

Valves

Ordering Information

*Additional configurations available upon request.

A	B	C	-	D	E	-	F	-	G	-	H	Standard feature
SM	BPDV1	C	-	VF	4	-	1F23	-	PA	-	P	Optional

A	Materials	
SM	316L	Stainless Steel
DM	316L	Stainless Steel VAR
4SS	304	Stainless Steel
13	SCS	13
16	SCS	16

B	Product Series	
Diaphragm Valves		
DV1	Low Pressure Manual Diaphragm Valve (Standard Type)	
PDV1	Low Pressure Pneumatic Diaphragm Valve (Standard Type)	
BDV1	Low Pressure Manual Block Diaphragm Valve	
PBDV1	Low Pressure Pneumatic Block Diaphragm Valve	
HDV1	High Pressure Manual Diaphragm Valve (Standard Type)	
Bellows Valves		
BV1	Low Pressure Manual Bellows Valve (Standard Type)	
PBV1	Low Pressure Pneumatic Bellows Valve (Standard Type)	
BV2	Low Pressure Manual Bellows Valve (Forged Type)	
PBV2	Low Pressure Pneumatic Bellows Valve (Forged Type)	
BV3	Low Pressure Manual Bellows Valve (Casting Type)	
Check Valves		
CV1	Check Valve	

C	Operation Method	
Add an operation method designator for Pneumatic Valves .		
C	Normally	Closed
O	Normally	Open

D	Connection Type	
VM	Male	BVC*
VF	Female	BVC*
S	SUPERLOK	Tube Fitting
TW	Butt	Weld
VMXVF	In Male-Out	Female
FE	Flange	

*NOTE: See BMT Vacuum Coupling (BVC) Fittings on page 5.

E	Connection Size			
ASTM Tube				
Designator	Nominal Size	Outside Diameter	Wall Thickness	
4	1/4 in.	6.35 mm	1.00 mm	
6	3/8 in.	9.53 mm	1.00 mm	
8	1/2 in.	12.7 mm	1.24 mm	
12	3/4 in.	19.05 mm	1.65 mm	
16	1 in.	25.4 mm	1.65 mm	
64	4 in.	101.6 mm	2.11 mm	
JIS Pipe				
Designator	Nominal Size	Outside Diameter	Schedule	Wall Thickness
15A	15A	21.7 mm	SCH 5S	1.65 mm
15AS			SCH 10S	2.10 mm
20A	20A	27.2 mm	SCH 5S	1.65 mm
20AS			SCH 10S	2.80 mm

E	Connection Size (Continued)				
JIS Pipe					
Designator	Nominal Size	Outside Diameter	Schedule	Wall Thickness	
25A	25A	34.0 mm	SCH 5S	1.65 mm	
25AS			SCH 10S	2.80 mm	
32A	32A	42.7 mm	SCH 5S	1.65 mm	
32AS			SCH 10S	2.80 mm	
40A	40A	48.6 mm	SCH 5S	1.65 mm	
40AS			SCH 10S	2.80 mm	
50A	50A	60.5 mm	SCH 5S	1.65 mm	
50AS			SCH 10S	2.80 mm	
65A	65A	76.3 mm	SCH 5S	2.10 mm	
65AS			SCH 10S	3.00 mm	
80A	80A	89.1 mm	SCH 5S	2.10 mm	
80AS			SCH 10S	3.00 mm	
100A	100A	114.3 mm	SCH 5S	2.10 mm	
100AS			SCH 10S	3.00 mm	
125A	125A	139.8 mm	SCH 5S	2.80 mm	
125AS			SCH 10S	3.40 mm	
150A	150A	165.2 mm	SCH 5S	2.80 mm	
150AS			SCH 10S	3.40 mm	
200A	200A	216.3 mm	SCH 5S	2.80 mm	
200AS			SCH 10S	4.00 mm	
250A	250A	267.4 mm	SCH 5S	3.40 mm	
250AS			SCH 10S	4.00 mm	
300A	300A	318.5 mm	SCH 5S	4.00 mm	
300AS			SCH 10S	4.50 mm	
350A	350A	355.6 mm	SCH 5S	4.00 mm	
350AS			SCH 10S	4.80 mm	
400A	400A	406.4 mm	SCH 5S	4.20 mm	
400AS			SCH 10S	4.80 mm	
450A	450A	457.2 mm	SCH 5S	4.20 mm	
450AS			SCH 10S	5.50 mm	
500A	500A	508.0 mm	SCH 5S	4.80 mm	
500AS			SCH 10S	5.50 mm	
550A	550A	558.8 mm	SCH 5S	4.80 mm	
550AS			SCH 10S	5.50 mm	

