



Series SY3000/5000/7000/9000 Body Ported Valve Single Unit

How to Order

SY 5 1 20 [] 5 L [] [] 01 [] []

Series

3	SY3000
5	SY5000
7	SY7000
9	SY9000

Type of actuation

1	2 position single (A)(B) (EA)(P)(EB)
2	2 position double (A)(B) (EA)(P)(EB)
3	3 position closed center (A)(B) (EA)(P)(EB)
4	3 position exhaust center (A)(B) (EA)(P)(EB)
5	3 position pressure center (A)(B) (EA)(P)(EB)

Coil specifications

Nil	Standard
T	With power saving circuit (24, 12 VDC only)

* Power saving circuit is not available in the case of "D", "DO" or "W□" type.

DC

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

Rated voltage

AC (50/60Hz)

1	100 VAC
2	200 VAC
3	110 VAC [115 VAC]
4	220 VAC [230 VAC]

* DC specifications of type "D" and "DO" is only available with 12 and 24 VDC.
* For type "W□", DC voltage is only available.

Electrical entry

24, 12, 6, 5, 3 VDC/100, 110, 200, 220 VAC		24, 12 VDC/100, 110, 200, 220 VAC	
Grommet G: Lead wire length 300 mm H: Lead wire length 600 mm	L plug connector L: With lead wire (Length 300 mm) LN: Without lead wire	M plug connector M: With lead wire (Length 300 mm) MN: Without lead wire LO: Without connector MO: Without connector	
24, 12, 6, 5, 3 VDC M8 connector WO: Without connector cable		DIN terminal DO: Without connector	

* "LN", "MN" type: with 2 sockets.
* For DIN terminal of SY3000 series, refer to page 1-4-207.
* DIN terminal type "Y" conforming to DIN 43650C is available, too. For details, refer to page 1-4-201.
* For connector cable of M8 connector, refer to page 1-4-209.

A, B port size Thread piping

Symbol	Port size	Applicable series
M5	M5 x 0.8	SY3000
01	1/8	SY5000
02	1/4	SY7000
03	3/8	SY9000

One-touch fitting (Metric size)

Symbol	Port size	Applicable series
C4	One-touch fitting for ø4	SY3000
C6	One-touch fitting for ø6	SY5000
C8	One-touch fitting for ø8	SY7000
C10	One-touch fitting for ø10	SY9000
C12	One-touch fitting for ø12	SY9000

One-touch fitting (Inch size)

Symbol	Port size	Applicable series
N3	One-touch fitting for ø 5/32"	SY3000
N7	One-touch fitting for ø 1/4"	SY3000
N3	One-touch fitting for ø 5/32"	SY5000
N7	One-touch fitting for ø 1/4"	SY5000
N9	One-touch fitting for ø 9/16"	SY7000
N9	One-touch fitting for ø 5/16"	SY7000
N11	One-touch fitting for ø 3/4"	SY9000
N9	One-touch fitting for ø 5/16"	SY9000
N11	One-touch fitting for ø 3/4"	SY9000

Manual override

Nil: Non-locking push type 	D: Push-turn locking slotted type 	E: Push-turn locking lever type
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Light/Surge voltage suppressor

Electrical entry for G, H, L, M, W

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.
* For "R" and "U", DC voltage is only available.
* Power saving circuit is only available in the "Z" type.

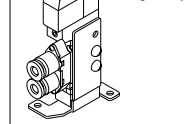
Electrical entry for D

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor

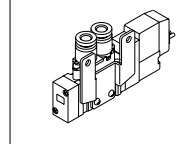
* "DOZ" is not available.
* For AC voltage valves there is no "S" option. It is already built-in to the rectifier circuit.

Bracket

Nil: Without bracket
F1: With foot bracket (2 position single only)



F2: With side bracket



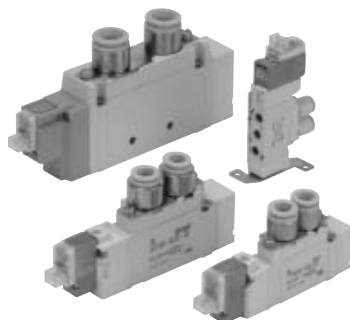
* SY9000 has no bracket.

Thread type

Nil	Rc
F	G
N	NPT
T	NPTF

Note) When placing an order for body ported solenoid valve as a single unit, mounting bolt for manifold and gasket are not attached. Order them separately, if necessary. (For details, refer to catalog on page 1-4-61.)

