

5 port solenoid valve with spool return spring

SY-X350 Series



Manifold Flow characteristics ¹⁾

Plug-in metal base

Series	Piping option	Port size		Valve flow-rate characteristics ³⁾					
		1, 5, 3 (P, EA, EB)	4, 2 ⁴⁾ (A, B)	1→4/2 (P→A/B)			4/2→5/3 (A/B→E)		
				C [dm ³ /(s·bar)]	b	Q [l/min] (ANR) ²⁾	C [dm ³ /(s·bar)]	b	Q [l/min] (ANR) ²⁾
SY3000	Side ported	1/8	N7 (C6)	1.1	0.19	262	1.1	0.15	256
	Bottom ported	1/8	N7 (C6)	1.2	0.31	307	1.2	0.14	278
	Top ported	1/8	N7 (C6)	1.1	0.29	278	1.2	0.20	287
SY5000	Side ported	1/4	N9 (C8)	2.6	0.28	653	2.6	0.14	603
	Bottom ported	1/4	N9 (C8)	2.7	0.35	709	2.8	0.20	671
	Top ported	1/4	N9 (C8)	2.6	0.26	645	3.1	0.13	715
SY7000	Side ported	3/8	N11 (C10)	3.8	0.27	948	4.0	0.20	958
	Bottom ported	3/8	N11 (C10)	4.1	0.34	1070	4.8	0.20	1150
	Top ported	3/8	N11 (C10)	4.5	0.27	1123	4.9	0.24	1201

Resin base

Series	Piping option	Port size		Valve flow-rate characteristics ³⁾					
		1, 5, 3 (P, EA, EB)	4, 2 (A, B)	1→4/2 (P→A/B)			4/2→5/3 (A/B→E)		
				C [dm ³ /(s·bar)]	b	Q [l/min] (ANR) ²⁾	C [dm ³ /(s·bar)]	b	Q [l/min] (ANR) ²⁾
SY3000	SS5Y3-10 (Side ported)	N9 (C8) ⁴⁾	N7 (C6) ⁴⁾	1.4	0.30	356	1.6	0.19	381
	SS5Y3-12 (Top ported)	N9 (C8) ⁴⁾	N7 (C6) ⁴⁾	1.2	0.29	303	1.3	0.19	310
SY5000	SS5Y5-10 (Side ported)	N11 (C10) ⁴⁾	N9 (C8) ⁴⁾	3.3	0.30	839	3.6	0.17	848
	SS5Y5-11 (Bottom ported)	N11 (C10) ⁴⁾	N9 (C8) ⁴⁾	3.3	0.29	834	4.2	0.26	1042
	SS5Y5-12 (Top ported)	N11 (C10) ⁴⁾	N9 (C8) ⁴⁾	2.8	0.27	699	3.8	0.23	926
SY7000	SS5Y7-10 (Side ported)	N13 (C12) ⁴⁾	N11 (C12) ⁴⁾	6.2	0.23	1511	5.9	0.20	1413
	SS5Y7-11 (Bottom ported)	N13 (C12) ⁴⁾	N11 (C12) ⁴⁾	6.2	0.25	1529	6.6	0.21	1590
	SS5Y7-12 (Top ported)	N13 (C12) ⁴⁾	N11 (C12) ⁴⁾	5.6	0.31	1433	5.7	0.24	1397

1) The value is for manifold base with 5 stations and individually operated 2-position type.

2) These values have been calculated according to ISO 6358 and indicate the flow rate under standard conditions with an inlet pressure of 0.6 MPa (relative pressure) and a pressure drop of 0.1 MPa.

3) These values are applicable to rubber seal type valves.

4) N**= inch, (C**) = metric

Dimensions

Dimensions are the same as the standard product.

Other SY safety specials



5 port bistable valve with detent
SY-X25 Series



5 port solenoid valve with spool detection
SY-X30 Series



Pilot pressure control valve with spool detection
SY-X31 Series



External pilot pressure control valve
SY-X310 Series

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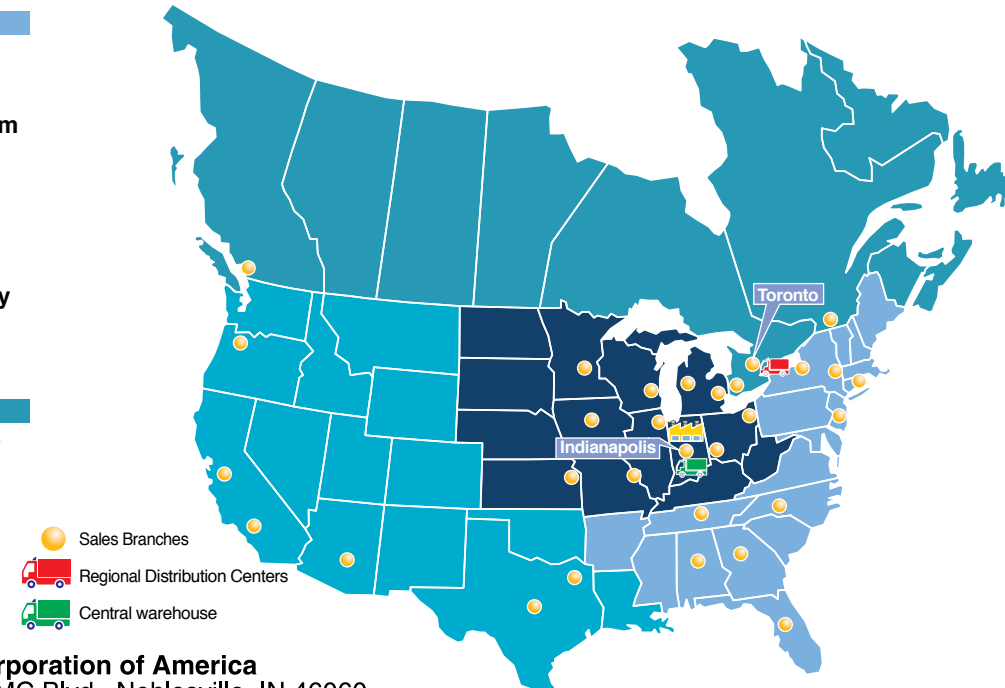
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Automation • Controls • Process



