

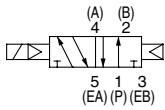
**Series SV Solenoid Valve Specifications**



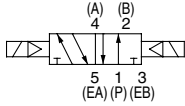
**Made to Order Specifications**  
(For details, refer to page 1-2-108.)

**JIS Symbol**

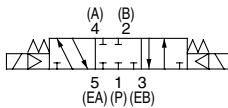
2 position single solenoid



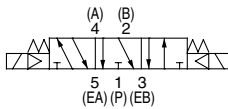
2 position double solenoid



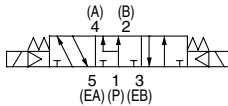
3 position closed center



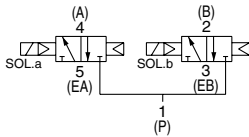
3 position exhaust center



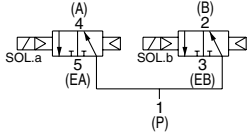
3 position pressure center



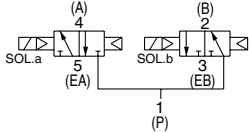
4 position dual 3 port valve: N.C./N.C.



4 position dual 3 port valve: N.O./N.O.



4 position dual 3 port valve: N.C./N.O.



Fluid	Air	
Internal pilot Operating pressure range (MPa)	2 position single	0.15 to 0.7
	4 position dual 3 port valve	
	3 position	
External pilot Operating pressure range (MPa)	Operating pressure range	-100 kPa to 0.7
	2 position single, double	
	3 position	
Ambient and fluid temperature (°C)	-10 to 50 (No freezing. Refer to page 1-7-4.)	
Max. operating frequency (Hz)	2 position single, double	5
	4 position dual 3 port valve	
	3 position	3
Manual override	Non-locking push type	
	Push-turn locking slotted type	
Pilot exhaust method	Internal pilot	Common exhaust type for main and pilot valve
	External pilot	
Lubrication	Not required	
Mounting orientation	Unrestricted	
Impact/Vibration resistance (ms <sup>2</sup> )	150/30	
Enclosure	IP67 (Based on IEC529)	
Coil rated voltage	24 VDC, 12 VDC	
Allowable voltage fluctuation	±10% of rated voltage	
Power consumption	0.6 (With indicator light: 0.65)	
Surge voltage suppressor	Zener diode	
Indicator light	LED	

**SV**

**SZ**

**SY**

**SYJ**

**SX**



Note) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

**Response Time**

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)			
	SV1000	SV2000	SV3000	SV4000
2 position single	11 or less	25 or less	28 or less	40 or less
2 position double	10 or less	17 or less	26 or less	40 or less
3 position	18 or less	29 or less	32 or less	82 or less
4 position dual 3 port valve	15 or less	33 or less	—	—



Note) Based on dynamic performance test, JIS B 8375-1981.  
(Coil temperature: 20°C, at rated voltage)

**Weight**

Series	Type of actuation	Weight (g)
<b>SV1000</b>	Single solenoid	66
	Double solenoid	71
	3 position	73
	4 position dual 3 port	71
<b>SV2000</b>	Single solenoid	74
	Double solenoid	78
	3 position	83
	4 position dual 3 port	78
<b>SV3000</b>	Single solenoid	99
	Double solenoid	102
	3 position	110
<b>SV4000</b>	Single solenoid	186
	Double solenoid	190
	3 position	211



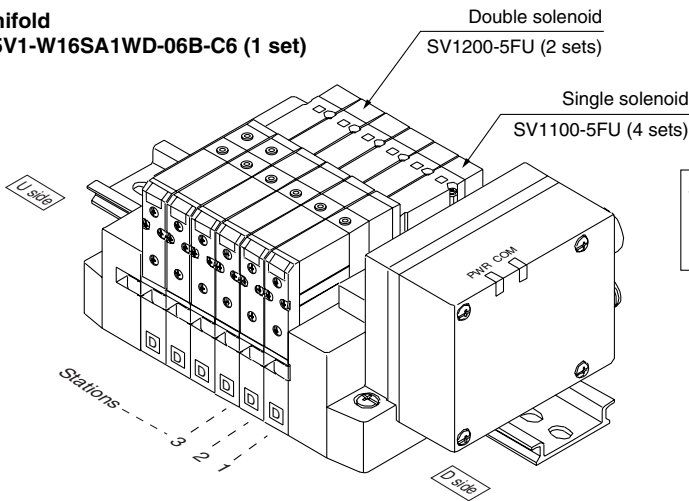
Note) Weight of solenoid valve only.

