

# Diaphragm Valves

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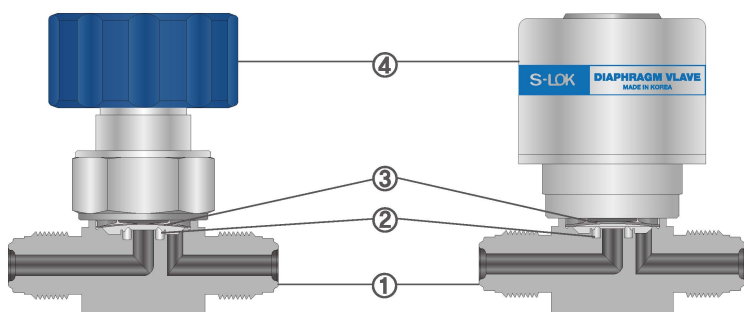
# 07



Catalogue No. S-LOK Jan.2023

### Features

- 316L Stainless steel body material (316L Single and double melting stainless steel materials available)
- Ni-Co alloy material diaphragm for strength and corrosion resistance
- Fully contained seat design minimizes particle generation
- Maximize flow capacity & minimize entrapment areas
- Optimal design for long cycle life
- Manual and pneumatic actuator
- All Valves are factory tested with helium.



### Cleaning and Packaging

- All parts are free of emulsion composition and residues involved in the machining process.
- Valves are assembled, inspected, tested and packaged in a CLASS 10 cleanroom.
- Double bag packaging is standard, and the inner bag contains ultra pure nitrogen.

### Materials of Construction

No.	Component	Material
1	Body	316L Stainless Steel (Single/ Double Melt)
2	Seat	PCTFE
3	Diaphragm	Ni-Co Alloy
4	Actuation	Aluminum

### Product Grade

Level	Inner Surface Roughness	
	Ra	Ry
EP	≤ 5 μ inch	≤ 0.7 μm
BA	≤ 10 μ inch	≤ 3.0 μm
AP	≤ 100 μ inch	≤ 25 μm

### Moisture Test

Test procedure per SEMI F58 for low surface area component, time to recover to baseline from 200 ppb spike in 1 hour.

### Reliability

- More than 3 million cycles for pneumatic valves.
- More than 100,000 cycles for manual valves.

### Chemical Composition

Element	Composition, Wt%									
	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al
SS316L Single Melt	≤ 0.03	≤ 0.75	≤ 0.8	≤ 0.04	≤ 0.005	12.0~16.0	16.0~18.0	2.0~3.0	≤ 0.5	-
SS316L Double Melt	≤ 0.01	≤ 0.3	≤ 0.4	≤ 0.03	≤ 0.003	14.5~15.0	16.5~17.0	2.2~2.5	≤ 0.25	≤ 0.01
SS316L VIM/VAR	≤ 0.01	≤ 0.2	≤ 0.05	≤ 0.02	≤ 0.003	14.5~15.0	16.5~17.0	2.2~2.5	≤ 0.2	≤ 0.01

### Specifications

Size in.	Working Pressure Mpa (psig)	Temperature Rating °C (°F)	Flow Coefficient (Cv)	Orifice mm (in.)	Across the Seat Helium Leak Rates	Inboard Helium Leak Rates	Particle Inspection (EP) (0.1 μm and Larger)
1/4	1 (145)	-10 ~ 80	0.3	4.0 (0.16)	≤ 1 x 10 <sup>-9</sup> atm cc/sec	≤ 1 x 10 <sup>-9</sup> atm cc/sec	No count Pressure: 60~80psi N2 Gas
3/8, 1/2, 3/4		(-23 ~ 176)	0.7	7.0 (0.27)			

