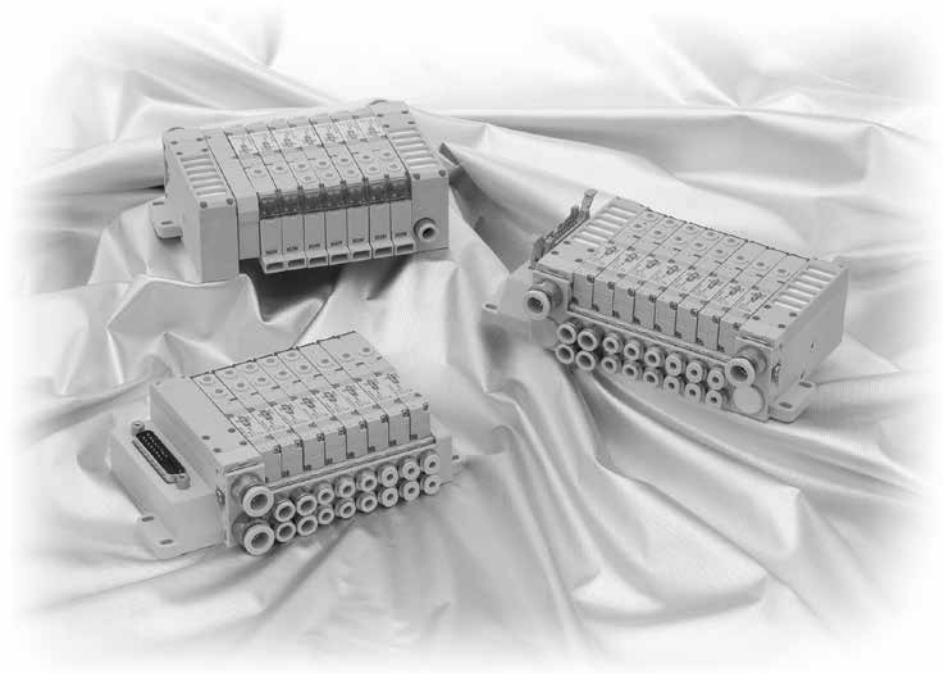
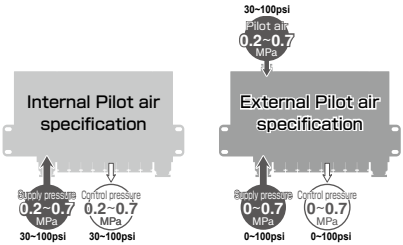


Solenoid Valve for Pneumatic System

Solenoid Valve **SVR** Series

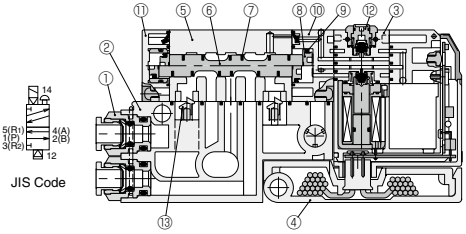
- *Small Body but Secure Large Flow Rate*
- *Valve width .41" (10.5mm)*
- *9 Valve Selections*
- *Intake / Output port size is changeable by Cartridge Fitting*
- *Available from control pressure 0 psi (0MPa)*

Usually pilot valves are operated by 30psi (0.2Mpa) or more, but SVR Series has an external pilot valve and air. It is possible to get SVR Series operate under 30psi (0.2MPa).



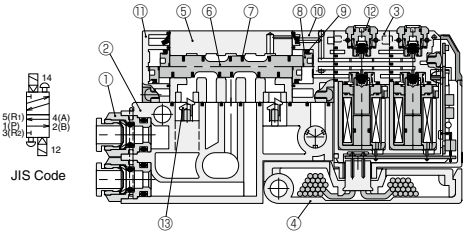
Construction

● 2-Position, 5-Port, Single Solenoid Valve (SVR10S)



No.	Part	Material (Treatment)
①	Fitting Assy	
②	Manifold-block	PBT
③	Pilot Valve Assy	
④	Electrical componet Ass'y	
⑤	Valve Body	Aluminum Alloy
⑥	Spool	Aluminum Alloy
⑦	Spool Seal Rubber	NBR
⑧	Piston	POM
⑨	Piston Seal Rubber	NBR
⑩	Intermediate Block	PBT
⑪	End Block	PBT
⑫	Manual Button	POM
⑬	Check Valve Assy	

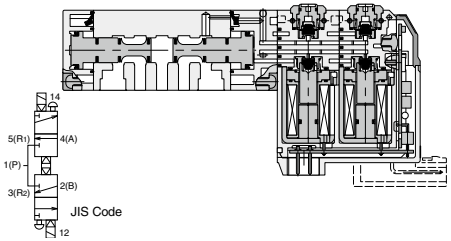
● 2-Position, 5-Port, Double Solenoid Valve (SVR10D)



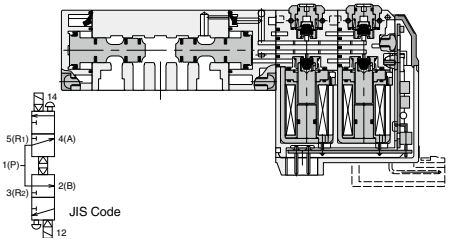
No.	Part	Material (Treatment)
①	Fitting Assy	
②	Manifold-block	PBT
③	Pilot Valve Assy	
④	Electrical componet Ass'y	
⑤	Valve Body	Aluminum Alloy
⑥	Spool	Aluminum Alloy
⑦	Spool Seal Rubber	NBR
⑧	Piston	POM
⑨	Piston Seal Rubber	NBR
⑩	Intermediate Block	PBT
⑪	End Block	PBT
⑫	Manual Button	POM
⑬	Check Valve Assy	

● 2-Position, 3-Port, Solenoid Valve

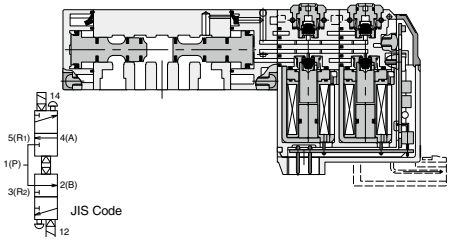
4(A). 2(B). Normally Closed (Twin 3-Way Valve) (SVR10E)



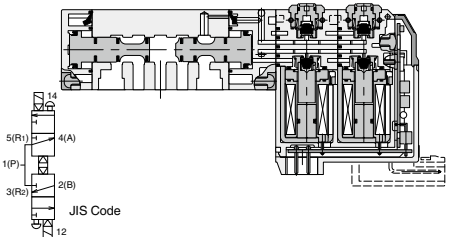
4(A). 2(B). Normally Open (Twin 3-Way Valve) (SVR10F)



4(A). Normally Closed, 2(B). Normally Open (Twin 3-Way Valve) (SVR10G)

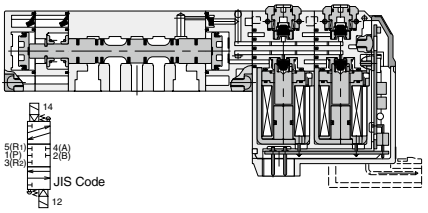


4(A). Normally Open, 2(B). Normally Closed (Twin 3-Way Valve) (SVR10H)

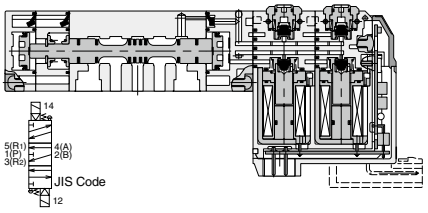


● 3-Position, 5-Port, Double Solenoid Valve

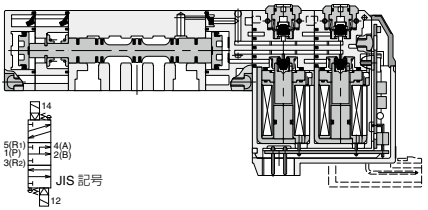
Closed Center (SVR10A)



Exhaust Center (SVR10R)



Pressure Center (SVR10P)



■ Model Designation (Example)

SVR10 | 08 | A | - | 1/4C | 3/8C | A08 | S | - | F | - | K

- SVR10 — Solenoid Valve SVR10 Series
- ① 08 — Number of Stations
- ② A — Intake & Exhaust Block Configuration
- ③ 1/4C — 4/2(A/B) Output Port Size
- ④ 3/8C — 1(P) Intake Port Size
- ⑤ A08 — Exhaust Check Valve
- ⑥ S — 5/3(R1/R2) Exhaust Port Size
- ⑦ F — Wiring Type
- ⑧ K — Valve Type

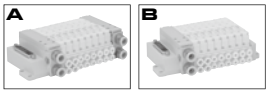
① Number of Stations

Code	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
No. of stations	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

❖ Max. 12 stations for Sub-D/Flat cable connector specifications

② Intake & Exhaust Block Configuration

Code	A	B
Specification	Both Sides	One Side



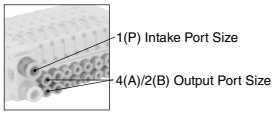
③ 4/2(A/B) Output Port Size

Fitting Type	Push-In Fitting (inch)					Push-In Fitting (mm)				
Code	1C	1/8C	5/32C	1/4C	5/16C(※)	2C	3C	4C	6C	8C(*)
Size (O.D.	Combination of Port Size	ø1/8	ø5/32	ø1/4	ø5/16	ø1.8	ø3	ø4	ø6	ø8
Piping direction	Side									

* Compresstion Fitting Special for Urethane tube.