## How to Order Valve Manifold Assembly

### Ordering example (SV1000)

Manifold

SS5V1-W16SA1WD-06B-C6 (1 set)



SS5V1-W16SA1WD-06B-C6.....1 set (Manifold part no.)  
 \*SV1100-5FU.....4 sets (Single solenoid part no.)  
 \*SV1200-5FU.....2 sets (Double solenoid part no.)

SV

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## How to Order Solenoid Valves

SV 1 1 00 [ ] [ ] — 5 F [ ] [ ] [ ]

**Series**

1	SV1000
2	SV2000
3	SV3000
4	SV4000

**Type of actuation**

1	2 position single solenoid
2	2 position double solenoid
3	3 position closed center
4	3 position exhaust center
5	3 position pressure center
A	4 position dual 3 port valve: N.C./N.C.
B	4 position dual 3 port valve: N.O./N.O.
C	4 position dual 3 port valve: N.C./N.O.

\* 4 position dual 3 port valves are applicable to Series SV1000 and SV2000 only.

**Pilot type**

Nil	Internal pilot
R	External pilot

\* External pilot specifications is not available for 4 position dual 3 port valves.

**Back pressure check valve**

Nil	None
K	Built-in

\* Built-in back pressure check valve type is applicable to series SV1000 only.

\* Back pressure check valve is not available for 3 position closed center and 3 position pressure

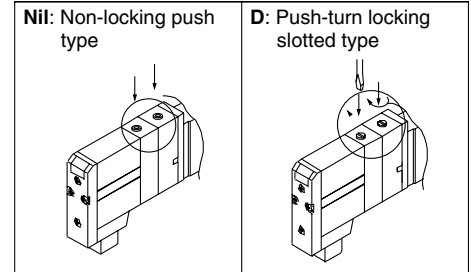
Refer to Precautions 2 on page 1-2-9.

Note)



Note) Available with manifold block for station additions. Refer to pages 1-2-89 and 1-2-93.

**Manual override**



**Light/Surge voltage suppressor**

U	With light/surge voltage suppressor
R	With surge voltage suppressor

**Rated voltage**

5	24 VDC
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# Series SV1000/2000/3000/4000

## Single Valve/Sub-plate Type

### IP67 Compliant

#### How to Order

**SV 1 1 00**   **5** **W1** **U** **D**    

**Series**

1	SV1000
2	SV2000
3	SV3000
4	SV4000

**Thread type**

Nil	Rc
F	G
N	NPT
T	NPTF

**Type of actuation**

1	<p>2 position single solenoid</p>
2	<p>2 position double solenoid</p>
3	<p>3 position closed center</p>
4	<p>3 position exhaust center</p>
5	<p>3 position pressure center</p>
A	<p>4 position dual 3 port valve: N.C./N.C.</p>
B	<p>4 position dual 3 port valve: N.O./N.O.</p>
C	<p>4 position dual 3 port valve: N.C./N.O.</p>

**Pilot type**

Nil	Internal pilot
R	External pilot

\* External pilot specifications is not available for 4 position dual 3 port valves.

**Rated voltage**

5	24 VDC
6	12 VDC

**M12 waterproof connector**

Symbol	Cable length (mm)
W1	300
W2	500
W3	1000
W4	2000
W7	5000

**Port size**

Symbol	Port size	Applicable series
Nil	Without sub-plate	
01	1/8	SV1000
02	1/4	SV2000 SV3000
03	3/8	SV3000 SV4000
04	1/2	SV4000

**Manual override**

Nil	Non-locking push type
D	Push-turn locking slotted type

**Light/Surge voltage suppressor**

U	With light/surge voltage suppressor
R	With surge voltage suppressor

SV3000 and 4000 are not available with dual 3 port valve.

