	50	31.6	37	28.6	10	24.5	
		1/2"	76.2	11.1	100.3	50	31.6	37	28.6	10	24.5	
	MFS Female	1/4"	70.6	14.3	80.4	37	24	26	25.4	7	20.5	
		3/8"	83	12.7	101.9	50	31.6	37	28.6	10	24.5	
		1/2"	83	12.7	101.9	50	31.6	37	28.6	10	24.5	
	Lok	1/4"	69.5	14.3	80.4	37	24	26	25.4	7	20.5	55
		3/8"	82.5	12.7	101.9	50	31.6	37	28.6	10	24.5	68
		1/2"	91	12.7	101.9	50	31.6	37	28.6	10	24.5	70
	Butt Weld	1/4"	54	14.3	80.4	37	24	26	25.4	7	20.5	
		3/8"	69	12.7	101.9	50	31.6	37	28.6	10	24.5	
		1/2"	69	12.7	101.9	50	31.6	37	28.6	10	24.5	

LOW PRESSURE MANUAL DIAPHRAGM VALVE

BRANCH TYPE

FEATURES

- Reduced inner capacity
- Highly resistant to corrosion using nickel-cobalt alloy diaphragm
- Minimal particle generation
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Permanently heat code laser marked; material traceable to original mill certificate of test
- Electropolished, D.I. water cleaned, assembled, tested and packed in a certified clean room



MAJOR SPECIFICATIONS

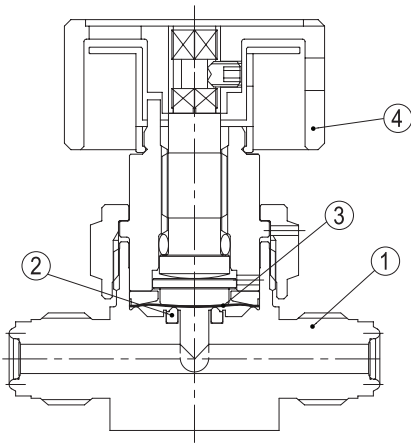
Size	1/4"	3/8", 1/2"	3/4"
Cv Value	0.3	0.7	0.7
Orifice Size	4.5mm	7mm	7mm
Max. Working Pressure (G.)	1MPa		
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C		
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻² Torr			
Holding Time ≥ 30 sec.			
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻² Torr			
Holding Time ≥ 1 min.			
Particle Inspection (EP only)	No count		
Pressure : 60~80psi N ₂ Gas			
Sample Volume : 1CFM			
0.1µm and Larger			

PRODUCT GRADE

0.3	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Handle	Aluminum



ORDERING INFORMATION

S
4
DVN3
VM
12T3
X1
P

Material
Size
Product
Connection
Flow
Option
Grade

MATERIAL	SIZE	CONNECTION	FLOW	GRADE
S 316L Stainless Steel	4 1/4"	VM MFS Male		AP AP Grade
D 316L Stainless Steel VAR	6 3/8"	VF MFS Female		BLANK BA Grade
4S 304 Stainless Steel	8 1/2"	SW Lok		P EP Grade
	12 3/4"	TW Butt Weld		

MODEL	CONNECTION	SIZE	A	B	C	D	F	G	H
	MFS Male	1/4"	57	11	64.3	40	26	25.4	
		3/8"	76.2	16	76.8	40	37	28	
		1/2"	76.2	16	76.8	40	37	28	
		3/4"	122	22	82.8	40	37	28	
	MFS Female	1/4"	70.6	11	64.3	40	26	25.4	
		3/8"	83	16	76.8	40	37	28	
		1/2"	83	16	76.8	40	37	28	
		3/4"	122	22	82.8	40	37	28	
	Lok	1/4"	69.5	11	64.3	40	26	25.4	14.5
		3/8"	82.5	16	76.8	40	37	28	15.5
		1/2"	91	16	76.8	40	37	28	16.5
		3/4"	106	22	82.8	40	37	28	23.5
	Butt Weld	1/4"	54	11	64.3	40	26	25.4	
		3/8"	69	16	76.8	40	37	28	
		1/2"	69	16	76.8	40	37	28	
		3/4"	150	22	82.8	40	37	28	

LOW PRESSURE PNEUMATIC DIAPHRAGM VALVE

BRANCH TYPE

FEATURES

- Reduced inner capacity
- Highly resistant to corrosion using nickel-cobalt alloy diaphragm
- Minimal particle generation
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Permanently heat code laser marked; material traceable to original mill certificate of test
- Increased operation speed using aluminum piston



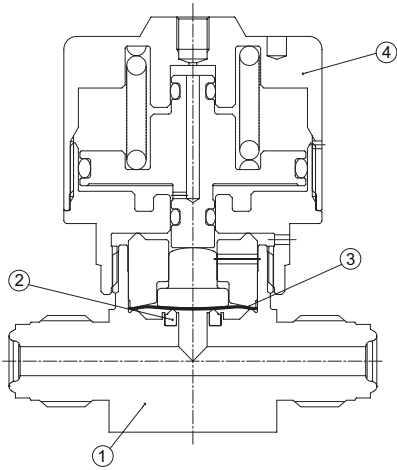
MAJOR SPECIFICATIONS

Size	1/4"	3/8", 1/2"	3/4"
Cv Value	0.3	0.7	0.7
Orifice Size	4.5mm	7mm	7mm
Max. Working Pressure (G.)	1MPa		
Operating Pressure (G.)	0.4~0.6MPa		
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C		
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻² Torr Holding Time ≥ 15 sec.			
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻² Torr Holding Time ≥ 1 min.			
Particle Inspection (EP only)	No count		
Pressure : 60~80psi N ₂ Gas			
Sample Volume : 1CFM 0.1µm and Larger			

PRODUCT GRADE

GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL



NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Actuator	Aluminum

ORDERING INFORMATION

S
4
PDVN3
VM
12T3
C
X1
P

Material Size Product Connection Flow Operation Method Option Grade

	MATERIAL	SIZE	CONNECTION	FLOW	OPERATION METHOD	GRADE
S	316L Stainless Steel	4 1/4"	VM MFS Male		C Normally Close	AP AP Grade
D	316L Stainless Steel VAR	6 3/8"	VF MFS Female			
4S	304 Stainless Steel	8 1/2"	SW Lok		O Normally Open	P EP Grade
		12 3/4"	TW Butt Weld			

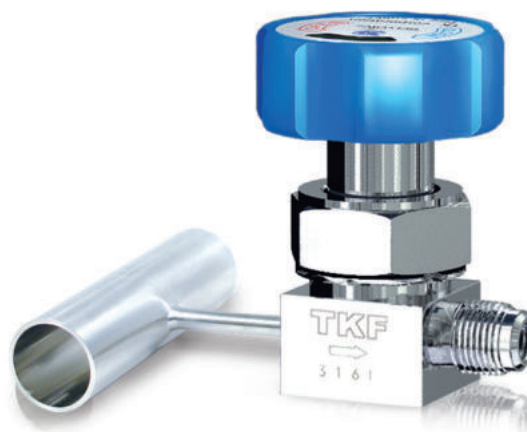
MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G
	MFS Male	1/4"	15.5	11	64.3	40	26	25.4	
		3/8"	19.6	16	83.8	55	37	28	
		1/2"	19.6	16	83.8	55	37	28	
		3/4"	42.5	22	89.8	55	37	28	
	MFS Female	1/4"	22.3	11	64.3	40	26	25.4	
		3/8"	23	16	83.8	55	37	28	
		1/2"	23	16	83.8	55	37	28	
		3/4"	42.5	22	89.8	55	37	28	
	Lok	1/4"	14.5	11	64.3	40	26	25.4	26.7
		3/8"	15.5	16	83.8	55	37	28	22.8
		1/2"	16.5	16	83.8	55	37	28	26.8
		3/4"	23.5	22	89.8	55	37	28	34.5
	Butt Weld	1/4"	54	11	64.3	40	26	25.4	
		3/8"	69	16	83.8	55	37	28	
		1/2"	69	16	83.8	55	37	28	
		3/4"	150	22	89.8	55	37	28	

LOW PRESSURE MANUAL DIAPHRAGM VALVE

WELD TEE & VALVE TYPE

FEATURES

- Used in sub-main or after of the bulk gas piping system
- Developed for low cost
- Simple and easy to use
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Component parts are reduced to minimum



MAJOR SPECIFICATIONS

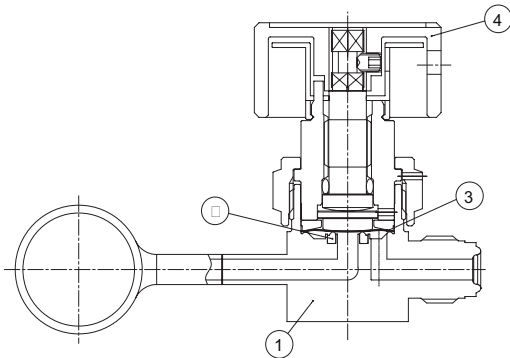
Size	1/4"	3/8", 1/2"	3/4"
Cv Value	0.3	0.7	0.7
Orifice Size	4.5mm	7mm	7mm
Max. Working Pressure (G.)	1MPa		
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C		
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻⁴ Torr			
Holding Time ≥ 30 sec.			
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻⁴ Torr			
Holding Time ≥ 1 min.			
Particle Inspection (EP only)	No count		
Pressure : 60~80psi N ₂ Gas			
Sample Volume : 1CFM			
0.1μm and Larger			

PRODUCT GRADE

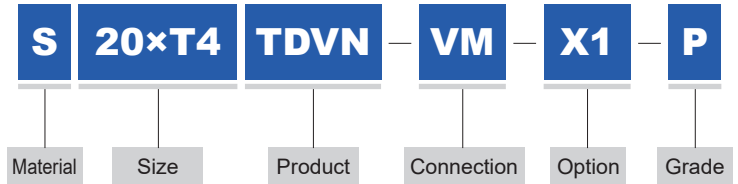
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40μm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0μm 10 μinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7μm 5 μinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Handle	Aluminum



ORDERING INFORMATION



MATERIAL	SIZE	CONNECTION	GRADE
S 316L Stainless Steel	20×T4	20A×1/4"	VM MFS Male AP AP Grade
D 316L Stainless Steel VAR	20×T6	20A×3/8"	VF MFS Female BLANK BA Grade
4S 304 Stainless Steel	20×T8	20A×1/2"	SW Lok P EP Grade
	20×T12	20A×3/4"	TW Buttt Weld

MODEL	CONNECTION	SIZE	A	B	C	D	E	H
	MFS Male	1/4"	98.5	11	64.3	26	40	115.5
		3/8"	122.6	16	76.8	28	40	136.2
		1/2"	122.6	16	76.8	28	40	136.2
		3/4"	158.9	22	82.8	28	40	172.5
	MFS Female	1/4"	105.9	11	64.3	26	40	122.9
		3/8"	114.5	16	76.8	28	40	131.5
		1/2"	114.5	16	76.8	28	40	131.5
		3/4"	141.8	22	82.8	28	40	172.5
	Lok	1/4"	105	11	64.3	26	40	114.7
		3/8"	118.5	16	76.8	28	40	135.5
		1/2"	118.5	16	76.8	28	40	135.5
		3/4"	155	22	82.8	28	40	168.6
	Buttt Weld	1/4"	97.2	11	64.3	26	40	114.2
		3/8"	126	16	76.8	28	40	143
		1/2"	126	16	76.8	28	40	143
		3/4"	155	16	82.8	28	40	168.6

LOW PRESSURE MANUAL DIAPHRAGM VALVE

WELD TEE & VALVE TYPE**FEATURES**

- Used in sub-main or after of the bulk gas piping system
- Developed for low cost
- Simple and easy to use
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Component parts are reduced to minimum

**MAJOR SPECIFICATIONS**

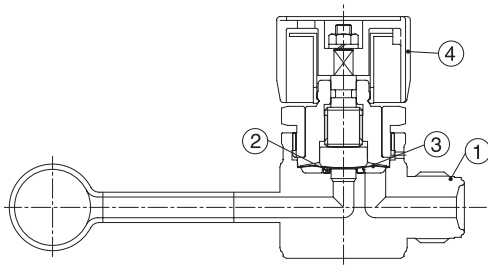
Size	1/4"	3/8", 1/2"	3/4"
Cv Value	0.3	0.7	0.7
Orifice Size	4.5mm	6.5mm	6.5mm
Max. Working Pressure (G.)	1MPa		
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C		
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻⁴ Torr			
Holding Time ≥ 30 sec.			
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻⁴ Torr			
Holding Time ≥ 1 min.			
Particle Inspection (EP only)	No count		
Pressure : 60~80psi N ₂ Gas			
Sample Volume : 1CFM			
0.1μm and Larger			

PRODUCT GRADE

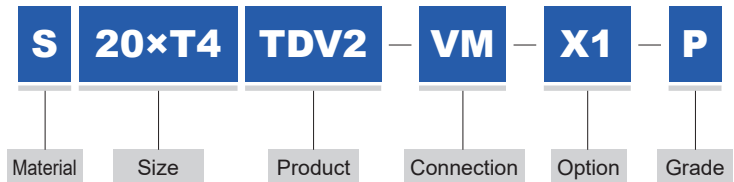
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40μm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0μm 10 μinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7μm 5 μinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Handle	HI-100



ORDERING INFORMATION



MATERIAL	SIZE	CONNECTION	GRADE
S 316L Stainless Steel	20xT4	20A×1/4"	VM MFS Male
D 316L Stainless Steel VAR	20xT6	20A×3/8"	VF MFS Female
4S 304 Stainless Steel	20xT8	20A×1/2"	SW Lok
	20xT12	20A×3/4"	TW Butt Weld

MODEL	CONNECTION	SIZE	A	B	C	D	E	H
	MFS Male	1/4"	99.9	11	66	17	45	113.5
		3/8"	121.5	16	77	28	45	135.1
		1/2"	121.5	16	77	28	45	135.1
		3/4"	158.9	22	85	28	45	172.5
	MFS Female	1/4"	105.9	11	66	17	45	123.8
		3/8"	135.8	16	77	28	45	149.4
		1/2"	135.8	16	77	28	45	149.4
		3/4"	141.8	22	85	28	45	155.4
	Lok	1/4"	98.4	11	66	17	45	112
		3/8"	117.5	16	77	28	45	131.1
		1/2"	118.5	16	77	28	45	132.1
		3/4"	155	22	85	28	45	168.6
	Butt Weld	1/4"	138.4	11	66	17	45	152
		3/8"	157	16	77	28	45	170.6
		1/2"	157	16	77	28	45	170.6
		3/4"	155	22	85	28	45	168.6

