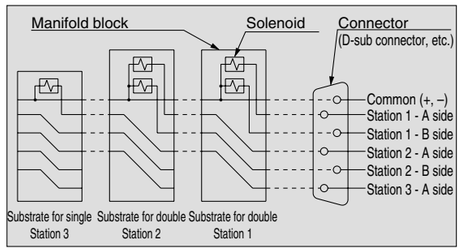
New Concept Connector Type Manifold
Series SV1000/2000/3000/4000

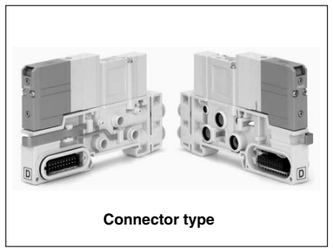
■ The use of multi-pin connectors to replace wiring inside manifold blocks provides flexibility when adding stations or changing manifold configuration.

Series SV employs a multi-connector instead of the conventional lead wires for internal.
By connecting each block with a connector, changes to manifold stations are greatly simplified.

Connector wiring diagram

For both serial and parallel wiring, additional manifold blocks are sequentially assigned pins on the connector. This makes it completely unnecessary to disassemble the connector unit.



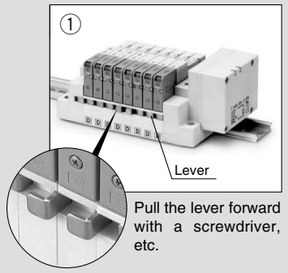


Connector type

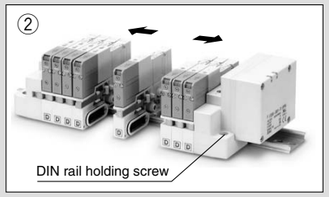
Service life of 50 million cycles or more (Based on SMC life test conditions)

■ Cassette base type manifold (For SV1000/2000)

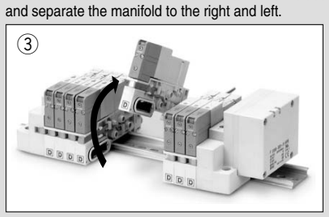
Cassette base type manifolds offer the ultimate in flexibility.
Manifold sections can be added using a simple release mechanism.



Pull the lever forward with a screwdriver, etc.



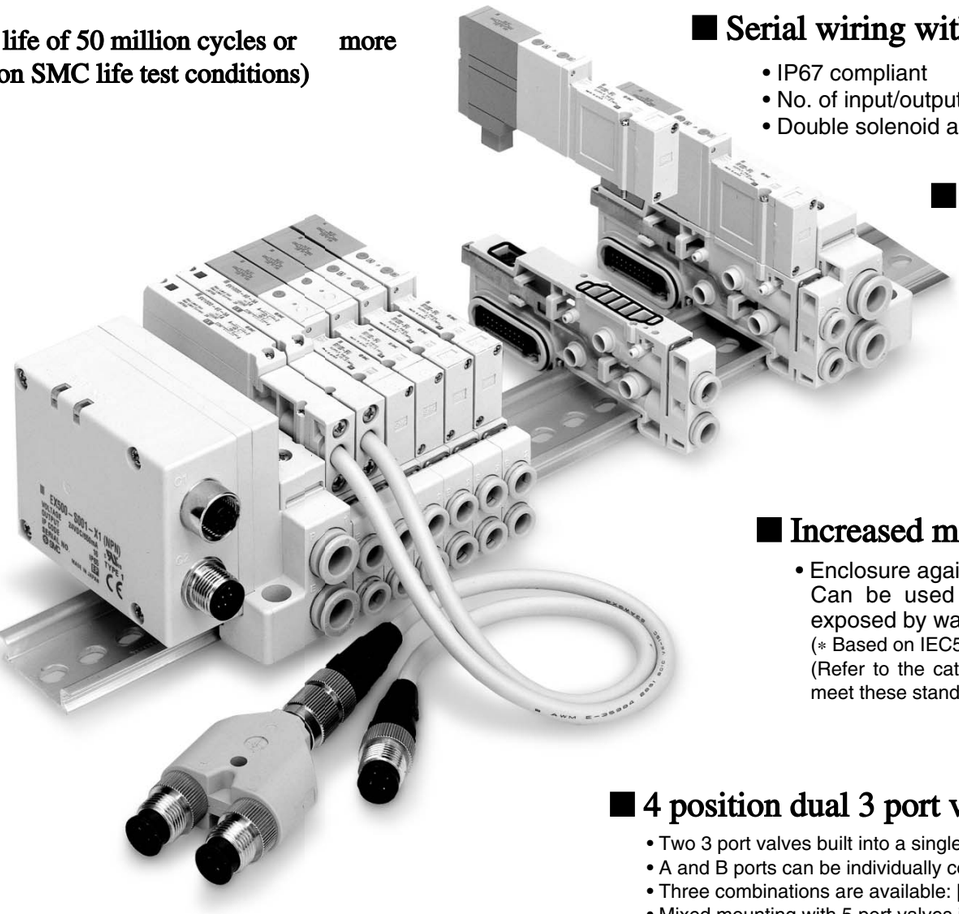
Loosen the screws that hold the DIN rail at both sides and separate the manifold to the right and left.



Pull the valve up at the front.

■ Tie-rod base manifold (For SV1000/2000/3000/4000)

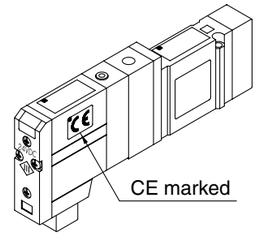
Conventional tie-rod base type manifolds are also available.
34 pins connector allows up to 16 stations with double solenoids.



Power consumption: 0.6 W (Current: 25 mA, 24 VDC)

■ A relay output module is available for control of devices up to 110 VAC, 3 A.

■ Product is CE compliant with standard part number. CE



■ Serial wiring gateway type Series EX500

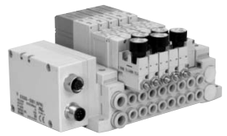
- IP67 protection (Gateway unit and input manifold are compliant with IP65.)
- No. of input/output point: 128 points (Output 64 points, Input 64 points)
- Controls up to 4 branches with 32 I/O per branch
- A single cable from the gateway provides both signal and power for each branch, eliminating the need for separate power connections for each manifold.

■ Serial wiring with I/O unit Series EX250

- IP67 compliant
- No. of input/output point: 64 points (Output 32 points, Input 32 points)
- Double solenoid allows up to 16 stations (up to 32 solenoids).

■ Interface regulator Series SV1000, 2000, 3000, 4000

- P port regulation, A port regulation and B port regulation are selectable, depending on an application.
  Able to set the pressure arbitrarily for each station of the manifold just by inserting between manifold base and valve.

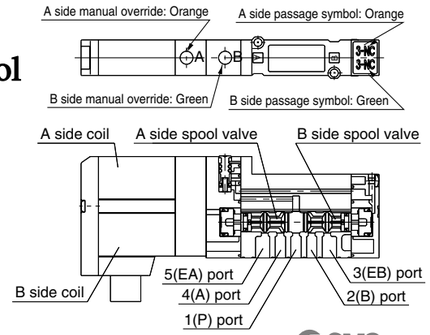


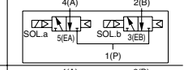
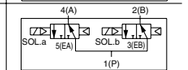
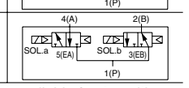
■ Increased moisture and dust resistance.