F	Flow Path (BDV1 and PBDV1 series only)			
See Flow Paths for the figures on page 75.				
1F23	Figure A	2F13	Figure C	
1F35	Figure B	5F13	Figure D	

G	Seat Material	
Add a seat material designator as needed. No designator is required for standard seat materials.		
PA	PFA	
PI	Polyimide	

H	Wetted Surface Grade	
BA is standard. No part designator needed.		
P	EP	
MP	MP	
AP	AP	

Low Pressure Manual Diaphragm Valve (Standard Type)

DV1 Series



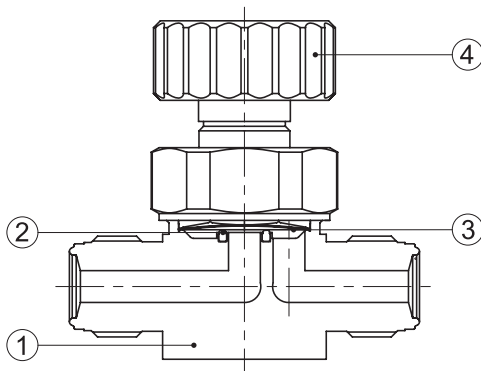
Part Number Examples

	SMDV1-S8		SMDV1-VM4-PA-P	
Material	SM	316L Stainless Steel	SM	316L Stainless Steel
Series	DV1	DV1 series	DV1	DV1 series
Operation Method		<i>Omit for Manual Valves</i>		<i>Omit for Manual Valves</i>
Connection Type	S	Lok	VM	BVC Male
Connection Size	8	1/2"	4	1/4"
Flow Path		<i>Omit for DV1 series</i>		<i>Omit for DV1 series</i>
Seat Material		PCTFE (standard)	PA	PFA
Grade		BA grade (standard)	P	EP grade

Specifications

Size	1/4"	3/8", 1/2"	3/4"
Cv Value	0.3	0.7	0.7
Orifice Size	4.5mm	7.0mm	7.0mm
Max. Working Pressure	10 bar (145 psig)		
Working Temperature	PCTFE: -10~80°C (14~176°F) / PFA, PI: -10~150°C (14~302°F)		
Internal Leakage Allowance (He) (Holding Time ≥ 15 sec.)	≤1x10 ⁻⁹ atm.cc/s		
External Leakage Allowance (He) (Holding Time ≥ 1 min.)	≤1x10 ⁻⁹ atm.cc/s		
Particle Inspection (EP Only) (0.1µm and Larger)	No Count		

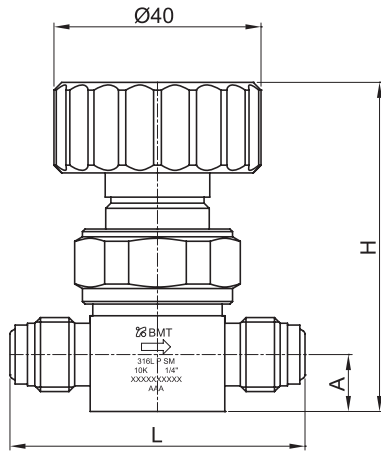
Material



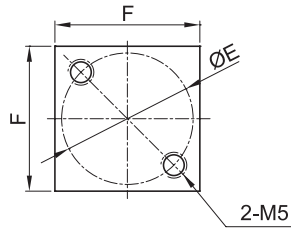
No.	Component	Material
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE (standard) / PFA / PI
3	Diaphragm	Ni-Co Alloy
4	Handle	Aluminium

NOTE:
 ·Dimensions and Drawings are for reference only and are subject to change without prior notice.
 ·Unless otherwise specified, all dimensions are in millimeters.