Your safety is our focus

Safety related special products

5 port solenoid valve with spool return spring

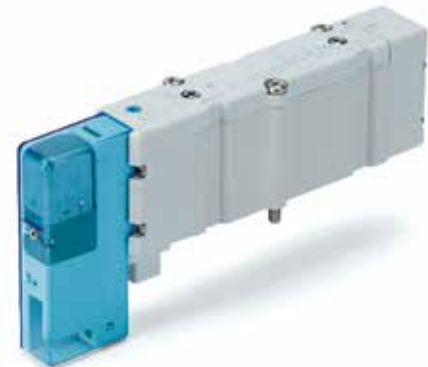
SY-X350 Series

NC399-A

5 port solenoid valve with spool return spring SY-X350 Series



► We focus on machinery safety as a key part of our product development strategy. We have just developed a new version of our SY valve that will help you to satisfy your machine safety system requirements.



Main Features

► Spool return spring - The concept

The SY-X350 versions contain a spool return mechanical spring that fulfill is the well-ried safety principle "well-ried spring" according to ISO 13849-2.

This means that in case of a pressure loss the spool moves to its de-energized position.

When used as a safety related part of a control system it satisfied the de-energization principle whereas the standard SY Series requires the supply or external pilot pressure to be maintained to ensure the spool returns to the de-energized position.

► Validated according to ISO 13849-2

This product is capable of meeting the relevant basic and well-ried safety principles.

► SISTEMA library is available

SY safety valves data are integrated into SISTEMA free software tool. Download it from our website and be ready to build your safety function.

► Still an option of our SY, the all-purpose valve

Benefit from the high versatility this series gives you and create your own configuration, tailored to your needs.



Applications

Because of its validated design meeting this valve can be used to implement many different types of safety function for all types of pneumatic actuators, pilot operated check valves and also to control process valves.

How to Order

Base mounted SY 00 - 1 - - X350

Top ported SY 30 - 1 - - - X350

① Valve series

3	SY3000
5	SY5000
7	SY7000

② Type of actuation

1	2-position single
A	4-position dual 3-port N.C./N.C.
B	4-position dual 3-port N.O./N.O.
C	4-position dual 3-port N.C./N.O.

③ Pilot type

-	Internal pilot
R	External pilot

④ Back pressure check valve (built-in valve type)

-	Internal pilot
H	Built-in

⑤ Pilot valve option

-	Standard 101.5 psi (0.7 MPa)
T	Quick response type 101.5 psi (0.7 MPa)

⑥ Coil type

-	Standard
B	With power saving circuit (continuous duty type)

⑦ Rated voltage

5	24 VDC
6	12 VDC

⑧ Light & surge suppressor

-	W/o indicator light & surge suppressor
R	W/surge suppressor (non polar)
U	W/indicator light & surge suppressor (non polar)
S	W/surge suppressor (positive common)
Z	W/indicator light & surge suppressor (positive common)
NS	W/surge suppressor (negative common)
NZ	W/indicator light & surge suppressor (negative common)

1) Only "Z" and "NZ" type is available for the product with power saving circuit.

Selected Part Numbers

Part number	Max. flow rate [l/min]	Operating pressure range
SY3100-□U1-X350	310	21.8 to 101.5 psi (0.15 - 0.7 MPa)
SY3100R-□U1-X350	310	-14.5 to 72.5 psi (-100 kPa - 0.5 MPa)
SY3A00-□U1-X350	310	21.8 to 101.5 psi (0.15 - 0.7 MPa)
SY5100-□U1-X350	1042	21.8 to 101.5 psi (0.15 - 0.7 MPa)
SY5100R-□U1-X350	1042	-14.5 to 72.5 psi (-100kPa to 0.5 MPa)
SY5A00-□U1-X350	1042	21.8 to 101.5 psi (0.15 - 0.7 MPa)
SY7100-□U1-X350	1590	21.8 to 101.5 psi (0.15 - 0.7 MPa)
SY7100R-□U1-X350	1590	-14.5 to 72.5 psi (-100kPa to 0.5 MPa)

⑨ Manual override

-	Non-locking push type
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⑩ A, B port size

M5	M5x0.8
C2	One touch fittings for Ø 2 tube
C3	One touch fittings for Ø 3 tube
C4	One touch fittings for Ø 4 tube
C6	One touch fittings for Ø 6 tube
N1	One touch fittings for Ø 1/8" tube
N3	One touch fittings for Ø 5/32" tube
N7	One touch fittings for Ø 1/4" tube

⑪ Thread type

-	Rc
F	G
N	NPT
T	NPTF

1) For SY3000 select "—".