DOUBLE DUTY DIAPHRAGM VALVE

STD TYPE

FEATURES

- Low internal volume
- Minimal particle generation
- Minimal contributions of moisture, Oxygen and Hydrocarbon
- Permanently heat code laser marked ; material traceable to original mill certificate of test
- Ni-Co Alloy and custom configurations available upon request

PATENT NUMBER

- 10-2004-0074464
- 20-2004-0026738

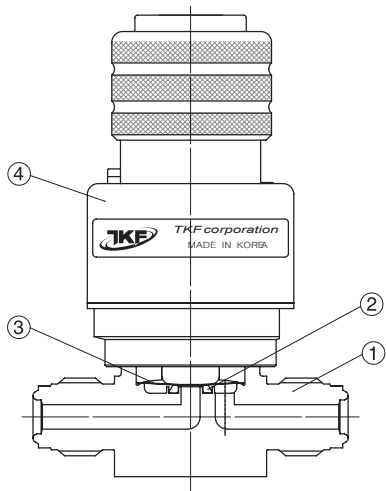


MAJOR SPECIFICATIONS

Size	1/4"
Cv Value	0.3
Orifice Size	4.5mm
Max. Working Pressure (G.)	1MPa
Operating Pressure (G.)	0.4~0.6MPa
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C
Internal Leakage Allowance (He)	
Test Pressure ≤ 1×10 ⁻² Torr	1×10 ⁻¹⁰ Pa · m ³ /s
Holding Time ≥ 15 sec.	
External Leakage Allowance (He)	
Test Pressure ≤ 1×10 ⁻² Torr	1×10 ⁻¹⁰ Pa · m ³ /s
Holding Time ≥ 1 min.	
Particle Inspection (EP only)	
Pressure : 60~80psi N ₂ Gas	No count
Sample Volume : 1CFM	
0.1μm and Larger	

PRODUCT GRADE

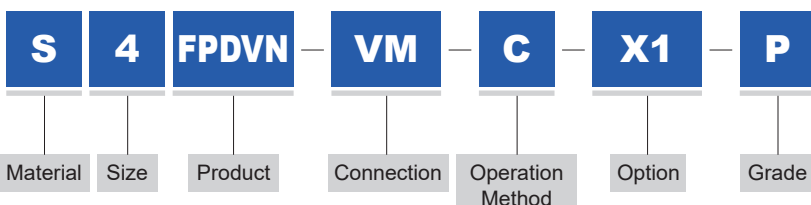
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40μm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0μm 10 μinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7μm 5 μinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Actuator	Aluminum

ORDERING INFORMATION



MATERIAL	SIZE	CONNECTION	OPERATION METHOD	GRADE
S 316L Stainless Steel	4 1/4"	VM MFS Male	C Normally Close	AP AP Grade
D 316L Stainless Steel VAR		VF MFS Female	O Normally Open	BLANK BA Grade
		SW Lok		P EP Grade
		TW Butt Weld		

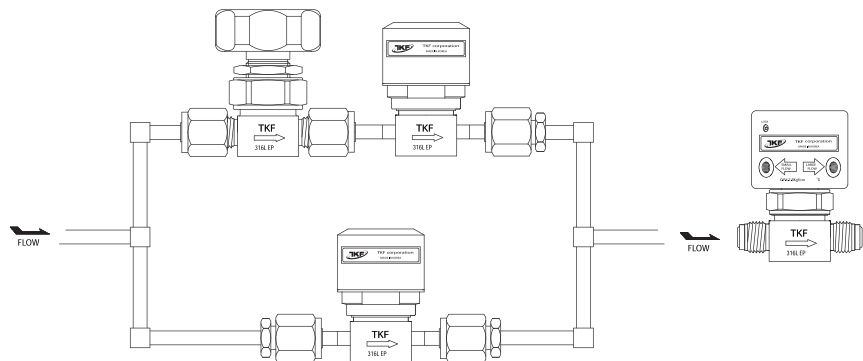
MODEL	CONNECTION	MFS MALE	MODEL	CONNECTION	MFS FEMALE
	SIZE	1/4"		SIZE	1/4"
	A	57		A	70.6
	B	11		B	11
	C	86		C	86
	D	ø38		D	ø38
	E	26		E	26
	F	25.4		F	25.4
	G	M5-TAP8		G	M5-TAP8
	SIZE	1/4"		SIZE	1/4"
	A	69.5		A	54
	B	11		B	11
	C	86		C	86
	D	ø38		D	ø38
	E	26		E	26
	F	25.4		F	25.4
	G	M5-TAP8		G	M5-TAP8

LOW PRESSURE DUAL FLOW PNEUMATIC DIAPHRAGM VALVE

STD TYPE

FEATURES

- Reduced inner capacity
- Highly resistant to corrosion using nickel-cobalt alloy diaphragm
- Minimal particle generation
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Permanently heat code laser marked, material traceable to original mill certificate of test
- Increased operation speed using aluminum piston



MAJOR SPECIFICATIONS

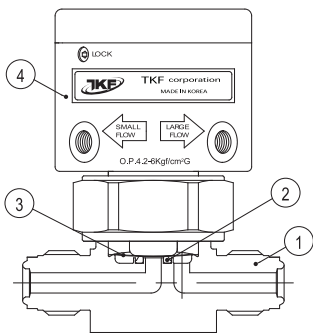
Size	1/4"
Cv Value	0.3
Orifice Size	3.5mm
Max. Working Pressure (G.)	1MPa
Operating Pressure (G.)	0.4 ~ 0.6MPa
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C
Internal Leakage Allowance (He)	
Test Pressure $\leq 1 \times 10^{-2}$ Torr	1×10^{-10} Pa · m ³ /s
Holding Time ≥ 15 sec.	
External Leakage Allowance (He)	
Test Pressure $\leq 1 \times 10^{-2}$ Torr	1×10^{-10} Pa · m ³ /s
Holding Time ≥ 1 min.	
Particle Inspection (EP only)	
Pressure : 60~80psi N ₂ Gas	No count
Sample Volume : 1CFM	
0.1 μ m and Larger	

PRODUCT GRADE

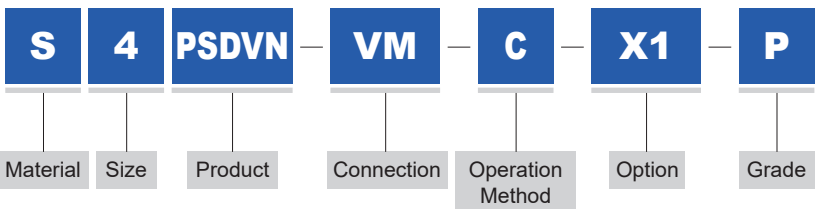
GRADE	AP	BA	EP
Inner Surface Roughness	Ry $\leq 40\mu$ m Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu$ m 10 μ inch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu$ m 5 μ inch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Actuator	Aluminum



ORDERING INFORMATION



	MATERIAL	SIZE	CONNECTION	OPERATION METHOD	GRADE
S	316L Stainless Steel	4 1/4"	VM MFS Male	C Normally Close	AP AP Grade
D	316L Stainless Steel VAR		VF MFS Female		BLANK BA Grade
4S	304 Stainless Steel		SW Lok		P EP Grade
			TW Buttt Weld		

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G
	MFS Male	1/4"	57	11	77.2	43.6	26	25.4	
	MFS Female	1/4"	70.6	11	77.2	43.6	26	25.4	
	Lok	1/4"	69.5	11	77.2	43.6	26	25.4	55
	Buttt Weld	1/4"	54	11	77.2	43.6	26	25.4	

LOW PRESSURE METAL DIAPHRAGM METERING VALVE

FLOW CONTROL TYPE**FEATURES**

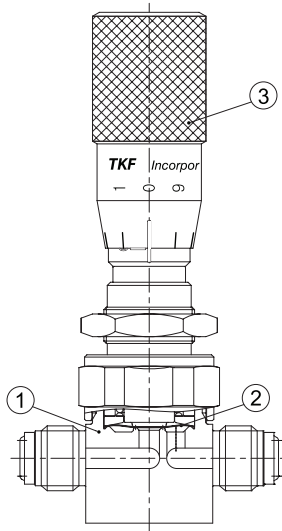
- Metal diaphragm metering valve
- Cv range from 0.25
- Valve for use in temperatures of up to 150°C
- Permanently heat code laser marked;
material traceable to original millcertificate of test

**MAJOR SPECIFICATIONS**

Size	1/4"
Cv Value	0.25
Orifice Size	4.5mm
Max. Working Pressure (G.)	1MPa
Max. Working Temp.	-10°C ~ 150°C
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s
Test Pressure ≤ 1×10 ⁻² Torr	
Holding Time ≥ 1 min.	
Particle Inspection (EP only)	
Pressure : 60~80psi N ₂ Gas	No count
Sample Volume : 1CFM	
0.1µm and Larger	

PRODUCT GRADE

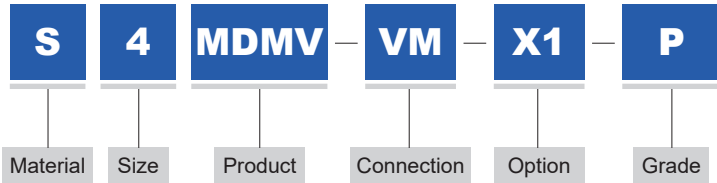
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR
2	Diaphragm	Ni-Co Alloy
3	Handle	Aluminum

ORDERING INFORMATION



MATERIAL		SIZE		CONNECTION		GRADE	
S	316L Stainless Steel	4	1/4"	VM	MFS Male	P	EP Grade
D	316L Stainless Steel VAR			VF	MFS Female		

STANDARD MODEL	CONNECTION	SIZE	A	B	C	D	E	F
	MFS Male	1/4"	57	11	119.3	25	26	25.4
	MFS Female	1/4"	70.6	11	119.3	25	26	25.4

LOW PRESSURE MANUAL DIAPHRAGM VALVE

FORGED BODY TYPE**FEATURES**

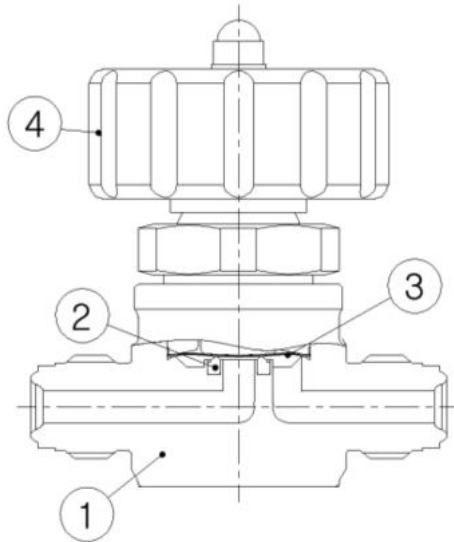
- Forged body using round bar stock
- Low internal volume
- Minimal particle generation
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Permanently heat code laser marked; material traceable to original mill certificate of test
- Hastelloy® C-22™ and custom configurations available upon request

**MAJOR SPECIFICATIONS**

Size	1/4"	3/8", 1/2"
Cv Value	0.3	0.7
Orifice Size	4.4mm	7mm
Max. Working Pressure (G.)	1MPa	
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI, PFA : -10°C ~ 150°C	
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10⁻² Torr		
Holding Time ≥ 30 sec.		
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10⁻² Torr		
Holding Time ≥ 1 min.		
Particle Inspection (EP only)	No count	
Pressure : 60~80psi N₂ Gas		
Sample Volume : 1CFM		
0.1µm and Larger		

PRODUCT GRADE

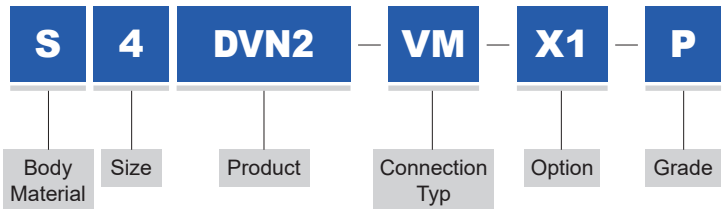
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE / PI / PFA
3	Diaphragm	Ni-Co Alloy
4	Handle	ABS

ORDERING INFORMATION



MATERIAL		SIZE		CONNECTION		GRADE	
S	316L Stainless Steel	4	1/4"	VM	MFS Male	AP	AP Grade
D	316L Stainless Steel VAR	6	3/8"	VF	MFS Female	BLANK	BA Grade
4S	304 Stainless Steel	8	1/2"	SW	Lok	P	EP Grade
				TW	Butt Weld		

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G
	MFS Male	1/4"	58	11	65.3	42	17	28	
		3/8"	76	16	75.5	42	28	38	
		1/2"	76	16	75.5	42	28	38	
	MFS Female	1/4"	78	11	65.3	42	17	28	
		3/8"	104.6	16	75.5	42	28	38	
		1/2"	104.6	16	75.5	42	28	38	
	Lok	1/4"	55	11	65.3	42	17	28	69.3
		3/8"	68	16	75.5	42	28	38	82.5
		1/2"	70	16	75.5	42	28	38	90.2
	Butt Weld	1/4"	135	11	65.3	42	17	28	
		3/8"	147	16	75.5	42	28	38	
		1/2"	147	16	75.5	42	28	38	

HIGH FLOW MANUAL DIAPHRAGM VALVE

STD TYPE

FEATURES

- Internally threadless and springless
- Fully functional from a vacuum to 275psig
- Aerodynamic, fully swept flow passages
- Minimum particle generation and particle areas
- 100% Helium leak tested



MAJOR SPECIFICATIONS

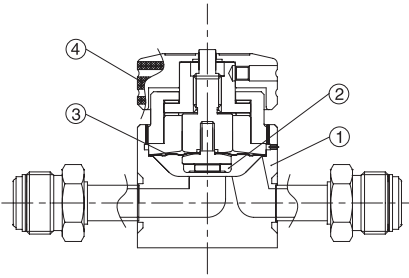
Size	1/2"	3/4", 1"
Cv Value	2.8	3.5
Max. Working Pressure (G.)	1.86MPa	
Max. Working Temp.	-10°C ~ 80°C	
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 30 sec.		
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 1 min.		
Particle Inspection (EP only)	No count	
Pressure : 60~80psi N ₂ Gas		
Sample Volume : 1CFM		
0.1µm and Larger		