Specifications



Series		SY3000	SY5000	SY7000	SY9000
Fluid		Air			
Internal pilot	2 position single	0.15 to 0.7			
Operating pressure range (MPa)	2 position double	0.1 to 0.7			
	3 position	0.2 to 0.7			
Ambient and fluid temperature (°C)		-10 to 50 (No freezing. Refer to page 1-7-5.)			
Max. operating frequency (Hz)	2 position single, double	10	5	5	5
	3 position	3	3	3	3
Manual override (Manual operation)		Non-locking push type, Push-turn locking slotted type, Push-turn locking lever type			
Pilot exhaust method		Common exhaust type for main and pilot valve			
Lubrication		Not required			
Mounting orientation		Unrestricted			
Impact/Vibration resistance (m/s ²) ^{Note}		150/30			
Enclosure		Dustproof (* DIN terminal, M8 connector conforms to IP65)			

* Based on IEC529)



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)

SV

SZ

SY

SYJ

SX



Made to Order Specifications
(For details, refer to pages 1-4-188 to 202.)

Solenoid Specifications

Electrical entry		Grommet (G), (H) L plug connector (L) M plug connector (M)	DIN terminal (D) M8 connector (W)
Coil rated voltage (V)	DC	24, 12, 6, 5, 3	
	AC 50/60 Hz	100, 110, 200, 220*	
Allowable voltage fluctuation (%)		±10% of rated voltage	
Power consumption (W)	DC	Standard	0.35 (With indicator light: 0.4 DIN terminal with indicator light: 0.45)
		With power saving circuit	0.1 (With indicator light only)
Apparent power (VA)	AC	100 V	1.4 (With indicator light: 1.5)
		110 V [115 V]	1.6 (With indicator light: 1.7) [1.7 (With indicator light: 1.8)]
		200 V	2.3 (With indicator light: 2.4)
		220 V [230 V]	2.5 (With indicator light: 2.6) [2.7 (With indicator light: 2.8)]
		Surge voltage suppressor	Diode (DIN terminal is ZNR. G, L or M (Non-polar) is zener diode.)
Indicator light		LED	



* In common between 110 VAC and 115 VAC, and between 220 VAC and 230 VAC.
* For 115 VAC and 230 VAC, the allowable voltage is -15% to +5% of rated voltage.

Response Time



Note) Based on dynamic performance test, JIS B 8375-1981. (Coil temperature: 20°C, at rated voltage, without surge suppressor)

SY3000

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)		
	Without light/surge voltage suppressor	With light/surge voltage suppressor	
		Type S, Z	Type R, U
2 position single	12 or less	15 or less	12 or less
2 position double	10 or less	13 or less	10 or less
3 position	15 or less	20 or less	16 or less

SY7000

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)		
	Without light/surge voltage suppressor	With light/surge voltage suppressor	
		Type S, Z	Type R, U
2 position single	31 or less	38 or less	33 or less
2 position double	27 or less	30 or less	28 or less
3 position	50 or less	56 or less	50 or less

SY5000

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)		
	Without light/surge voltage suppressor	With light/surge voltage suppressor	
		Type S, Z	Type R, U
2 position single	19 or less	26 or less	19 or less
2 position double	18 or less	22 or less	18 or less
3 position	32 or less	38 or less	32 or less

SY9000

Type of actuation	Response time (ms) (at the pressure of 0.5 MPa)		
	Without light/surge voltage suppressor	With light/surge voltage suppressor	
		Type S, Z	Type R, U
2 position single	35 or less	41 or less	35 or less
2 position double	35 or less	41 or less	35 or less
3 position	62 or less	64 or less	62 or less