- Enclosure against foreign matters and water is conforming to IP67*. Can be used in an atmosphere where the valve or manifold is exposed by water, etc. directly.
  (* Based on IEC529)
  (Refer to the catalog contents for details, as some types of connectors do not meet these standards.)

■ 4 position dual 3 port valves available for Series SV1000/2000

- Two 3 port valves built into a single valve body.
- A and B ports can be individually controlled.
- Three combinations are available: [N.C./N.C.], [N.O./N.O.], and [N.C./N.O.].
- Mixed mounting with 5 port valves is also possible.
- Labels are attached to indicate A and B side functions, using the same color as the manual override.



Model	A side	B side	JIS Symbol
$SV^{1}_{2}A00$	N.C. valve	N.C. valve	
$SV^{1}_{2}B00$	N.O. valve	N.O. valve	
$SV^{1}_{2}C00$	N.C. valve	N.O. valve	

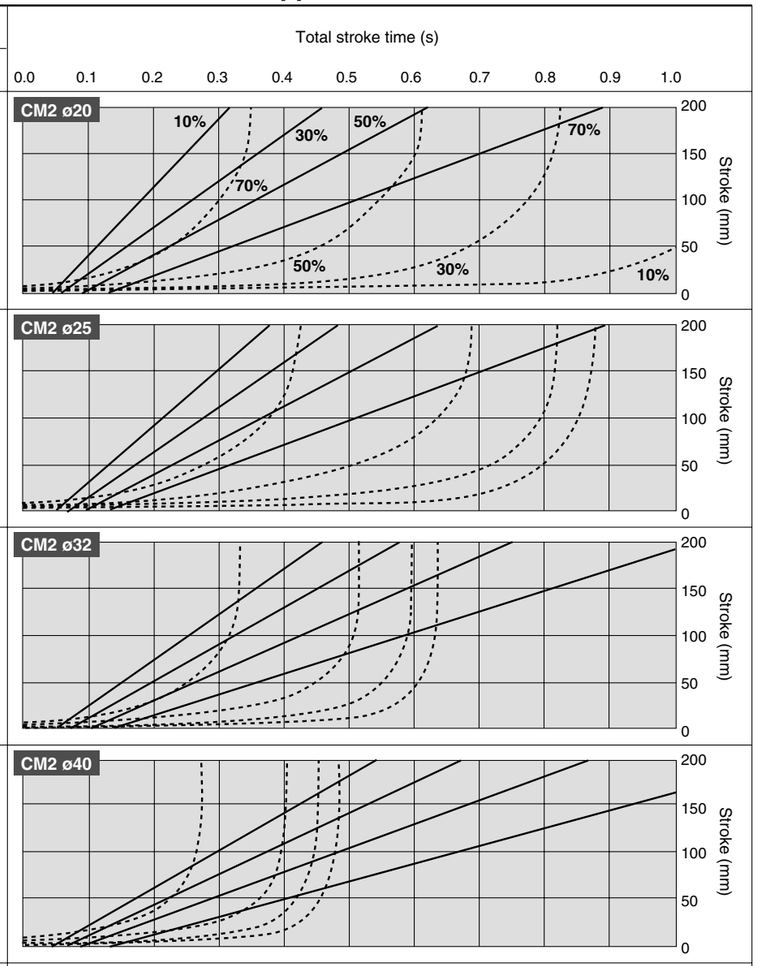
* External pilot specifications is not available for 4 position dual 3 port valves.

Air Cylinders Drive System
Full Stroke Time and Speed at the End

Series SV1000

Applicable bore size: ø20, ø25, ø32, ø40

Applicable related components			
Solenoid valve	Silencer	Tubing	Speed controller
SV1□00	ANA1 -C08	T0604	AS2201F -01-06 AS2200-01
			AS2201F -01-06 AS2200-01
			AS2201F -01-06 AS2200-01
			AS2201F -02-06 AS2200-02

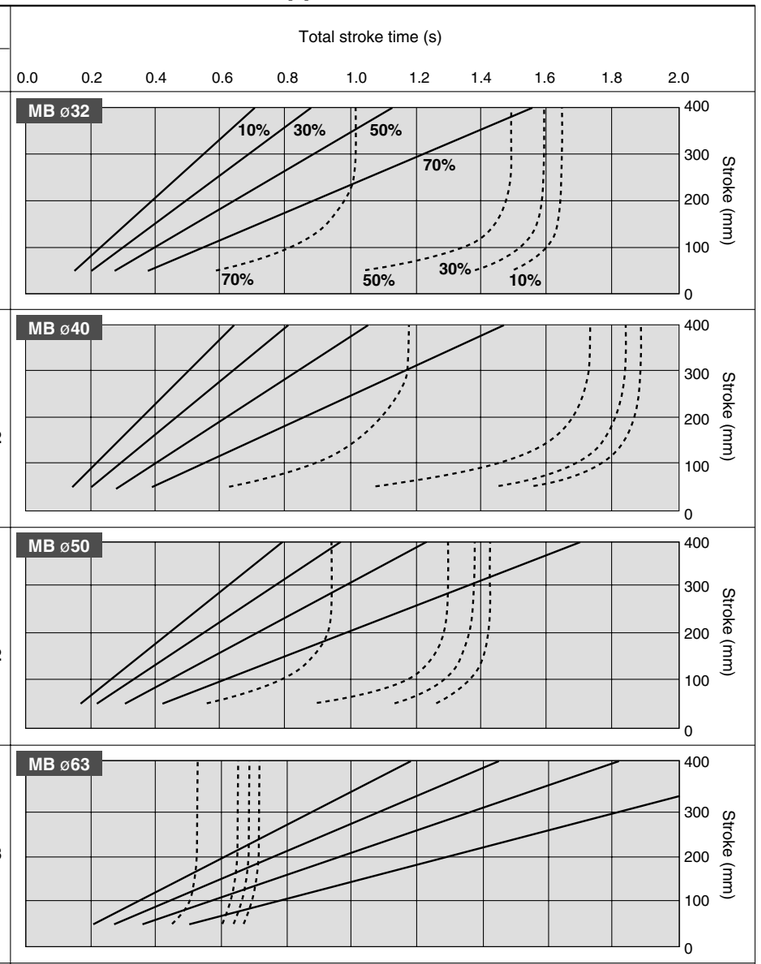


For details regarding different conditions, make determinations after using the SMC Model Selection Program - Pneumatic Cylinder Drive Systems.

Series SV2000

Applicable bore size: ø32, ø40, ø50, ø63

Applicable related components			
Solenoid valve	Silencer	Tubing	Speed controller
SV2□00	ANA1 -C10	T0806	AS2201F -01-08 AS2200-01
			AS2201F -02-08 AS2200-02
			AS3201F -02-08 AS3000-02
			AS4000-03



For details regarding different conditions, make determinations after using the SMC Model Selection Program - Pneumatic Cylinder Drive Systems.