PRODUCT GRADE

GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Disk	PCTFE
3	Diaphragm	316L Stainless Steel
4	Handle	Aluminum

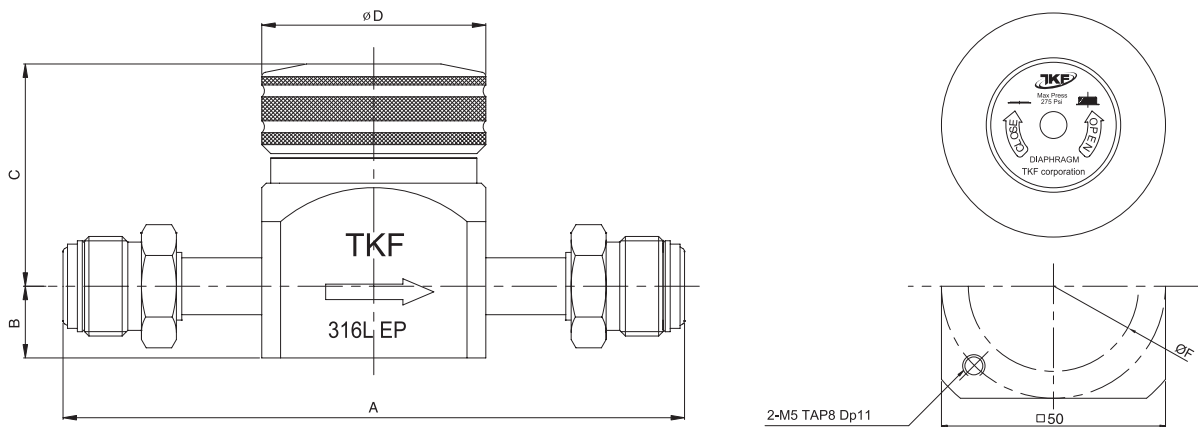


ORDERING INFORMATION

S	8	HFDV	VM	P2	PVF	X1	P
Material	Size	Product	Connection	Purge Port	Purge Port Connection	Option	Grade

MATERIAL		SIZE		CONNECTION	
S	316L Stainless Steel	8	1/2"	VM	MFS Male
D	316L Stainless Steel VAR	12	3/4"	VF	MFS Female
4S	304 Stainless Steel	16	1"	TW	Butt Weld

PURGE PORT LOCATION		PURGE PORT CONNECTIONS		GRADE	
P0	Outlet Side	PVM	1/4" MFS Male	AP	AP Grade
P1	Inlet and Outlet	PVF	1/4" MFS Female	BLANK	BA Grade
P2	Inlet Side			P	EP Grade
Blank	No Purge Port				



SIZE	CONNECTION	A	B	C	D	E
1/2"	VM	138.7	16	53.5	50	50
	VF	138.7	16	53.5	50	50
	TW	150	16	53.5	50	50
3/4"	VM	157.0	17.5	56.5	50	50
	VF	157.0	17.5	56.5	50	50
	TW	150	17.5	56.5	50	50
1"	VM	166	17.5	56.5	50	50
	VF	166	17.5	56.5	50	50
	TW	150	17.5	56.5	50	50

ULTRA HIGH FLOW MANUAL DIAPHRAGM VALVE

STD TYPE

FEATURES

- Internally threadless and springless
- Fully functional from a vacuum to 275psig
- Aerodynamic, fully swept flow passages
- Minimum particle generation and particle areas
- 100% Helium leak tested



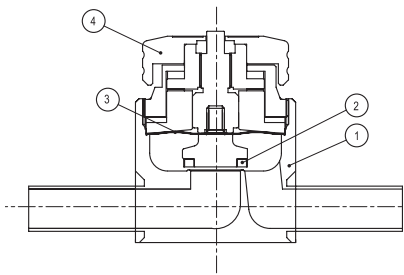
MAJOR SPECIFICATIONS

Size	3/4", 1", 1-1/2", 2"
Cv Value	10
Max. Working Pressure (G.)	1.86MPa
Max. Working Temp.	-10°C ~ 80°C
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s
Test Pressure ≤ 1×10 ⁻² Torr	
Holding Time ≥ 30 sec.	
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s
Test Pressure ≤ 1×10 ⁻² Torr	
Holding Time ≥ 1 min.	
Particle Inspection (EP only) Pressure : 60~80psi N ₂ Gas Sample Volume : 1CFM 0.1µm and Larger	No count

PRODUCT GRADE

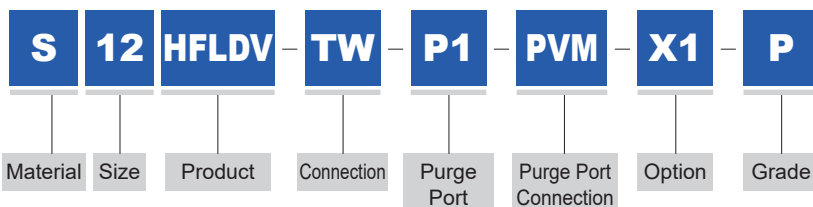
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL



NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Disk	PCTFE
3	Diaphragm	316L Stainless Steel
4	Handle	Aluminum

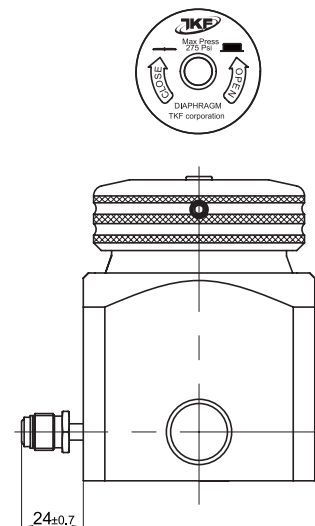
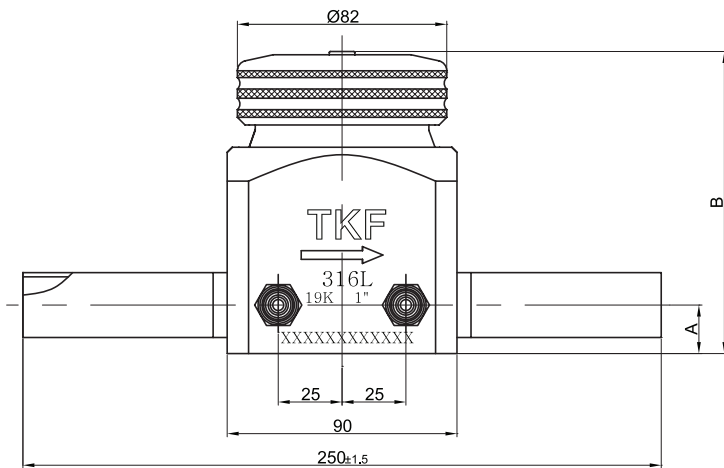
ORDERING INFORMATION



MATERIAL		SIZE		CONNECTION	
S	316L Stainless Steel	12	3/4"	TW	Butt Weld(3/4", 1", 1-1/2", 2")
D	316L Stainless Steel VAR	16	1"	VM	MFS Male(3/4", 1")
4S	304 Stainless Steel	24	1 - 1/2"	VF	MFS Female(3/4", 1")
		32	2"		

PURGE PORT LOCATION		PURGE PORT CONNECTIONS		GRADE	
P0	Outlet Side	PVM	1/4" MFS Male	AP	AP Grade
P1	Inlet and Outlet			BLANK	BA Grade
P2	Inlet Side	PVF	1/4" MFS Female	P	EP Grade
Blank	No Purge Port				

OUTSIDE DIMENSIONS		
	PORT SIZES	
	3/4", 1"	1-1/2", 2"
A	19	29.2
B	218	228



HIGH FLOW MANUAL BLOCK DIAPHRAGM VALVE

STD TYPE

FEATURES

- Internally threadless and springless
- Fully functional from a vacuum to 275psig
- Aerodynamic, fully swept flow passages
- Minimum particle generation and particle entrapment areas
- 100% Helium leak tested



MAJOR SPECIFICATIONS

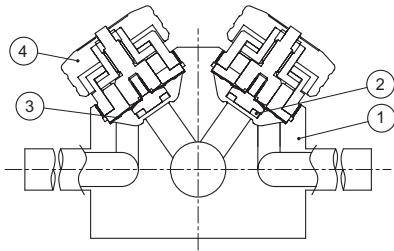
Size	Main : 1/2", 3/4", 1", 1-1/2", 2"	Branch : 1/4", 3/8", 1/2", 3/4", 1"
Cv Value	2.8	
Max. Working Pressure (G.)	1.86MPa	
Max. Working Temp.	-10°C ~ 80°C	
Internal Leakage Allowance (He)		
Test Pressure $\leq 1 \times 10^{-2}$ Torr	1×10^{-10} Pa · m ³ /s	
Holding Time ≥ 30 sec.		
External Leakage Allowance (He)		
Test Pressure $\leq 1 \times 10^{-2}$ Torr	1×10^{-10} Pa · m ³ /s	
Holding Time ≥ 1 min.		
Particle Inspection (EP only)		
Pressure : 60~80psi N ₂ Gas		
Sample Volume : 1CFM		
0.1 μ m and Larger	No count	

PRODUCT GRADE

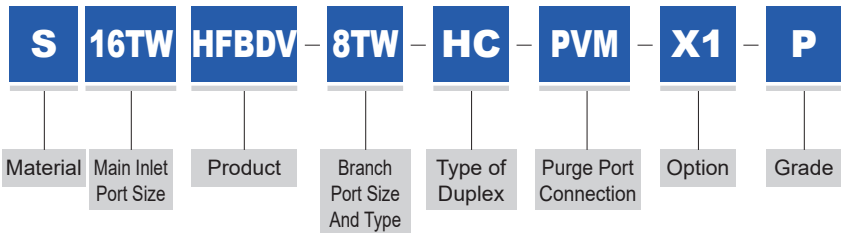
GRADE	AP	BA	EP
Inner Surface Roughness	Ry $\leq 40\mu$ m Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu$ m 10 μ inch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu$ m 5 μ inch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL

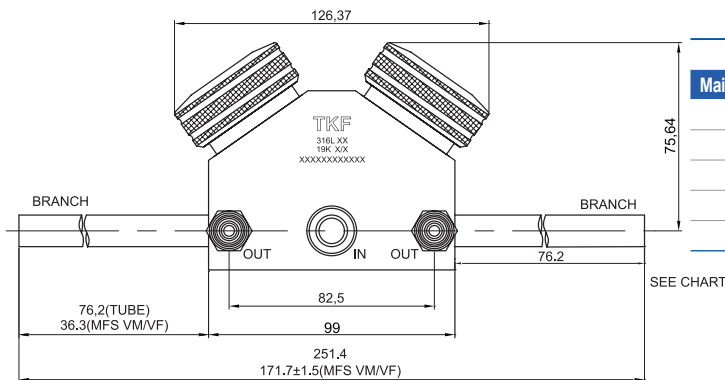
NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Disk	PCTFE
3	Diaphragm	316L Stainless Steel
4	Handle	Aluminum



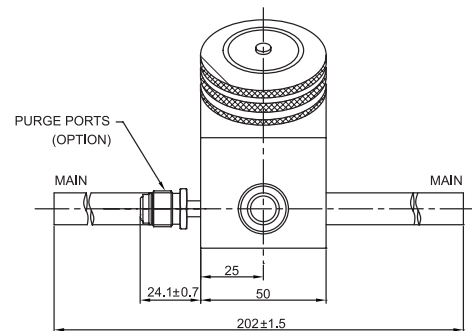
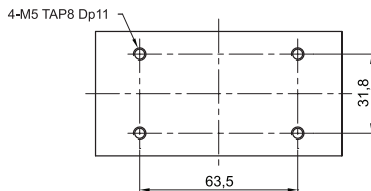
ORDERING INFORMATION



MATERIAL	MAIN INLET PORT SIZE	BRANCH PORT SIZE AND TYPE		TYPE OF DUPLEX		PURGE PORT CONNECTIONS		GRADE		
S 316L Stainless Steel	8TW	1/2" Tube	4TW	1/4" Tube	HC	Horizontal Cross	BLANK	NO	AP	AP Grade
D 316L Stainless Steel VAR	12TW	3/4" Tube	6TW	3/8" Tube	HT	Horizontal Tee	PVM	1/4" MFS Male	BLANK	BA Grade
4S 304 Stainless Steel	16TW	1" Tube	8TW	1/2" Tube	VT	Vertical Tee			P	EP Grade
	24TW	1-1/2" Tube	12TW	3/4" Tube						
	32TW	2" Tube	16TW	1" Tube						
		(Not available Vertical Tee)	8VM	1/2" MFS Male						
			8VF	1/2" MFS Female						



MAIN & BRANCH PORT LOCATION			
Main Port Tube Dia.	Horizontal Cross(HC)	Horizontal Tee(HT)	Vertical Tee(VT)
1/2"	15.7	15.7	15.7
3/4"	15.7	15.7	15.7
1"	15.7	15.7	15.7
1-1/2"	31.7	31.7	31.7
2"	31.7	31.7	N/A



HIGH PRESSURE MANUAL DIAPHRAGM VALVE

STD TYPE

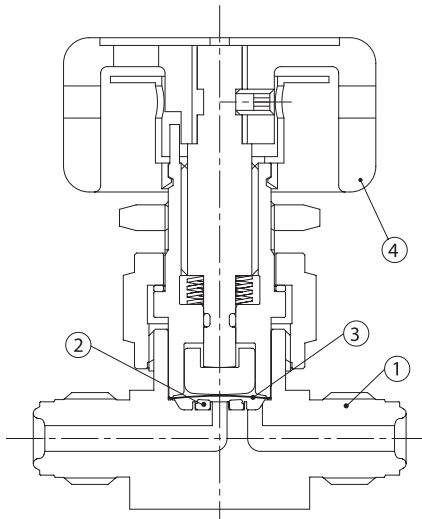


MAJOR SPECIFICATIONS

Size	1/4"
Cv Value	0.1
Orifice Size	2.3mm
Max. Working Pressure (G.)	23.5MPa
Max. Working Temp.	-10°C ~ 40°C
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s
Test Pressure ≤ 1×10 ⁻² Torr	
Holding Time ≥ 30 sec.	
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s
Test Pressure ≤ 1×10 ⁻² Torr	
Holding Time ≥ 1 min.	
Particle Inspection (EP only)	No count
Pressure : 60~80psi N ₂ Gas	
Sample Volume : 1CFM	
0.1μm and Larger	

