

High Speed 2 Port Valve

New
CE RoHS

High speed response

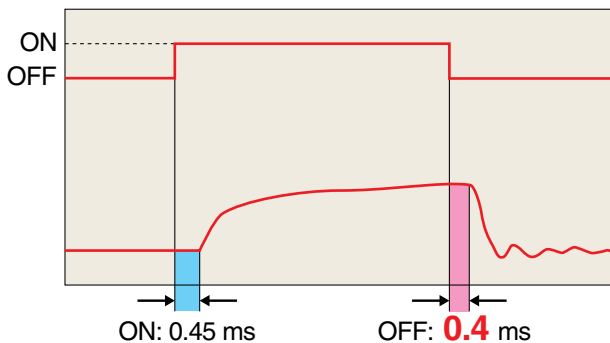
ON **0.45 ms**
±0.05 ms

OFF **0.4 ms**
±0.05 ms

9^{Width}mm



• 1.8 scfm (50 L/min) 80 W type



* The response time is measured based on SMC test conditions. (Not guaranteed values)

Long service life: 5 billion cycles or more

SMC's original valve and coil structure realizes a longer product life and requires less maintenance frequency.

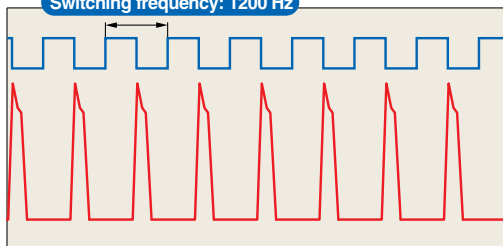
(1.8 scfm (50 L/min) type, 24 VDC, 36 psi (0.25 MPa). Based on SMC life test conditions.)

High frequency: 1200 Hz

Good followability and response to successive electrical signal input. Continuous operation possible.

• 1.8 scfm (50 L/min) 80 W type

Switching frequency: 1200 Hz



Series SX10

2 mounting types

Quick disconnect type

Screw mount type



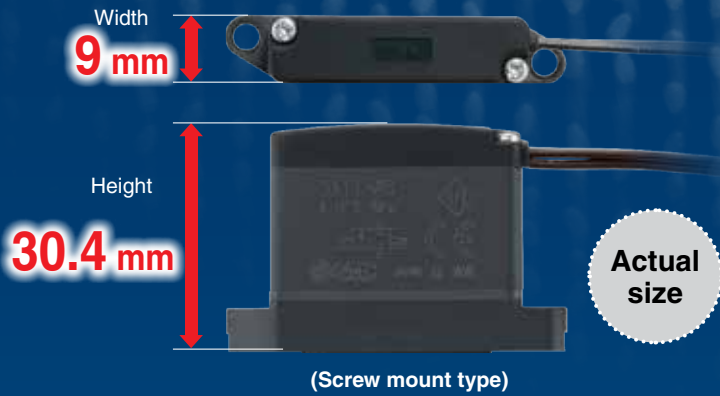
The manifold base should be prepared by users.

Low power consumption: 4w

Continuous energization for extended periods is possible.

SMC
CAT.NAS70-53A

Compact and Space-saving The manifold base should be prepared by users.

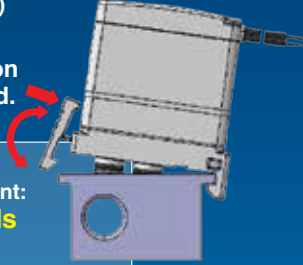


Actual size

Actual size

Reduction in installation labor

(Quick disconnect type)
Can be mounted/
removed in one action
and no tools required.



Required time for attachment/detachment:
Approx. 5 seconds
(per unit)

Reduces installation time for multiple numbers of valves.