How to Read the Graph

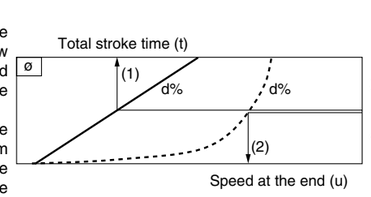
These graphs show the total stroke time and speed at the end when a cylinder drive system is composed of the ideal components. The graphs above indicate the total stroke time and speed at the end with respect to various load ratios and strokes for each cylinder bore size.

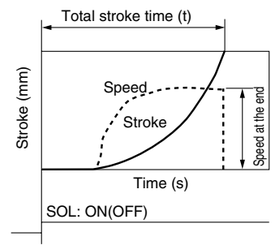
Common Conditions

Inlet pressure	0.5 MPa
Piping length	SV1000: 1 m, SV2000/3000: 2 m, SV4000: 3 m
Cylinder direction	Vertical upward
Speed controller	Meter-out, Directly connected to cylinder, Needle fully open
Load ratio	{(Load weight x 9.8) Theoretical output} x 100%

Example

Go to the chart for the bore size cylinder you are using (ø). To find the total stroke time (t), follow arrow (1) from your stroke length ("L") to the solid line representing the load ratio (d%) for the application
then up to the total stroke time (t). To find the ending cylinder speed (u), follow arrow (2) from your stroke length ("L") to the dotted line representing the load ratio (d%) then down to the ending cylinder speed (u).



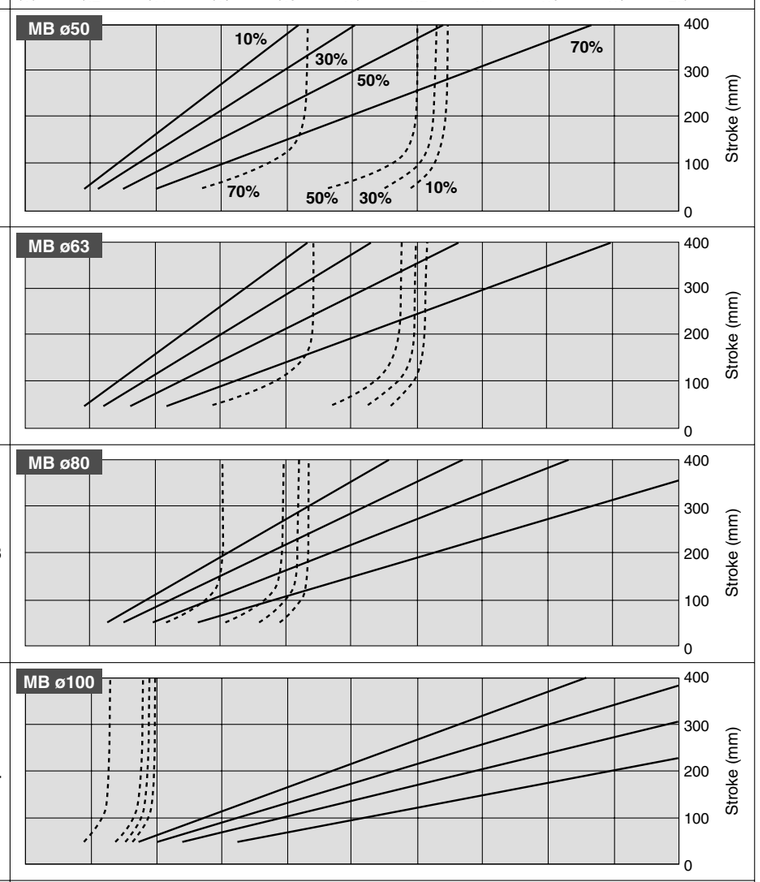


Air Cylinders Drive System
Full Stroke Time and Speed at the End

Series SV3000

Applicable bore size: ø50, ø63, ø80, ø100

Applicable related components				Total stroke time (s)
Solenoid Valve	Silencer	Tubing	Speed controller	0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0
SV3□00	ANA1 -C12	T1075	AS2201F -02-10	MB ø50
			AS3201F -03-10	MB ø63
			AS4000-03	MB ø80
			AS4000-04	MB ø100
Solenoid valve	Silencer	Tubing	Speed controller	200 300 400 500 600 700 800 900 1000 1100 1200
Applicable related components				Speed at the end (mm/s)

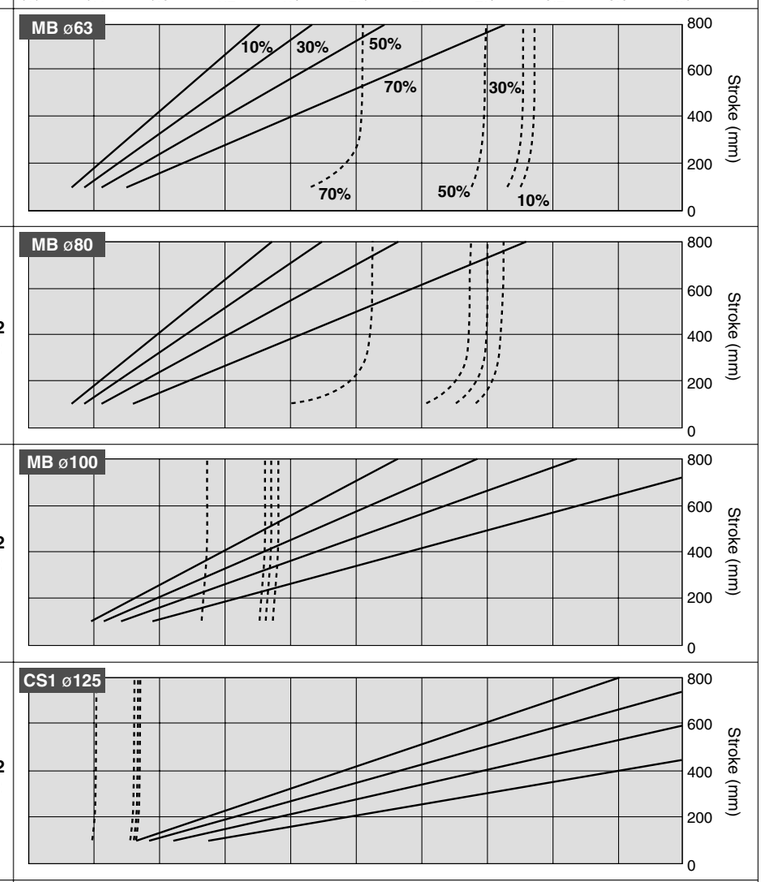


For details regarding different conditions, make determinations after using the SMC Model Selection Program - Pneumatic Cylinder Drive Systems.