## Low Pressure Diaphragm Valve - Forged Body - Manual Handle

■ Handle Position ■ Ordering Information and Dimensions



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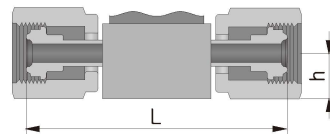
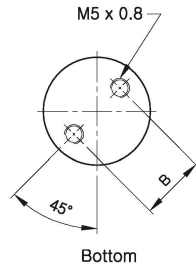
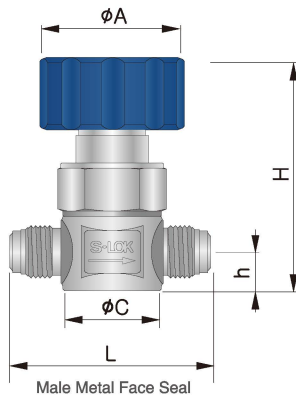


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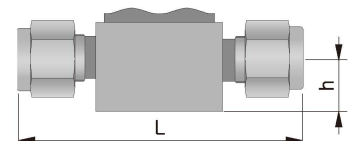
<b>SFDV</b>	-	<b>MG</b>	-	<b>8</b>	-	<b>EP</b>	-	<b>S6LS</b>
<b>Valve Model</b>		<b>Connection Type</b>		<b>Connection Size</b>		<b>Product Grade</b>		<b>Body Material</b>

Valve Model	Connection Type	Connection Size	Product Grade	Body Material
- SFDV : Low Pressure Diaphragm Valve - Forged Body - Manual Handle	- MG : Male Metal Face Seal - FG : Female Metal Face Seal - S : S-LOK - BW : Tube Butt Weld	- 4 : 1/4" - 6 : 3/8" - 8 : 1/2" - 12 : 3/4"	- BA : BA - EP : EP	- S6LS : SS316L Single Melt - S6LV : SS316L Double Melt

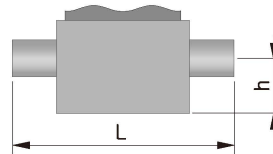
■ Dimensions



• Female Metal Face Seal



• S-LOK Tube Fitting



• Tube Butt Weld

Basic Ordering Number	End Connection	Dimensions, mm					
		L	h	H	A	B	C
SFDV-MG-4	Male MFS 1/4"	58	11	66.1	40	17	28
SFDV-MG-8	Male MFS 1/2"	76	16	78.2	40	28	38
SFDV-MG-12	Male MFS 3/4"	122	22	84.2	40	28	38
SFDV-FG-4	Female MFS 1/4"	78	11	66.1	40	17	28
SFDV-FG-8	Female MFS 1/2"	104.6	16	78.2	40	28	38
SFDV-FG-12	Female MFS 3/4"	122	22	84.2	40	28	38
SFDV-S-4	S-LOK 1/4"	69.5	11	66.1	40	17	28
SFDV-S-6	S-LOK 3/8"	82.8	16	78.2	40	28	38
SFDV-S-8	S-LOK 1/2"	90.9	16	78.2	40	28	38
SFDV-S-12	S-LOK 3/4"	103.8	22	84.2	40	28	38
SFDV-BW-4	Tube Butt Weld 1/4"	58	11	66.1	40	17	18
SFDV-BW-6	Tube Butt Weld 3/8"	72	16	78.2	40	28	38
SFDV-BW-8	Tube Butt Weld 1/2"	72	16	78.2	40	28	38
SFDV-BW-12	Tube Butt Weld 3/4"	84	22	84.2	40	28	38

## Low Pressure Diaphragm Valve - Square Body - Manual Handle

Handle Position    Ordering Information and Dimensions



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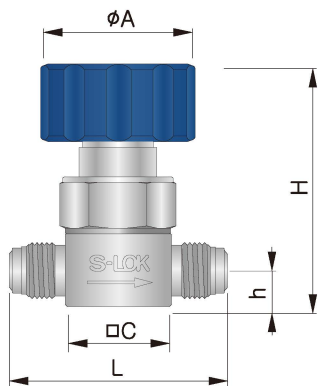
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SSDV - MG - 8 - EP - S6LS