⑫ Type of mounting screw

-	Round head combination screw
B	Hexagon socket head cap screw
K	Round head combination screw (falling-out -prevention type)
H	Hexagon socket head cap screw (falling-out -prevention type)

Note 1) The SY with external pilot type has a maximum operating pressure of 72.5 psi (0.5 MPa) and the pilot pressure shall be 29 psi (0.2 MPa) higher than the operating pressure. If a 101.5 psi (0.7 MPa) operating pressure is needed, please order SY5000-X67 or SY7000-X323 versions.

Note 2) Individually wired with M8 connector. Independent of parallel wiring or serial communication also available using the SY5000-X49 version.

Valve Specifications

Valve type		Fluid	Rubber seal
Internal pilot operating pressure range	2-position single 4-position dual 3-port valve	Air	21.8 to 101.5 psi (0.15 to 0.7 MPa)
External pilot operating pressure range	Operating pressure range	2-position single/double 4-position dual 3-port valve	-14.5 to 101.5 psi (-100 kPa to 0.7 MPa) -14.5 to 72.5 psi (-100 kPa to 0.5 MPa)
	Pilot pressure range	2-position single 4-position dual 3-port valve	36.3 to 101.5 psi (0.25 to 0.7 MPa) Operating pressure +14.5 psi (0.1 MPa) or more [min. 36.3 psi (0.25 MPa), max 101.5 psi (0.7 MPa)]
Ambient and fluid temperature			14 to 122°C (-10 to 50°F)
Max. operating frequency	SY3000	2-position single/double	5 Hz
	SY5000	4-position dual 3-port valve	
	SY7000	2-position single/double 4-position dual 3-port valve	
Manual override			Non-locking push type
Pilot exhaust type	Internal pilot		Main/Pilot valve common exhaust
	External pilot		Pilot valve individual exhaust
Lubrication			Not required
Mounting orientation ¹⁾			Unrestricted
Impact/Vibration resistance ¹⁾			150/50 m/s ²
Enclosure			IP67 (based on IEC60529)
Coil rated voltage [DC]			24, 12 VDC
Allowable voltage fluctuation			+/- 10 % of rated voltage
Power consumption (W)	Standard		0.35 (with indicator light = 0.4)
	High pressure type, quick response type		0.9 (with indicator light = 0.95)
	With power saving circuit		Standard: 0.1 (With indicator light only) [Inrush 0.35, Holding 0.1] High pressure type: 0.4 (With indicator light only) [Inrush 0.9, Holding 0.4]
Surge voltage suppressor			Diode (Varistor for non-polar type)
Indicator light			LED

1) Impact resistance: No malfunction occurred when it is tested in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every time in 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 ed-energized states in the axial direction and at right angles to the main valve and armature. (Values at the initial period)

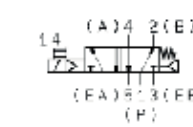
2) Due to voltage drops by the internal circuit in S/Z type and T type (with power saving circuit), use within the allowable voltage fluctuation as follows.

S/Z type { 24 VDC: -7 % to +10 %
12 VDC: -4 % to +10 % } T type { 24 VDC: -8 % to +10 %
12 VDC: -6 % to +10 % }

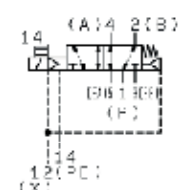
3) For technical data which are not shown in this document, please see the instruction manual or the standard catalog on www.smcusa.com

Symbols

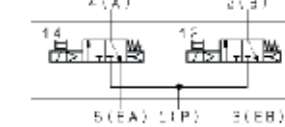
SY□000



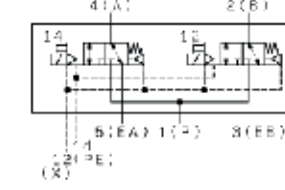
SY□100R



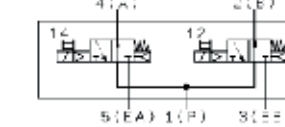
SY□A00



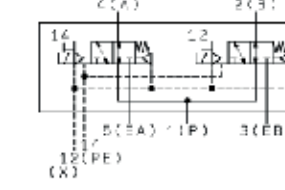
SY□A00R



SY□B00



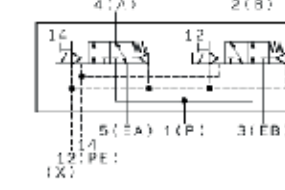
SY□B00R



SY□C00



SY□C00R



For dimensions and other details refer to general catalog of SY-X350 series at www.smcusa.com