Series SV4000

Applicable bore size: ø63, ø80, ø100, ø125

Applicable related components				Total stroke time (s)
Solenoid valve	Silencer	Tubing	Speed controller	0.0 0.4 0.8 1.2 1.6 2.0 2.4 2.8 3.2 3.6 4.0
SV4□00	AN300 -KM12	T1209	AS3201F -02-12	MB ø63
			AS5000-02 AS420-02	MB ø80
			AS5000-02 AS420-02	MB ø100
			AS5000-02 AS420-02	CS1 ø125
Solenoid valve	Silencer	Tubing	Speed controller	200 300 400 500 600 700 800 900 1000 1100 1200
Applicable related components				Speed at the end (mm/s)



For details regarding different conditions, make determinations after using the SMC Model Selection Program - Pneumatic Cylinder Drive Systems.

How to Read the Graph

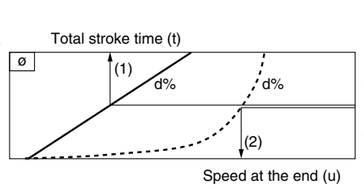
These graphs show the total stroke time and speed at the end when a cylinder drive system is composedof the ideal components. The graphs above indicate the total stroke time and speed at the end with respect to various load ratios and strokes for each cylinder bore size.

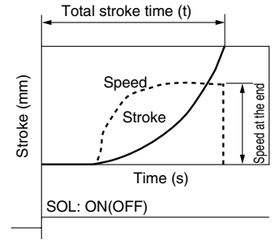
Common Conditions

Inlet pressure	0.5 MPa
Piping length	SV1000: 1 m, SV2000/3000: 2 m, SV4000: 3 m
Cylinder direction	Vertical upward
Speed controller	Meter-out, Directly connected to cylinder, Needle fully open
Load ratio	{(Load weight x 9.8) Theoretical output} x 100%

Example

Go to the chart for the bore size cylinder you are using (ø). To find the total stroke time (t), follow arrow (1) from your stroke length ("L") to the solid line representing the load ratio (d%) for the application
then up to the total stroke time (t). To find the ending cylinder speed (u), follow arrow (2) from your stroke length ("L") to the dotted line representing the load ratio (d%) then down to the ending cylinder speed (u).





Series SV1000/2000/3000/4000
Single Valve/Sub-plate Type IP67 Compliant

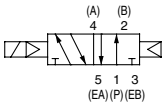
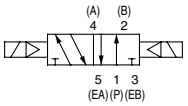
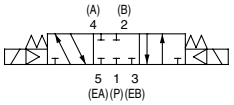
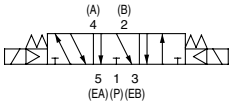
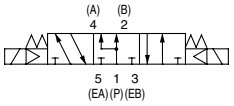
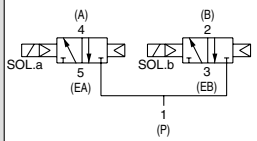
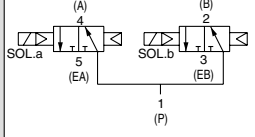
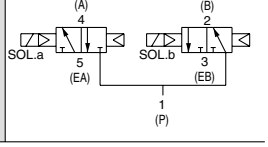
How to Order

SV [1] [1] 00 [ ] — [5] [W1] [U] [D] — [ ] [ ]

Series

1	SV1000
2	SV2000
3	SV3000
4	SV4000

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. 

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

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

Light/Surge voltage suppressor

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

Manual override

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

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

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Series SV Solenoid Valve Specifications

Fluid		Air
Internal pilot operating pressure range (MPa)	2 position single 4 position dual 3 port valve	0.15 to 0.7
	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 3 position	0.25 to 0.7
Ambient and fluid temperature (°C)		–10 to 50 (No freezing. Refer to page 1-7-4.)
Max. operating frequency (Hz)	2 position single, double 4 position dual 3 port valve	5
	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	Pilot valve individual exhaust
Lubrication		Not required
Mounting orientation		Unrestricted
Impact/Vibration resistance (ms^2)		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

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

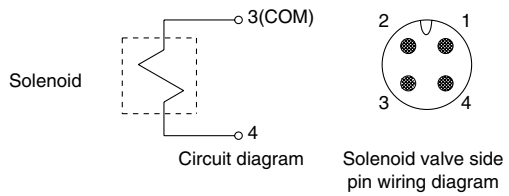
Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)			
	SV1000	**SV2000**	**SV3000**	**SV4000**
2 position single	11 or less	25 or less	28 or less	40 or less
2 position double	10 or less	17 or less	26 or less	40 or less
3 position	18 or less	29 or less	32 or less	82 or less
4 position dual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

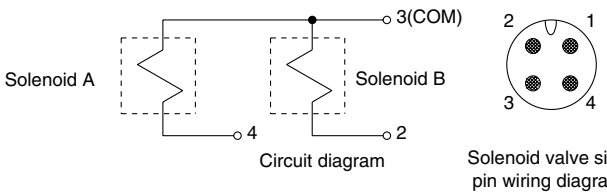
4 pins connector (M12) plug



Circuit diagram — Solenoid valve side pin wiring diagram

Double solenoid

4 pins connector (M12) plug



Circuit diagram — Solenoid valve side pin wiring diagram

Note) Solenoid valves have no polarity.

Flow Characteristics/Weight

Series SV1000

Valve model	Type of actuation		Port size	Flow characteristics (1)						Weight (g) (2)
				1 → 4/2 (P → A/B)			4/2 → 5/3(A/B → EA/EB)			M12 waterproof connector (Cable length 300 mm)
				C [dm³/(s·bar)]	b	Cv	C [dm³/(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	
	4 position dual	N.C./N.C.		0.68	0.35	0.18	1.1	0.39	0.29	128 (93)
		N.O./N.O.		0.87	0.31	0.23	0.77	0.44	0.21	

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

Series SV2000

Valve model	Type of actuation		Port size	Flow characteristics (1)						Weight (g) (2)
				1 → 4/2 (P → A/B)			4/2 → 5/3(A/B → EA/EB)			M12 waterproof connector (Cable length 300 mm)
				C [dm³/(s·bar)]	b	Cv	C [dm³/(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	
	4 position dual	N.C./N.C.		2.2	0.40	0.55	2.6	0.31	0.60	163 (100)
		N.O./N.O.		2.7	0.24	0.57	2.3	0.36	0.54	

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

Series SV3000

Valve model	Type of actuation		Port size	Flow characteristics (1)						Weight (g) (2)
				1 → 4/2 (P → A/B)			4/2 → 5/3(A/B → EA/EB)			M12 waterproof connector (Cable length 300 mm)
				C [dm³/(s·bar)]	b	Cv	C [dm³/(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	
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	

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

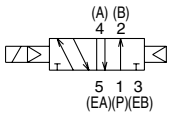
Series SV4000

Valve model	Type of actuation		Port size	Flow characteristics (1)						Weight (g) (2)
				1 → 4/2 (P → A/B)			4/2 → 5/3(A/B → EA/EB)			M12 waterproof connector (Cable length 300 mm)
				C [dm³/(s·bar)]	b	Cv	C [dm³/(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	
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	

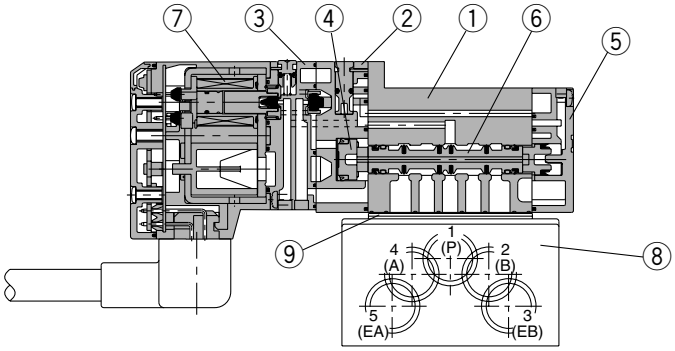
Note 1) [ ]: Denotes the normal position. Note 2) ( ): Denotes without sub-plate.