Coil temperature rise: 41°F (5°C)

(4 W type)

Power consumption	Temperature rise
4 W type	41°F (5°C)
10 W type	57°F (14°C)

During continuous operation at 24 VDC,
36 psi (0.25 MPa), 300 Hz

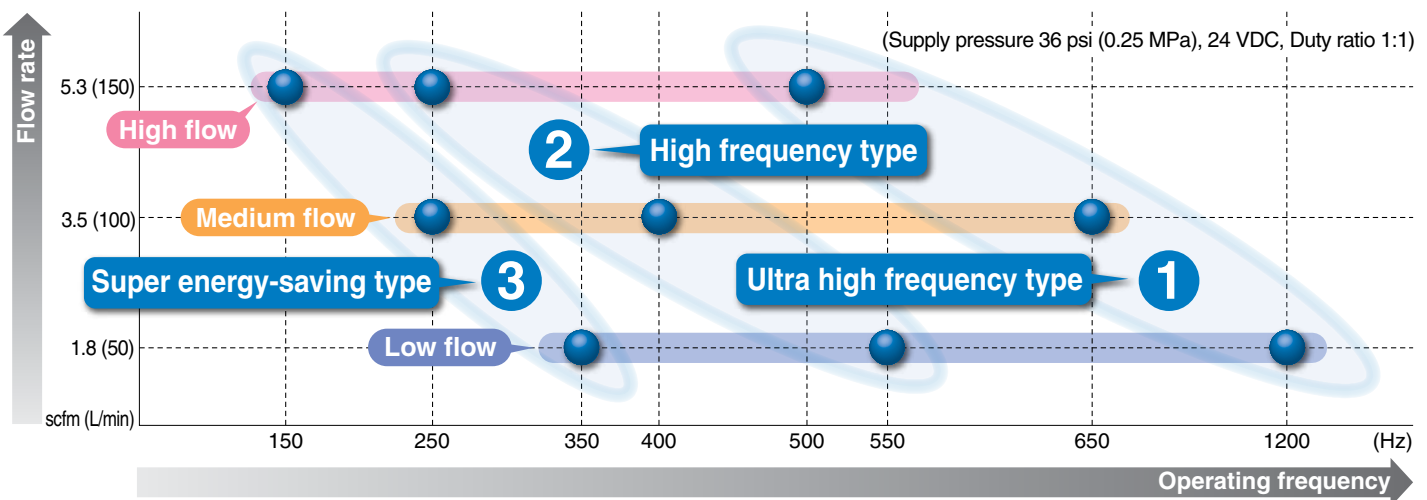
Filter attached type available



Filter is mounted to port 1 (IN).
Filter is mounted to port 1 (IN)
for quick disconnect type as well.

Variations/Purpose of Usage (Guide)