④ 1(P)Intake Port Size

Fitting Type	Push-In Fitting (inch)			Push-In Fitting (mm)		
Code	1/4C	5/16C	3/8C	6C	8C	0C
Size (O.D.)	ø1/4	ø5/16	ø3/8	ø6	ø8	ø10
Piping direction	Side					



⑤ Exhaust Check Valve

No Code : Without Check Valve

A□ : With Check Valve

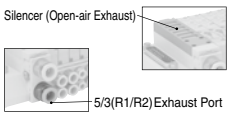
Code	A01	A02	A03	A04	A05	A06	A07	A08	A09	A10
Qty	1	2	3	4	5	6	7	8	9	10

Code	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
Qty	11	12	13	14	15	16	17	18	19	20

* This option is not selectable for purchasing a Manifold-block only. Select Exhaust Check Valve Ass'y (SVR-EXV) for a Manifold-block separately.

⑥ 5/3(R1/R2) Exhaust Port Size

Fitting Type	Push-In Fitting (mm)			Push-In Fitting (inch)			Silencer (Open-air Exhaust)
Code	1/4	5/16	3/8	6	8	0	S
Size (O.D.)	ø1/4	ø5/16	ø3/8	ø6	ø8	ø10	–



D24 - ⑨ ⑩ ⑪ 4C ⑫ MC ⑬

⑬ Common Inputs
⑫ External Pilot Air Port
⑪ DIN-Rail Mounting Bracket
⑩ Dual Pressure Option
⑨ Valve Coil Voltage

⑦ Wiring Type

Code	Wiring Type
D	Sub-D connector
S	Individual Plug-in Connector
F	Flat Cable (Ribbon Cable) Connector

⑧ Valve Type

Code	# of Port	# of Position	Valve Type
S	5	2	Single Solenoid
D	5	2	Double Solenoid
E	3	2	4(A), 2(B). Normally Closed (Twin 3-Way Valve)
F	3	2	4(A), 2(B). Normally Open (Twin 3-Way Valve)
G	3	2	4(A). Normally Closed, 2(B). Normally Open (Twin 3-Way Valve)
H	3	2	4(A). Normally Open, 2(B). Normally Closed (Twin 3-Way Valve)

Code	# of Port	# of Position	Valve Type
A	5	3	Closed Center
R	5	3	Exhaust Center
P	5	3	Pressure Center
K	–	–	Combination of Valves
B	–	–	Block Plate
M	–	–	Manifold-block Only

⑨ Valve Coil Voltage

Code	D24	A100
Coil Voltage	DC24V	AC100V

⑩ Dual Pressure Option

Code	No Code	P
Supply Pressure	Single Pressure	Dual Pressure

* Please specify where on the manifold to mount using the order form. (Refer to page 100).
For the manifold type with Dual Pressure, Intake & Exhaust Block "A" (Intake & Exhaust Block on Both Sides) is only selectable.

⑪ DIN-Rail Mounting Bracket

Code	No Code	D
Bracket Spec.	Without Bracket	With Bracket (*)

* 1 set (2pcs) is equipped.

⑫ External Pilot Air

Code	Spec.	Fitting Size & Type
No Code	Internal Pilot Air	–
4C	External Pilot Air	5/32" or ø4mm · Straight Type
6C	External Pilot Air	ø6mm · Straight Type
4L	External Pilot Air	5/32" or ø4mm · Elbow Type
6L	External Pilot Air	ø6mm · Elbow Type


External Pilot Air port
(Located back side)

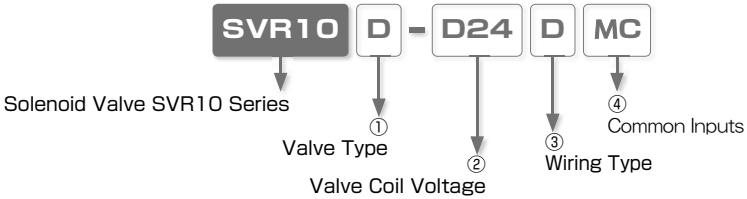
⑬ Common Polarity Specification

No code: Positive common

MC: Negative common (Make to order production)

❖ Negative common, MC is selectable when coil voltage is 24VDC

Model Designation of Mounting Valve (Example)



① Valve Type

Code	# of Port	# of Position	Valve Type
S	5	2	Single Solenoid
D	5	2	Double Solenoid
E	3	2	4(A), 2(B). Normally Closed (Twin 3-Way Valve)
F	3	2	4(A), 2(B). Normally Open (Twin 3-Way Valve)
G	3	2	4(A). Normally Closed, 2(B). Normally Open (Twin 3-Way Valve)
H	3	2	4(A). Normally Open, 2(B). Normally Closed (Twin 3-Way Valve)

Code	# of Port	# of Position	Valve Type
A	5	3	Closed Center
R	5	3	Exhaust Center
P	5	3	Pressure Center
B(※)	–	–	Block Plate

※ Leave ② and ③ blank, when the valve type is "B".

② Valve Coil Voltage

Code	D24	A100
Coil Voltage	DC24V	AC100V

③ Wiring Type

Code	Wiring Type
D	Concentrated wiring (Sub-D connector, Flat cable connector)
S	Individual Plug-in Connector

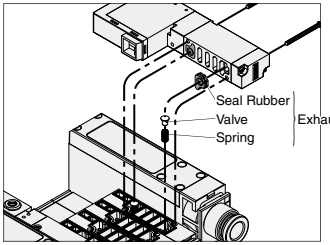
④ Common Polarity Specification

No code : Positive common

MC : Negative common

❖ Negative common, MC is selectable when coil voltage is 24VDC

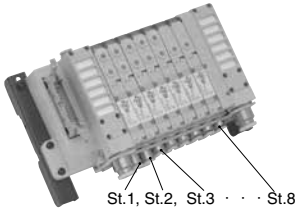
Model Code of Exhaust Check Valve



Ording Example

Model Series	Number of Stations ①	IN & EX Block Config. ②	Output ③	Intake ④	Check Valve ⑤	Exhaust ⑥	Wiring ⑦	Valve Type ⑧	Coil Vol. ⑨	Dual Pressure ⑩	DIN Rail ⑪	External Pilot Air Port ⑫	Common Inputs ⑬
SVR10	08	A	1C	0C	A03	S	F	K	D24	P	D	4C	MC

Station No.	Output	Check Valve	Valve Type	Dual Pressure
St. 1	1/4		SVR10 D	
St. 2	6		SVR10 D	○
St. 3	4	A	SVR10 D	
St. 4	1/4	A	SVR10 D	
St. 5	4	A	SVR10 D	
St. 6	1/8		SVR10 S	
St. 7	3		SVR10 S	
St. 8	3		SVR10 B	



*Station Number is counted St.1, St.2, St.3 · · · St.8 from left side with the tube fittings at the front as shown in the figure.

Order Form: SVR 10 Series

To: PISCO USA, Inc.

From :

Name :

Order # :

Date :

Requested EX-W PISCO Date : Quantity :

Model Series	Number of Stations ①	Intake / Exhaust Port ②	Output Port Size ③	Intake Port Size ④	Exhaust Check Valve ⑤	Exhaust Port Size ⑥	Wiring Type ⑦	Valve Type ⑧	Coil Voltage ⑨	Dual Pressure Option ⑩	DIN Rail Bracket ⑪	External Pilot Air Port ⑫	Common Inputs ⑬
SVR10													

Station Number	Output	Check Valve	Valve Type	Dual Pressure
St. 1			SVR10	
St. 2			SVR10	
St. 3			SVR10	
St. 4			SVR10	
St. 5			SVR10	
St. 6			SVR10	
St. 7			SVR10	
St. 8			SVR10	
St. 9			SVR10	
St. 10			SVR10	
St. 11			SVR10	
St. 12			SVR10	
St. 13			SVR10	
St. 14			SVR10	
St. 15			SVR10	
St. 16			SVR10	
St. 17			SVR10	
St. 18			SVR10	
St. 19			SVR10	
St. 20			SVR10	

※ Make a copy of this page and use it for ordering.

Specifications

Manifold

Item \ Model		SVR10□□-□-D	SVR10□□-□-F	SVR10□□-□-S
		Sub-D connector	Flat (Ribbon) Cable Connector	Individual Plug-in Connector
Fluid Medium		Air		
Operating Pressure Range		30~100psi (0.2-0.7MPa) (0 to 100psi ((0 to 0.7MPa with External Pilot Air Port)) Pressure range of External Pilot Air Port: 30 to 100psi (0.2 to 0.7MPa)		
Pressure Proof		150psi (1.05MPa)		
Operating Temp. Range		40~120℉ (5 ~ 50℃)		
Installing Direction		No Restriction (*2)		
Vibration Resistance		49m/s^2		
Impact Resistance		150m/s^2		
Max. Mountable Number of Valve Unit		Max. 12 units		Max. 20 units
Wiring Type	Type	Sub-D connector	Flat (Ribbon) Cable Connector	Individual Plug-in
	Number of Pins	2 to 4 stations: 9 pins	2 to 4 stations: 10 pins	3 pins
		5 to 12 stations: 25 pins	5 to 9 stations: 20 pins	
			10 to 12 stations: 26 pins	
Silencer		Standard equipment only for open-air exhaust type with (5(R1) and 3(R2) Port).		

*1. When twin 3-way valve is mounted: 30 to 100psi (0.2 to 0.7Mpa)
*2. Refer to "Warning" in "Detailed Safety Instructions".