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

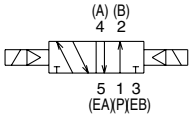
2 position single



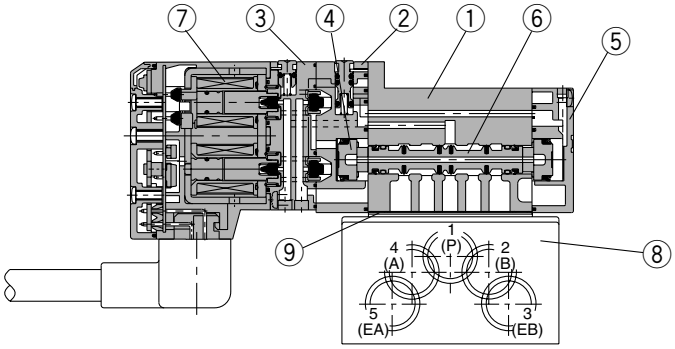
2 position single



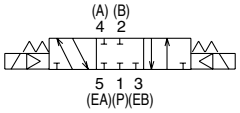
2 position double



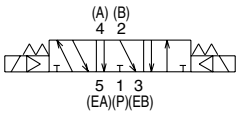
2 position double



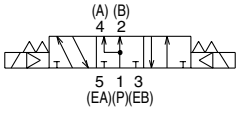
3 position closed center



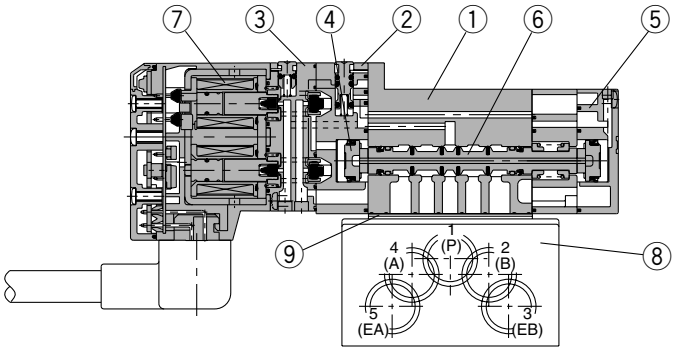
3 position exhaust center



3 position pressure center



3 position closed center/exhaust center/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

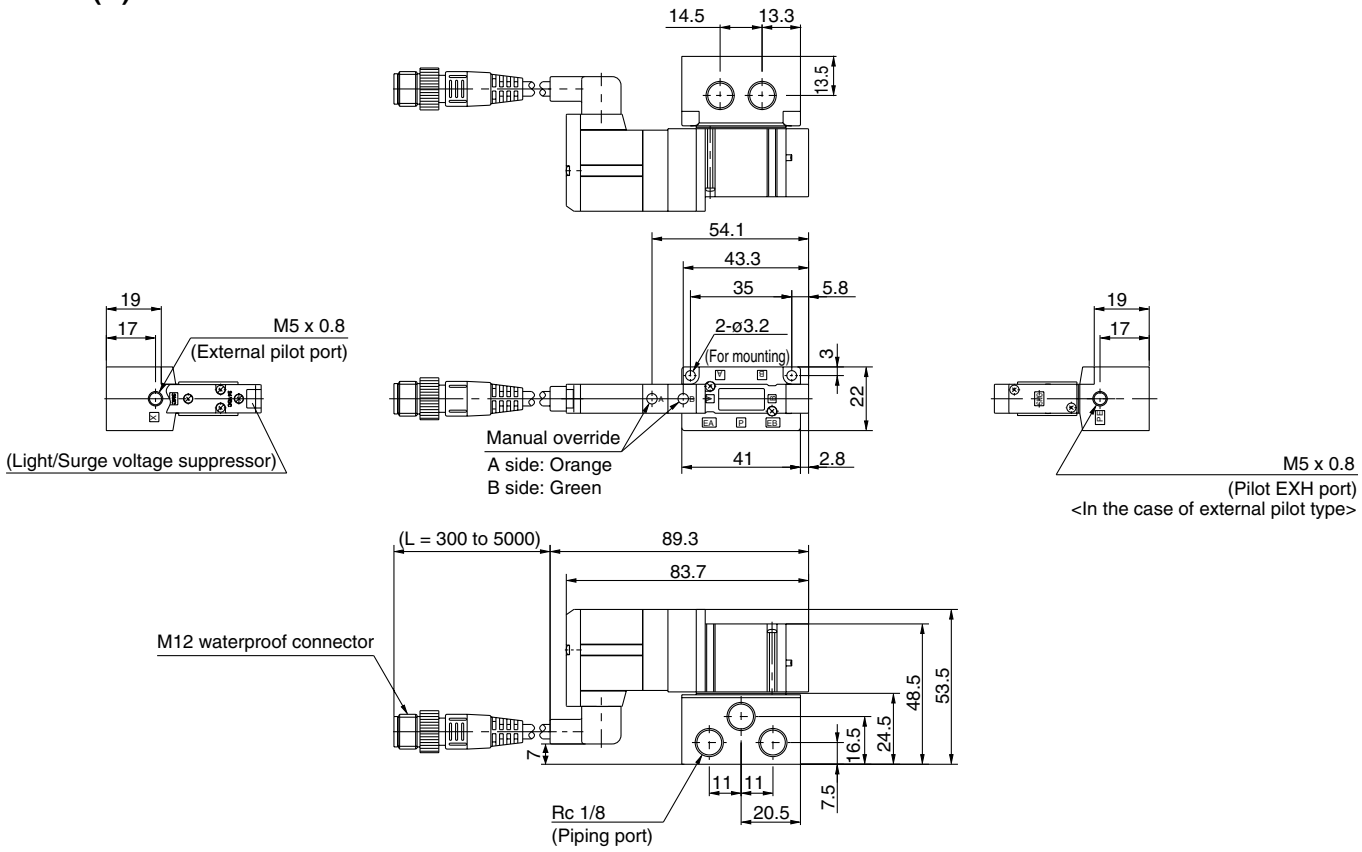
Replacement Parts

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)