PRODUCT GRADE

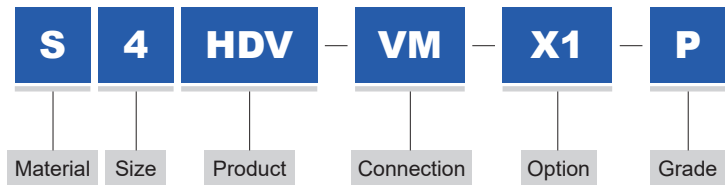
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40μm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0μm 10 μinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7μm 5 μinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE
3	Diaphragm	Ni-Co Alloy
4	Handle	Aluminum

ORDERING INFORMATION



MATERIAL	SIZE	CONNECTION	GRADE				
S	316L Stainless Steel	4	1/4"	VM	MFS Male	AP	AP Grade
D	316L Stainless Steel VAR			VF	MFS Female	BLANK	BA Grade
4S	304 Stainless Steel			SW	Lok	P	EP Grade
				TW	Butt Weld		

MODEL	CONNECTION	A	B	C	D	E	F	G	H	I	J
	MFS Male	57	11	74	48	28	25.4	28.5	3.5	M5	
	MFS Female	70.6	11	74	48	28	25.4	28.5	3.5	M5	
	Lok	55	11	74	48	28	25.4	28.5	3.5	M5	69.3
	Butt Weld	135	11	74	48	28	25.4	28.5	3.5	M5	

HIGH PRESSURE MANUAL DIAPHRAGM VALVE

SPRING TYPE

FEATURES

- HPL series diaphragm valves require just one-quarter turn of the handle to actuate the valve from fully open to closed.
- Position indicator ring provides visual confirmation that the valve is fully open or closed.
- Splined handle and actuator prevent handle slippage and assure positive valve actuator.
- Various end connections are available
(MFS Male, MFS Female, Lok)

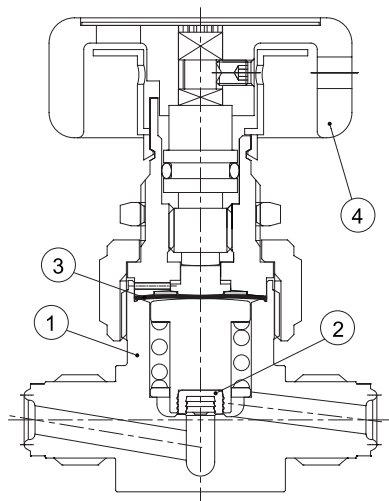


MAJOR SPECIFICATIONS

Size	1/4"
Cv Value	0.3
Orifice Size	4.5mm
Max. Working Pressure (G.)	24.1MPa
Max. Working Temp.	-73°C ~ 80°C
Internal Leakage Allowance (He)	
Test Pressure $\leq 1 \times 10^{-2}$ Torr	1×10^{-10} Pa · m ³ /s
Holding Time ≥ 30 sec.	
External Leakage Allowance (He)	
Test Pressure $\leq 1 \times 10^{-2}$ Torr	1×10^{-10} Pa · m ³ /s
Holding Time ≥ 1 min.	
Particle Inspection (EP only)	
Pressure : 60~80psi N ₂ Gas	No count
Sample Volume : 1CFM	
0.1µm and Larger	

PRODUCT GRADE

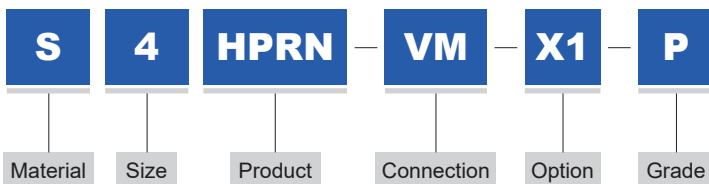
GRADE	AP	BA	EP
Inner Surface Roughness	Ry $\leq 40\mu\text{m}$ Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu\text{m}$ 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu\text{m}$ 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR
2	Seat	PCTFE / PFA
3	Diaphragm	Ni-Co Alloy
4	Handle	Aluminum

ORDERING INFORMATION

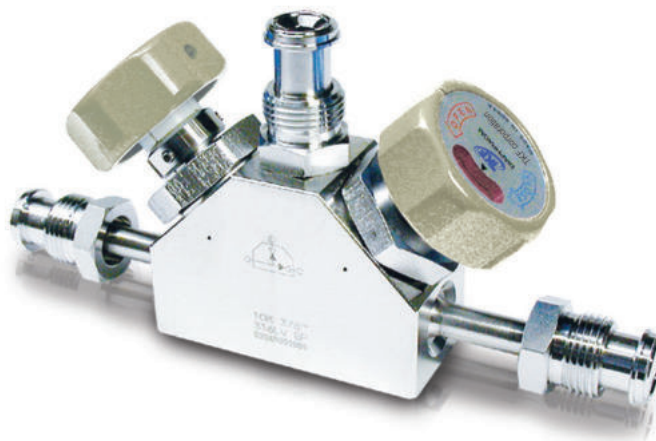


	MATERIAL	SIZE	HANDLE	CONNECTION	GRADE
S	316L Stainless Steel	4	1/4"	HPR Round Handle	VM MFS Male AP AP Grade
D	316L Stainless Steel VAR			HPL Lever Handle	VF MFS Female BLANK BA Grade
				SW Lok	P P EP Grade

ROUND HANDLE	CONNECTION	SIZE	A	B	C	D	E	F
	MFS Male	1/4"	58.4	11.4	76	48	26.9	25.4
	MFS Female	1/4"	70.1	11.4	76	48	26.9	25.4
	Lok	1/4"	68.2	11.4	76	48	26.9	25.4

HIGH PRESSURE MANUAL BLOCK DIAPHRAGM VALVE

STD TYPE



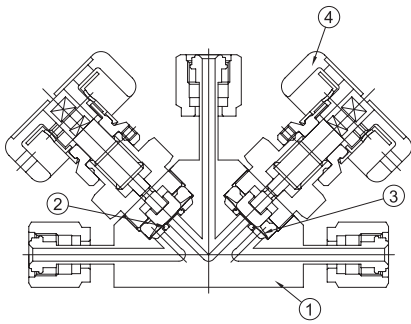
MAJOR SPECIFICATIONS

Size	1/4"
Cv Value	0.1
Orifice Size	2.3mm
Max. Working Pressure (G.)	23.5MPa
Max. Working Temp.	-10°C ~ 40°C
Internal Leakage Allowance (He)	
Test Pressure $\leq 1 \times 10^{-2}$ Torr	1×10^{-10} Pa · m ³ /s
Holding Time ≥ 30 sec.	
External Leakage Allowance (He)	
Test Pressure $\leq 1 \times 10^{-2}$ Torr	1×10^{-10} Pa · m ³ /s
Holding Time ≥ 1 min.	
Particle Inspection (EP only)	
Pressure : 60~80psi N ₂ Gas	No count
Sample Volume : 1CFM	
0.1 μ m and Larger	

PRODUCT GRADE

GRADE	AP	BA	EP
Inner Surface Roughness	Ry $\leq 40\mu$ m Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu$ m 10 μ inch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu$ m 5 μ inch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL



NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR
2	Seat	PCTFE
3	Diaphragm	Ni-Co Alloy
4	Handle	Aluminum

ORDERING INFORMATION

S
4
HBDV
VM
1T23
X1
P

Material Size Product Connection Flow Option Grade

MATERIAL	SIZE	CONNECTION	FLOW	GRADE
S 316L Stainless Steel	4 1/4"	VF MFS Female	1T25	AP AP Grade
D 316L Stainless Steel VAR			5T12	BLANK BA Grade
			1T23	P EP Grade
			3T12	

MODEL	FLOW	MODEL	FLOW	MODEL	FLOW	MODEL	FLOW
	1T25		1T23		5T12		3T12

MODEL	FLOW	SIZE	A	B	C	D	E	F	G	H
	1T25	1/4"	21.8	11	74.4	53.8	126.7	64	15	40
	1T23	1/4"	21.8	11	74.4	34.8	126.7	64	15	40

HIGH PRESSURE MANUAL DIAPHRAGM VALVE

BRANCH TYPE



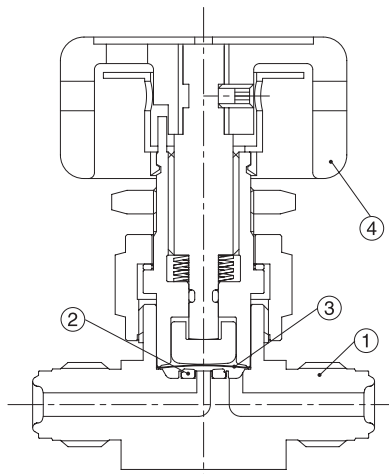
MAJOR SPECIFICATIONS

Size	1/4"
Cv Value	0.1
Orifice Size	2.3mm
Max. Working Pressure (G.)	23.5MPa
Max. Working Temp.	-10°C ~ 40°C
Internal Leakage Allowance (He)	
Test Pressure $\leq 1 \times 10^{-2}$ Torr	1×10^{-10} Pa · m ³ /s
Holding Time ≥ 30 sec.	
External Leakage Allowance (He)	
Test Pressure $\leq 1 \times 10^{-2}$ Torr	1×10^{-10} Pa · m ³ /s
Holding Time ≥ 1 min.	
Particle Inspection (EP only)	
Pressure : 60~80psi N ₂ Gas	No count
Sample Volume : 1CFM	
0.1 μ m and Larger	

PRODUCT GRADE

GRADE	AP	BA	EP
Inner Surface Roughness	Ry $\leq 40\mu$ m Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu$ m 10 μ inch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu$ m 5 μ inch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL



NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE
3	Diaphragm	Ni-Co Alloy
4	Handle	Aluminum

ORDERING INFORMATION

S
4
HDV3
VM
12T3
X1
P

Material Size Product Connection Flow Option Grade

MATERIAL	SIZE	CONNECTION	FLOW	GRADE
S 316L Stainless Steel	4 1/4"	VM MFS Male		AP AP Grade
D 316L Stainless Steel VAR		VF MFS Female		BLANK BA Grade
4S 304 Stainless Steel		SW Lok		P EP Grade
		TW Butt Weld		

MODEL	CONNECTION	A	B	C	D	E	F	G	H
	MFS Male	57	11	73	48		25.4	28.5	3.5
	MFS Female	70.6	11	73	48		25.4	28.5	3.5
	Lok	69.3	11	73	48	13.5	25.4	28.5	3.5
	Butt Weld	135	11	73	48		25.4	28.5	3.5

HIGH PRESSURE PNEUMATIC DIAPHRAGM VALVE

STD TYPE

FEATURES

- Highly resistant to corrosion using nickel-cobalt alloy diaphragm
- Minimal particle generation
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Permanently heat code laser marked; material traceable to original mill certificate of test
- Increased operation speed using aluminum piston

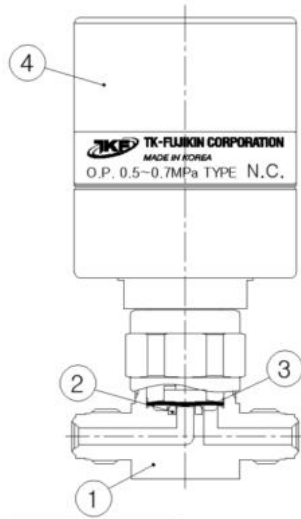


MAJOR SPECIFICATIONS

Size	1/4"	1/2"
Cv Value	0.28	0.7
Orifice Size	4.4mm	8mm
Max. Working Pressure (G.)	20.5MPa	
Operating Pressure (G.)	0.5 ~ 0.7MPa	
Max. Working Temp.	PCTFE : -10°C ~ 40°C	
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 15 sec.		
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 1 min.		
Particle Inspection (EP only)	No count	
Pressure : 60~80psi N ₂ Gas		
Sample Volume : 1CFM		
0.1μm and Larger		

PRODUCT GRADE

GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40μm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0μm 10 μinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7μm 5 μinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless steel 316L Stainless steel VAR 304 Stainless Steel
2	Seat	PCTFE
3	Diaphragm	Ni-Co Alloy
4	Actuator	Aluminum

ORDERING INFORMATION

S
4
HPDVN
VM
C
X1
P

Body Material
Size
Product
Connection Type
Operation Method
Option
Grade

	MATERIAL	SIZE	CONNECTION	OPTION	GRADE
S	316L Stainless Steel	4 1/4"	VM MFS Male	C Normally Close	AP AP Grade
D	316L Stainless Steel VAR	8 1/2"	VF MFS Female		BLANK BA Grade
4S	304 Stainless Steel				P EP Grade

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G
	MFS Male	1/4"	58.7	11.1	119.8	57.5	18	28	
		1/2"	82.5	18.3	134.1	57.5	27	44.3 x 38	
	MFS Female	1/4"	76.2	11.1	119.8	57.5	18	28	
		1/2"	114.3	18.3	134.1	57.5	27	44.3 x 38	

HIGH PRESSURE MANUAL DIAPHRAGM VALVE

STD TYPE

FEATURES

- Highly resistant to corrosion using nickel-cobalt alloy diaphragm
- Minimal particle generation
- Permanently heat code laser marked; material traceable to original mill certificate of test
- Electropolished, D.I. water cleaned, assembled, tested and packed in a certified clean room

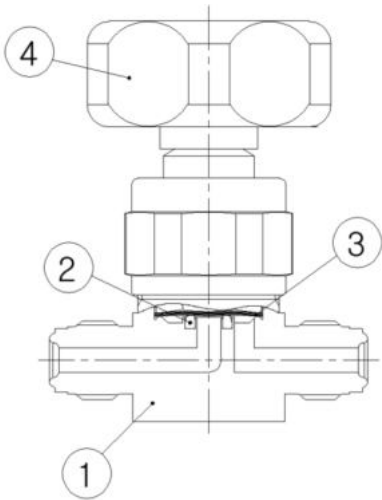


MAJOR SPECIFICATIONS

Size	1/4"	1/2"
Cv Value	0.29	0.7
Orifice Size	4.4mm	7mm
Max. Working Pressure (G.)	20.6MPa	
Max. Working Temp.	PCTFE : -40°C ~ 71°C	PCTFE : -40°C ~ 65°C
Internal Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 30 sec.		
External Leakage Allowance (He)	1x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 1 min.		
Particle Inspection (EP only)	No count	
Pressure : 60~80psi N ₂ Gas		
Sample Volume : 1CFM 0.1µm and Larger		

PRODUCT GRADE

GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE
3	Diaphragm	Ni-Co Alloy
4	Handle	Aluminum