### Series SV Solenoid Valve Specifications



Fluid		Air
Internal pilot operating pressure range (MPa)	2 position single	0.15 to 0.7
	4 position dual 3 port valve	
	2 position double	0.1 to 0.7
	3 position	0.2 to 0.7
External pilot operating pressure range (MPa)	Operating pressure range	-100 kPa to 0.7
	2 position single, double	0.25 to 0.7
	3 position	
Ambient and fluid temperature (°C)		-10 to 50 (No freezing. Refer to page 1-7-4.)
Max. operating frequency (Hz)	2 position single, double	5
	4 position dual 3 port valve	
	3 position	3
Manual override		Non-locking push type Push-turn locking slotted type
Pilot exhaust method	Internal pilot	Common exhaust type for main and pilot valve Pilot valve individual exhaust
	External pilot	
Lubrication		Not required
Mounting orientation		Unrestricted
Impact/Vibration resistance (ms <sup>2</sup> )		150/30 (8.3 to 2000 Hz)
Enclosure		IP67 (Based on IEC529)
Electrical entry		M12 waterproof connector
Coil rated voltage		24 VDC, 12 VDC
Allowable voltage fluctuation		±10% of rated voltage
Power consumption (W)		0.6 (With indicator light: 0.65)
Surge voltage suppressor		Zener diode
Indicator light		LED

**SV**

**SZ**

**SY**

**SYJ**

**SX**

Note) Impact resistance: No malfunction occurred when it is tested with a drop tester in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 8.3 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

### Response Time

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)			
	SV1000	SV2000	SV3000	SV4000
2 position single	11 or less	25 or less	28 or less	40 or less
2 position double	10 or less	17 or less	26 or less	40 or less
3 position	18 or less	29 or less	32 or less	82 or less
4 position dual 3 port valve	15 or less	33 or less	—	—

Note) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage)

### M12 Waterproof Connector Wiring Specifications

Single solenoid	Double solenoid
<p>4 pins connector (M12) plug</p> <p>Solenoid</p> <p>Circuit diagram</p> <p>Solenoid valve side pin wiring diagram</p>	<p>4 pins connector (M12) plug</p> <p>Solenoid A</p> <p>Solenoid B</p> <p>Circuit diagram</p> <p>Solenoid valve side pin wiring diagram</p>

Note) Solenoid valves have no polarity.

# Series SV

## Flow Characteristics/Weight

### Series SV1000

Valve model	Type of actuation		Port size	Flow characteristics <sup>(1)</sup>						Weight (g) <sup>(2)</sup>
				1 → 4/2 (P → A/B)			4/2 → 5/3(A/B → EA/EB)			M12 waterproof connector (Cable length 300 mm)
				C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	
SV1□00-□-01	2 position	Single	Rc 1/8	1.0	0.30	0.24	1.1	0.30	0.26	123 (88)
		Double								128 (93)
	3 position	Closed center		0.77	0.28	0.18	0.85	0.30	0.19	130 (95)
		Exhaust center		0.73	0.31	0.18	1.1 [0.55]	0.26 [0.52]	0.24 [0.16]	
		Pressure center		1.2 [0.51]	0.24 [0.45]	0.29 [0.14]	0.89	0.47	0.24	
		N.C./N.C.		0.68	0.35	0.18	1.1	0.39	0.29	
	4 position dual	N.O./N.O.		0.87	0.31	0.23	0.77	0.44	0.21	128 (93)

Note 1) [ ]: Denotes the normal position. Note 2) ( ): Denotes without sub-plate.