Series SY3000/5000/7000/9000

Flow Characteristics/Weight

Series SY3000

Valve model	Type of actuation		Port size		Flow characteristics						Weight (g)				
			1, 5, 3 P, EA, EB	4, 2 (A, B)	1→4/2 (P→A/B)			4/2→5/3 (A/B→EA/EB)			Grom- met	L, M plug connector	W M8 connector		
			C (dm ³ /s/bar)	b	Cv	C (dm ³ /s/bar)	b	Cv	C (dm ³ /s/bar)	b				Cv	
SY3□20 -□-M5	2 position	Single	M5 x 0.8	C4 (One-touch fitting for ø4)	0.61	0.44	0.16	0.64	0.45	0.18	51	53	57		
		Double			0.48	0.46	0.13	0.47	0.43	0.13	68	74	82		
	3 position	Closed center			0.47	0.42	0.13	0.47	0.41	0.13	71	76	84		
		Exhaust center			0.50	0.48	0.15	0.47	0.43	0.13					
SY3□20 -□-C4	2 position	Single			M5 x 0.8	C4 (One-touch fitting for ø4)	0.72	0.29	0.18	0.64	0.34	0.17	60	63	67
		Double					0.59	0.28	0.15	0.59	0.30	0.15	78	83	101
	3 position	Closed center					0.63	0.35	0.16	0.42	0.34	0.11	81	86	94
		Exhaust center					0.76	0.42	0.21	0.59	0.29	0.15			
SY3□20 -□-C6	2 position	Single	M5 x 0.8	C6 (One-touch fitting for ø6)			0.76	0.30	0.19	0.65	0.39	0.17	56	59	63
		Double					0.76	0.30	0.19	0.65	0.39	0.17	74	79	87
	3 position	Closed center					0.76	0.55	0.24	0.60	0.33	0.16	77	82	90
		Exhaust center					0.65	0.32	0.16	0.64	0.31	0.17			
SY3□20 -□-C8	2 position	Single			M5 x 0.8	C8 (One-touch fitting for ø8)	0.77	0.34	0.21	0.61	0.34	0.16	56	59	63
		Double					0.76	0.30	0.19	0.65	0.39	0.17	74	79	87
	3 position	Closed center					0.65	0.32	0.16	0.64	0.31	0.17	77	82	90
		Exhaust center					0.77	0.34	0.21	0.61	0.34	0.16			

Note [] : Denotes normal position.

Series SY7000

Valve model	Type of actuation		Port size		Flow characteristics						Weight (g)					
			1, 5, 3 P, EA, EB	4, 2 (A, B)	1→4/2 (P→A/B)			4/2→5/3 (A/B→EA/EB)			Grom- met	L, M plug connector	DIN terminal	W M8 connector		
			C (dm ³ /s/bar)	b	Cv	C (dm ³ /s/bar)	b	Cv	C (dm ³ /s/bar)	b					Cv	
SY7□20 -□-02	2 position	Single	1/4	C8 (One-touch fitting for ø8)	4.1	0.23	0.93	3.3	0.33	0.81	101	104	125	129		
		Double			2.9	0.31	0.70	2.4	0.38	0.63	120	125	167	175		
	3 position	Closed center			2.5	0.39	0.65	3.4	0.35	0.82	128	133	175	183		
		Exhaust center			4.3	0.23	0.97	2.2	0.39	0.58						
SY7□20 -□-C8	2 position	Single			1/4	C8 (One-touch fitting for ø8)	3.2	0.26	0.77	3.2	0.37	0.82	107	110	131	135
		Double					2.6	0.24	0.63	2.4	0.31	0.62	126	132	174	182
	3 position	Closed center					2.4	0.25	0.57	2.6	0.42	0.70	134	140	182	190
		Exhaust center					3.3	0.28	0.78	2.2	0.34	0.60				
SY7□20 -□-C10	2 position	Single	1/4	C10 (One-touch fitting for ø10)			3.8	0.26	0.86	3.2	0.34	0.82	103	105	126	130
		Double					2.8	0.27	0.67	2.4	0.21	0.59	122	127	169	177
	3 position	Closed center					2.5	0.25	0.59	2.7	0.38	0.70	130	135	177	185
		Exhaust center					3.8	0.25	0.89	2.3	0.38	0.61				

Note [] : Denotes normal position.