ORDERING INFORMATION

S
4
HDVN
VM
X1
P

Body Material
Size
Product
Connection Type
Option
Grade

	MATERIAL	SIZE	CONNECTION	GRADE
S	316L Stainless Steel	4	1/4"	VM MFS Male AP AP Grade
D	316L Stainless Steel VAR	8	1/2"	VF MFS Female BLANK BA Grade
4S	304 Stainless Steel			P EP Grade

MODEL	CONNECTION	SIZE	A	B	C	D	E	F
	MFS Male	1/4"	58.7	11.1	72.8	48	18	28
		1/2"	82.5	18.3	87	48	27	44.3 X 38
	MFS Female	1/4"	76.2	11.1	72.8	48	18	28
		1/2"	114.3	18.3	87	48	27	44.3 X 38

LOW PRESSURE MANUAL BELLOWS VALVE

STD TYPE

FEATURES

- Minimize the dead space
- Installation can be made either panel-mount or bottom-mount
- Handle with open/close indicator is standardized

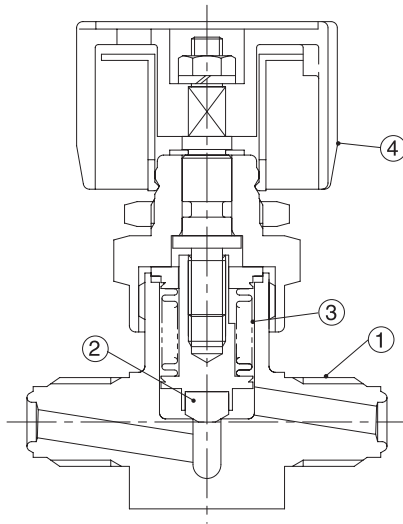


MAJOR SPECIFICATIONS

Size	1/4"	3/8", 1/2"	3/4"
Cv Value	0.36	1.1	2.6
Orifice Size	4.5mm	8mm	12mm
Max. Working Pressure (G.)	1MPa		
Max. Working Temp.	PCTFE : -10°C ~ 80°C / PI : -10°C ~ 150°C		
Internal Leakage Allowance (He)	4x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻² Torr			
Holding Time ≥ 30 sec.			
External Leakage Allowance (He)	4x10 ⁻¹⁰ Pa · m ³ /s		
Test Pressure ≤ 1×10 ⁻² Torr			
Holding Time ≥ 1 min.			
Particle Inspection (EP only)	No count		
Pressure : 60~80psi N ₂ Gas			
Sample Volume : 1CFM			
0.1μm and Larger			

PRODUCT GRADE

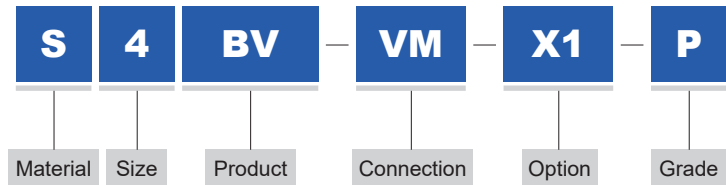
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40μm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0μm 10 μinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7μm 5 μinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Disk	PCTFE / PI
3	Bellows	316L Stainless Steel
4	Handle	1/4" ~ 1/2" : HI-100, 3/4" : Aluminum

ORDERING INFORMATION



MATERIAL		SIZE		CONNECTION		OPTION		GRADE	
S	316L Stainless Steel	4	1/4"	VM	MFS Male	X259	PI Disk	AP	AP Grade
D	316L Stainless Steel VAR	6	3/8"	VF	MFS Female			BLANK	BA Grade
4S	304 Stainless Steel	8	1/2"	SW	Lok			P	EP Grade
		12	3/4"	TW	Butt Weld				

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G	H	J	L
	MFS Male	1/4"	58	14	79	45	23	25	30	2	18.5	
		3/8"	60	16	85	45	23	25	36.5	2	18.5	
		1/2"	60	16	85	45	23	25	36.5	2	18.5	
		3/4"	125	22	124	65	32	33	58	6	24	
	MFS Female	1/4"	70.5	14	79	45	23	25	30	2	18.5	
		3/8"	90	14	85	45	23	25	36.5	2	18.5	
		1/2"	90	14	85	45	23	25	36.5	2	18.5	
		3/4"	115	22	124	65	32	33	58	6	24	
	Lok	1/4"	50	14	79	45	23	25	30	2	18.5	64
		3/8"	63	14	85	45	23	25	36.5	2	18.5	78
		1/2"	63	14	85	45	23	25	36.5	2	18.5	83.5
		3/4"	80	22	124	65	32	33	58	6	24	101
	Butt Weld	1/4"	150	14	85	45	23	25	36.5	2	18.5	
		3/8"	150	14	85	45	23	25	36.5	2	18.5	
		1/2"	150	14	85	45	23	25	36.5	2	18.5	
		3/4"	158	22	124	65	32	33	58	6	24	

LOW PRESSURE PNEUMATIC BELLOWS VALVE

STD TYPE

FEATURES

- Reduced inner capacity
- Electropolished, D.I. water cleaned, assembled, tested and packaged in a certified clean room
- Minimal contributions of Moisture, Oxygen and Hydrocarbon
- Permanently heat code laser marked; material traceable to original mill certificate of test

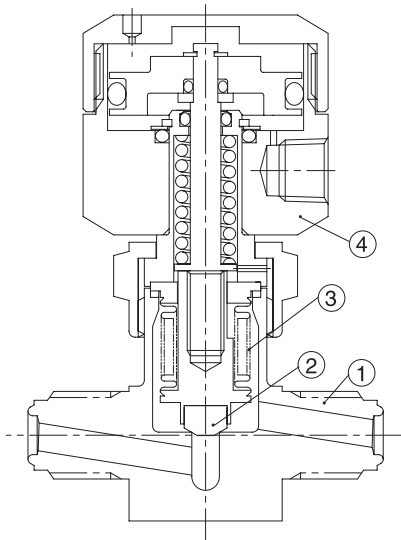


MAJOR SPECIFICATIONS

Size	1/4"	3/8", 1/2"
Cv Value	0.36	1.1
Orifice Size	4.5mm	8mm
Max. Working Pressure (G.)	1MPa	
Operating Pressure (G.)	0.4 ~ 0.6MPa	
Max. Working Temp.	-10°C ~ 80°C	
Internal Leakage Allowance (He) Test Pressure ≤ 1×10 ⁻² Torr Holding Time ≥ 15 sec.	4×10 ⁻¹⁰ Pa · m ³ /s	
External Leakage Allowance (He) Test Pressure ≤ 1×10 ⁻² Torr Holding Time ≥ 1 min.	4×10 ⁻¹⁰ Pa · m ³ /s	
Particle Inspection (EP only) Pressure : 60~80psi N ₂ Gas Sample Volume : 1CFM 0.1µm and Larger	No count	

PRODUCT GRADE

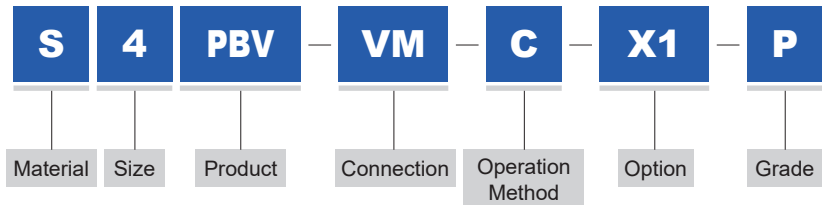
GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Disk	PCTFE
3	Bellows	316L Stainless Steel
4	Actuator	Aluminum

ORDERING INFORMATION



MATERIAL	SIZE	CONNECTION	OPERATION METHOD	GRADE
S 316L Stainless Steel	4 1/4"	VM MFS Male	C Normally Close	AP AP Grade
D 316L Stainless Steel VAR	6 3/8"	VF MFS Female	O Normally Open	BLANK BA Grade
4S 304 Stainless Steel	8 1/2"	SW Lok		P EP Grade
		TW Butt Weld		

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	H
	MFS Male	1/4"	58	14	82.6	40	23	25	
		3/8"	60	16	88.7	40.6	23	25	
		1/2"	60	16	88.7	40.6	23	25	
	MFS Female	1/4"	70.5	14	82.6	40	23	25	
		3/8"	90	14	86.7	40.6	23	25	
		1/2"	90	14	86.7	40.6	23	25	
	Lok	1/4"	50	14	82.6	40	23	25	64
		3/8"	63	14	86.7	40.6	23	25	78
		1/2"	63	14	86.7	40.6	23	25	83.5
	Butt Weld	1/4"	150	14	89.1	40	23	25	
		3/8"	150	14	86.7	40.6	23	25	
		1/2"	150	14	86.7	40.6	23	25	

LOW PRESSURE MANUAL BELLOWS METERING VALVE

FLOW CONTROL TYPE**FEATURES**

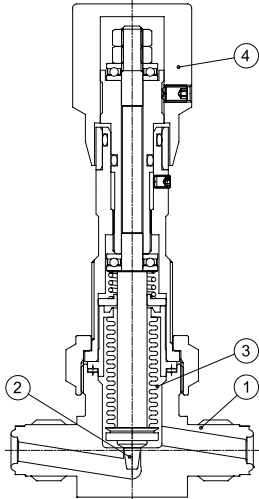
- Reduced inner capacity
- Precise Micrometer Handle
- Precisely processed Stem Assembly: No backlash enables control of even a very small flow
- Metal Gasket (standard feature): Improves heat resistance

**MAJOR SPECIFICATIONS**

Size	1/4"(4BMVS)	1/4"(4BMVM)
Cv Value	0.02	0.3
Orifice Size	1.4mm	4.5mm
Max. Working Pressure (G.)	1MPa	
Max. Working Temp.	-10°C ~ 150°C	
Internal Leakage Allowance	-	
External Leakage Allowance (He)	-	
Test Pressure $\leq 1 \times 10^{-2}$ Torr Holding Time ≥ 1 min.	1×10^{-10} Pa · m ³ /s	
Particle Inspection (EP only) Pressure : 60~80psi N ₂ Gas Sample Volume : 1CFM 0.1 μ m and Larger	No count	

PRODUCT GRADE

GRADE	AP	BA	EP
Inner Surface Roughness	Ry $\leq 40\mu$ m Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu$ m 10 μ inch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu$ m 5 μ inch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Stem	316L Stainless Steel
3	Bellows	316L Stainless Steel
4	Handle	Aluminum

ORDERING INFORMATION

S	4	BMV	S	VM	X1	P
Body Material	Connection Size	Product	Orifice	Connection	Option	Grade

MATERIAL	SIZE	ORIFICE	CONNECTION	GRADE
S 316L Stainless Steel	4 1/4"	S 1.4mm	VM MFS Male	AP AP Grade
D 316L Stainless Steel VAR		M 4.0mm	VF MFS Female	BLANK BA Grade
4S 304 Stainless Steel				P EP Grade

MODEL	SIZE	TYPE	A	B	C	D	E	F	H	J	K
	1/4"	4BMVS	57	11	120	28	25.4	26	12	19.5	27
		4BMVM	57	11	120	28	25.4	26	12	19.5	27
	1/4"	4BMVS	70.6	11	120	28	25.4	26	12	19.5	27
		4BMVM	70.6	11	120	28	25.4	26	12	19.5	27

LOW PRESSURE MANUAL BELLOWS VALVE

FORGED A TYPE**FEATURES**

- Forged body reduced the total weight
- The valve seat is designed to produce less dust and gas residue
- Handle colors available on request

**MAJOR SPECIFICATIONS**

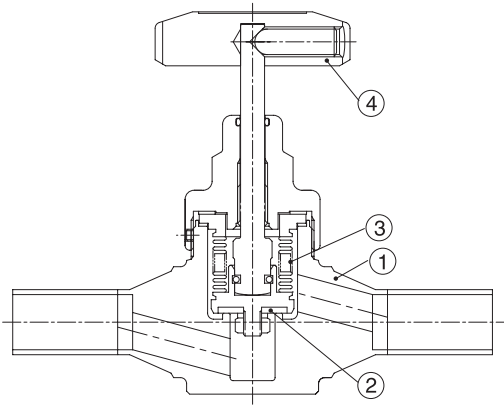
Size	15A	1"	20A	25A
Cv Value	2.9	4.1	4.1	6.9
Orifice Size	15mm	19mm	19mm	25mm
Max. Working Pressure (G.)	1MPa			
Max. Working Temp.	-10°C ~ 80°C			
Internal Leakage Allowance (He) Test Pressure ≤ 1×10 ⁻² Torr Holding Time ≥ 30 sec.	1×10 ⁻⁶ Pa · m ³ /s			
External Leakage Allowance (He) Test Pressure ≤ 1×10 ⁻² Torr Holding Time ≥ 1 min.	1×10 ⁻⁶ Pa · m ³ /s			
Particle Inspection (EP only) Pressure : 60~80psi N ₂ Gas Sample Volume : 1CFM 0.1μm and Larger	No count			

PRODUCT GRADE

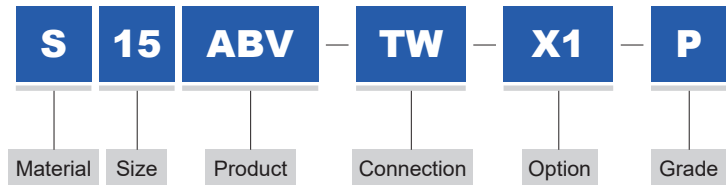
GRADE	AP	BA	EP
Inner Surface Roughness	1/4"~1", 15A~100A Ra ≤ 40μm 125A~ Ra ≤ 100μm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0μm 10 μinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7μm 5 μinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Disk	PTFE
3	Bellows	316L Stainless Steel
4	Handle	Aluminum



ORDERING INFORMATION



MATERIAL		SIZE		CONNECTION		GRADE	
S	316L Stainless Steel	15	15A	TW	Butt Weld	AP	AP Grade
D	316L Stainless Steel VAR	T16	1"	FL	Flange(JIS 10K)	BLANK	BA Grade
4S	304 Stainless Steel	20	20A			P	EP Grade
		25	25A				

MODEL	CONNECTION	SIZE	A	B	C	D	E	G	L
	Butt Weld	15A	190	24	131	65	30		
		1"	200	28	143	65	35		
		20A	200	28	143	65	35		
		25A	210	33	161	79	40		

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G	N-H
	Flange	15A	108	47.5	155	65	95	70	51	4-Ø15
		1"	117	50	165	65	100	75	56	4-Ø15
		20A	117	50	165	65	100	75	56	4-Ø15
		25A	127	62.5	191	79	125	90	67	4-Ø19