Main Valve

Item \ Model		SVR10S	SVR10D	SVR10A SVR10R SVR10P	SVR10E SVR10F SVR10G SVR10H
Valve Type		Indirectly activated pneumatic operation by pilot valve			
Valve Stracture		Spool Valve (Elastic Seal)			
Number of Positions		2-Position		3-Position	2-Position
Number of Ports		5-Port			3-Port × 2
Valve Function		Single	Double		Single × 2
Number of pilot points		1	2		
Response Time (*1)	→ON	13msec	10msec	10msec (*2)	12msec
	→OFF	8msec	—	15msec (*2)	11msec
Max. Operation Cycle		5Hz			
Min. Excitation Time		—	50msec	—	—
Vibration Resistance		49m/s^2			
Impact Resistance		150m/s^2			
Lubrication		Not Required			
Operating Pressure Range		0.2 to 0.7MPa (0 to 0.7MPa by External Pilot Air Port)			

*1.The value at supply air: 72.5psi (0.5MPa) with DC24V
*2. Response Time for 3-Position represents the value from Neutral Position to ON and from ON to Neutral Position (OFF).

■ Pilot Valve

Item \ Rated Voltage	DC24V	AC100V
Operating System	Direct Acting	
Valve Structure	Elastic Seal, Poppet Valve	
Tolerance of Voltage Range	DC21.6 ~ 26.4V	AC90 ~ 110V
Power Consumption (with LED)	0.7W	1VA
Surge Protection Circuit	Surge Absorber	Bridge Diode
Manual Operation	Push-Lock Button	
Max. Operating Pressure	100psi (0.7MPa)	
Operation Displaying LED	LED (4(A) : Green, 2(B) : Red)	

■ Flow Characteristics

Model		SVR10S-□ SVR10D-□		SVR10A-□		SVR10R-□		SVR10P-□		SVR10E-□ SVR10G-□(NC) SVR10H-□(NC)		SVR10F-□ SVR10G-□(NO) SVR10H-□(NO)	
Piping Spec.	Output Port Size	*1	Cv	*1	Cv	*1	Cv	*1	Cv	*1	Cv	*1	Cv
1(P) → 4(A), 2(B)	ø5/16, ø8mm (*2)	6.0	0.33	4.7	0.25	4.7	0.25	6.8	0.37	3.5	0.19	5.9	0.32
	ø1/4, ø6mm	6.0	0.33	4.7	0.25	4.7	0.25	6.8	0.37	3.5	0.19	5.9	0.32
	ø5/32, ø4mm	4.0	0.22	3.8	0.21	3.8	0.21	4.3	0.23	3.3	0.18	4.0	0.22
	ø1/8, ø3mm	2.6	0.14	2.6	0.14	2.6	0.14	2.6	0.14	2.6	0.14	2.6	0.14
	ø1.8mm	1.1	0.06	1.1	0.06	1.1	0.06	1.1	0.06	1.1	0.06	1.1	0.06
4(A), 2(B) → 5(R1), 3(R2) Without Exhaust Check Valve (*3)	ø5/16, ø8mm (*2)	5.6	0.30	3.6	0.20	6.7	0.36	3.6	0.20	5.1	0.28	5.1	0.28
	ø1/4, ø6mm	5.6	0.30	3.6	0.20	6.7	0.36	3.6	0.20	5.1	0.28	5.1	0.28
	ø5/32, ø4mm	3.6	0.20	3.3	0.18	4.3	0.23	3.3	0.18	4.0	0.22	4.0	0.22
	ø1/8, ø3mm	2.1	0.11	2.1	0.11	2.1	0.11	2.1	0.11	2.1	0.11	2.1	0.11
	ø1.8mm	0.5	0.03	0.5	0.03	0.5	0.03	0.5	0.03	0.5	0.03	0.5	0.03
4(A), 2(B) → 5(R1), 3(R2) With Exhaust Check Valve (*3)	ø5/16, ø8mm (*2)	3.6	0.20	3.1	0.17	3.6	0.20	3.1	0.17	3.5	0.19	3.5	0.19
	ø1/4, ø6mm	3.6	0.20	3.1	0.17	3.6	0.20	3.1	0.17	3.5	0.19	3.5	0.19
	ø5/32, ø4mm	2.9	0.16	2.9	0.16	3.4	0.18	2.9	0.16	3.1	0.17	3.1	0.17
	ø1/8, ø3mm	2.1	0.11	2.1	0.11	2.1	0.11	2.1	0.11	2.1	0.11	2.1	0.11
	ø1.8mm	0.5	0.03	0.5	0.03	0.5	0.03	0.5	0.03	0.5	0.03	0.5	0.03

*1. Effective Sectional Area: S(mm^2)
*2. The value of a compression fitting
*3. The value at the spec of 5/3(R1,R2) and Port: ø10mm Fitting

Intake Port Size (mm)	Piping Spec.	Effective Sectional Area S [mm^2]	Sonic Conductance C [dm^3/(S·bar)]	Cv
ø1/4, ø6	A (Intake & Exhaust Port on Both Sides)	18.0	3.6	0.98
	B (Intake & Exhaust Block on One Side)	9.0	1.8	0.49
ø5/16, ø8	A (Intake & Exhaust Port on Both Sides)	36.6	7.3	1.98
	B (Intake & Exhaust Block on One Side)	18.3	3.7	0.99
ø3/8, ø10	A (Intake & Exhaust Port on Both Sides)	45.0	9.0	2.44
	B (Intake & Exhaust Block on One Side)	22.5	4.5	1.22

Selecting Criteria of Intake Port Size

① Refer to the table of Valve Type, Output Port Size and effective sectional area of simultaneous operated valve units. Sum up all effective sectional area.

② Select a suitable Intake Port Size so that its effective sectional area should be larger than the sum of the effective sectional area.

Note) This table shows a reference value. Make a selection securing safty under the actual operation.

Example)

● Manifold Type: 8 stations, Valve Type: S, Output Port Size: Ø4mm, Max. 5 stations are operated at the same time.

→→ The sum of effective sectional area: 4.0mm^2 x 5 stations =20mm^2

In this case, one of the following Intake Port specs. shall be selected. Intake Port ø8mm / 36.6mm^2 on both sides , or Intake Port of ø10mm / 22.5mm^2 on one side or IntakePort of Ø10mm / 45.0mm^2 on both sides.

Cylinder Speed Table

Cylinder Speed (mm/s)	Cylinder Tube bore (mm)									
	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø140
100	■	■	■	■	■	■	■			
200	■	■	■	■	■					
300	■	■	■	■						
400	■	■	■							
500	■	■	■							
600	■	■								
700	■	■								
800	■									

Note) ● The cylinder average speed is referential at 72.5psi (0.5MPa) of pressure, 30% of load factor and 1m of tube length.

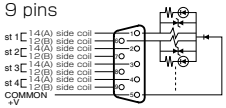
● The cylinder speed can vary according to the configuration of piping and fittings.

● The data in the above table represents the value when ø6mm Push-In Fitting is used on 4(A) and 2(B) ports of SVR10D.

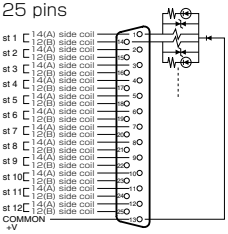
Electric Circuit (DC24V)

●Sub-D connector

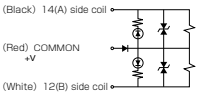
9 pins



25 pins



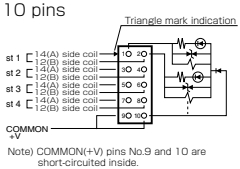
●Individual Plug-in Connector



Note) The color in parenthesis is lead wire color.

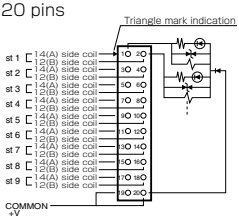
●Flat (Ribbon) Cable Connector

10 pins



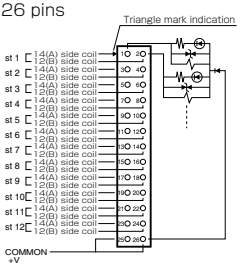
Note) COMMON(+V) pins No.9 and 10 are short-circuited inside.

20 pins



Note) COMMON(+V) pins No.19 and 20 are short-circuited inside.

26 pins

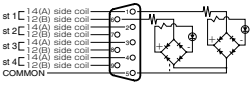


Note) COMMON(+V) pins No.25 and 26 are short-circuited inside.

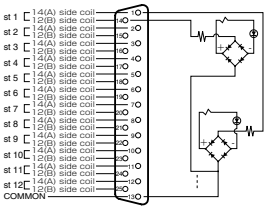
Electric Circuit (AC100V)

●Sub-D connector

9 pins

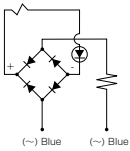


25 pins

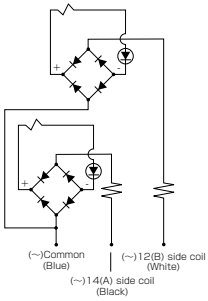


●Individual Plug-in Connector

Single Solenoid

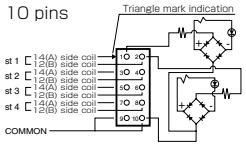


Double Solenoid



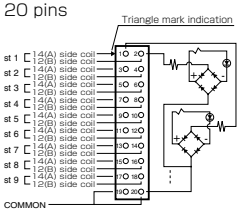
●Flat (Ribbon) Cable Connector

10 pins



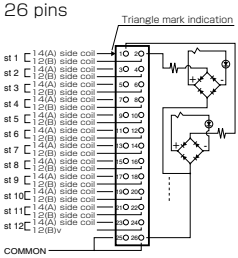
Note) COMMON(+V) pins No.9 and 10 short-circuited inside.

20 pins



Note) COMMON(+V) pins No.19 and 20 short-circuited inside.

26 pins



Note) COMMON(+V) pins No.25 and 26 short-circuited inside.