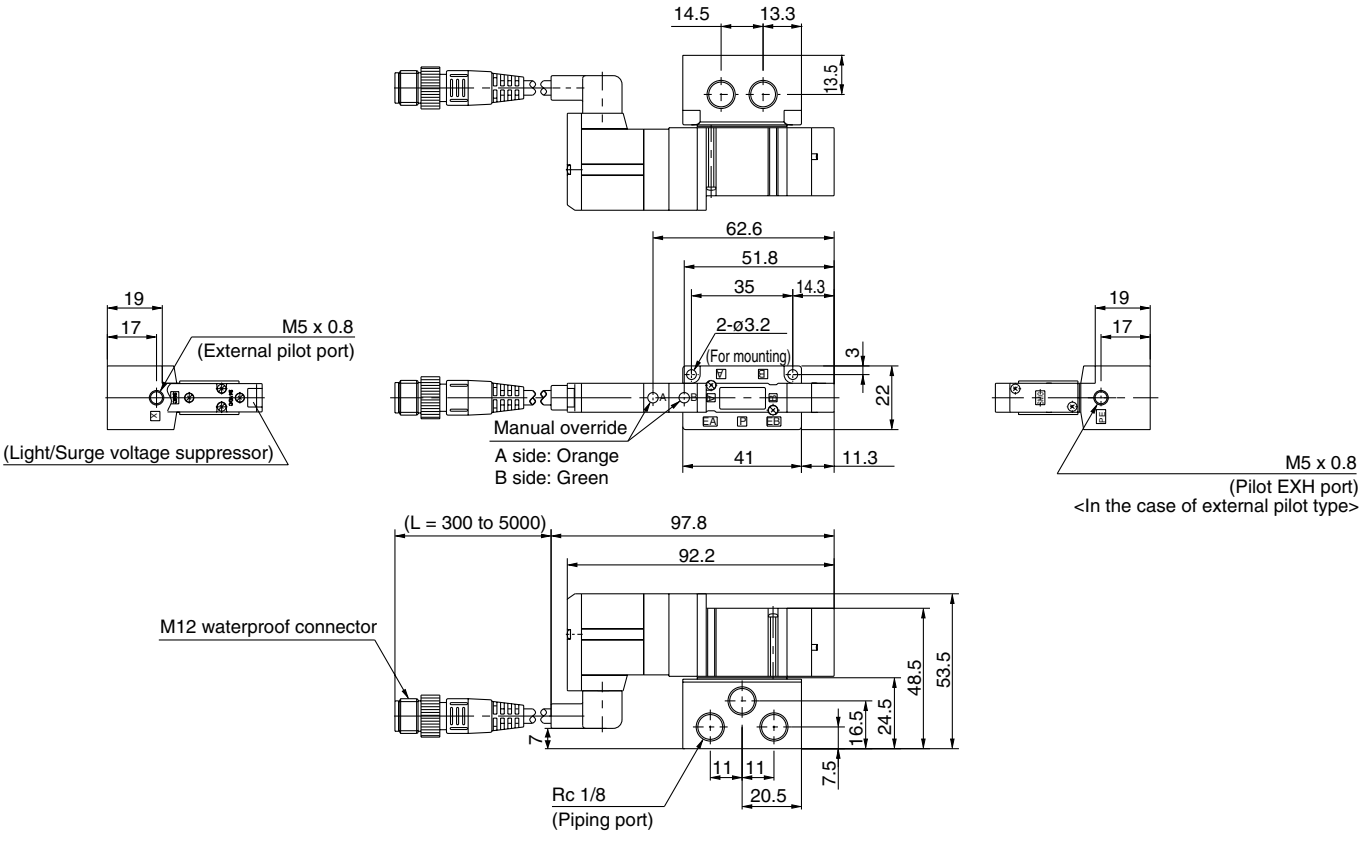
Note) Round head combination screw requires 2 pcs. per one valve for Series SV1000, SV2000, SV3000. For Series SV4000, it requires 3 pcs.

Dimensions: Series SV1000

2 position single/double, 4 position dual 3 port [M12 waterproof connector type]
SV1□00(R)-□W□□-01□

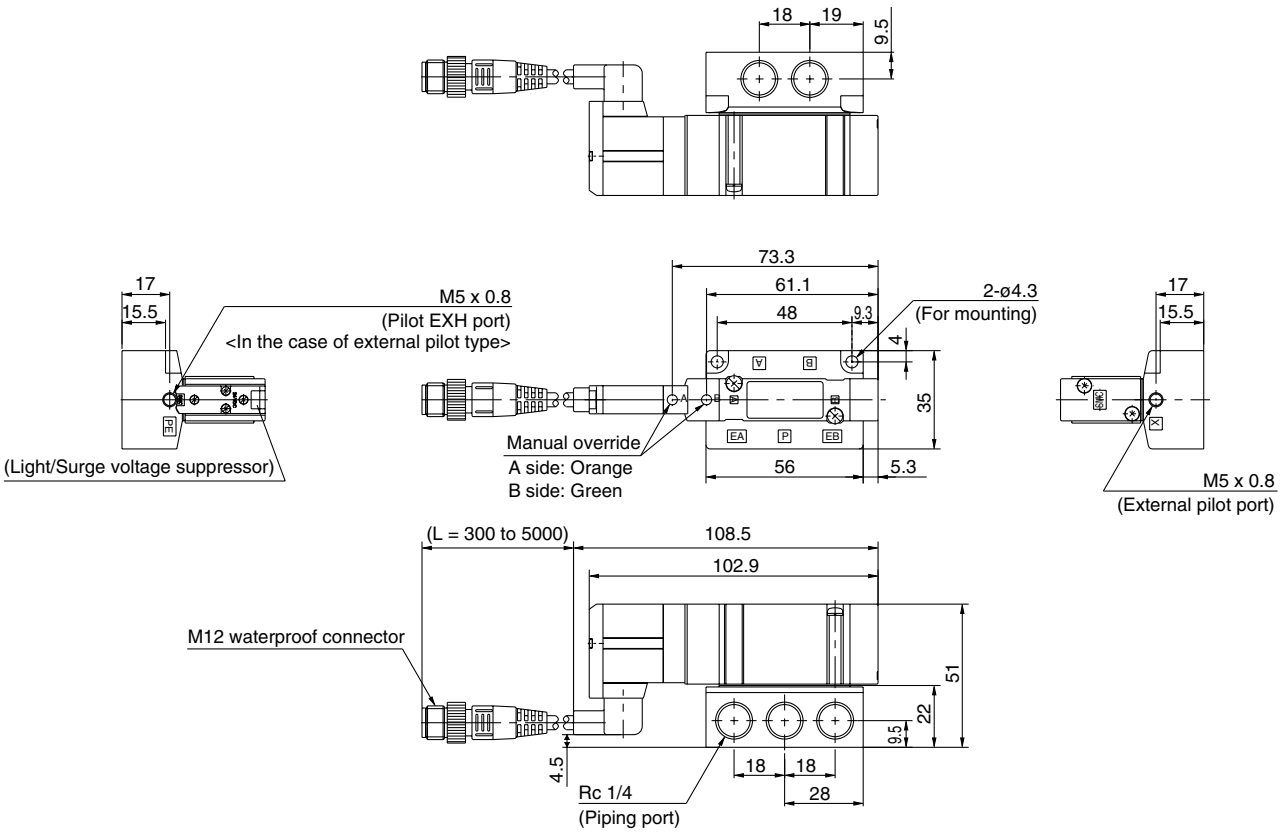


3 position closed center/exhaust center/pressure center [M12 waterproof connector type]
SV1□00(R)-□W□□-01□