Series SY5000

Valve model	Type of actuation		Port size		Flow characteristics						Weight (g)					
			1, 5, 3 P, EA, EB	4, 2 (A, B)	1→4/2 (P→A/B)			4/2→5/3 (A/B→EA/EB)			Grom- met	L, M plug connector	DIN terminal	W M8 connector		
			C (dm ³ /s/bar)	b	Cv	C (dm ³ /s/bar)	b	Cv	C (dm ³ /s/bar)	b					Cv	
SY5□20 -□-01	2 position	Single	1/8	C4 (One-touch fitting for ø4)	1.9	0.35	0.49	2.4	0.39	0.61	70	72	93	97		
		Double			1.7	0.43	0.45	1.8	0.35	0.46	88	93	135	143		
	3 position	Closed center			1.5	0.44	0.41	2.5	0.32	0.59	93	98	140	148		
		Exhaust center			2.2	0.46	0.61	1.8	0.38	0.46						
SY5□20 -□-C4	2 position	Single			1/8	C4 (One-touch fitting for ø4)	0.75	0.43	0.20	0.85	0.64	0.30	94	96	117	121
		Double					0.74	0.40	0.19	0.84	0.57	0.28	111	117	159	167
	3 position	Closed center					0.75	0.36	0.19	0.84	0.64	0.30	117	122	164	172
		Exhaust center					0.78	0.44	0.21	0.84	0.57	0.27				
SY5□20 -□-C6	2 position	Single	1/8	C6 (One-touch fitting for ø6)			1.5	0.33	0.33	2.0	0.37	0.52	88	91	112	116
		Double					1.3	0.31	0.33	1.6	0.32	0.39	106	111	153	161
	3 position	Closed center					1.3	0.33	0.33	1.8	0.35	0.44	111	116	158	166
		Exhaust center					1.7	0.31	0.42	1.7	0.33	0.44				
SY5□20 -□-C8	2 position	Single			1/8	C8 (One-touch fitting for ø8)	1.9	0.21	0.45	2.3	0.29	0.57	80	82	103	107
		Double					1.6	0.29	0.39	1.7	0.38	0.46	98	103	145	153
	3 position	Closed center					1.4	0.38	0.39	2.0	0.37	0.52	103	108	150	158
		Exhaust center					2.2	0.32	0.56	1.8	0.41	0.50				

Note [] : Denotes normal position.

Series SY9000

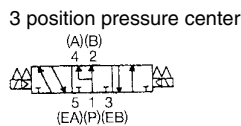
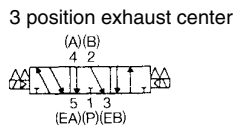
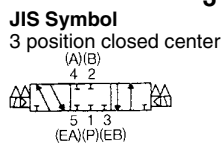
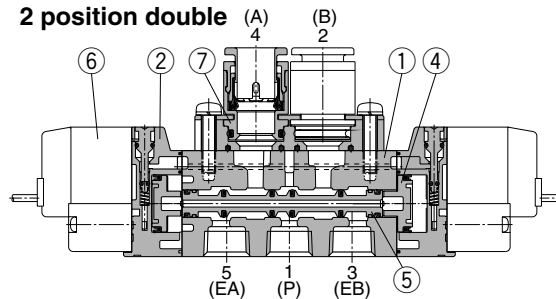
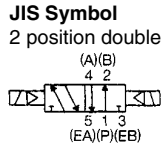
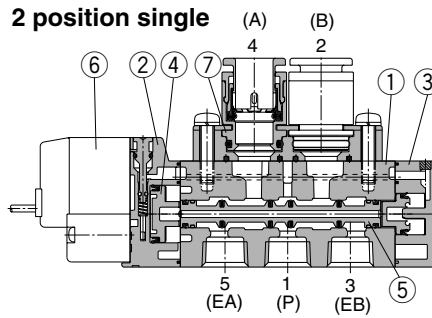
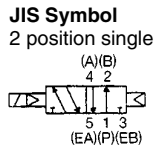
Valve model	Type of actuation		Port size		Flow characteristics						Weight (g)					
			1, 5, 3 P, EA, EB	4, 2 (A, B)	1→4/2 (P→A/B)			4/2→5/3 (A/B→EA/EB)			Grom- met	L, M plug connector	DIN terminal	W M8 connector		
			C (dm ³ /s/bar)	b	Cv	C (dm ³ /s/bar)	b	Cv	C (dm ³ /s/bar)	b					Cv	
SY9□20 -□-02	2 position	Single	1/4	C8 (One-touch fitting for ø8)	7.0	0.33	1.7	7.6	0.35	2.0	241	244	265	269		
		Double			6.7	0.37	1.7	6.4	0.34	1.6	260	266	308	316		
	3 position	Closed center			6.4	0.36	1.6	8.3	0.41	2.2	284	290	332	340		
		Exhaust center			8.0	0.27	1.8	6.5	0.22	1.4						
SY9□20 -□-03	2 position	Single			3/8	C8 (One-touch fitting for ø8)	8.0	0.29	1.9	8.0	0.33	2.0	236	239	260	264
		Double					7.9	0.33	1.9	6.6	0.27	1.6	255	261	303	311
	3 position	Closed center					8.0	0.33	1.9	8.7	0.34	2.2	279	285	327	335
		Exhaust center					8.9	0.34	2.2	6.5	0.25	1.5				
SY9□20 -□-C8	2 position	Single	1/4	C8 (One-touch fitting for ø8)			4.3	0.28	0.96	7.1	0.32	1.7	293	296	317	321
		Double					4.3	0.31	0.99	6.1	0.28	1.4	312	318	360	368
	3 position	Closed center					4.3	0.3	0.99	7.4	0.36	1.9	336	342	384	392
		Exhaust center					4.4	0.35	1.0	2.1	0.41	0.53				
SY9□20 -□-C10	2 position	Single			1/4	C10 (One-touch fitting for ø10)	6.1	0.28	1.4	7.9	0.33	1.9	279	282	303	307
		Double					5.9	0.30	1.4	6.5	0.26	1.5	298	304	346	354
	3 position	Closed center					5.8	0.25	1.3	8.4	0.33	2.0	322	328	370	378
		Exhaust center					6.3	0.29	1.5	6.4	0.25	1.5				
SY9□20 -□-C12	2 position	Single	1/4	C12 (One-touch fitting for ø12)			7.0	0.25	1.6	8.6	0.41	2.2	265	268	289	293
		Double					6.9	0.24	1.6	7.0	0.33	1.7	284	290	332	340
	3 position	Closed center					6.6	0.23	1.4	9.4	0.48	2.6	308	314	356	364
		Exhaust center					7.4	0.25	1.7	6.6	0.23	1.5				