Weight List

Valve Type	Weight (g)
SVR10S	29.7
SVR10D	37.3
SVR10E	37.7
SVR10F	37.7
SVR10G	37.7
SVR10H	37.7
SVR10A	39.4
SVR10R	39.4
SVR10P	39.4
SVR10B	16.3

Manifold Block / Station	Weight (g)
Individual Connector Type	15.2
Concentrated wiring Type	17

Manifold Block / Station for Dual Pressure Type	Weight (g)
Individual Connector Type	15.4
Concentrated wiring Type	17.1

Exhaust Check Valve Ass'y	Weight (g)
For one Station	0.4

Connector cable (Individual Plug-in Connector Type)	Weight (g)
2P (Valve Type: S)	3
3P (Valve Type: D, E, F, G, H, A, R and P)	4.5

Manifold Type	Exhaust Type	Wiring	Weight (g)
One Side Block	Tube Exhaust	Individual Connector	78.6
One Side Block	Tube Exhaust	9 Pins Sub-D connector	101.9
One Side Block	Tube Exhaust	25 Pins Sub-D connector	105.9
One Side Block	Tube Exhaust	10 Pins Flat Cable Connector	101.1
One Side Block	Tube Exhaust	20 Pins Flat Cable Connector	102.4
One Side Block	Tube Exhaust	26 Pins Flat Cable Connector	102.6
One Side Block	Open-air Exhaust	Individual Connector	82
One Side Block	Open-air Exhaust	9 Pins Sub-D connector	105.3
One Side Block	Open-air Exhaust	25 Pins Sub-D connector	109.3
One Side Block	Open-air Exhaust	10 Pins Flat Cable Connector	104.5
One Side Block	Open-air Exhaust	20 Pins Flat Cable Connector	105.8
One Side Block	Open-air Exhaust	26 Pins Flat Cable Connector	106
Both Sides Block	Tube Exhaust	Individual Connector	109.8
Both Sides Block	Tube Exhaust	9 Pins Sub-D connector	133.7
Both Sides Block	Tube Exhaust	25 Pins Sub-D connector	137.7
Both Sides Block	Tube Exhaust	10 Pins Flat Cable Connector	132.9
Both Sides Block	Tube Exhaust	20 Pins Flat Cable Connector	134.2
Both Sides Block	Tube Exhaust	26 Pins Flat Cable Connector	134.4
Both Sides Block	Open-air Exhaust	Individual Connector	116.5
Both Sides Block	Open-air Exhaust	9 Pins Sub-D connector	140.5
Both Sides Block	Open-air Exhaust	25 Pins Sub-D connector	144.5
Both Sides Block	Open-air Exhaust	10 Pins Flat Cable Connector	139.6
Both Sides Block	Open-air Exhaust	20 Pins Flat Cable Connector	141
Both Sides Block	Open-air Exhaust	26 Pins Flat Cable Connector	141.1

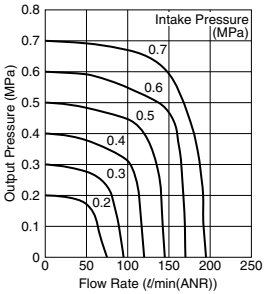
Cartridge Fitting		Weight (g)
CJC09-180	Output Port	4.3
CJC09-03	Output Port	3.7
CJC09-04A	Output Port / External Pilot Air Port	3.5
CJC09-06A	Output Port / External Pilot Air Port	3.5
CJB09-08	Output Port	9
CJL09-04	External Pilot Air Port	4.7
CJL09-06	External Pilot Air Port	5.5
CJP09	External Pilot Air Port (Plug)	1.3
CJC14-06	Intake Port / Exhaust Port	11.5
CJC14-08	Intake Port / Exhaust Port	10
CJC14-10	Intake Port / Exhaust Port	13

Use the following formula to calculate the weight of SVR10.

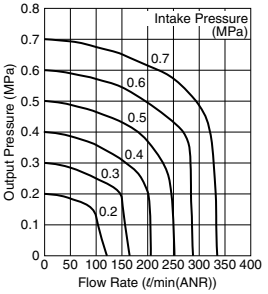
(Station x Qty) + Manifold Type + (Cartridge Fitting x Qty) + (Connector cable x Qty) + (Exhaust Check Valve x Qty) + (Valve Type x Qty)

Flow Characteristics

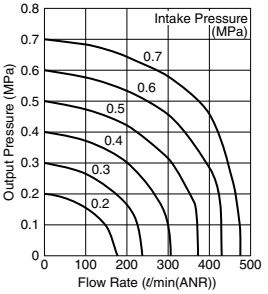
SVR10S & D Output Port Size ø3mm (1(P)→2(B))



SVR10S & D Output Port Size ø4mm (1(P)→2(B))



SVR10S & D Output Port Size ø6mm (1(P)→2(B))



Standard Size List

Type	Refer to the pages below	Port	Fitting Type	Tube O.D.
SVR IN. & EX. Block on Both Sides Tube Exhaust	Sub-D connector Flat Cable Connector Individual Plug-in Connector	Output port 4(A) 2(B)	Push-In Fitting	ø1/8 ø5/32 ø1/4 ø1.8mm ø3mm ø4mm ø6
			Compression Fitting for Polyurethane Tube	ø8mm
		Intake port 1(P) Exhaust port 5/3(R)	Push-In Fitting	ø1/4 ø5/16 ø3/8 ø6mm ø8mm ø10mm
		External pilot air port 12 14	Push-In Fitting (Straight Type)	ø5/32 ø4mm ø6mm
			Push-In Fitting (Elbow Type)	ø5/32 ø4mm ø6mm

Type	Refer to the pages below	Port	Fitting Type	Tube O.D.
SVR IN. & EX. Block on One Side Tube Exhaust	Sub-D connector Flat Cable Connector Individual Plug-in Connector	Output port 4(A) 2(B)	Push-In Fitting	ø1/8 ø5/32 ø1/4 ø1.8mm ø3mm ø4mm ø6
			Compression Fitting for Polyurethane Tube	ø8mm
		Intake port 1(P) Exhaust port 5/3(R)	Push-In Fitting	ø1/4 ø5/16 ø3/8 ø6mm ø8mm ø10mm
		External pilot air port 12 14	Push-In Fitting (Straight Type)	ø5/32 ø4mm ø6mm
			Push-In Fitting (Elbow Type)	ø5/32 ø4mm ø6mm

Type	Refer to the pages below	Port	Fitting Type	Tube O.D.
SVR IN. & EX. Block on Both Sides Open-air Exhaust	Sub-D connector Flat Cable Connector Individual Plug-in Connector	Output port 4(A) 2(B)	Push-In Fitting	ø1/8 ø5/32 ø1/4 ø1.8mm ø3mm ø4mm ø6
			Compression Fitting for Polyurethane Tube	ø8mm
		Intake port 1(P)	Push-In Fitting	ø1/4 ø5/16 ø3/8 ø6mm ø8mm ø10mm
		External pilot air port 12 14	Push-In Fitting (Straight Type)	ø5/32 ø4mm ø6mm
			Push-In Fitting (Elbow Type)	ø5/32 ø4mm ø6mm

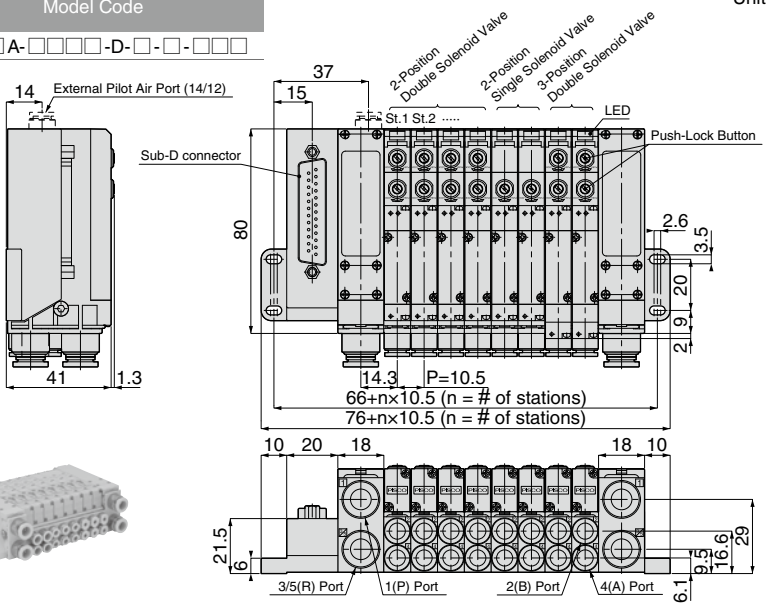
Type	Refer to the pages below	Port	Fitting Type	Tube O.D.
SVR IN. & EX. Block on One Side Open-air Exhaust	Sub-D connector Flat Cable Connector Individual Plug-in Connector	Output port 4(A) 2(B)	Push-In Fitting	ø1/8 ø5/32 ø1/4 ø1.8mm ø3mm ø4mm ø6
			Compression Fitting for Polyurethane Tube	ø8mm
		Intake port 1(P)	Push-In Fitting	ø1/4 ø5/16 ø3/8 ø6mm ø8mm ø10mm
		External pilot air port 12 14	Push-In Fitting (Straight Type)	ø5/32 ø4mm ø6mm
			Push-In Fitting (Elbow Type)	ø5/32 ø4mm ø6mm

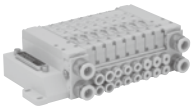
SVR10 Intake & Exhaust Block on Both Sides, Tube Exhaust Sub-D connector