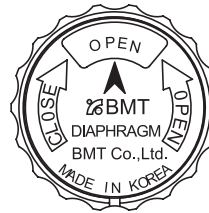
Dimensions



Male BVC



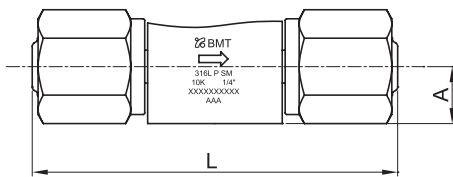
Bottom Mounting



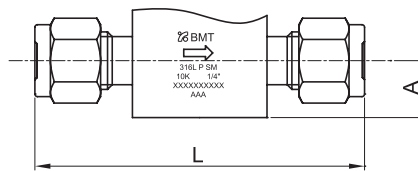
Handle Open



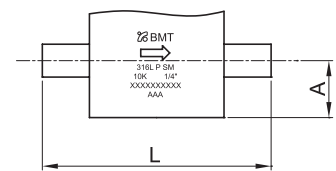
Handle Close



Female BVC



SUPERLOK Tube Fitting



Tube Butt Weld

End Connection	Part No.	Dimensions (mm)				
		L	H	A	E (Φ)	F
Male BVC	SMDV1-VM4	57	63.6	11	25.4	28
	SMDV1-VM6	77	74.1	16	28	37
	SMDV1-VM8	77	74.1	16	28	37
	SMDV1-VM12	122	82.8	22	28	37
Female BVC	SMDV1-VF4	70.6	63.6	11	25.4	28
	SMDV1-VF6	83	74.1	16	28	37
	SMDV1-VF8	83	74.1	16	28	37
	SMDV1-VF12	122	82.8	22	28	37
SUPERLOK Tube Fitting	SMDV1-S4	63.7	63.6	11	25.4	28
	SMDV1-S6	75.6	74.1	16	28	37
	SMDV1-S8	81.2	74.1	16	28	37
	SMDV1-S12	106	82.8	22	28	37
Tube Butt Weld	SMDV1-TW4	44.2	63.6	11	25.4	28
	SMDV1-TW6	68	74.1	16	28	37
	SMDV1-TW8	68	74.1	16	28	37
	SMDV1-TW12	150	82.8	22	28	37

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Low Pressure Pneumatic Diaphragm Valve (Standard Type)

PDV1 Series



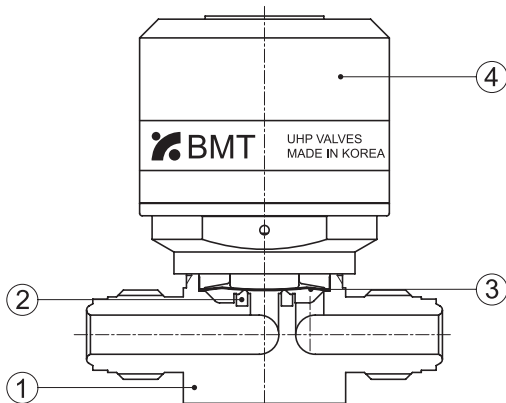
Part Number Examples

		DMPDV10-TW8		SMPDV1C-VM4-PA-P
Material	DM	316L Stainless Steel VAR	SM	316L Stainless Steel
Series	PDV1	PDV1 series	PDV1	PDV1 series
Operation Method	O	Normally Open	C	Normally Closed
Connection Type	TW	Butt Weld	VM	BVC Male
Connection Size	8	1/2"	4	1/4"
Flow Path		<i>Omit for PDV1 series</i>		<i>Omit for PDV1 series</i>
Seat Material		PCTFE (<i>standard</i>)	PA	PFA
Grade		BA grade (<i>standard</i>)	P	EP grade

Specifications

Size	1/4"	3/8", 1/2"	3/4"
Cv Value	0.3	0.7	0.7
Orifice Size	4.5mm	7.0mm	7.0mm
Max. Working Pressure	10 bar (145 psig)		
Operating Pressure	0.4~0.6 MPa (58~87 psig)		
Working Temperature	PCTFE: -10~80°C (14~176°F) / PFA, PI: -10~150°C (14~302°F)		
Internal Leakage Allowance (He) (Holding Time ≥ 15 sec.)	≤1x10 ⁻⁹ atm.cc/s		
External Leakage Allowance (He) (Holding Time ≥ 1 min.)	≤1x10 ⁻⁹ atm.cc/s		
Particle Inspection (EP Only) (0.1µm and Larger)	No Count		

Material



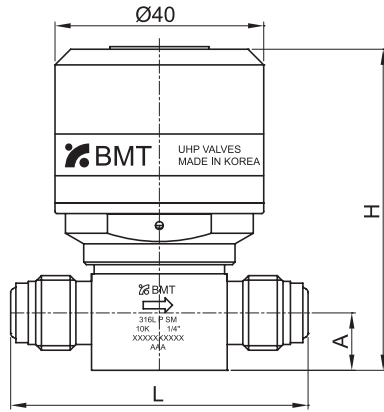
No.	Component	Material
1	Body	316L Stainless Steel
		316L Stainless Steel VAR
		304 Stainless Steel
2	Seat	PCTFE (<i>standard</i>) / PFA / PI
3	Diaphragm	Ni-Co Alloy
4	Actuator	Aluminium

NOTE:

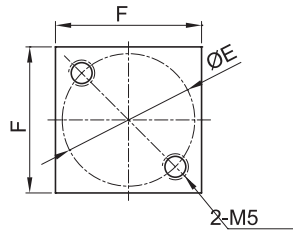
·Dimensions and Drawings are for reference only and are subject to change without prior notice.