### Series SV2000

Valve model	Type of actuation		Port size	Flow characteristics <sup>(1)</sup>						Weight (g) <sup>(2)</sup>
				1 → 4/2 (P → A/B)			4/2 → 5/3(A/B → EA/EB)			M12 waterproof connector (Cable length 300 mm)
				C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	
SV2□00-□-02	2 position	Single	Rc 1/4	2.4	0.41	0.64	2.8	0.29	0.66	159 (96)
		Double								163 (100)
	3 position	Closed center		1.8	0.47	0.50	1.8	0.40	0.47	168 (105)
		Exhaust center		1.4	0.55	0.44	3.0 [1.2]	0.33 [0.48]	0.72 [0.37]	
		Pressure center		3.3 [0.84]	0.36 [0.60]	0.85 [0.28]	1.8	0.40	0.48	
		N.C./N.C.		2.2	0.40	0.55	2.6	0.31	0.60	
	4 position dual	N.O./N.O.		2.7	0.24	0.57	2.3	0.36	0.54	163 (100)

Note 1) [ ]: Denotes the normal position. Note 2) ( ): Denotes without sub-plate.

### Series SV3000

Valve model	Type of actuation		Port size	Flow characteristics <sup>(1)</sup>						Weight (g) <sup>(2)</sup>
				1 → 4/2 (P → A/B)			4/2 → 5/3(A/B → EA/EB)			M12 waterproof connector (Cable length 300 mm)
				C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	
SV3□00-□-02	2 position	Single	Rc 1/4	4.1	0.41	1.1	4.1	0.29	1.0	250 (121)
		Double								253 (124)
	3 position	Closed center		3.0	0.43	0.80	2.6	0.41	0.72	26 (132)
		Exhaust center		2.6	0.42	0.71	4.7 [1.7]	0.35 [0.48]	1.1 [0.49]	
		Pressure center		5.3 [2.3]	0.39 [0.49]	1.3 [0.65]	2.2	0.49	0.63	
		N.C./N.C.		2.6	0.42	0.71	4.8 [1.7]	0.35 [0.48]	1.1 [0.34]	
SV3□00-□-03	2 position	Single	Rc 3/8	4.9	0.29	1.2	4.5	0.27	1.1	235
		Double								238
	3 position	Closed center		3.0	0.40	0.80	2.6	0.45	0.73	246
		Exhaust center		2.6	0.42	0.71	4.8 [1.7]	0.35 [0.48]	1.1 [0.34]	
		Pressure center		5.3 [2.3]	0.31 [0.51]	1.3 [0.64]	2.3	0.45	0.66	
		N.C./N.C.		2.6	0.42	0.71	4.8 [1.7]	0.35 [0.48]	1.1 [0.34]	

Note 1) [ ]: Denotes the normal position. Note 2) ( ): Denotes without sub-plate.

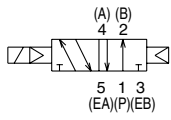
### Series SV4000

Valve model	Type of actuation		Port size	Flow characteristics <sup>(1)</sup>						Weight (g) <sup>(2)</sup>
				1 → 4/2 (P → A/B)			4/2 → 5/3(A/B → EA/EB)			M12 waterproof connector (Cable length 300 mm)
				C [dm <sup>3</sup> /(s·bar)]	b	Cv	C [dm <sup>3</sup> /(s·bar)]	b	Cv	
SV4□00-□-03	2 position	Single	Rc 3/8	7.9	0.34	2.0	9.6	0.43	2.5	505 (208)
		Double								509 (212)
	3 position	Closed center		7.5	0.33	1.8	7.3	0.30	1.7	530 (233)
		Exhaust center		7.2	0.34	1.7	13 [4.0]	0.23 [0.41]	2.8 [0.95]	
		Pressure center		12 [3.3]	0.26 [0.41]	2.8 [0.84]	6.7	0.40	1.9	
		N.C./N.C.		7.2	0.34	1.7	13 [4.0]	0.23 [0.41]	2.8 [0.95]	
SV4□00-□-04	2 position	Single	Rc 1/2	8.0	0.48	2.2	10	0.29	2.5	484
		Double								488
	3 position	Closed center		7.6	0.32	1.8	7.3	0.32	1.8	509
		Exhaust center		7.3	0.42	2.0	13 [4.7]	0.32 [0.54]	3.6 [1.5]	
		Pressure center		12 [3.3]	0.33 [0.51]	3.3 [0.94]	7.4	0.33	1.9	
		N.C./N.C.		7.3	0.42	2.0	13 [4.7]	0.32 [0.54]	3.6 [1.5]	