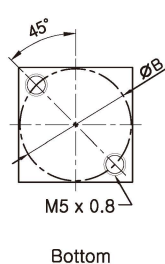
Valve Model    Connection Type    Connection Size    Product Grade    Body Material

Valve Model	Connection Type	Connection Size	Product Grade	Body Material
- SSDV : Low Pressure Diaphragm Valve - Square Body - Manual Handle	- MG : Male Metal Face Seal  - FG : Female Metal Face Seal  - S : S-LOK - BW : Tube Butt Weld	- 4 : 1/4" - 6 : 3/8" - 8 : 1/2" - 12 : 3/4"	- BA : BA - EP : EP	- S6LS : SS316L Single Melt - S6LV : SS316L Double Melt

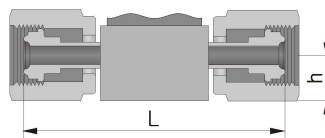
Dimensions



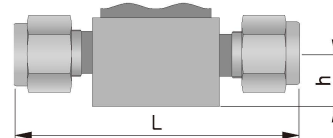
Male Metal Face Seal



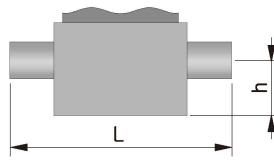
Bottom



Female Metal Face Seal



S-LOK Tube Fitting

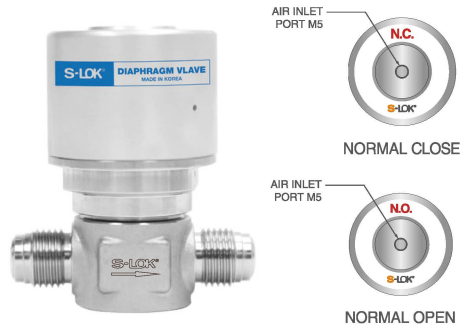


Tube Butt Weld

Basic Ordering Number	End Connection	Dimensions, mm					
		L	h	H	A	B	C
SSDV-MG-4	Male MFS 1/4"	57	11	64.1	40	25.4	26
SSDV-MG-8	Male MFS 1/2"	76.2	16	76.2	40	28	37
SSDV-MG-12	Male MFS 3/4"	122	22	82.2	40	28	37
SSDV-FG-4	Female MFS 1/4"	70.6	11	64.1	40	25.4	26
SSDV-FG-8	Female MFS 1/2"	83	16	76.2	40	28	37
SSDV-FG-12	Female MFS 3/4"	122	22	82.2	40	28	37
SSDV-S-4	S-LOK 1/4"	69.5	11	64.1	40	25.4	26
SSDV-S-6	S-LOK 3/8"	82.8	16	76.2	40	28	37
SSDV-S-8	S-LOK 1/2"	90.9	16	76.2	40	28	37
SSDV-S-12	S-LOK 3/4"	106	22	82.2	40	28	37
SSDV-BW-4	Tube Butt Weld 1/4"	54	11	64.1	40	25.4	26
SSDV-BW-6	Tube Butt Weld 3/8"	69	16	76.2	40	28	37
SSDV-BW-8	Tube Butt Weld 1/2"	69	16	76.2	40	28	37
SSDV-BW-12	Tube Butt Weld 3/4"	84	22	82.2	40	28	37

## Low Pressure Diaphragm Valve - Forged Body - Pneumatic Actuator

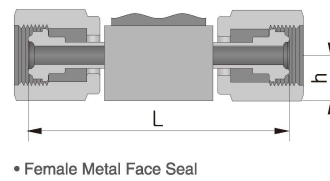
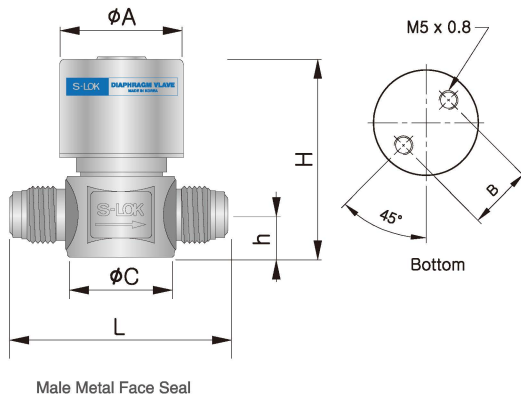
### Actuator configuration ■ Ordering Information and Dimensions