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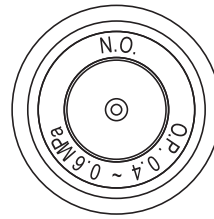
Dimensions



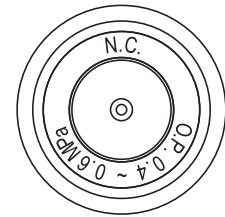
Male BVC



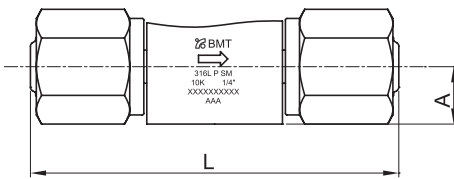
Bottom Mounting



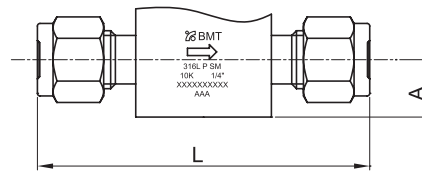
Normal Open



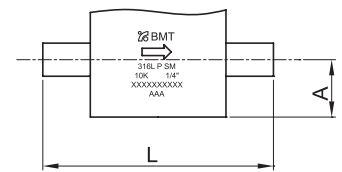
Normal Close



Female BVC



SUPERLOK Tube Fitting



Tube Butt Weld

End Connection	Part No.	Dimensions (mm)				
		L	H	A	E (Φ)	F
Male BVC	SMPDV1C-VM4	57	62.1	11	25.4	28
	SMPDV1C-VM6	77	81.2	16	28	37
	SMPDV1C-VM8	77	81.2	16	28	37
	SMPDV1C-VM12	122	90	22	28	37
Female BVC	SMPDV1C-VF4	70.6	62.1	11	25.4	28
	SMPDV1C-VF6	83	81.2	16	28	37
	SMPDV1C-VF8	83	81.2	16	28	37
	SMPDV1C-VF12	122	90	22	28	37
SUPERLOK Tube Fitting	SMPDV1C-S4	63.7	62.1	11	25.4	28
	SMPDV1C-S6	75.6	81.2	16	28	37
	SMPDV1C-S8	81.2	81.2	16	28	37
	SMPDV1C-S12	106	90	22	28	37
Tube Butt Weld	SMPDV1C-TW4	44.2	62.1	11	25.4	28
	SMPDV1C-TW6	68	81.2	16	28	37
	SMPDV1C-TW8	68	81.2	16	28	37
	SMPDV1C-TW12	150	90	22	28	37

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Low Pressure Manual Block Diaphragm Valve

BDV1 Series



Part Number Examples

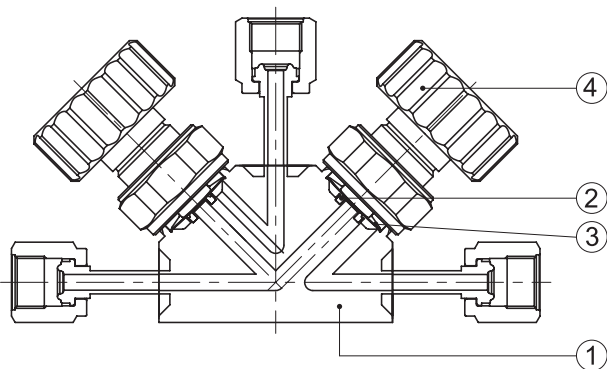
	SMBDV1-VM4-1F23-PA-P		DMBDV1-VF8-2F13-P	
Material	SM	316L Stainless Steel	DM	316L Stainless Steel VAR
Series	BDV1	BDV1 series	BDV1	BDV1 series
Operation Method	<i>Omit for Manual Valves</i>		<i>Omit for Manual Valves</i>	
Connection Type	VM	BVC Male	VF	BVC Female
Connection Size	4	1/4"	8	1/2"
Flow Path*	1F23	Fig.A of <i>Flow Paths</i> , page 75	2F13	Fig.C of <i>Flow Paths</i> , page 75
Seat Material	PA	PFA	PCTFE (<i>standard</i>)	
Grade	P	EP grade	P	EP grade

*NOTE: See *Flow Paths* on page 75.