Note [] : Denotes normal position.

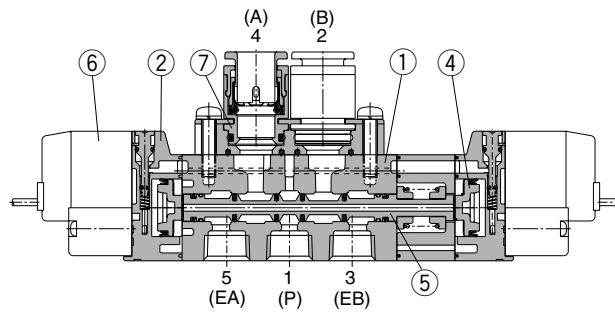
- SV
- SZ
- SY
- SYJ
- SX

Construction

Series SY



3 position closed center/exhaust center/pressure center



(This figure shows a closed center type.)

Component Parts

No.	Description	Material	Note
①	Body	Aluminum die-casted (SY3000: Zinc die-casted)	White
②	Adapter plate	Resin	White (SY9000: Gray)
③	End plate	Resin	White
④	Piston	Resin	—
⑤	Spool valve assembly	Aluminum, HNBR	—

Replacement Parts

No.	Description	Part no.
⑥	Pilot valve assembly	Refer to "How to Order Pilot Valve Assembly" on page 1-4-10.
⑦	M5 port block assembly	Refer to "How to Order Port Block Assembly" on page 1-4-11.

Bracket Assembly Part No.

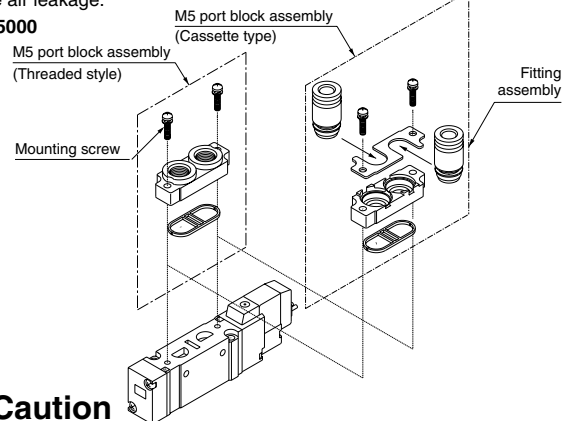
Description	part no.
Bracket (For F1)	SX ³ 000-16-2A (with mounting screw)
Bracket (For F2)	SX ³ 000-16-1A (with mounting screw)

* SY9000 has no bracket.

How to Change Port Block Assembly

If using body port type, both A and B port sizes can be changed by replacing the port block assembly mounted on the body. When changing this block assembly, the correct screw torque must be achieved to avoid possible air leakage.

For SY5000



⚠ Caution

Mounting screw tightening torques

SY3000 (M2): 0.12 N·m
SY⁷000 (M3): 0.6 N·m
SY9000 (M4): 1.4 N·m

* Refer to "How to Order Port Block Assembly" on page 1-4-11 for part no.