Unit：mm

Model Code

SVR10□A-□□□□-D-□-□-□□□

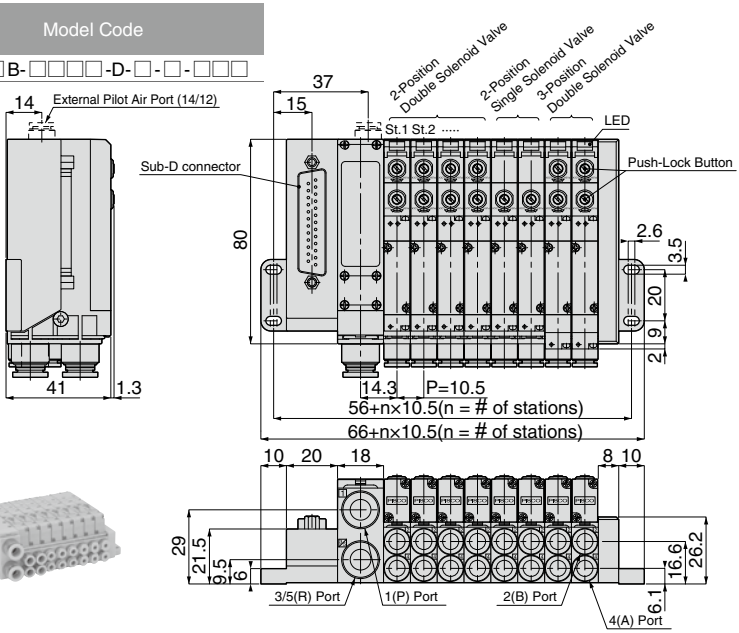




SVR10 Intake & Exhaust Block: One Side, Tube Exhaust Sub-D connector

Model Code

SVR10□B-□□□□-D-□-□-□□□

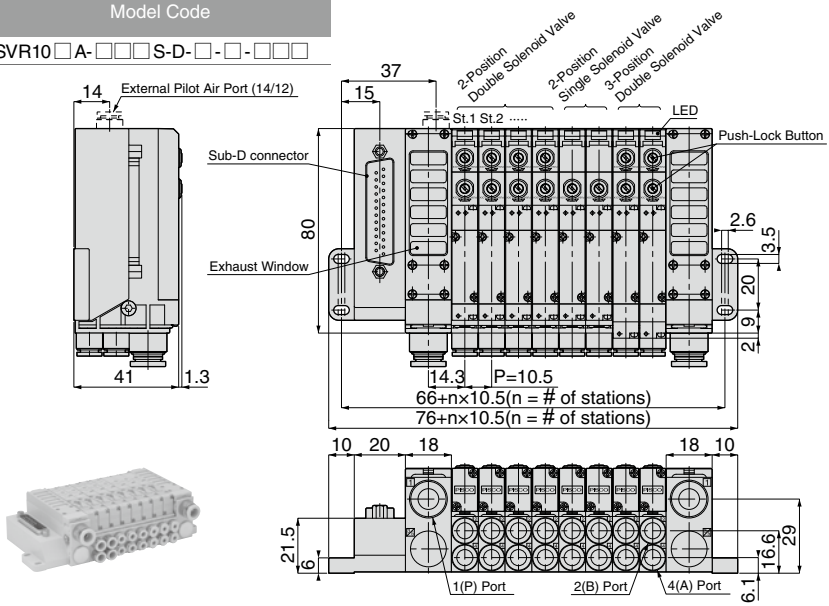


Intake & Exhaust Block: Both Sides, Open-air Exhaust Sub-D connector

Unit : mm

Model Code

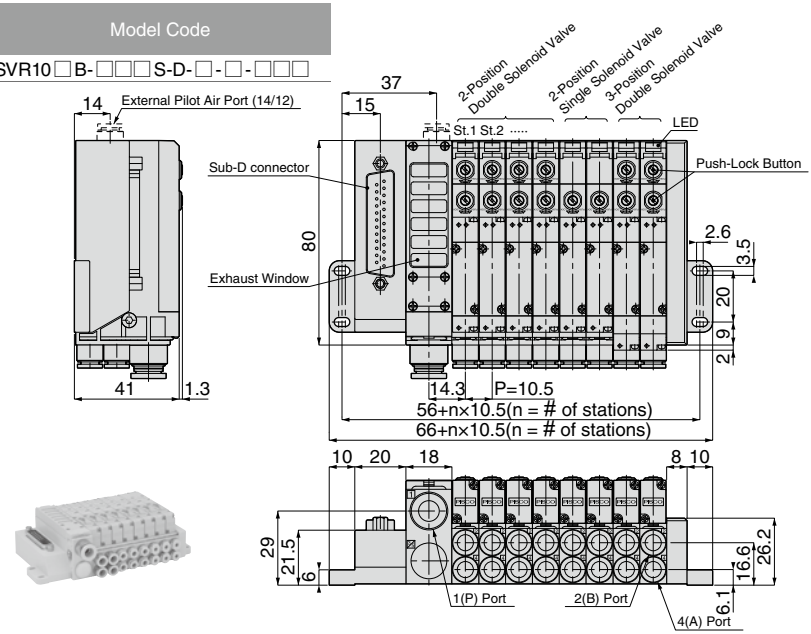
SVR10□A-□□□S-D-□-□-□□□



Intake & Exhaust Block: One Side, Open-air Exhaust Sub-D connector

Model Code

SVR10□B-□□□S-D-□-□-□□□

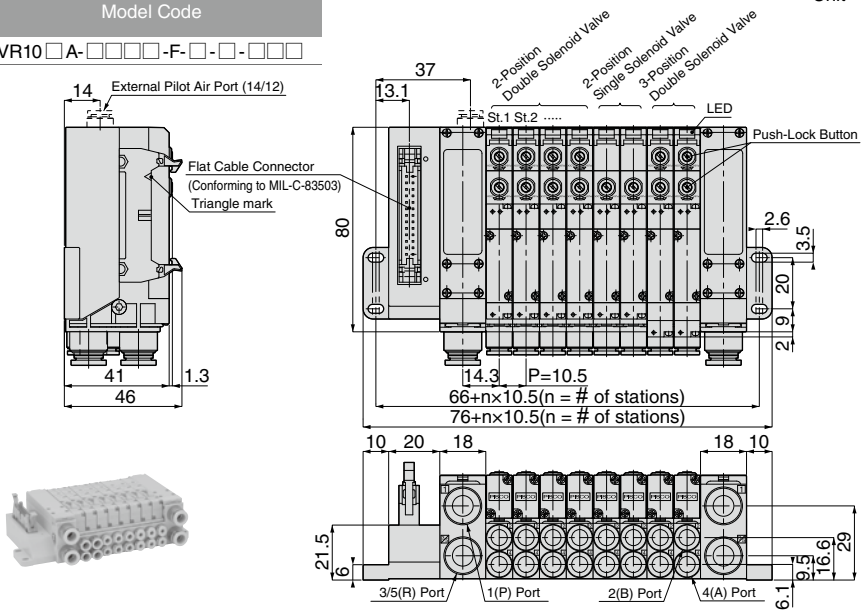


Intake & Exhaust Block on Both Sides, Tube Exhaust Flat Cable Connector

Unit：mm

Model Code

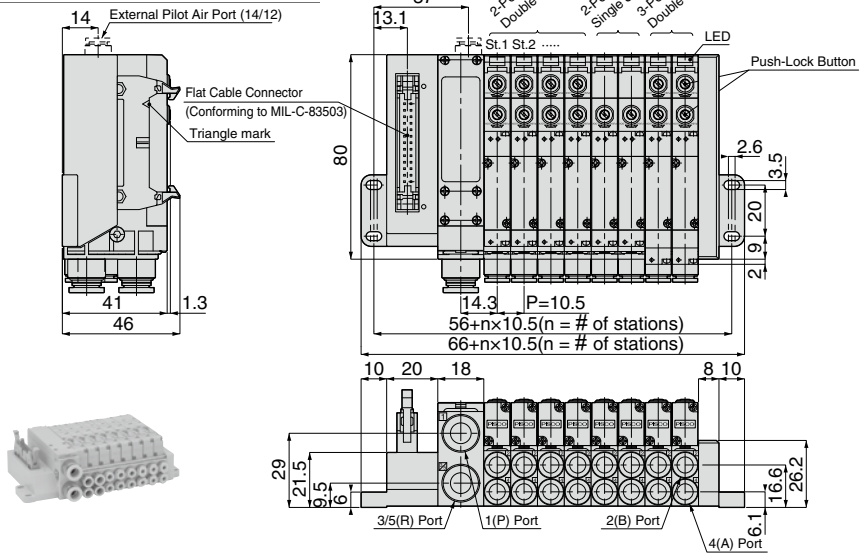
SVR10□A-□□□□-F-□-□-□□□



Intake & Exhaust Block: One Side, Tube Exhaust Flat Cable Connector

Model Code

SVR10□B-□□□□-F-□-□-□□□

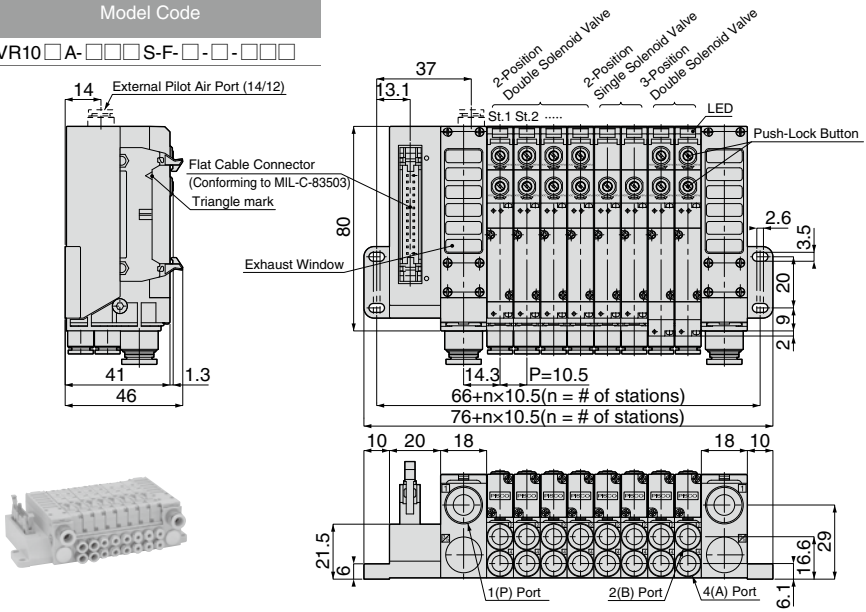


Intake & Exhaust Block on Both Sides, Open-air Exhaust Flat Cable Connector

Unit : mm

Model Code

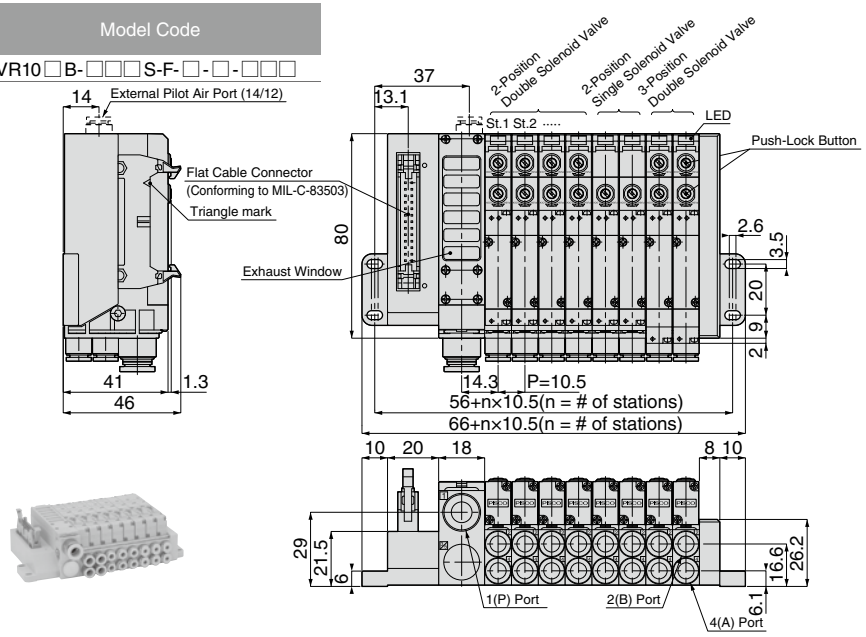
SVR10□A-□□□S-F-□-□-□□□