Specifications

Size	1/4"	1/2"
Cv Value	0.3	0.7
Orifice Size	4.5mm	7.0mm
Max. Working Pressure	10 bar (145 psig)	
Working Temperature	PCTFE: -10~80°C (14~176°F) / PFA, PI: -10~150°C (14~302°F)	
Internal Leakage Allowance (He) (Holding Time ≥ 15 sec.)	≤1x10 ⁻⁹ atm.cc/s	
External Leakage Allowance (He) (Holding Time ≥ 1 min.)	≤1x10 ⁻⁹ atm.cc/s	
Particle Inspection (EP Only) (0.1µm and Larger)	No Count	

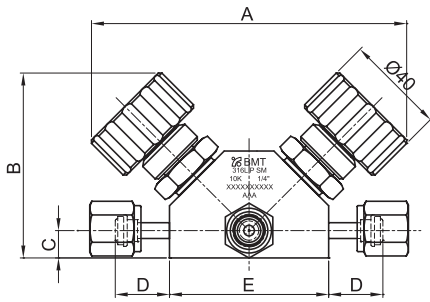
Material



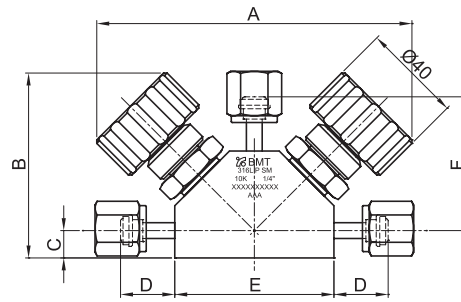
No.	Component	Material
1	Body	316L Stainless Steel
		316L Stainless Steel VAR
		304 Stainless Steel
2	Seat	PCTFE (<i>standard</i>) / PFA / PI
3	Diaphragm	Ni-Co Alloy
4	Handle	Aluminium

NOTE:
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 ·Unless otherwise specified, all dimensions are in millimeters.

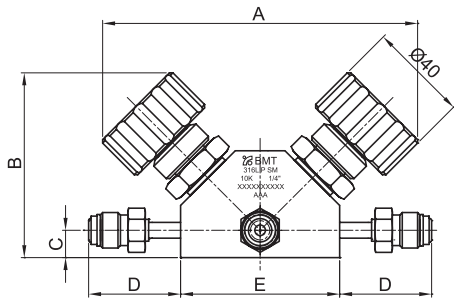
Dimensions



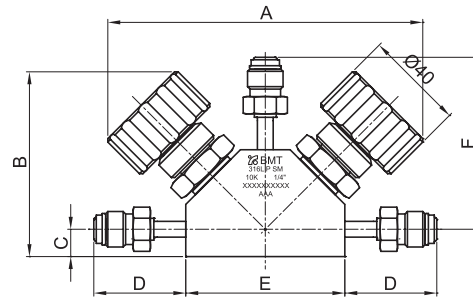
Female BVC
FLOW (1F35, 5F13)



Female BVC
FLOW (1F23, 2F13)



Male BVC
FLOW (1F35, 5F13)



Male BVC
FLOW (1F23, 2F13)

*NOTE: See **Flow Paths** on page 75.

End Connection	Part No.	Dimensions (mm)						
		A	B	C	D	E	F	G (Φ)
Male BVC	SMBDV1-VM4-1F23	126.7	74.4	11	37	64	68	26
	SMBDV1-VM4-1F35						50	
	SMBDV1-VM8-1F23	145	90.2	16	41	82	89.5	
	SMBDV1-VM8-1F35						59	
Female BVC	SMBDV1-VF4-1F23	126.7	74.4	11	21.8	64	53.8	
	SMBDV1-VF4-1F35						34.8	
	SMBDV1-VF8-1F23	145	90.2	16	23	82	71.5	
	SMBDV1-VF8-1F35						41	

NOTE:
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Low Pressure Pneumatic Block Diaphragm Valve