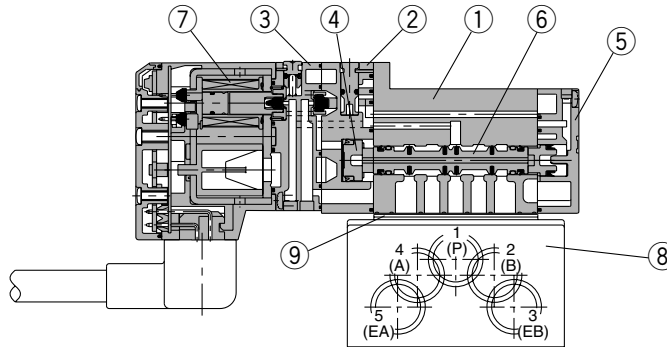
Note 1) [ ]: Denotes the normal position. Note 2) ( ): Denotes without sub-plate.

**Construction: SV1000/2000/3000/4000 Tie-rod Base Type**

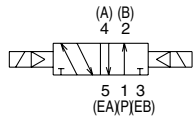
2 position single



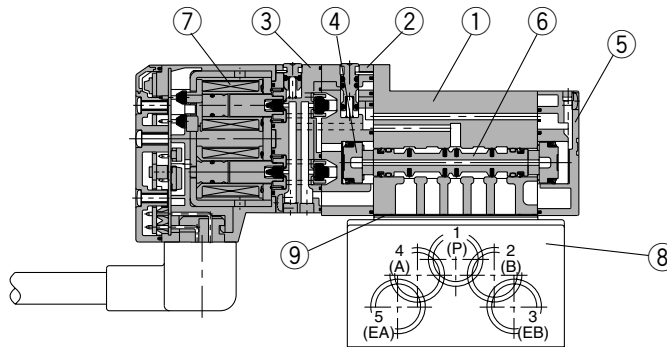
2 position single



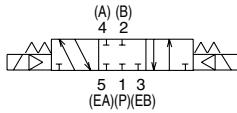
2 position double



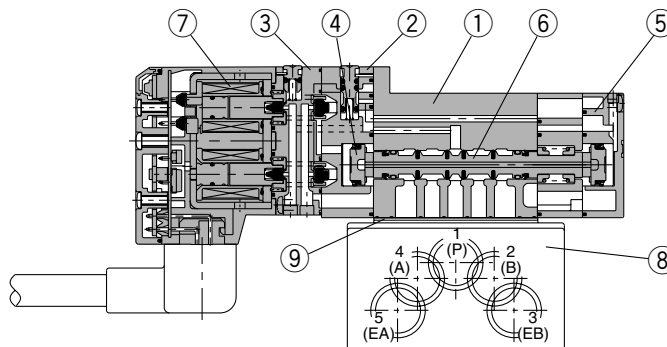
2 position double



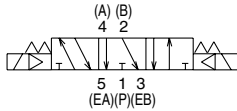
3 position closed center



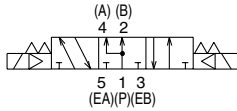
3 position closed center/exhaust center/pressure center



3 position exhaust center



3 position pressure center



**Component Parts**

No.	Description	Material	Note
①	Body	Aluminum die-casted (SV1000 is zinc die-casted)	White
②	Adapter plate	Resin	White
③	Pilot body	Resin	White
④	Piston	Resin	—
⑤	End plate	Resin	White
⑥	Spool valve assembly	Aluminum/HNBR	—
⑦	Molded coil	—	Gray

**Caution**

Mounting screw tightening torques

M2: 0.16 N·m  
M3: 0.8 N·m  
M4: 1.4 N·m

**Replacement Parts**

No.	Description	Part no.				Note
		SV1□00	SV2□00	SV3□00	SV4□00	
⑧	Sub-plate	SY3000-27-1□-Q	SY5000-27-1□-Q	1/4: SY7000-27-1□-Q 3/8: SY7000-27-2□-Q	3/8: SY9000-27-1□ 1/2: SY9000-27-2□	Aluminum die-casted Refer to thread types on page 1-2-100 for □.
⑨	Gasket	SY3000-11-25	SY5000-11-18	SY7000-11-14	SY9000-11-2	
—	Round head combination screw	SX3000-22-2 (M2 x 24)	SV2000-21-1 (M3 x 30)	SV3000-21-1 (M4 x 35)	SV2000-21-2 (M3 x 40)	For valve mounting (Matt nickel plated)

Note) Round head combination screw requires 2 pcs. per one valve for Series SV1000, SV2000, SV3000. For Series SV4000, it requires 3 pcs.