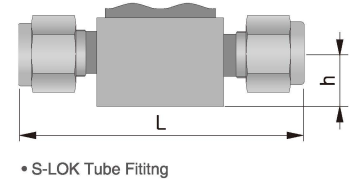
SFPDV	MG	8	NC	EP	S6LS
Valve Model	Connection Type	Connection Size	Actuation	Product Grade	Body Material

Valve Model	Connection Type	Connection Size	Actuation	Product Grade	Body Material
- SFPDV : - Low Pressure - Diaphragm Valve - Forged Body - Pneumatic Actuator	- MG : Male Metal Face Seal  - FG : Female Metal Face Seal  - S : S-LOK  - BW : Tube Butt Weld	- 4 : 1/4" - 6 : 3/8" - 8 : 1/2" - 12 : 3/4"	- NC : Normally Closed  - NO : Normally Open	- BA : BA - EP : EP	- S6LS : SS316L Single Melt  - S6LV : SS316L Double Melt

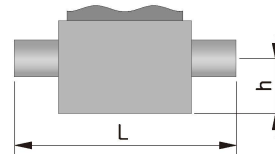
### Dimensions



• Female Metal Face Seal



• S-LOK Tube Fitting

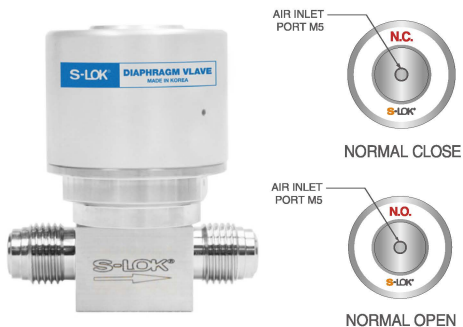


• Tube Butt Weld

Basic Ordering Number	End Connection	Dimensions, mm					
		L	h	H	A	B	C
SFPDV-MG-4	Male MFS 1/4"	58	11	66.3	40	17	28
SFPDV-MG-8	Male MFS 1/2"	76	16	82.4	52	28	38
SFPDV-MG-12	Male MFS 3/4"	122	22	88.4	52	28	38
SFPDV-FG-4	Female MFS 1/4"	78	11	66.3	40	17	28
SFPDV-FG-8	Female MFS 1/2"	104.6	16	82.4	52	28	38
SFPDV-FG-12	Female MFS 3/4"	122	22	88.4	52	28	38
SFPDV-S-4	S-LOK 1/4"	69.5	11	66.3	40	17	28
SFPDV-S-6	S-LOK 3/8"	82.8	16	82.4	52	28	38
SFPDV-S-8	S-LOK 1/2"	90.9	16	82.4	52	28	38
SFPDV-S-12	S-LOK 3/4"	103.8	22	88.4	52	28	38
SFPDV-BW-4	Tube Butt Weld 1/4"	58	11	66.3	40	17	18
SFPDV-BW-6	Tube Butt Weld 3/8"	72	16	82.4	52	28	38
SFPDV-BW-8	Tube Butt Weld 1/2"	72	16	82.4	52	28	38
SFPDV-BW-12	Tube Butt Weld 3/4"	84	22	88.4	52	28	38