PBDV1 Series



Part Number Examples

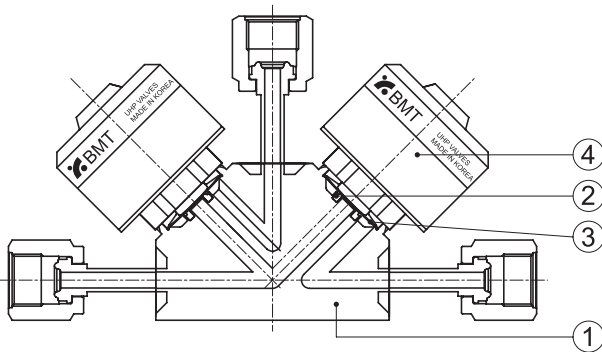
	SMPBDV1C-VF4-1F23-PA-P		DMPBDV10-VM8-5F13	
Material	SM	316L Stainless Steel	DM	316L Stainless Steel VAR
Series	PBDV1	PBDV1 series	PBDV1	PBDV1 series
Operation Method	C	Normally Closed	O	Normally Open
Connection Type	VF	BVC Female	VM	BVC Male
Connection Size	4	1/4"	8	1/2"
Flow Path*	1F23	Fig.A of <i>Flow Paths</i> , page 75	5F13	Fig.D of <i>Flow Paths</i> , page 75
Seat Material	PA	PFA		PCTFE (standard)
Grade	P	EP grade		BA grade (standard)

*NOTE: See *Flow Paths* on page 75.

Specifications

Size	1/4"	1/2"
Cv Value	0.3	0.7
Orifice Size	4.5mm	7.0mm
Max. Working Pressure	10 bar (145 psig)	
Working Temperature	PCTFE: -10~80°C (14~176°F) / PFA, PI: -10~150°C (14~302°F)	
Internal Leakage Allowance (He) (Holding Time ≥ 15 sec.)	≤1x10 ⁻⁹ atm.cc/s	
External Leakage Allowance (He) (Holding Time ≥ 1 min.)	≤1x10 ⁻⁹ atm.cc/s	
Particle Inspection (EP Only) (0.1µm and Larger)	No Count	

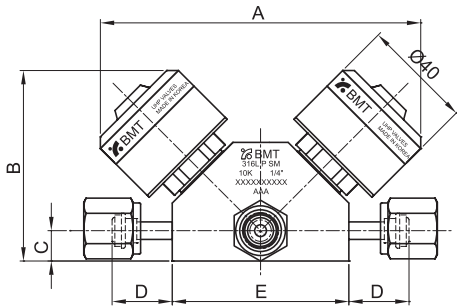
Material



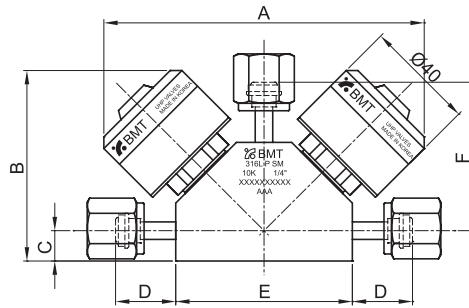
No.	Component	Material
1	Body	316L Stainless Steel
		316L Stainless Steel VAR
		304 Stainless Steel
2	Seat	PCTFE (standard) / PFA / PI
3	Diaphragm	Ni-Co Alloy
4	Actuator	Aluminium

NOTE:
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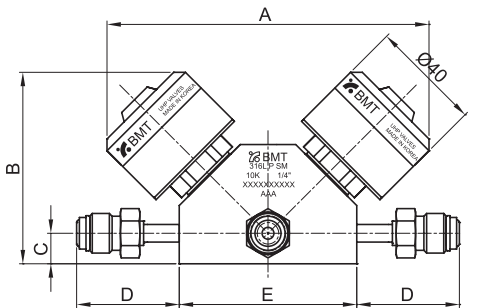
Dimensions



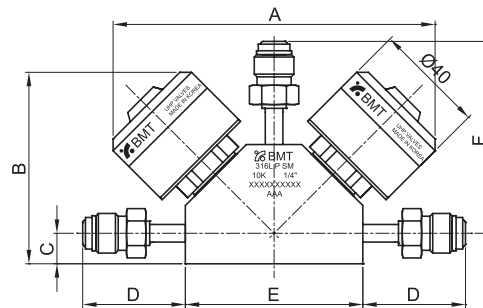
Female BVC
FLOW (1F35, 5F13)



Female BVC
FLOW (1F23, 2F13)



Male BVC
FLOW (1F35, 5F13)



Male BVC
FLOW (1F23, 2F13)

*NOTE: See **Flow Paths** on page 75.