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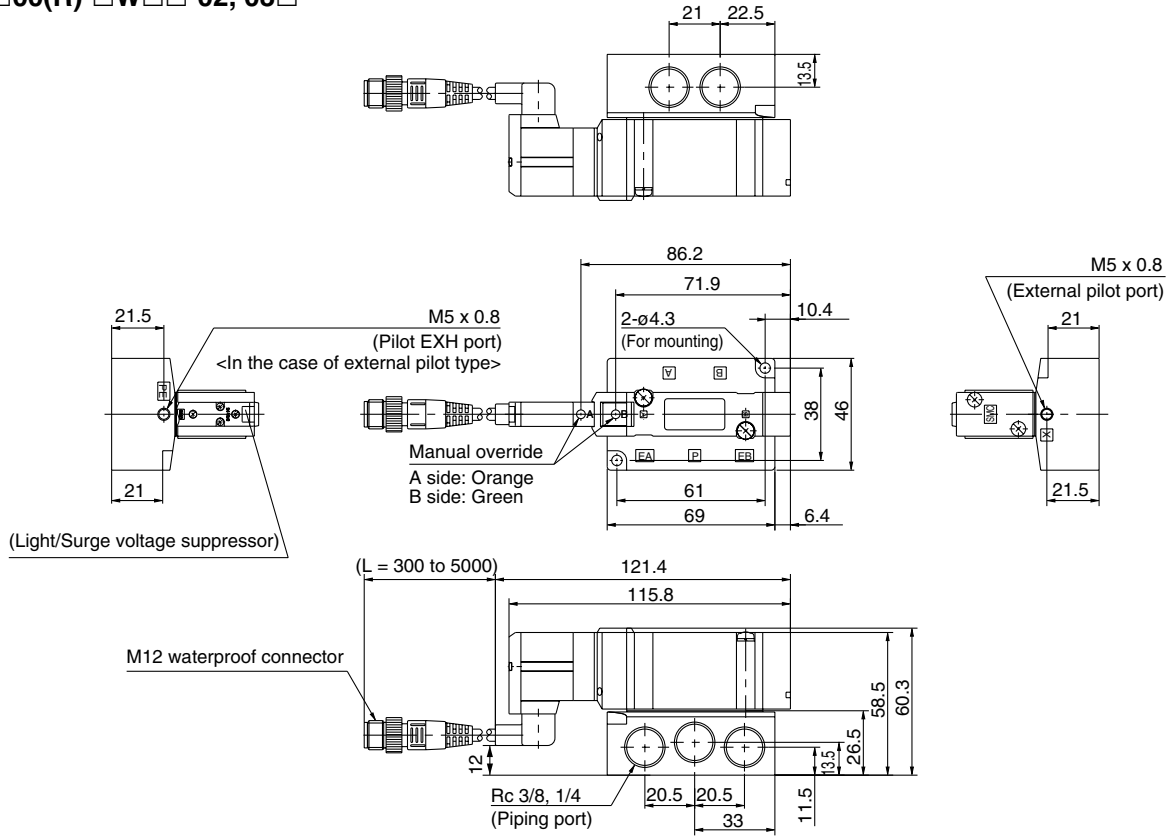
SX