Flow Rate/Operating Frequency

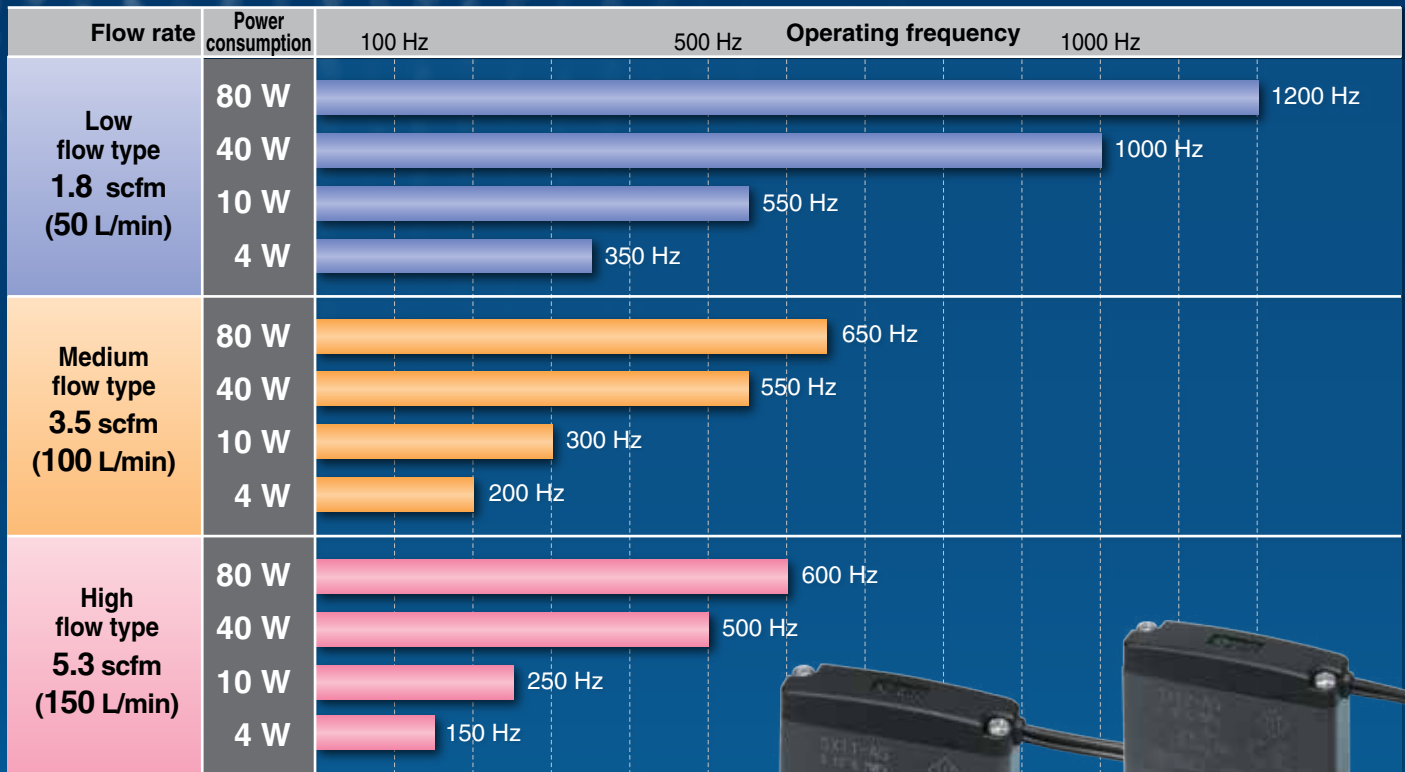


Specifications	Driver	Continuous energization	Power consumption	OFF response time scfm (L/min)		
				1.8 (50)	3.5 (100)	5.3 (150)
① Ultra high frequency type 500 to 1200 Hz	For power saving driver (Refer to page 4.)	—	80 W, 40 W	0.4 ms	0.55 ms	0.75 ms
② High frequency type 250 to 550 Hz	Control driver is not necessary.	(Note)	10 W	0.4 ms	0.55 ms	0.75 ms
③ Super energy-saving type 150 to 350 Hz	Control driver is not necessary.	Possible	4 W	0.4 ms	0.55 ms	0.75 ms

(Note) Please consult with SMC for continuous energization.

Variations

All models have the same body size.



Select a model according to applications and purposes.

High speed response required for both ON and OFF

Select the 80 W or 40 W type.

High speed response required for OFF only without use of special control circuit

Select the 10 W type.

Saving energy and continuous energization required

Select the 4 W type.

Model	Power consumption	Flow rate scfm (L/min)	Max. operating frequency	Response time (ms)	
				ON	OFF
SX1□-A	80 W	1.8 (50)	1200 Hz	0.45	0.4
-B	40 W	1.8 (50)	1000 Hz	0.55	0.4
-E	80 W	3.5 (100)	650 Hz	0.55	0.55
-F	40 W	3.5 (100)	550 Hz	0.7	0.55
-J	80 W	5.3 (150)	600 Hz	0.6	0.75
-K	40 W	5.3 (150)	500 Hz	0.8	0.75

* Current needs to be limited.

Model	Power consumption	Flow rate scfm (L/min)	Max. operating frequency	Response time (ms)	
				ON	OFF
SX1□-C	10 W	1.8 (50)	500 Hz	0.9	0.4
-G	10 W	3.5 (100)	300 Hz	1.1	0.55
-L	10 W	5.3 (150)	250 Hz	1.35	0.75

* Please consult with SMC for continuous energization.