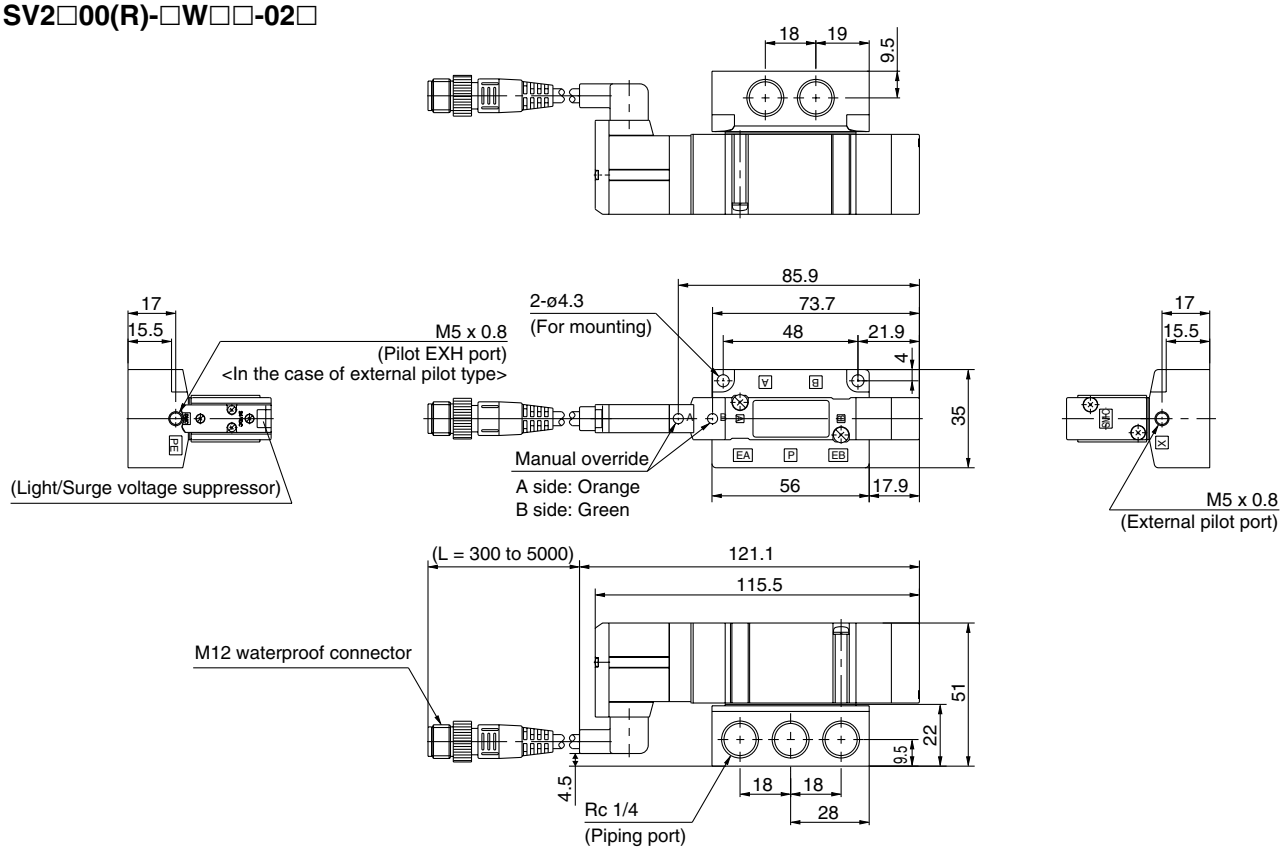


Dimensions: Series SV2000

2 position single/double, 4 position dual 3 port [M12 waterproof connector type]
SV2□00(R)-□W□□-02□

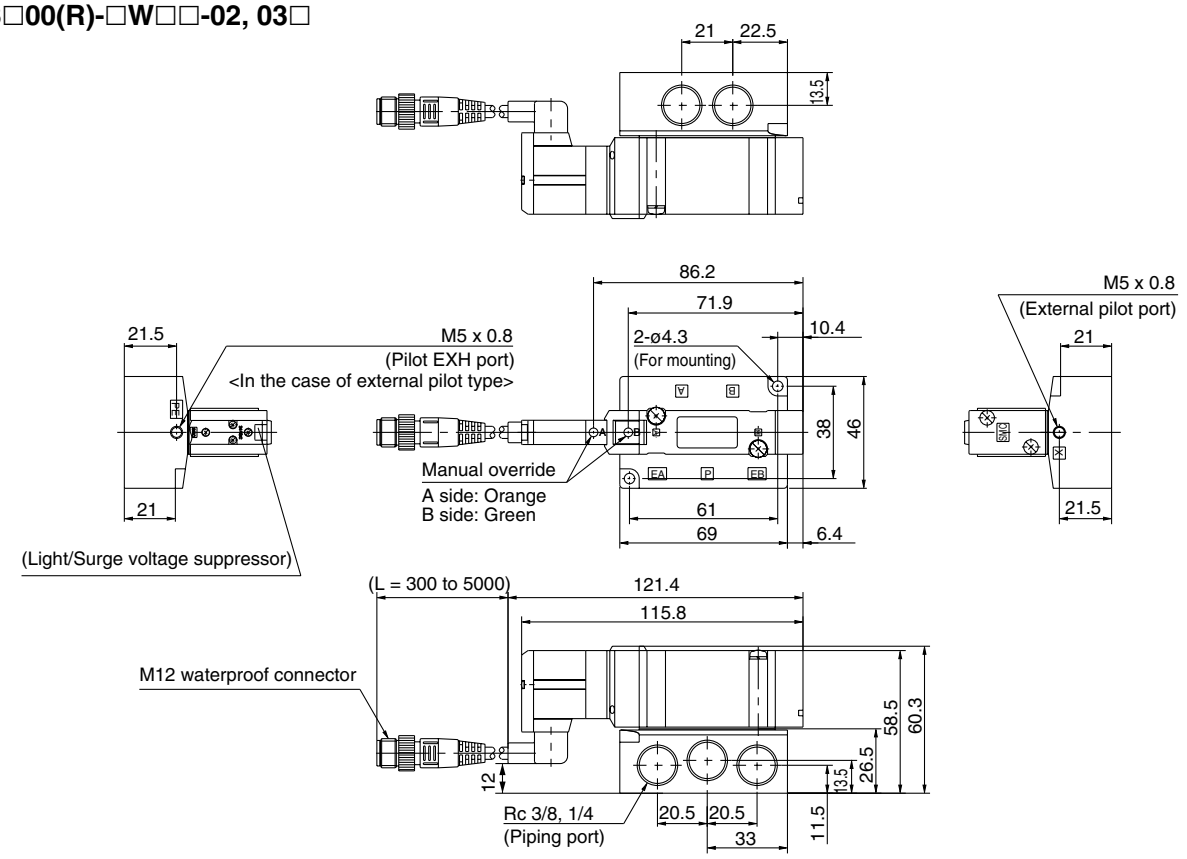


3 position closed center/exhaust center/pressure center [M12 waterproof connector type]
SV2□00(R)-□W□□-02□