LOW PRESSURE PNEUMATIC BELLOWS VALVE

FORGED A TYPE**FEATURES**

- Forged body reduced the total weight
- The valve seat is designed to produce less dust and gas residue

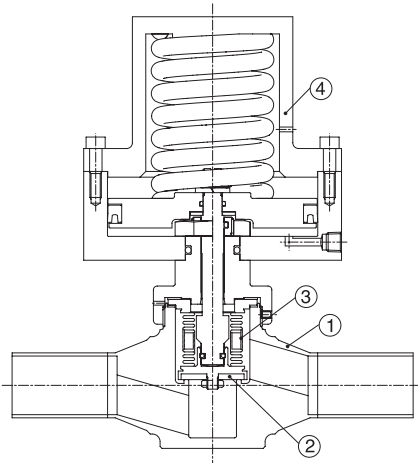
**MAJOR SPECIFICATIONS**

Size	15A	1"	20A	25A
Cv Value	2.9	4.1	4.1	6.9
Orifice Size	15mm	19mm	19mm	25mm
Max. Working Pressure (G.)	1MPa			
Operating Pressure (G.)	0.4 ~ 0.7MPa			
Max. Working Temp.	-10°C ~ 80°C			
Internal Leakage Allowance (He)				
Test Pressure $\leq 1 \times 10^{-2}$ Torr	1x10 ⁻⁶ Pa · m ³ /s			
Holding Time ≥ 15 sec.				
External Leakage Allowance (He)				
Test Pressure $\leq 1 \times 10^{-2}$ Torr	1x10 ⁻⁶ Pa · m ³ /s			
Holding Time ≥ 1 min.				
Particle Inspection (EP only)				
Pressure : 60~80psi N ₂ Gas				
Sample Volume : 1CFM				
0.1μm and Larger	No count			

PRODUCT GRADE

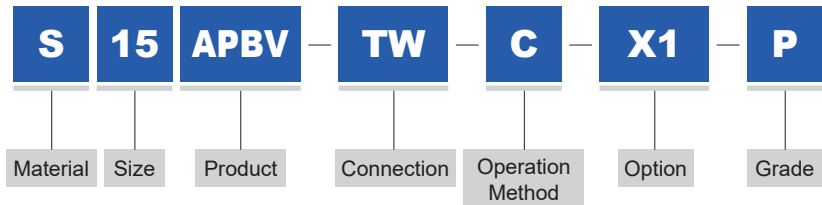
GRADE	AP	BA	EP
Inner Surface Roughness	1/4"~1", 15A~100A Ry $\leq 40\mu\text{m}$ 125A~ Ry $\leq 100\mu\text{m}$ Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu\text{m}$ 10 μinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu\text{m}$ 5 μinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL



NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Disk	PCTFE
3	Bellows	316L Stainless Steel
4	Actuator	Aluminum

ORDERING INFORMATION



MATERIAL	SIZE	CONNECTION	OPERATION METHOD	GRADE
S 316L Stainless Steel	15 15A	TW Butt Weld	C Normally Close	AP Grade
D 316L Stainless Steel VAR	T16 1"	FL Flange (JIS 10K)	O Normally Open	BA Grade
4S 304 Stainless Steel	20 20A			P EP Grade
	25 25A			

MODEL	CONNECTION	SIZE	A	B	C	D	E
	Butt Weld	15A	190	24	204	110	30
		1"	200	28	215	135	35
		20A	200	28	215	135	35
		25A	210	33	226	135	40

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G	N-H
	Flange	15A	108	47.5	228	110	95	70	51	4-Ø15
		1"	117	50	237	135	100	75	56	4-Ø15
		20A	117	50	237	135	100	75	56	4-Ø15
		25A	127	62.5	256	135	125	90	67	4-Ø19

LOW PRESSURE MANUAL BELLOWS VALVE (32A ~ 50A)

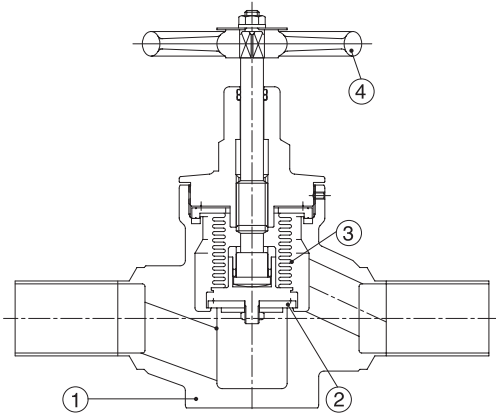
FORGED A TYPE**MAJOR SPECIFICATIONS**

Size	32A	40A	2"	50A
Cv Value	16	16	16	21
Orifice Size	40mm	40mm	40mm	45mm
Max. Working Pressure (G.)	1MPa			
Max. Working Temp.	-10°C ~ 80°C			
Internal Leakage Allowance (He) Test Pressure $\leq 1 \times 10^{-2}$ Torr Holding Time ≥ 30 sec.	1x10 ⁻⁶ Pa · m ³ /s			
External Leakage Allowance (He) Test Pressure $\leq 1 \times 10^{-2}$ Torr Holding Time ≥ 1 min.	1x10 ⁻⁶ Pa · m ³ /s			
Particle Inspection (EP only) Pressure : 60~80psi N ₂ Gas Sample Volume : 1CFM 0.1μm and Larger	No count			

PRODUCT GRADE

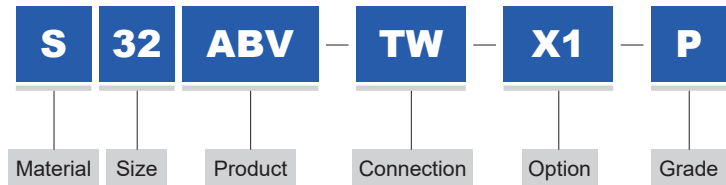
GRADE	AP	BA	EP
Inner Surface Roughness	1/4"~1", 15A~100A Ry $\leq 40\mu\text{m}$ 125A~ Ry $\leq 100\mu\text{m}$ Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu\text{m}$ 10 μinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu\text{m}$ 5 μinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL



NO.	NAME	MATERIAL
1	Body	SCS16 SCS13
2	Disk	PTFE
3	Bellows	316L Stainless Steel
4	Handle	SCS13

ORDERING INFORMATION



MATERIAL		SIZE		CONNECTION		GRADE	
S	SCS16	32	32A	TW	Butt Weld	AP	AP Grade
4S	SCS13	40	40A	FL	Flange(JIS 10K)	BLANK	BA Grade
		T32	2"			P	EP Grade
		50	50A				

MODEL	CONNECTION	SIZE	A	B	C	D
	Butt Weld	32A	270	51	239	125
		40A	270	51	239	125
		2"	270	51	239	125
		50A	295	61	295	160

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G	N-H
	Flange	32A	165	67.5	256.0	125	135	100	76	4-Ø19
		40A	165	70.0	258.0	125	140	105	81	4-Ø19
		2"	165	70.0	258.0	125	140	105	81	4-Ø19
		50A	203	77.5	311.5	160	155	120	96	4-Ø19

LOW PRESSURE MANUAL BELLOWS VALVE (65A ~ 500A)

CASTING A TYPE

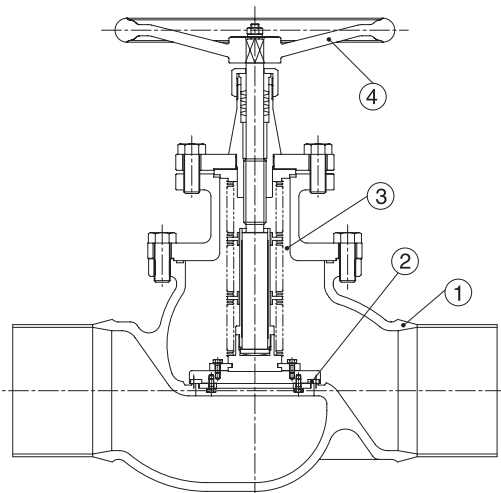


MAJOR SPECIFICATIONS

Size	65A	80A	100A	125A	150A	200A	250A	300A	350A	400A	450A	500A
Cv Value	81	132	200	302	434	772	1200	1600	2000	2650	3100	3400
Orifice Size	65	80	100	124	148	200	250	300	350	400	450	490
Max. Working Pressure (G.)	1MPa											
Max. Working Temp.	-10°C ~ 80°C											
Internal Leakage Allowance (He) Test Pressure $\leq 1 \times 10^{-2}$ Torr Holding Time ≥ 30 sec.	1x10 ⁻⁶ Pa · m ³ /s											
External Leakage Allowance (He) Test Pressure $\leq 1 \times 10^{-2}$ Torr Holding Time ≥ 1 min.	1x10 ⁻⁶ Pa · m ³ /s											
Particle Inspection (EP only) Pressure : 60~80psi N ₂ Gas Sample Volume : 1CFM 0.1 μ m and Larger	No count											

PRODUCT GRADE

GRADE	AP	BA	EP
Inner Surface Roughness	1/4"~1", 15A~100A Ry $\leq 40\mu$ m 125A~ Ry $\leq 100\mu$ m Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu$ m 10 μ inch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu$ m 5 μ inch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	SCS16 SCS13
2	Disk	PTFE
3	Bellows	316L Stainless Steel
4	Handle	SCS13

ORDERING INFORMATION

S	65	ABV	TW	X1	P
Material	Size	Product	Connection	Option	Grade

MATERIAL		SIZE		CONNECTION		GRADE	
S	SCS16	65	65A	TW	Butt Weld	AP	AP Grade
4S	SCS13	80	80A	FL	Flange(JIS 10K)	BLANK	BA Grade
		100	100A			P	EP Grade
		125	125A				
		150	150A				
		200	200A				
		250	250A				
		300	300A				
		350	350A				
		400	400A				
		450	450A				
		500	500A				

MODEL	CONNECTION	SIZE	A	B	C	D
	Butt Weld	65A	416	68	347	160
		80A	441	80	381	200
		100A	492	94	476	200
		125A	556	111	616	300
		150A	606	126	632	300
		200A	795	157	847	400
		250A	1022	190	1085	450
		300A	1100	216	1228	500
		350A	1187	241	1286	710
		400A	1314	268	1318	710
450A	1440	305	1454	800		

MODEL	CONNECTION	SIZE	A	B	C	D
	Flange	65A	216	87.5	367	160
		80A	241	92.5	394	200
		100A	292	105	487	200
		125A	356	125	630	300
		150A	406	140	646	300
		200A	495	165	855	400
		250A	622	200	1095	450
		300A	698	222.5	1235	500
		350A	787	245	1290	710
		400A	914	280	1330	710
450A	1040	310	1579	800		
500A	1040	338	1630	800		

NOTE : When order for 50A Size, part no. must be 50 ABV-TW-X388 / 50ABV-FL-X388

LOW PRESSURE PNEUMATIC BELLOWS VALVE (32A ~ 50A)

CASTING A TYPE

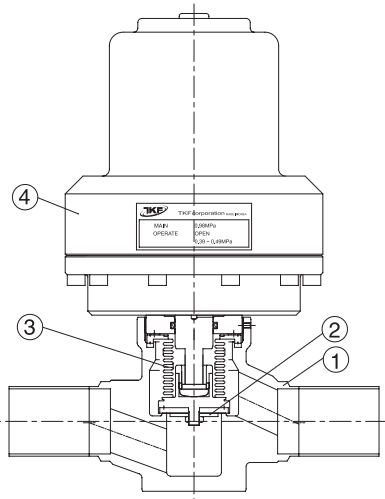


MAJOR SPECIFICATIONS

Size	32A	40A	2"	50A
Cv Value	16	16	16	21
Orifice Size	40mm	40mm	40mm	45mm
Max. Working Pressure (G.)	1MPa			
Operating Pressure (G.)	0.4 ~ 0.7MPa			
Max. Working Temp.	-10°C ~ 80°C			
Internal Leakage Allowance (He)				
Test Pressure $\leq 1 \times 10^{-2}$ Torr	1x10 ⁻⁶ Pa · m ³ /s			
Holding Time ≥ 15 sec.				
External Leakage Allowance (He)				
Test Pressure $\leq 1 \times 10^{-2}$ Torr	1x10 ⁻⁶ Pa · m ³ /s			
Holding Time ≥ 1 min.				
Particle Inspection (EP only)				
Pressure : 60~80psi N ₂ Gas	No count			
Sample Volume : 1CFM				
0.1 μ m and Larger				

PRODUCT GRADE

GRADE	AP	BA	EP
Inner Surface Roughness	1/4"~1", 15A~100A Ry $\leq 40\mu$ m 125A~ Ry $\leq 100\mu$ m Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu$ m 10 μ inch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu$ m 5 μ inch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	SCS16 SCS13
2	Disk	PTFE
3	Bellows	316L Stainless Steel
4	Actuator	Aluminum

ORDERING INFORMATION

S
40
APBV
TW
C
X1
P

Material
Size
Product
Connection
Operation Method
Option
Grade

MATERIAL		SIZE		CONNECTION		OPERATION METHOD		GRADE	
S	SCS16	32	32A	TW	Butt Weld	C	Normally Close	AP	AP Grade
4S	SCS13	40	40A	FL	Flange (JIS 10K)	O	Normally Open	BLANK	BA Grade
		T32	2"					P	EP Grade
		50	50A						

MODEL	CONNECTION	SIZE	A	B	C	D
	Butt Weld	32A	270	51	309	188
		40A	270	51	309	188
		2"	270	51	309	188
		50A	295	57	350	188

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G	N-H
	Flange	32A	165	67.5	309	188	135	100	76	4-Ø19
		40A	165	70.0	309	188	140	105	81	4-Ø19
		2"	165	70.0	309	188	140	105	81	4-Ø19
		50A	203	77.5	350	188	155	120	96	4-Ø19

LOW PRESSURE FULL FLOW MANUAL BELLOWS VALVE

Y TYPE

FEATURES

- Achieved large Cv value
- Inner surface has uniform surface roughness
- The valve seat is designed to produce less dust and gas residue
- Cast steel valves suitable for works demanding strength, shock resistance, elongation and heat resistance(40A~200A)