Model	Power consumption	Flow rate scfm (L/min)	Max. operating frequency	Response time (ms)	
				ON	OFF
SX1□-D	4 W	1.8 (50)	350 Hz	1.25	0.4
-H	4 W	3.5 (100)	200 Hz	1.7	0.55
-M	4 W	5.3 (150)	150 Hz	2.75	0.75

* Continuous energization is possible.



High Speed 2 Port Valve

Series SX10



How to Order

SX1 **2** **F** - **A** **G**

Valve mounting

1	Screw mount type <small>Note)</small>
2	Quick disconnect type

Note) Two mounting screws (M3 x 0.5) and a gasket are included. (packaged together)

Filter (IN port)

Nil	Without filter
F	With filter <small>Note)</small>

Note) Flow reduction rate
 1.8 scfm (50 L/min): 5% or less
 3.5 scfm (100 L/min): 5 to 10%
 5.3 scfm (150 L/min): 10 to 15%

Flow rate/Operating frequency (at 24 VDC, 36 psi (0.25 MPa))

Symbol	Flow rate scfm(L/min)	Power consumption (W)	Max. operating frequency (Hz)
A	1.8 (50)	80	1200
B		40	1000
C		10	550
D		4	350
E	3.5 (100)	80	650
F		40	550
G		10	300
H		4	200
J	5.3 (150)	80	600
K		40	500
L		10	250
M		4	150

Lead wire (grommet) length

Symbol	Length
G	300 mm
H	500 mm
J	1000 mm

Specifications

Flow rate (L/min) [at 36 psi (0.25 MPa)]	50				100				150			
	80	40	10	4	80	40	10	4	80	40	10	4
Power consumption (W)	80	40	10	4	80	40	10	4	80	40	10	4
Type of actuation	2-position 2 port N.C., Air return											
Seal type	Metal poppet seal											
Valve width (mm)	9											
Fluid	Air											
Min. operating pressure psi (MPa)	22 (0.15)											
Coil resistance value (Ω)	7.2	14.4	58	144	7.2	14.4	58	144	7.2	14.4	58	144
Max. operating pressure (MPa) [at 24 VDC]	0.7	0.7	0.7	0.6	0.7	0.7	0.6	0.4	0.7	0.7	0.4	0.25
Ambient and fluid temperature	14 to 122 °F (-10 to 50°C) (No freezing)											
Lubrication	Not required											
Mounting orientation	Unrestricted											
Impact/Vibration resistance (m/s ²)	300/50											
Enclosure	Dustproof											
Electrical entry	Grommet											
Weight (g)	Screw mount type											
	Quick disconnect type											
	27											
	29											

Characteristics

Flow rate (L/min) [at 0.25 MPa]	50				100				150			
	80	40	10	4	80	40	10	4	80	40	10	4
Power consumption (W)	80	40	10	4	80	40	10	4	80	40	10	4
Flow-rate characteristics	C [dm ³ /(s/bar)]											
	0.24				0.47				0.70			
	0.24				0.28				0.21			
Response time (ms) [at 0.25 MPa]	Cv											
	0.06				0.12				0.17			
Response time (ms) [at 0.25 MPa]	ON											
	0.45	0.55	0.9	1.25	0.55	0.7	1.1	1.7	0.6	0.8	1.35	2.75
Max. operating frequency (Hz) [at 0.25 MPa]	OFF											
	0.4	0.4	0.4	0.4	0.55	0.55	0.55	0.55	0.75	0.75	0.75	0.75
	1,200	1,000	550	350	650	550	300	200	600	500	250	150