## Low Pressure Diaphragm Valve - Square Body - Pneumatic Actuator

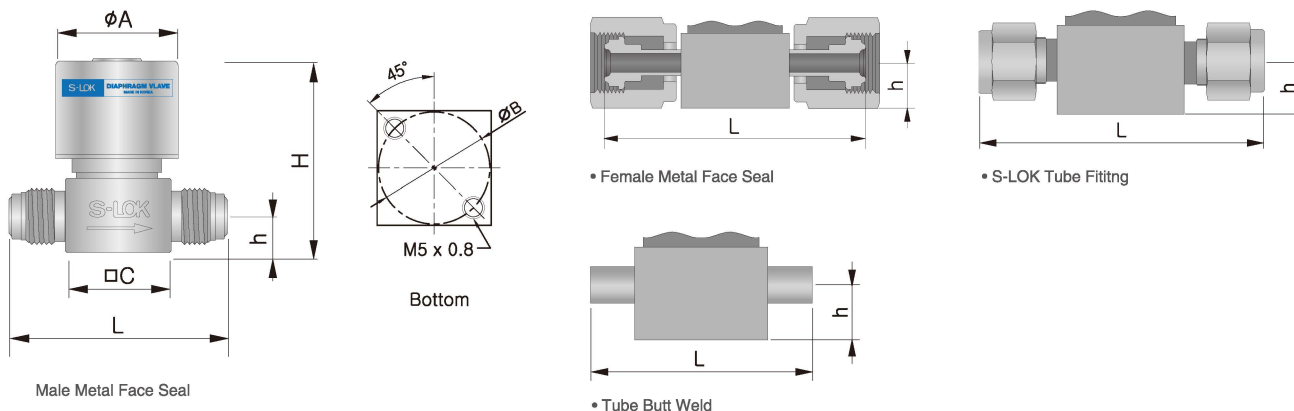
### Actuator configuration ■ Ordering Information and Dimensions



SSPDV	MG	8	NC	EP	S6LS
Valve Model	Connection Type	Connection Size	Actuation	Product Grade	Body Material

Valve Model	Connection Type	Connection Size	Actuation	Product Grade	Body Material
- SSPDV : - Low Pressure - Diaphragm Valve - Square Body - Pneumatic Actuator	- MG : Male Metal Face Seal  - FG : Female Metal Face Seal  - S : S-LOK  - BW : Tube Butt Weld	- 4 : 1/4" - 6 : 3/8" - 8 : 1/2" - 12 : 3/4"	- NC : Normally Closed  - NO : Normally Open	- BA : BA - EP : EP	- S6LS : SS316L Single Melt  - S6LV : SS316L Double Melt

### Dimensions



Basic Ordering Number	End Connection	Dimensions, mm					
		L	h	H	A	B	C
SSPDV-MG-4	Male MFS 1/4"	57	11	64.3	40	25.4	26
SSPDV-MG-8	Male MFS 1/2"	76.2	16	80.4	52	28	37
SSPDV-MG-12	Male MFS 3/4"	122	22	86.4	52	28	37
SSPDV-FG-4	Female MFS 1/4"	70.6	11	64.3	40	25.4	26
SSPDV-FG-8	Female MFS 1/2"	83	16	80.4	52	28	37
SSPDV-FG-12	Female MFS 3/4"	122	22	86.4	52	28	37
SSPDV-S-4	S-LOK 1/4"	69.5	11	64.3	40	25.4	26
SSPDV-S-6	S-LOK 3/8"	82.8	16	80.4	52	28	37
SSPDV-S-8	S-LOK 1/2"	90.9	16	80.4	52	28	37
SSPDV-S-12	S-LOK 3/4"	106	22	86.4	52	28	37
SSPDV-BW-4	Tube Butt Weld 1/4"	54	11	64.3	40	25.4	26
SSPDV-BW-6	Tube Butt Weld 3/8"	69	16	80.4	52	28	37
SSPDV-BW-8	Tube Butt Weld 1/2"	69	16	80.4	52	28	37
SSPDV-BW-12	Tube Butt Weld 3/4"	84	22	86.4	52	28	37