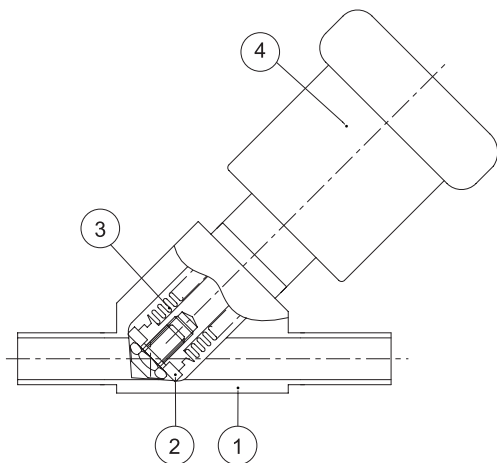


MAJOR SPECIFICATIONS

Size	1/2"	3/4"	1"
Cv Value	17	23	38
Max. Working Pressure (G.)	1MPa		
Max. Working Temp.	-10°C ~ 80°C		
Internal Leakage Allowance (He) Test Pressure $\leq 1 \times 10^2$ Torr Holding Time ≥ 30 sec.	4x10 ⁻¹⁰ Pa · m ³ /s		1x10 ⁻⁶ Pa · m ³ /s
External Leakage Allowance (He) Test Pressure $\leq 1 \times 10^2$ Torr Holding Time ≥ 1 min.	4x10 ⁻¹⁰ Pa · m ³ /s		1x10 ⁻⁶ Pa · m ³ /s
Particle Inspection (EP only) Pressure : 60~80psi N ₂ Gas Sample Volume : 1CFM 0.1 μ m and Larger	No count		No count

PRODUCT GRADE

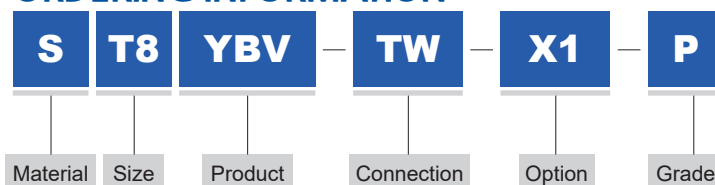
GRADE	AP	BA	EP
Inner Surface Roughness	1/4"~1", 15A~100A Ry $\leq 40\mu$ m 125A~ Ry $\leq 100\mu$ m Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu$ m 10 μ inch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu$ m 5 μ inch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Disk	PCTFE / PTFE
3	Bellows	316L Stainless Steel
4	Handle	Aluminum

ORDERING INFORMATION



MATERIAL		SIZE				CONNECTION		GRADE	
S	316L Stainless Steel	T8	1/2"	80	80A	TW	Butt Weld	AP	AP Grade
D	316L Stainless Steel VAR	T12	3/4"	100	100A			BLANK	BA Grade
4S	304 Stainless Steel	T16	1"	125	125A			P	EP Grade
S	SCS16(40A~200A)	40	40A	150	150A				
4S	SCS13(40A~200A)	50	50A	200	200A				
		65	65A						

MODEL	CONNECTION	SIZE	A	B	C	D
	Butt Weld	1/2"	180	8.4	109	52
		3/4"	200	11.5	127	59
	Butt Weld	1"	257	17.7	187	65

LOW PRESSURE FULL / HALF FLOW PNEUMATIC BELLOWS VALVE

YPBV TYPE

FEATURES

- Achieved large Cv value
- Inner surface has uniform surface roughness
- The valve seat is designed to produce less dust and gas residue



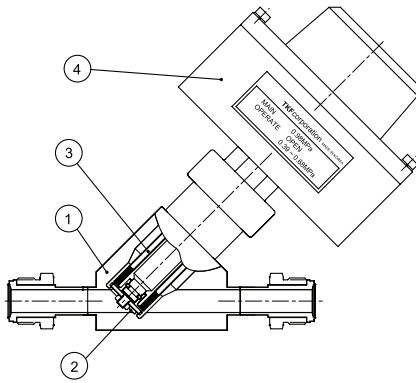
MAJOR SPECIFICATIONS

Size	FULL FLOW		HALF FLOW
	1/2"	3/4"	1"
Cv Value	17	20	36
Max. Working Pressure (G.)	1MPa		
Operating Pressure (G.)	1/2"~1" : 0.4 ~ 0.7MPa		
Max. Working Temp.	-10°C ~ 80°C		
Internal Leakage Allowance (He) Test Pressure $\leq 1 \times 10^{-2}$ Torr Holding Time ≥ 30 sec.	1x10 ⁻⁶ Pa · m ³ /s		
External Leakage Allowance (He) Test Pressure $\leq 1 \times 10^{-2}$ Torr Holding Time ≥ 1 min.	1x10 ⁻⁶ Pa · m ³ /s		
Particle Inspection (EP only) Pressure : 60~80psi N ₂ Gas Sample Volume : 1CFM 0.1 μ m and Larger	No count		

PRODUCT GRADE

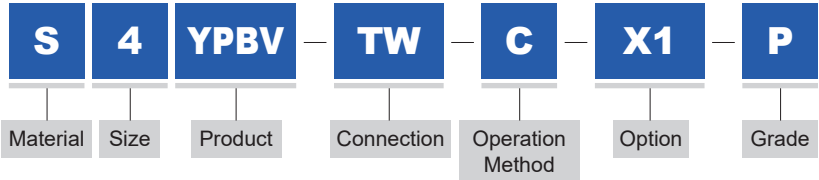
GRADE	AP	BA	EP
Inner Surface Roughness	1/4"~1", 15A~100A Ry $\leq 40\mu$ m 125A~ Ry $\leq 100\mu$ m Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu$ m 10 μ inch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu$ m 5 μ inch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL



NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Disk	PCTFE / PTFE
3	Bellows	316L Stainless Steel
4	Actuator	Aluminum

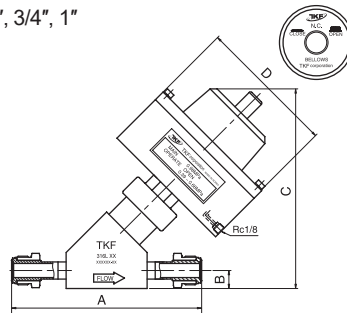
ORDERING INFORMATION



MATERIAL		SIZE		PRODUCT		CONNECTION		OPERATION METHOD		GRADE	
S	316L Stainless Steel	T8	1/2"	YPBVK	Full Flow	VM	MFS Male	C	Normally Close	AP	AP Grade
D	316L Stainless Steel VAR	T12	3/4"	YPHBVK	Half Flow	VF	MFS Female	O	Normally Open	BLANK	BA Grade
4S	304 Stainless Steel	T16	1"			TW	Butt Weld			P	EP Grade

MODEL

BODY SIZE : 1/2", 3/4", 1"



Full Flow

CONNECTION	SIZE	A	B	C	D
VM	1/2"	162	15	175	120
VM	3/4"	211.2	20	222	155
TW	3/4"	260	20	222	155
VM	1"	214	17.7	230	169
TW	1"	270	17.7	230	169

Half Flow

CONNECTION	SIZE	A	B	C	D
VM	1/2"	162	15	175	120
VM	3/4"	211.2	20	228	155
TW	3/4"	260	20	228	155
VM	1"	214	17.7	228	169
TW	1"	270	17.7	228	169

HIGH FLOW MANUAL BELLOWS VALVE

STD TYPE

FEATURES

- Achieved large Cv value
- The valve seat is designed to produce less dust and gas residue.
- Electropolished, D.I. water cleaned, assembled, tested and packaged in a certified clean room



MAJOR SPECIFICATIONS

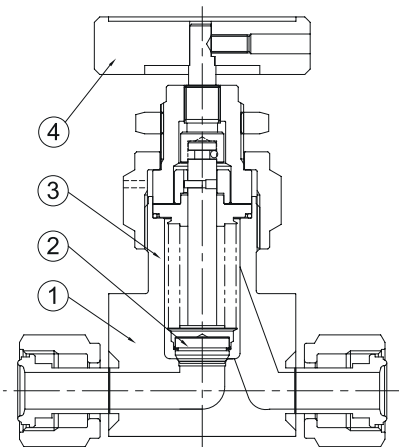
Size	1/2"	3/4"
Cv Value	2.0	2.8
Orifice Size	10.2mm	12.0mm
Max. Working Pressure (G.)	1MPa	
Max. Working Temp.	-10°C ~ 80°C	
Internal Leakage Allowance (He) Test Pressure $\leq 1 \times 10^{-2}$ Torr Holding Time ≥ 30 sec.	5x10 ⁻¹⁰ Pa · m ³ /s	
External Leakage Allowance (He) Test Pressure $\leq 1 \times 10^{-2}$ Torr Holding Time ≥ 1 min.	5x10 ⁻¹⁰ Pa · m ³ /s	
Particle Inspection (EP only) Pressure : 60~80psi N ₂ Gas Sample Volume : 1CFM 0.1μm and Larger	No count	

PRODUCT GRADE

GRADE	AP	BA	EP
Inner Surface Roughness	Ry $\leq 40\mu\text{m}$ Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu\text{m}$ 10 μinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu\text{m}$ 5 μinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish

MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Disk	PCTFE
3	Bellows	316L SS
4	Handle	Aluminum



ORDERING INFORMATION

S	8	HFBV	VF	X1	P
Body Material	Size	Product	Connection Type	Option	Grade

MATERIAL	SIZE	CONNECTION	GRADE
S 316L Stainless Steel	8 1/2"	VM MFS Male	AP AP Grade
D 316L Stainless Steel VAR	12 3/4"	VF MFS Female	BLANK BA Grade
4S 304 Stainless Steel			P EP Grade

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G
	MFS Male	1/2"	76.2	11.1	111.9	60	40	34	22.6
		3/4"	85	22	119.5	60	40	40	22.6
	MFS Female	1/2"	102.6	12.7	117.2	60	52	34	22.6
		3/4"	149	22	118.5	60	47	34	22.6

HIGH FLOW PNEUMATIC BELLOWS VALVE

STD TYPE

FEATURES

- Achieved large Cv value
- The valve seat is designed to produce less dust and gas residue.
- Electropolished, D.I. water cleaned, assembled, tested and packaged in a certified clean room

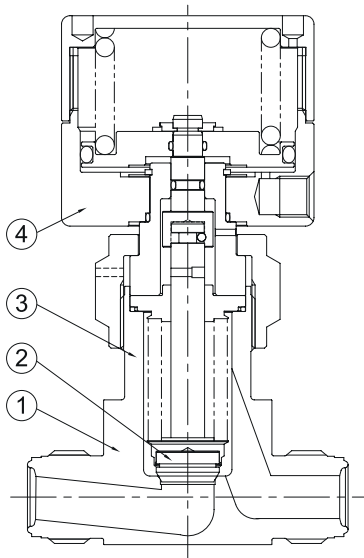


MAJOR SPECIFICATIONS

Size	1/2"	3/4"
Cv Value	2.0	2.8
Orifice Size	10.2mm	12.0mm
Max. Working Pressure (G.)	1MPa	
Operating Pressure (G.)	0.34 ~ 0.59MPa	
Max. Working Temp.	-10°C ~ 80°C	
Internal Leakage Allowance (He)	5x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 30 sec.		
External Leakage Allowance (He)	5x10 ⁻¹⁰ Pa · m ³ /s	
Test Pressure ≤ 1×10 ⁻² Torr		
Holding Time ≥ 1 min.		
Particle Inspection (EP only)	No count	
Pressure : 60~80psi N ₂ Gas		
Sample Volume : 1CFM		
0.1µm and Larger		

PRODUCT GRADE

GRADE	AP	BA	EP
Inner Surface Roughness	Ry ≤ 40µm Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry ≤ 3.0µm 10 µinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7µm 5 µinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Disk	PCTFE
3	Bellows	316L SS
4	Actuator	Aluminum

ORDERING INFORMATION

S	8	HFPBV	VM	C	X1	P
Body Material	Size	Product	Connection Type	Operation Method	Option	Grade

MATERIAL	SIZE	CONNECTION	OPTION	GRADE
S 316L Stainless Steel	8 1/2"	VM MFS Male	C Normally Close	AP AP Grade
D 316L Stainless Steel VAR	12 3/4"	VF MFS Female	O Normally Open	BLANK BA Grade
4S 304 Stainless Steel				P EP Grade

MODEL	CONNECTION	SIZE	A	B	C	D	E	F	G
	MFS Male	1/2"	76.2	11.1	125.7	60	40	34	22.6
		3/4"	85	22	133.4	60	40	40	22.6
	MFS Female	1/2"	102.6	12.7	131	60	52	34	22.6
		3/4"	149	22	132.4	60	47	34	22.6

CHECK VALVE

STD TYPE

FEATURES

- Using SUS316L as a material , corrosion resistance is improved
- All-welded design provides reliable containment of system fluid
- Conserves panel space
- Noise free operations
- Cleanroom assembled and packaged

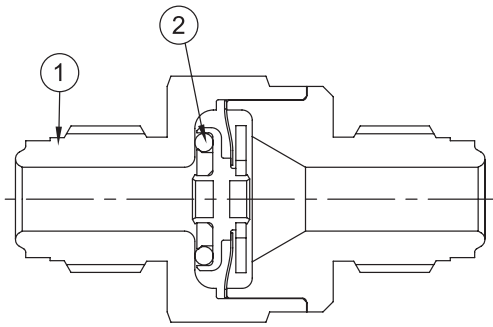


MAJOR SPECIFICATIONS

Size	1/4"	3/8", 1/2"
Cv Value	0.55	0.7
Max. Working Pressure (G.)	20.6MPa	
Nominal Reseal Pressure (G.)	27.6KPa	
Nominal Cracking Pressure (G.)	13.8KPa	
Max. Working Temp.	-10°C ~ 80°C	
External Leakage Allowance (He) Test Pressure $\leq 1 \times 10^{-2}$ Torr Holding Time ≥ 1 min.	1x10 ⁻¹⁰ Pa · m ³ /s	
Particle Inspection (EP only) Pressure : 60~80psi N ₂ Gas Sample Volume : 1CFM 0.1μm and Larger	No count	

PRODUCT GRADE

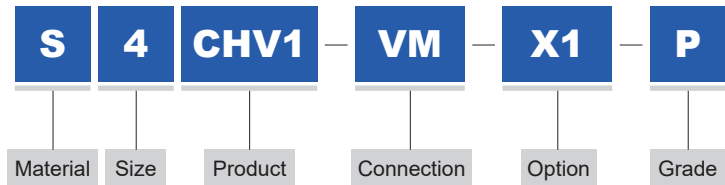
GRADE	AP	BA	EP
Inner Surface Roughness	Ry $\leq 40\mu\text{m}$ Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu\text{m}$ 10 μinch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu\text{m}$ 5 μinch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR
2	Seal Ring	FKM / Neoprene /
3	Spring	Hastelloy C-22