36 psi = 25 MPa

Note 1) 24 VDC, Duty ratio 1:1

80 W: Current needs to be limited by using an energy saving driver circuit.

40 W: Current needs to be limited by using an energy saving driver circuit.

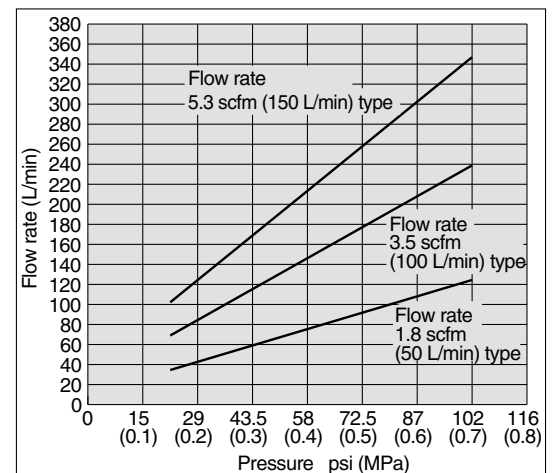
10 W: Energizing time is one second at a maximum. Please consult with SMC for continuous energization.

4 W: Continuous energization is possible.

Note 2) The response time and maximum operating frequency are not guaranteed.

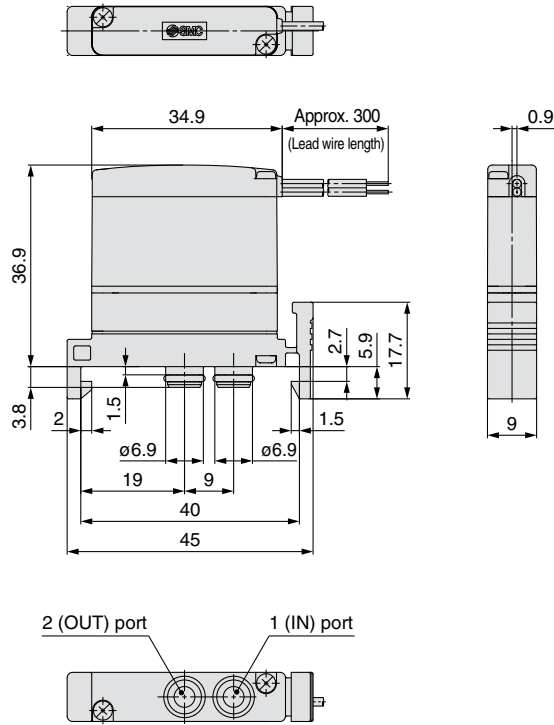
(Actual values based on SMC test conditions)

Pressure/Flow-rate Characteristics (without filter)