End Connection	Part No.	Dimensions (mm)						
		A	B	C	D	E	F	G (Φ)
Male BVC	SMPBDV1C-VM4-1F23	126.7	74.4	11	37	64	68	26
	SMPBDV1C-VM4-1F35						50	
	SMPBDV1C-VM8-1F23	145	90.2	16	41	82	89.5	
	SMPBDV1C-VM8-1F35						59	
Female BVC	SMPBDV1C-VF4-1F23	126.7	74.4	11	21.8	64	53.8	
	SMPBDV1C-VF4-1F35						34.8	
	SMPBDV1C-VF8-1F23	145	90.2	16	23	82	71.5	
	SMPBDV1C-VF8-1F35						41	

NOTE:
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High Pressure Manual Diaphragm Valve (Standard Type)

HDV1 Series



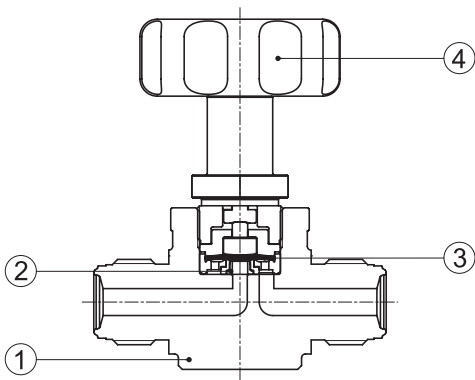
Part Number Examples

	SMHDV1-VF4-P		DMHDV1-VM8-P	
Material	SM	316L Stainless Steel	DM	316L Stainless Steel VAR
Series	HDV1	HDV1 series	HDV1	HDV1 series
Operation Method		<i>Omit for Manual Valves</i>		<i>Omit for Manual Valves</i>
Connection Type	VF	BVC Female	VM	BVC Male
Connection Size	4	1/4"	8	1/2"
Flow Path		<i>Omit for HDV1 series</i>		<i>Omit for HDV1 series</i>
Seat Material		PCTFE (<i>standard</i>)		PCTFE (<i>standard</i>)
Grade	P	EP grade	P	EP grade

Specifications

Size	1/4"	1/2"
Cv Value	0.1	0.27
Orifice Size	2.4 mm	3.8mm
Max. Working Pressure	210 bar (3,045 psig)	
Working Temperature	-10 ~ 40°C (14 ~ 104°F)	
Internal Leakage Allowance (He) (Holding Time ≥ 15 sec.)	≤1x10 ⁻⁹ atm.cc/s	
External Leakage Allowance (He) (Holding Time ≥ 1 min.)	≤1x10 ⁻⁹ atm.cc/s	
Particle Inspection (EP Only) (0.1µm and Larger)	No Count	

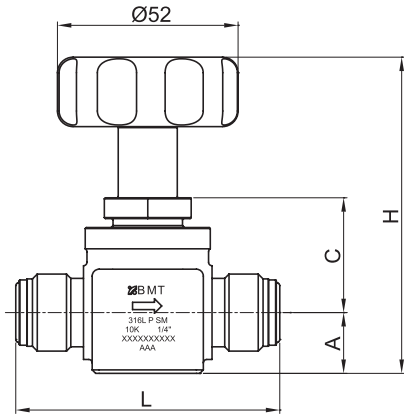
Material



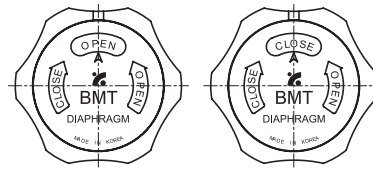
No.	Component	Material
1	Body	316L Stainless Steel 316L Stainless Steel VAR 304 Stainless Steel
2	Seat	PCTFE (<i>standard</i>)
3	Diaphragm	Ni-Co Alloy
4	Handle	Aluminium

NOTE:
 ·Dimensions and Drawings are for reference only and are subject to change without prior notice.
 ·Unless otherwise specified, all dimensions are in millimeters.