Intake & Exhaust Block on One Side, Open-air Exhaust Flat Cable Connector

Model Code

SVR10□B-□□□S-F-□-□-□□□

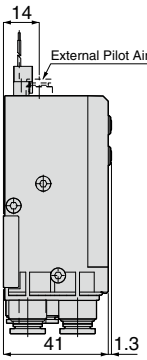


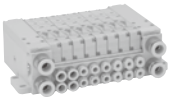
Intake & Exhaust Block on Both Sides, Tube Exhaust Individual Plug-in Connector

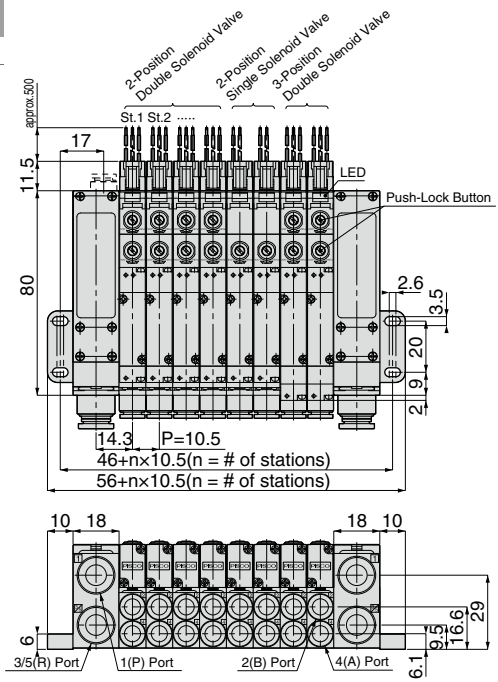
Unit：mm

Model Code

SVR10□A-□□□□-S-□-□-□□□



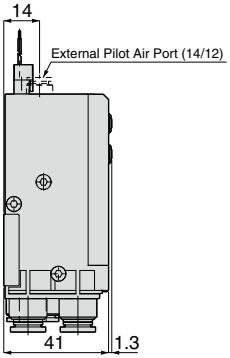


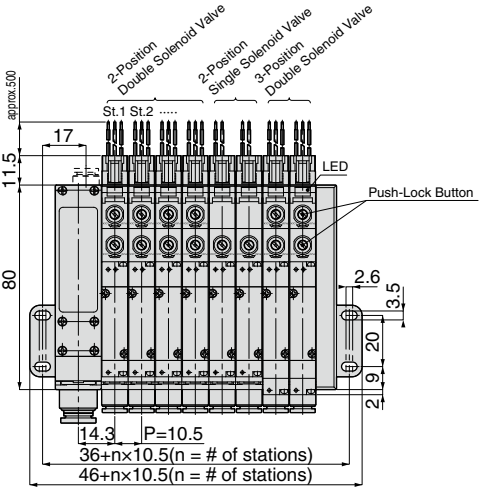


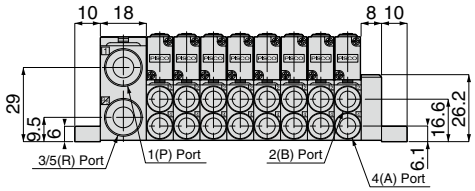
Intake & Exhaust Block on One Side, Tube Exhaust Individual Plug-in Connector

Unit : mm

Model Code
SVR10□B-□□□□-S-□-□-□□□





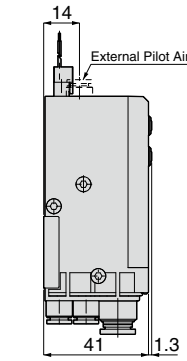


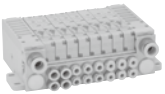
Intake & Exhaust Block on Both Sides, Open-air Exhaust Individual Plug-in Connector

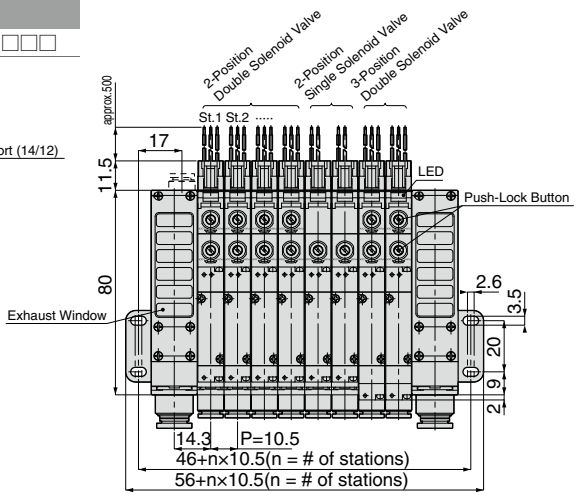
Unit：mm

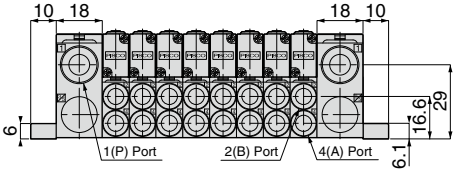
Model Code

SVR10□A-□□□S-S-□-□-□□□





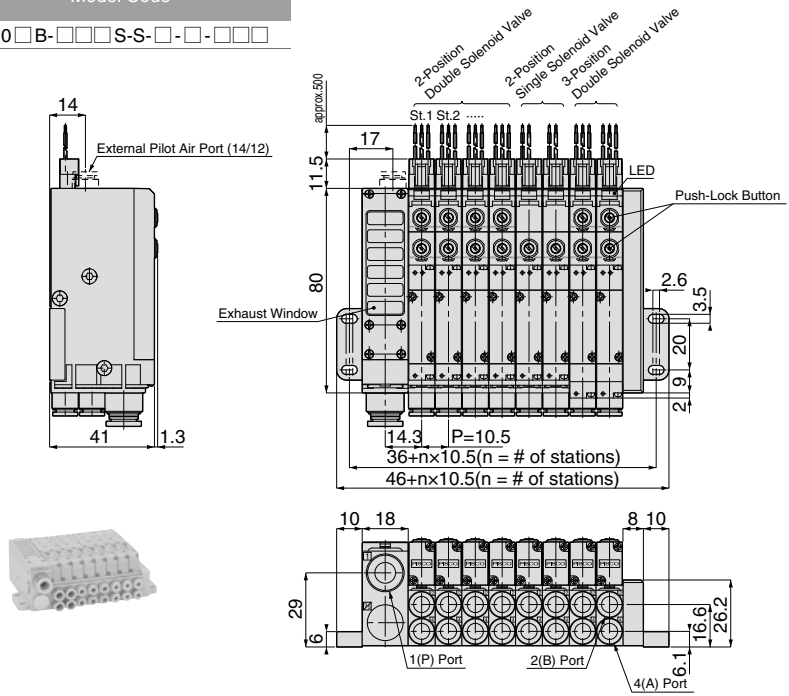




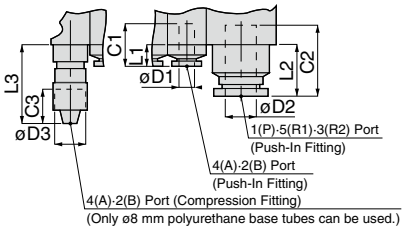
Intake & Exhaust Block on One Side, Open-air Exhaust Individual Plug-in Connector