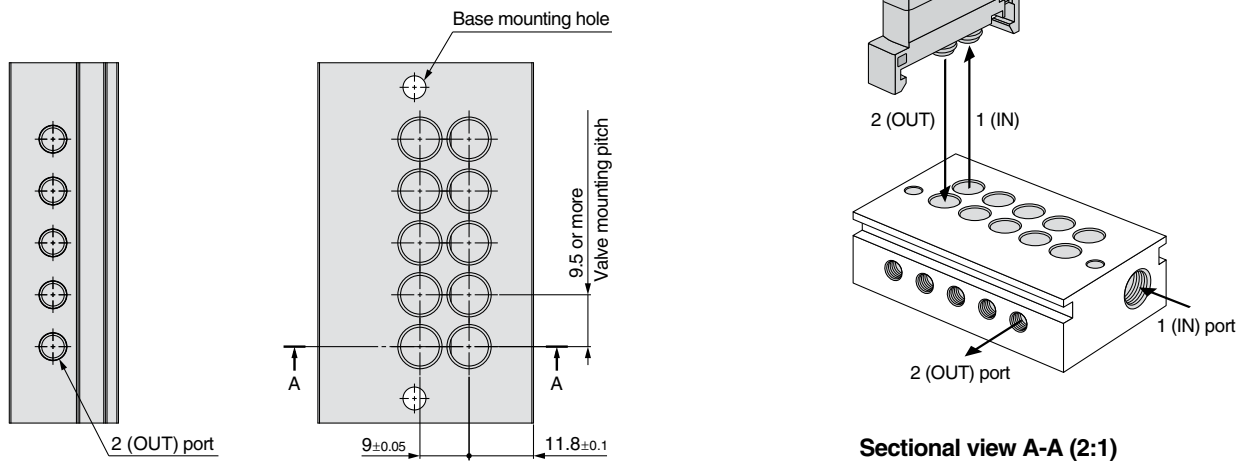


Dimensions

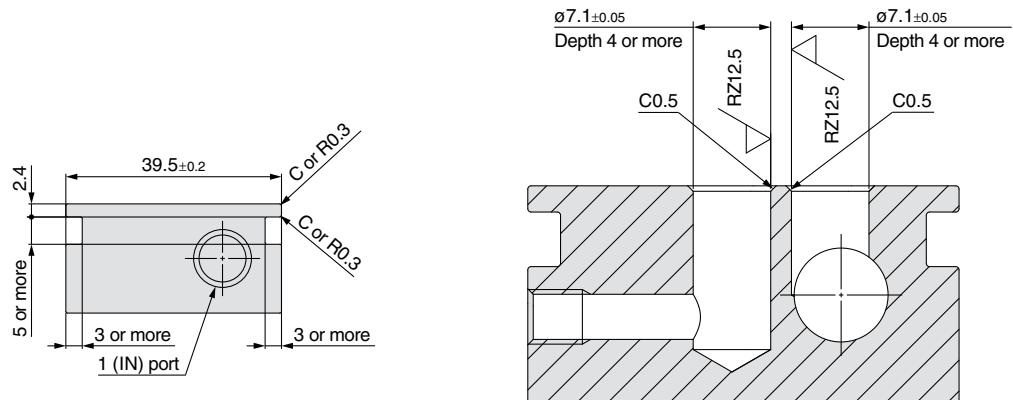
SX12-□G Quick disconnect type



Manifold base recommended dimensions



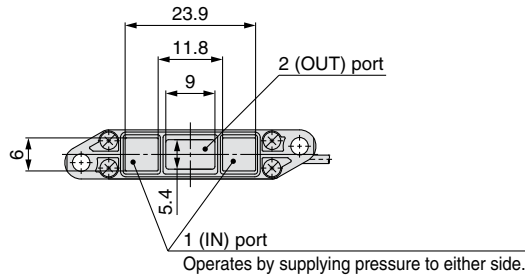
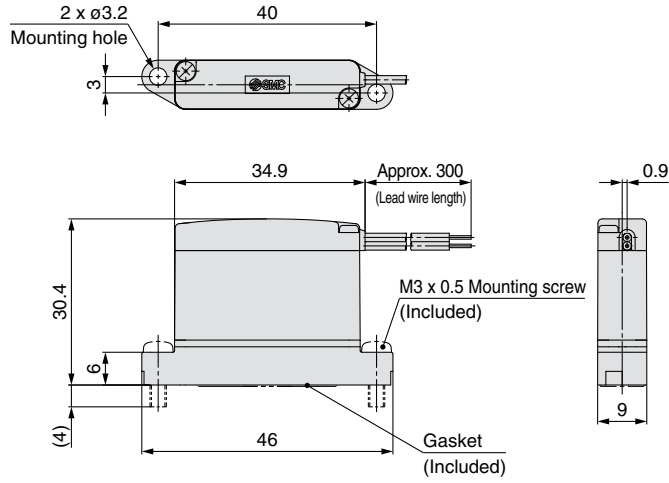
Sectional view A-A (2:1)