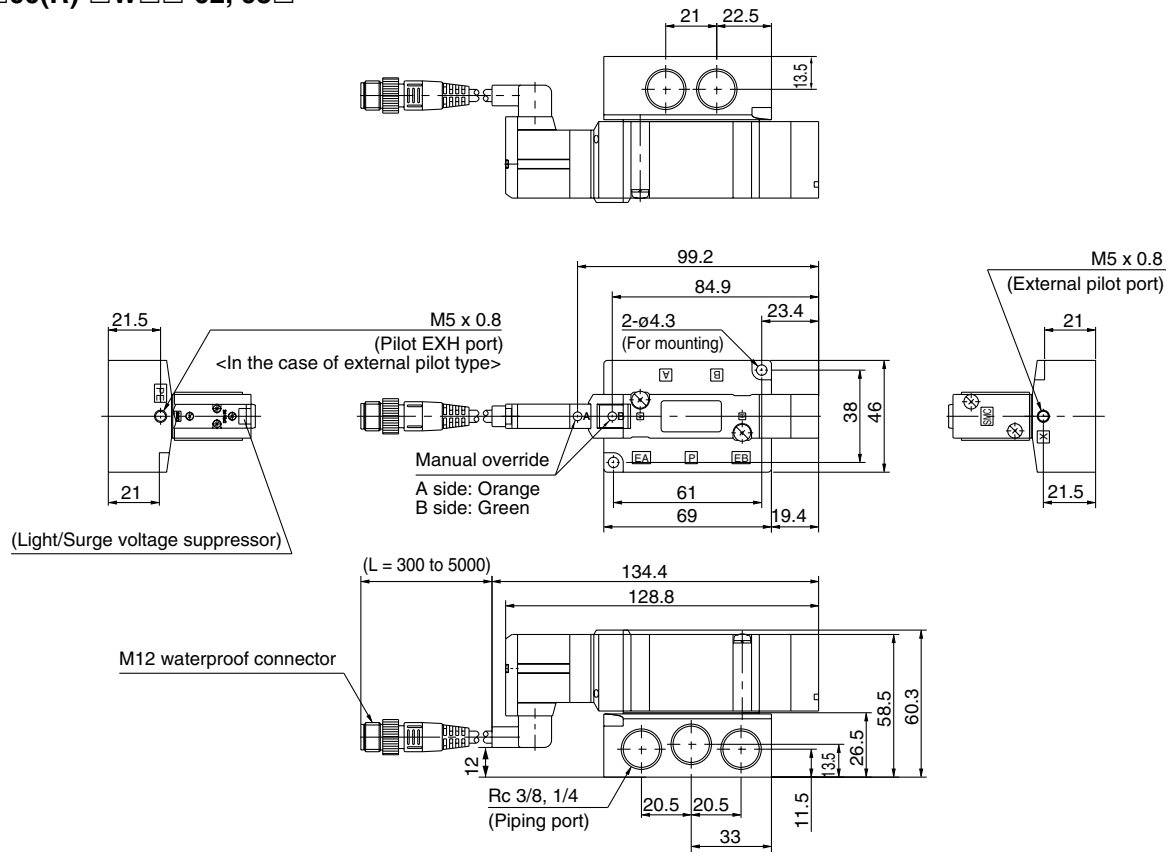


Dimensions: Series SV3000

2 position single/double [M12 waterproof connector type]
SV3□00(R)-□W□□-02, 03□

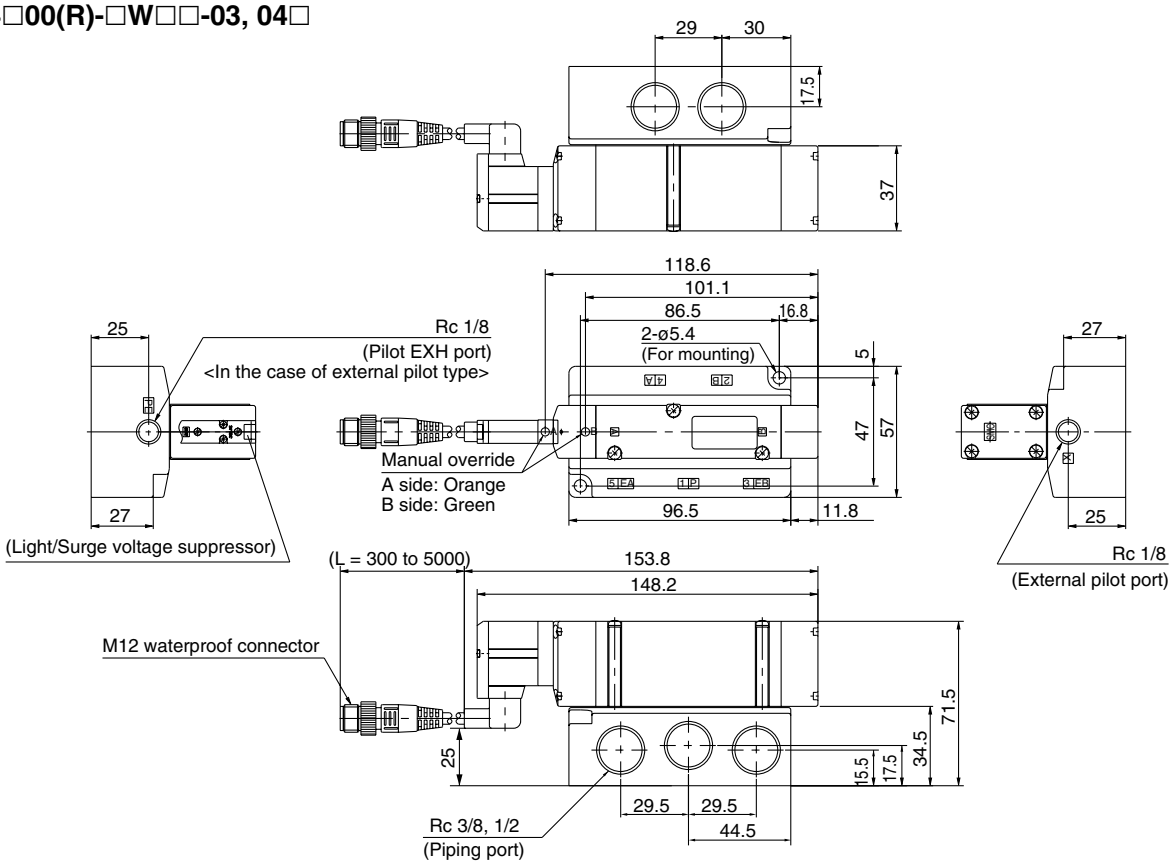


3 position closed center/exhaust center/pressure center [M12 waterproof connector type]
SV3□00(R)-□W□□-02, 03□



Dimensions: Series SV4000

2 position single/double [M12 waterproof connector type]
SV4□00(R)-□W□□-03, 04□



3 position closed center/exhaust center/pressure center [M12 waterproof connector type]
SV4□00(R)-□W□□-03, 04□