Unit : mm

Model Code
SVR10□B-□□□S-S-□-□-□□□



Dimension of Fittings

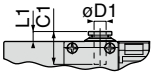


Unit：mm

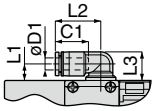
	Tube O.D. øD1	C1	L1	Tube O.D. øD2	C2	L2	Tube O.D. øD3	C3	L3
Output ports 4(A)Port · 2(B)Port	1.8	8.5	5	—	—	—	—	—	—
	3 (1/8)	11	5.8	—	—	—	—	—	—
	4 (5/32)	11	6	—	—	—	—	—	—
	6	12	9	—	—	—	—	—	—
	1/4	11.4	10.4	—	—	—	—	—	—
	—	—	—	—	—	—	8 (5/16)	9	22
Inlet and Exhaust port 1(P)Port · 5/3(R)Port	—	—	—	6	17	12	—	—	—
	—	—	—	1/4	17	12	—	—	—
	—	—	—	8 (5/16)	18.5	13.5	—	—	—
	—	—	—	10	21	17	—	—	—
	—	—	—	3/8	21	17	—	—	—

Dimension of Fittings (External Pilot Air Port)

Straight Type



Elbow Type



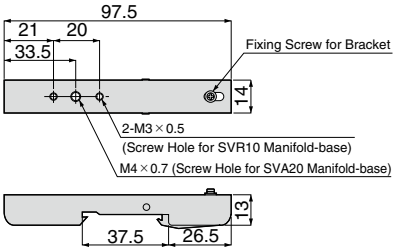
Unit：mm

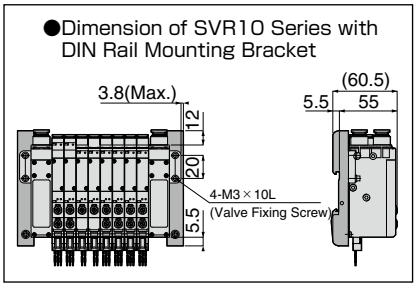
	Tube O.D. øD1	C1	L1	L2	L3
External Pilot Air Port (Straight Type) (14/12)	4 (5/32")	10.9	3.3	—	—
	6	12	6.5	—	—
External Pilot Air Port (Elbow Type) (14/12)	4 (5/32")	11	5.5	15.1	9.5
	6	11.6	6.5	16	11.8

DIN Rail Mounting Bracket

DRF35S DIN Rail Mounting Bracket

Unit : mm





Model Code	CAD file name
DRF35S	SVA-047

Method for Attaching / Detaching DIN Rail Mounting Bracket

(1) Fix a solenoid valve on DIN Rail Bracket (DRF35S) by tightening a screw. (*1).

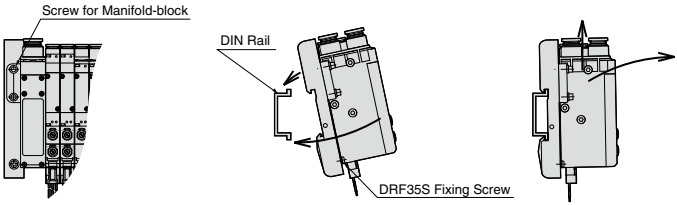
*1. Use a screw of M3x0.5 (L=8-10).

(2) Mount DIN Rail Bracket (DRF35S) on DIN Rail. Tighten the fixing screw of DIN Rail Bracket (DRF35S) with the designated tightening torque in the below table.

Table. Tightening Torque of Fixing Screw

Tightening Torque	0.3 ~ 0.4N·m
Max. Load	100N

(3) Loosen the fixing screw of DRF35S and lean forward the solenoid valve in the way like pulling it up, detach it from the rail as following figure shows.



⚠ Detailed Safety Instructions

Before using PISCO products, be sure to read "Safety Instructions" and "Safety Instruction Manual" and Common Safety Instructions for Solenoid Valve Series".

Warning

1. When a solenoid valve is operated under vibration less than 49m/s^2, install it so that a spool valve is at a right angle to the vibrating direction.
   * Refer to the figure of "4. Installation" under "Precautions for Use".

Caution

1. When the valves are used with Valve Manifold, back pressure can cause malfunctions of the actuator (single acting cylinder, etc.) In such a case, provide a check valve to the exhaust port.
2. Do not use a 3-position valve for accurate mid-stroke positioning of the cylinder. Compressiveness of air may not allow accuracy in stop position. Also, the valve permits leakage, so that the stop position may not remain constant for a long time.
3. Do not give excessive tension or bending to the individual plug-in connector (Cable). Disconnection or damage to the connector may be caused.
4. The Cartridge Fitting can be disconnected by removing the lock pin. However, make sure that the lock pin is properly in place before using.
5. Read the manual carefully for proper installation and removal of valves. Also, keep the manual at hand.
6. Read the method for replacing Cartridge Fitting in the catalog carefully.
7. Read the method for replacing Cartridge Fitting and piping ø8mm Compression Fitting in the catalog carefully.
8. When wiring Sub-D connector, Individual plug-in Connector and Flat Cable, refer to the electric circuit in this catalog.

⚠ Safety Instructions for DIN Rail Mounting Bracket

1. Fixing screw shall be tightened within the designated tightening torque.
2. Do not place anything which exceeds the maximum load on DIN Rail and Bracket.
3. Do not place DIN rail on a place with extreme vibration (9.8m/s^2 or less).

⚠ Safety Rules for Use

1. Air Quality

■ Impurities contained in air may cause malfunctions or troubles of solenoid valves. Remove drain and dust from the supply air.

■ Apply flushing to both supplying and cylinder sides when piping. Place a filter (filtering accuracy: 5μm or less) close to a solenoid valve.

■ A large amount of drain, excessive lubrication and super dry air may cause malfunctions or troubles. Pay special attentions to air quality.

2. Operating Environment

■ Operate solenoid valves under the following environment.

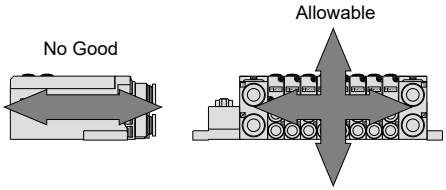
- Within Operating Temp. Range
- Avoid dew condensation by temperature change
- No water / oil drops and dust
- No corrosive gas

3. Leakage Current

■ When a solenoid valve is operated by a programmable controller, leakage current in output side shall be less than 1mA. There is a risk that the leakage current of the output can cause malfunctions.

4. Installation

■ When a solenoid valve is operated under a vibrating condition, install it so that a spool valve is at a right angle to the vibrating direction.（Operate the valve under a vibration of less than 49m/s².）



5. Lubrication

■ No lubrication is recommended in principle.

■ When a system needs to be lubricated, use Turbine Oil Class 1 (ISO VG 32) / free of additives. If the lubrication is stopped supplying to the system in the middle of operation, malfunctions may be caused due to the loss of the initial lubricant on valves. Keep providing lubricant.

6. Method for Attaching / Detaching Solenoid Valve

In order to attach or detach a valve unit on a Manifold-base, follow the instructions below.

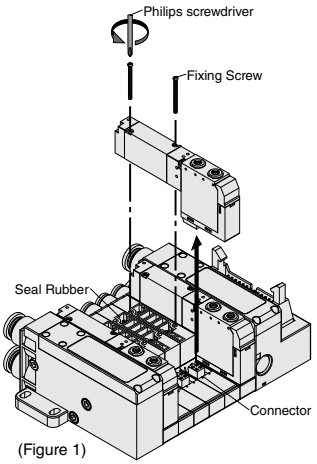
① Loosen 2 fixing screws with a Philips screwdriver and take them out completely from the valve unit .

② Pull up a valve unit toward the arrow direction in Figure 1 and remove the unit from the Manifold-base.

③ In order to attache a valve unit to the Manifold-base, pay attention to connect with a connector as well as to placing a valve unit at a right angle to a Manifold-block.

* Make sure that a seal rubber is placed properly on its groove before attaching a valve unit.

④ Tighten fixing screws firmly.



(Figure 1)

7. Recommended Tightening Torque for Manifold Fixing Screws

■ Refer to the table below when mounting solenoid valves on a Manifold-base. Tightening screws with tightening torque other than the recommended range may cause unfixing or damaging valves.

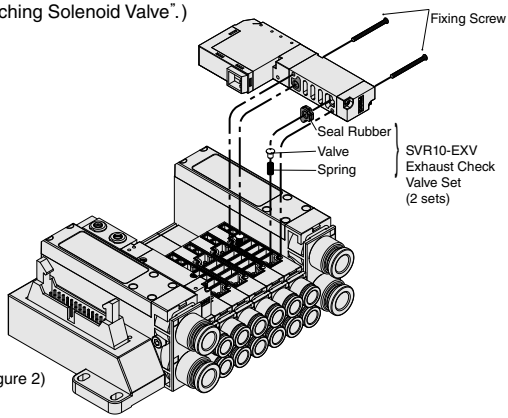
Valve Series	SVR10 Series
Recommended Tightening Torque	0.18 ~ 0.22N·m

8. Installing Method for Exhaust Check Valve

■ Fit a seal rubber on a valve unit. (Push the rubber until it stops)

■ Fit a spring first and a valve next on the projection part of the exhauset port on the Manifold-block.
Note) Pay attention not to drop the spring and the valve into the manifold-base.

■ Install the valve unit on the satation base and tighten fixing screws.
(Refer to "6. Method for Attaching / Detaching Solenoid Valve".)