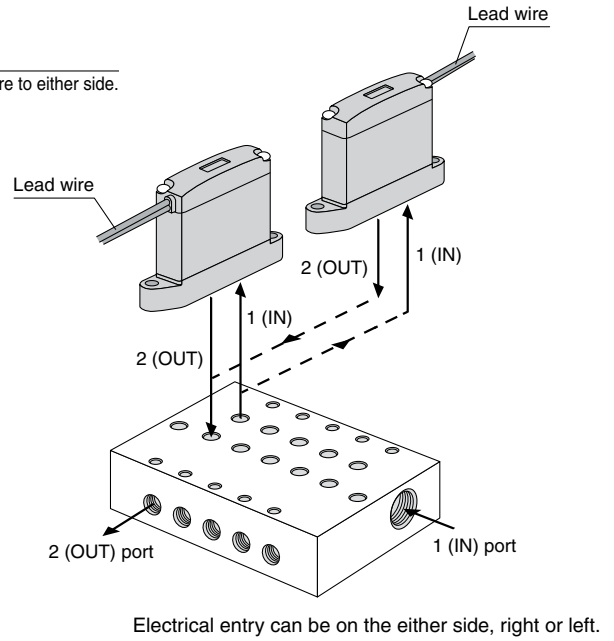
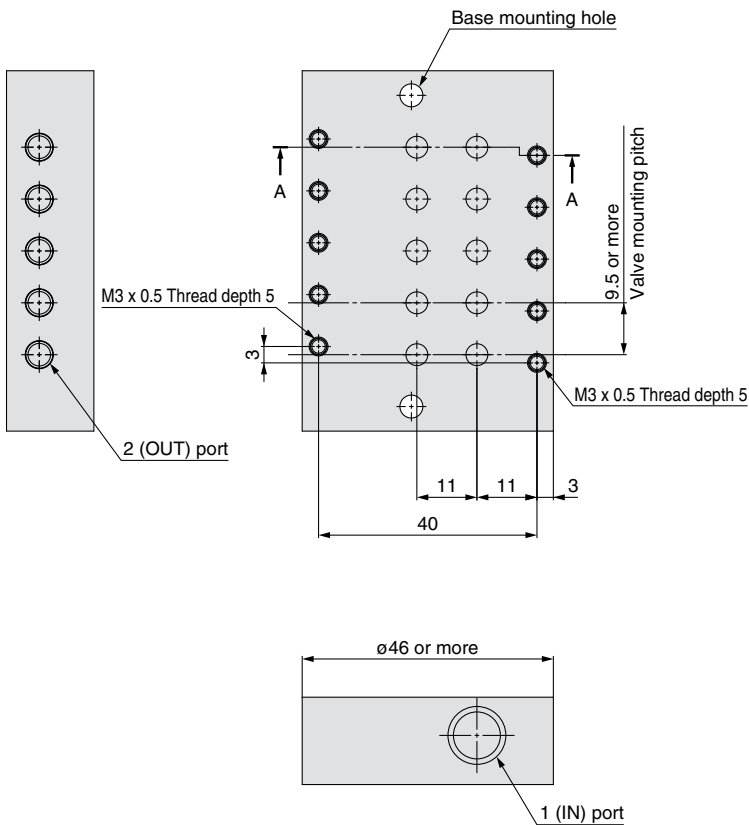
Series SX10

Dimensions

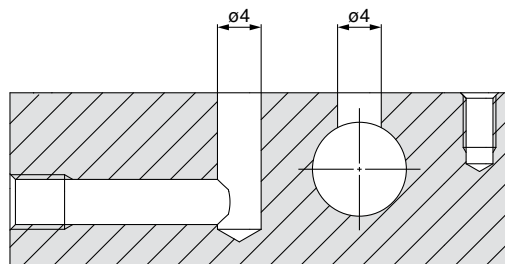
SX11-□G Screw mount type



Manifold base recommended dimensions

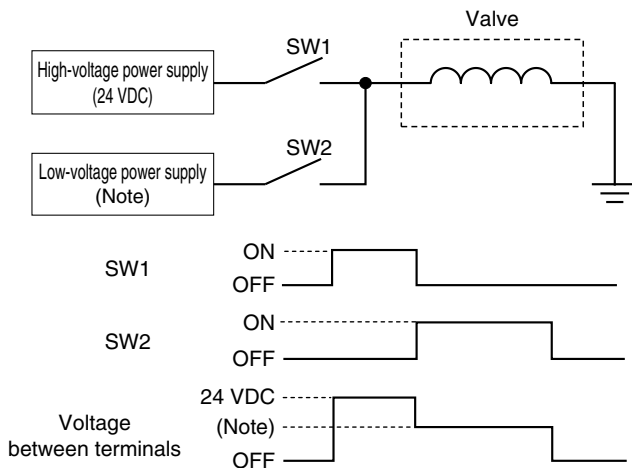


Sectional view A-A (2:1)