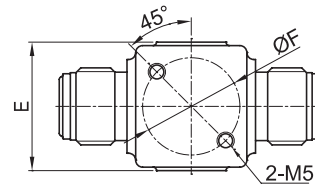
Dimensions



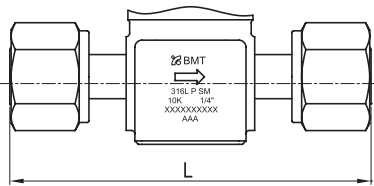
Male BVC



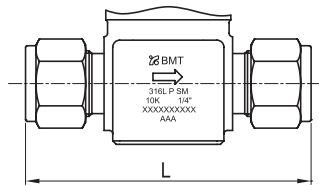
Handle Open Handle Close



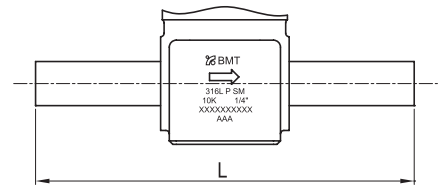
Bottom Mounting



Female BVC



SUPERLOK Tube Fitting

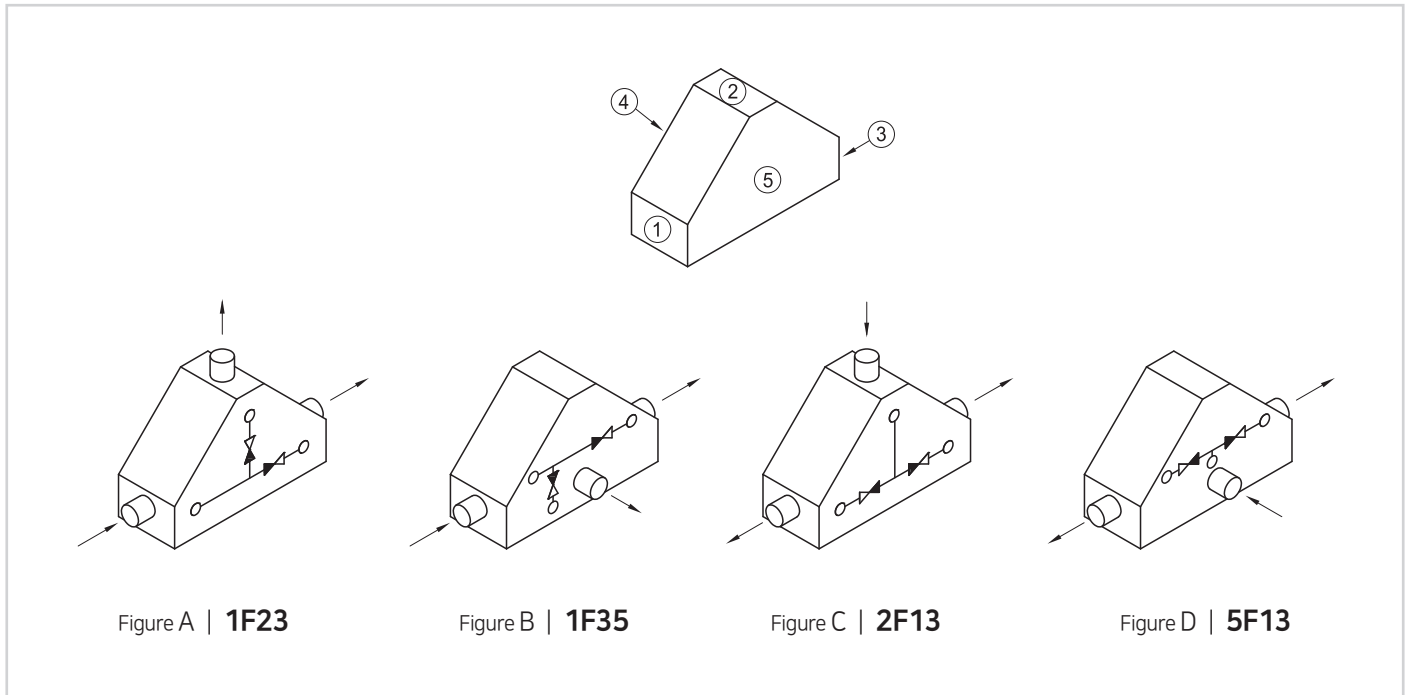


Tube Butt Weld

End Connection	Part No.	Dimensions (mm)					
		L	H	A	C	E	F (Φ)
Male BVC	SMHDV1-VM4	57	74	11	28.5	28	25.4
	SMHDV1-VM8	76	91.5	17.5	50.5	37	28
Female BVC	SMHDV1-VF4	70.6	74	11	28.5	28	25.4
	SMHDV1-VF8	100	91.5	17.5	50.5	37	28
SUPERLOK Tube Fitting	SMHDV1-S4	55	74	11	28.5	28	25.4
	SMHDV1-S8	86	91.5	17.5	50.5	37	28
Tube Butt Weld	SMHDV1-TW4	135	74	11	28.5	28	25.4
	SMHDV1-TW8	105	91.5	17.5	50.5	37	28

NOTE:
 ·Dimensions and Drawings are for reference only and are subject to change without prior notice.
 ·Unless otherwise specified, all dimensions are in millimeters.

Flow Paths



Gauge Port Configurations