# Series SV

## Dimensions: Series SV3000

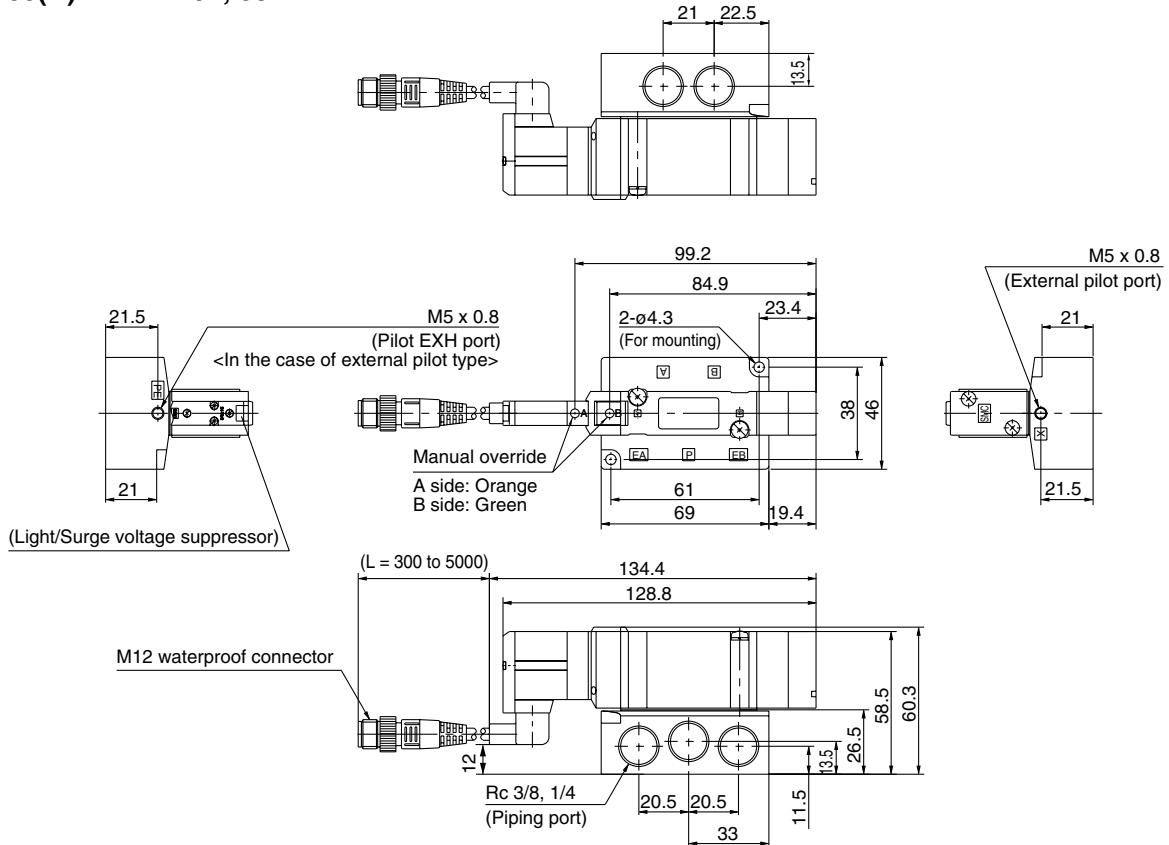
### 2 position single/double [M12 waterproof connector type]

SV3□00(R)-□W□□-02, 03□



### 3 position closed center/exhaust center/pressure center [M12 waterproof connector type]

SV3□00(R)-□W□□-02, 03□



# Series SV

# Made to Order Specifications:

For detailed specifications, delivery and pricing, please contact SMC.

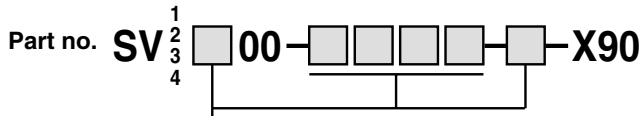
## 1 Main Valve Fluoro Rubber Specifications

Symbol

-X90

Fluoro rubber is used for rubber parts of the main valve to allow use in applications such as the following.

1. When using a lubricant other than the recommended turbine oil, and there is a possibility of malfunction due to swelling of the spool valve seals.
2. When ozone enters or is generated in the air supply.



● Entry is the same as standard products.

Note) Because in series -X90 fluoro rubber is used for only main valve, the rubber parts of the application/usage in conditions requiring heat resistance should be avoided.