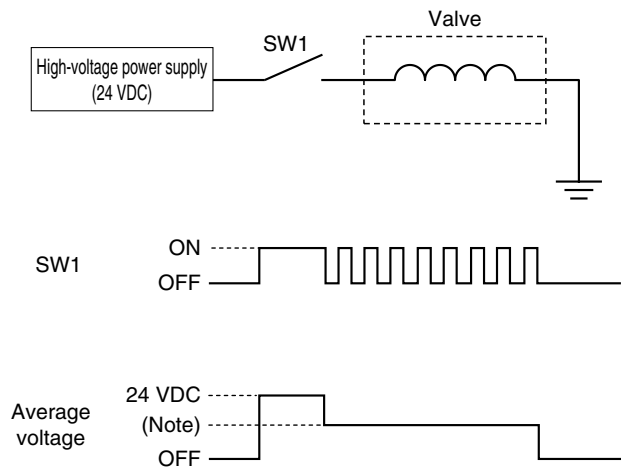
Control Method (Operation example with an energy saving driver circuit)

**1. Control with 2 power supplies, starting power supply and holding power supply.
Switching system from high voltage to low voltage**



(Note) 80 W type: 3 to 6 VDC
40 W type: 4 to 8 VDC
10 W type: 8 to 16 VDC

2. High speed switching control of high voltage by PWM control*. (*: PWM control circuit not currently available.)



⚠ Specific Product Precautions

Be sure to read before handling. Refer to back cover for Safety Instructions. For 2 Port Solenoid Valves for Fluid Control Precautions, refer to “Handling Precautions for SMC Products” and the Operation Manual on SMC website, <http://www.smcworld.com>

Continuous Energization (at 24 VDC)

⚠ Caution

- 1. Power consumption 80 W type: Not available**
When operating with an energy saving driver, continuous energization with the holding voltage of 3 to 6 VDC is possible.
- 2. Power consumption 40 W type: Not available**
When operating with an energy saving driver, continuous energization with the holding voltage of 4 to 8 VDC is possible.
- 3. Power consumption 10 W type: Please consult with SMC.**
When operating with an energy saving driver, continuous energization with the holding voltage of 8 to 16 VDC is possible.
- 4. Power consumption 4 W type: Available**

**Energized Time/Non-energized Time
(When not using power saving driver)**

⚠ Caution

- 1. Non-energized time (OFF) must be set longer than the energized time (ON).**
- 2. For use with voltages other than 24 VDC, please consult with SMC with the operating condition information of pressure, voltage, energized time and non-energized time.**




Others

⚠ Caution

- 1. If the valve is energized without air supply, the coil may be burned. Make sure to supply pressure to the valve when energizing.**
- 2. Please contact SMC for the product usage with a voltage at 75 VDC or more. Standard required by CE mark is different.**

Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1, and other safety regulations.

-  **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
-  **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
-  **Danger:** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

- *1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots – Safety.
etc.

Warning

- 1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**
Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
- 2. Only personnel with appropriate training should operate machinery and equipment.**
The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.
- 3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**
 - The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
 - When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
 - Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.
- 4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
 - Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
 - Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
 - An application which could have negative effects on people, property, or animals requiring special safety analysis.
 - Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Caution

- 1. The product is provided for use in manufacturing industries.**
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.
Read and accept them before using the product.

Limited warranty and Disclaimer


- The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
- For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
- Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

*2) **Vacuum pads are excluded from this 1 year warranty.**

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

- The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
- The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

 **Safety Instructions** Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.



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