ORDERING INFORMATION



MATERIAL		SIZE		CONNECTION		GRADE	
S	316L Stainless Steel	4	1/4"	VM	MFS Male	AP	AP Grade
D	316L Stainless Steel VAR	8	1/2"			BLANK	BA Grade
						P	EP Grade

MODEL	CONNECTION	SIZE	A	B
	MFS Male	1/4"	45.8	22
		1/2"	52.3	27

HIGH PRESSURE CYLINDER VALVE

DIAPHRAGM SEAL TYPE

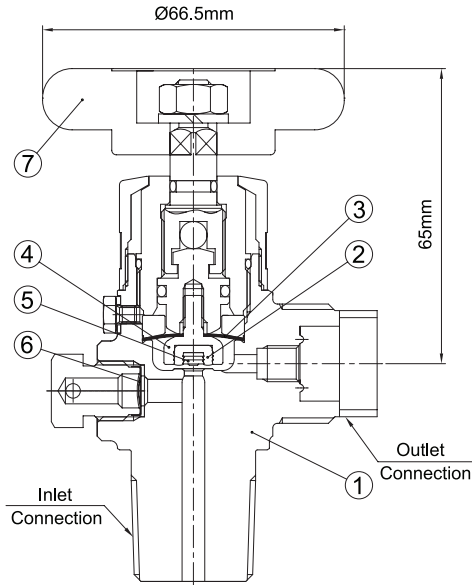
FEATURES

- Ultra high purity gas available
- Minimized dead space
- Springless type
- Handwheel smoothly control
- Secondary sealing type
- Outlet connection changeable
(CGA, CGA DISS, DIN, JIS Standard)



MAJOR SPECIFICATIONS

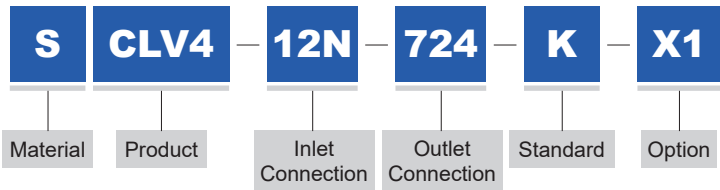
Cv Value	0.35
Orifice Size	4mm
Max. Working Pressure (G.)	20.6MPa
Max. Working Temp.	-40°C ~ 70°C
Internal Leakage Allowance (He) Test Pressure $\leq 1 \times 10^{-2}$ Torr Holding Time ≥ 30 sec.	1×10^{-10} Pa · m ³ /s
External Leakage Allowance (He) Test Pressure $\leq 1 \times 10^{-2}$ Torr Holding Time ≥ 1 min.	1×10^{-10} Pa · m ³ /s
Particle Inspection Pressure : 60~80psi N ₂ Gas Sample Volume : 1CFM 0.1 μ m and Larger	No count
Inner Surface Roughness	Ry $\leq 3.0\mu$ m 10 μ inch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE
3	Diaphragm	Ni-Co Alloy
4	Seat Holder	316L Stainless Steel
5	Seat Pin	316L Stainless Steel
6	Burst Disc	Nickel
7	Handle	Aluminum

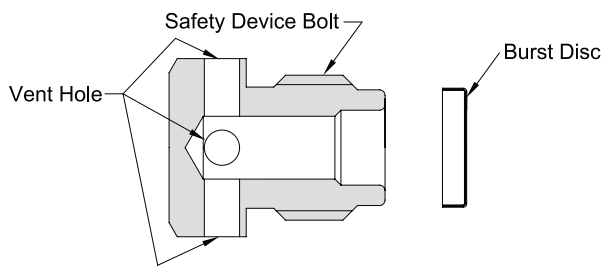
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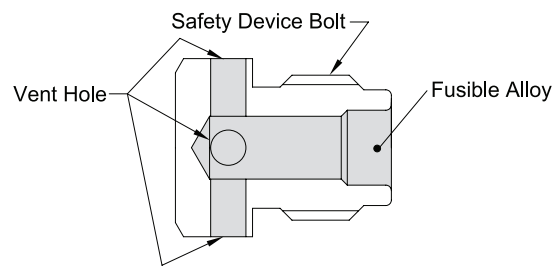
MATERIAL	INLET CONNECTION	OUTLET CONNECTION	STANDARD
S 316L Stainless Steel	8N 1/2"-14NGT Thread	632 CGA632	K KS Standard
D 316L Stainless Steel VAR	12N 3/4"-14NGT Thread	640 CGA640	G CGA Standard
4S 304 Stainless Steel	16N 1"-11 1/2NGT Thread	724 CGA724	
	W28 W28-14	W22 W22-14	
	⋮ (Customer Option)	⋮ (Customer Option)	

SAFETY DEVICES

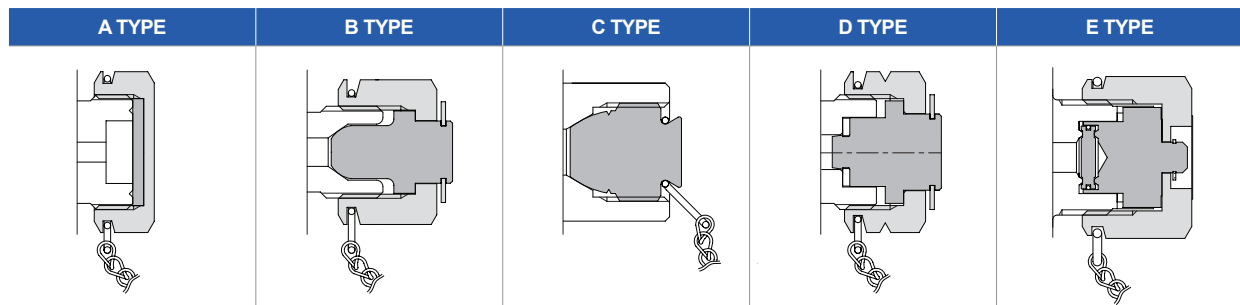
■ Burst Disc



■ Fusible Alloy (option)



OUTLET CAP DESIGNS



- A TYPE : CGA 170, 180, 320, 330, 660, 670
- B TYPE : CGA 290, 326, 346, 350, 540
- C TYPE : CGA 296, 510, 580, 590
- D TYPE : CGA 678, 679
- E TYPE : CGA DISS SERIES (632 ~ 642, 712 ~ 728)

HIGH PRESSURE MANUAL METERING VALVE

FLOW CONTROL TYPE**FEATURES**

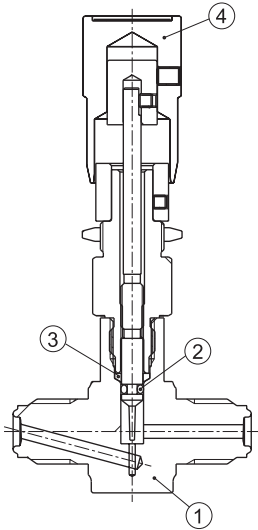
- Precisely tapered valve stem accurately controls flow
- 316L forged body construction
- Panel or in-line mounting
- IN-line patterns
- Valve stem thread not in contact with process fluid
- Optional handle

**MAJOR SPECIFICATIONS**

Size	1/4"
Cv Value	0.03
Stem Taper	3°
Tums to Open	9+/-1
Orifice Size	1.35mm
Max. Working Pressure (G.)	6.89MPa
Max. Working Temp.	-10°C ~ 150°C
External Leakage Allowance (He) Test Pressure $\leq 1 \times 10^{-2}$ Torr Holding Time ≥ 1 min.	1×10^{-10} Pa · m ³ /s
Particle Inspection (EP only) Pressure : 60~80psi N ₂ Gas Sample Volume : 1CFM 0.1 μ m and Larger	No count

PRODUCT GRADE

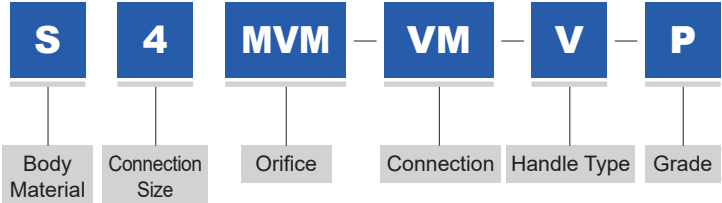
GRADE	AP	BA	EP
Inner Surface Roughness	Ry $\leq 40\mu$ m Cut off Length : 2.5mm Measuring Length : 12.5mm	Ry $\leq 3.0\mu$ m 10 μ inch Ra(Avg.) Cut off Length : 0.8mm Measuring Length : 4mm	Ry $\leq 0.7\mu$ m 5 μ inch Ra(Avg.) Cut off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Machining Finish	Electro Polishing Finish



MATERIAL

NO.	NAME	MATERIAL
1	Body	316L Stainless Steel 316L Stainless Steel VAR
2	O-Ring	FKM
3	Grand Ring	Teflon
4	Handle	Aluminum

ORDERING INFORMATION



MATERIAL	SIZE	ORIFICE	CONNECTION	HANDLE TYPE	GRADE
S 316L Stainless Steel	4 1/4"	MVM 1.35	VM MFS Male SW Lok	K Knurled KS Knurled with Slot V Vernier	AP AP Grade BLANK BA Grade P EP Grade

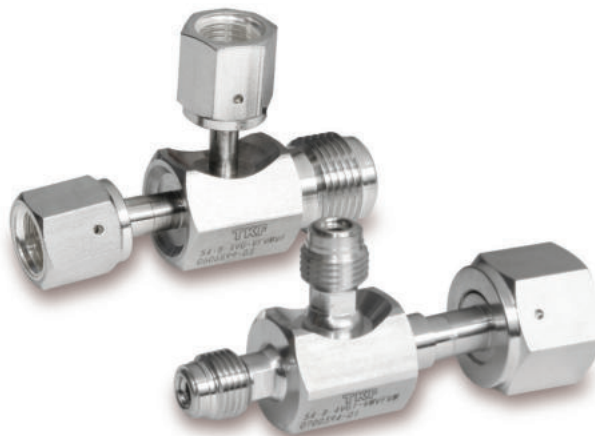
MODEL	CONNECTION	A	B	C	D	E	F	G
	MFS Male	52.4	13.5	38.4	91	21.6	4.5	
	Lok	60.6	13.5	38.4	91	21.6	4.5	46.3

ULTRA - HIGH PURITY VACUUM GENERATORS

VG1 SERIES

FEATURES

- High Performance Design
- Stainless Steel 316L Construction
- Metal Face Seal and Tube Butt-Weld Connections



TECHNICAL DATA

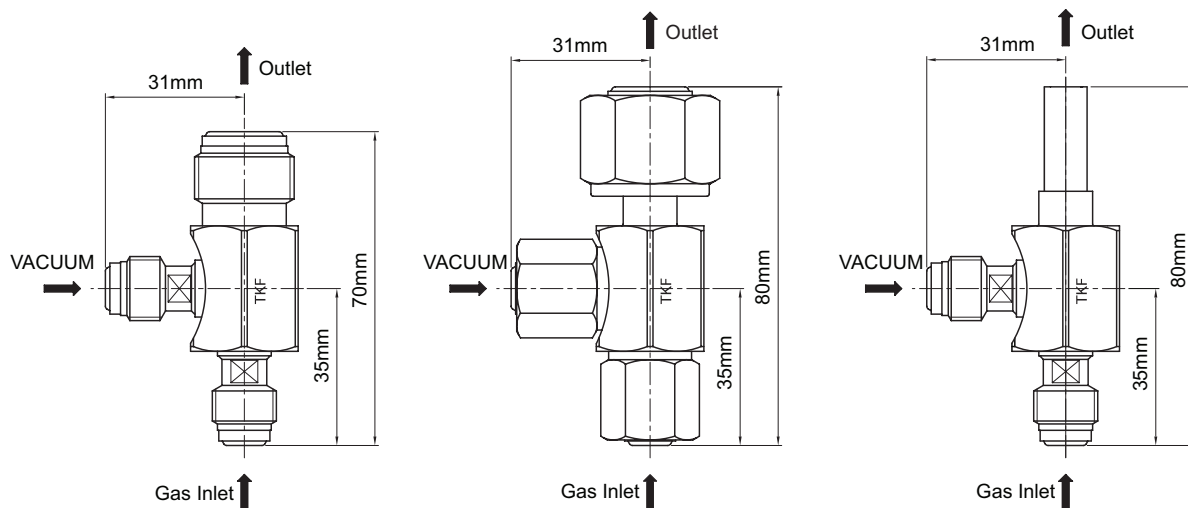
Ultimate Pressure	50torr (66.7mbar)
Gas Flow at Ultimate	60ℓ / min
Gas Pressure at Ultimate	80psig
Optimize working Pressure	80 ~ 100psig
Max. Working Pressure	150psig (10kgf/cm ²)
Operating Temperature	0 ~ 150°C

* measured when operating gas flow is over 60LPM and extension vent tube length is over 20mm.

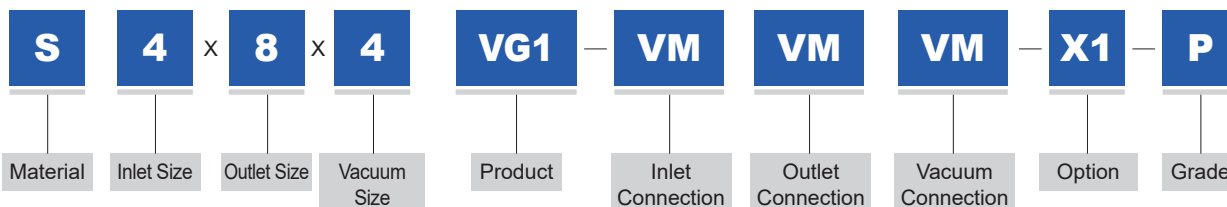
Note1. The dimension of drawing is for reference only. Please contact us for customer drawing and special product.

PRODUCT FEATURES

- 50torr(66.7mbar) vacuum generated with a minimum source Nitrogen pressure of 80psig
- Ultrasonic and D.I. water cleaned for semiconductor Ultra-high purity
- Cleaned, welded, assembled, tested and packaged in a Class 100 or 10 clean room
- 100% tested for vacuum performance and Helium leakage



ORDERING INFORMATION



MATERIAL		SIZE		CONNECTION		GRADE	
S	316L Stainless Steel	4	1/4"	VM	MFS Male	A	AP Grade
D	316L Stainless Steel VAR	6	3/8"	VF	MFS Female	Blank	BA Grade
		8	1/2"	TW	Tube Butt Weld	P	EP Grade

VACUUM AND FLOW SPECIFICATIONS