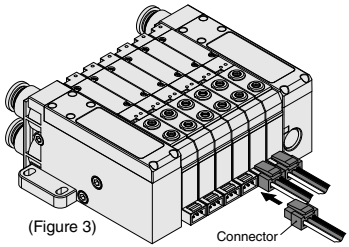


(Figure 2)

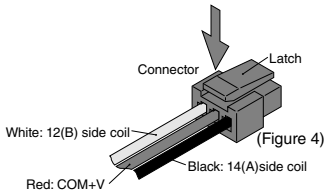
9. Attaching / detaching Individual Plug-in Connector

■ To attach the Individual Plug-in Connector, insert the connector into the socket. (Figure 3)

■ In order to detach the connector, push the latch to the arrowed direction in the figure below and pull out the connector. (Figure 4)



(Figure 3)



(Figure 4)

10. Replacement of Cartridge Fitting

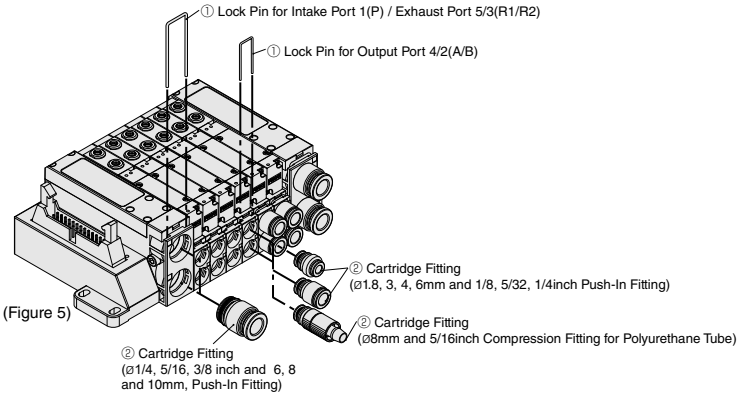
All Cartridge Fittings are replaceable. Follow the instructions below for the replacement.

■ Instructions for Intake Port 1(P) / Output Port 4/2(A/B) / Exhaust Port 5/3(R1/R2) (Figure 5)

① Pull up a lock pin with a tool such as a flathead screwdriver and take it out.

② Pull out Cartridge Fitting (Push-In Fitting or Compression Fitting) .

* When installing a cartridge fitting, make sure no dust or fluffs stuck on O-ring.
* When 3-Posion Solenoid Valve is mounted, detach the valve unit before pulling out the cartridge fitting.



(Figure 5)

11. Piping Method of Compression Fitting for ø8mm Polyurethane Tube

■ Follow the instructions below to insert tube into Compression Fitting on Output Port (4(A)port, 2(B) port). (Figure 6)

①. Detach Compression Fitting from a Manifold-block. Refer to "10. Replacement of Cartridge Fitting".

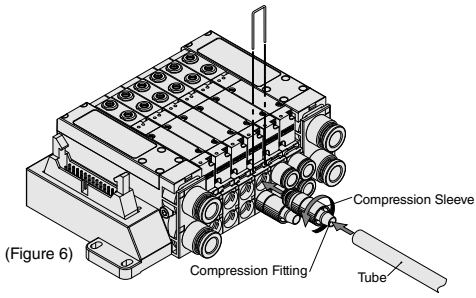
②. Rotate a compression sleeve until it touches the sleeve end. Refer to Figure 7.

③. Insert a tube until it touches to the tube end. (Refer to Figure 8.) Make sure to use only polyurethane tubes for Compression Fitting.

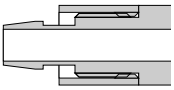
④. Turn the sleeve counterclockwise from 6 to 8 times by hand or with a long-nose pliers.

⑤. Attach the Compression Fitting to the Manifold-block.

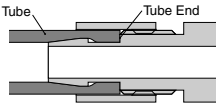
* Lock Pin should be placed properly after the installation of Compression Fitting.



(Figure 6)



(Figure 7)



(Figure 8)

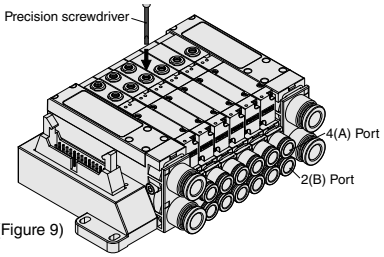
12. Manual Operation

■ A valve can be switched over by a manual operation only when pilot air is supplied.

■ Push a manual button with a precision screwdriver until the button stops and turn it clockwise to lock. Turn the button counterclockwise for unlocking. (4(A)side : Green, 2(B)side: Red. Recommended tightening torque: 0.05Nm or less when tightening with a precision screwdriver) Tightening torque of the screwdriver shall be less than 0.05Nm)

■ Be sure to unlock the button before a normal operation of the valve.

■ Avoid an excessive force on the button. Otherwise, there is a risk of damaging the product.



(Figure 9)

13. Replacement of Silencer Element

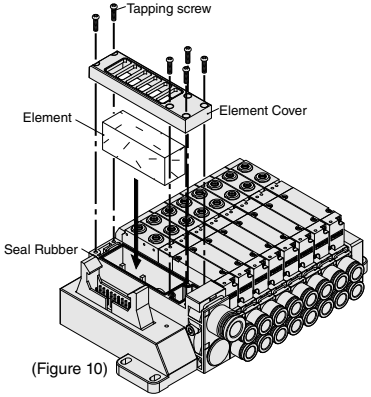
Follow the instructions below for the replacement of Silencer Element.

① Take out 6 screws fixing an element cover.

② Take out the element (Model Code: SVR10EX-E).

③ Install a new element, set back the element cover and fix it by tightening the screws.
(Tapping screws for resin are used for this product. Confirm the mesh with a precision driver first, then completely tighten all of them. Recommended tightening torque: 0.25-0.3Nm)

* Seal rubber should be placed on groove properly before placing the cover.



(Figure 10)

14. External Pilot Air Port

■ When Twin 3-Way Solenoid Valve (Valve Type: E, F, G and H) is operated with External Pilot Air Port, keep 30psi (0.2MPa) or more on Intake Port (1(P)). Besides, keep the condition of Pilot Air Pressure ≧ Intake Port 1(P) Pressure. If pilot air pressure is lower than supply pressure, there is a risk of malfunctions.

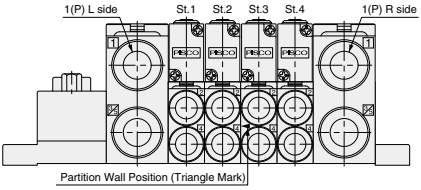
15. Electric Circuit

■ Refer to the charts described above.

16. Dual Pressure Option

■ Triangle Mark indicates the partition to separate supply pressure.

Example) In case of the figure below, the supply port on L side supplies air to St.1 and St.2 and the supply port on R side supplies air to St.3 and St.4.



* When Twin 3-Way Solenoid Valve is mounted on a dual pressure manifold base, keep the supply pressure under the condition [1(P)L side ≧ 1(P)R side].

⚠ SAFETY Instructions

This safety instructions aim to prevent personal injury and damage to properties by requiring proper use of PISCO products.

Be certain to follow ISO 4414 and JIS B 8370

ISO 4414 : Pneumatic fluid power···Recomendations for the application of equipment to transmission and control systems.

JIS B 8370 : General rules and safety requirements for systems and their components.

This safety instructions is classified into “Danger”, “Warning” and “Caution” depending on the degree of danger or damages caused by improper use of PISCO products.

⚠ Danger	Hazardous conditions. It can cause death or serious personal injury.
⚠ Warning	Hazardous conditions depending on usages. Improper use of PISCO products can cause death or serious personal injury.
⚠ Caution	Hazardous conditions depending on usages. Improper use of PISCO products can cause personal injury or damages to properties.

⚠ Warning

1. Selection of pneumatic products
   ① A user who is a pneumatic system designer or has sufficient experience and technical expertise should select PISCO products.
   ② Due to wide variety of operating conditions and applications for PISCO products, carry out the analysis and evaluation on PISCO products. The pneumatic system designer is solely responsible for assuring that the user's requirements are met and that the application presents no health or safety hazards. All designers are required to fully understand the specifications of PISCO products and constitute all systems based on the latest catalog or information, considering any malfunctions.

2. Handle the pneumatic equipment with enough knowledge and experience
   ① Improper use of compressed air is dangerous. Assembly, operation and maintenance of machines using pneumatic equipment should be conducted by a person with enough knowledge and experience.

3. Do not operate machine / equipment or remove pneumatic equipment until safety is confirmed.
   ① Make sure that preventive measures against falling work-pieces or sudden movements of machine are completed before inspection or maintenance of these machine.
   ② Make sure the above preventive measures are completed. A compressed air supply and the power supply to the machine must be off, and also the compressed air in the systems must be exhausted.
   ③ Restart the machines with care after ensuring to take all preventive measures against sudden movements.

Disclaimer

1. PISCO does not take any responsibility for any incidental or indirect loss, such as production line stop, interruption of business, loss of benefits, personal injury, etc., caused by any failure on use or application of PISCO products.

2. PISCO does not take any responsibility for any loss caused by natural disasters, fires not related to PISCO products, acts by third parties, and intentional or accidental damages of PISCO products due to incorrect usage.

3. PISCO does not take any responsibility for any loss caused by improper usage of PISCO products such as exceeding the specification limit or not following the usage the published instructions and catalog allow.

4. PISCO does not take any responsibility for any loss caused by remodeling of PISCO products, or by combinational use with non-PISCO products and other software systems.

5. The damages caused by the defect of Pisco products shall be covered but limited to the full amount of the PISCO products paid by the customer.

⚠ SAFETY INSTRUCTION MANUAL

PISCO products are designed and manufactured for use in general industrial machines. Be sure to read and follow the instructions below.

⚠ Danger

1. Do not use PISCO products for the following applications.
   ① Equipment used for maintaining / handling human life and body.
   ② Equipment used for moving / transporting human.
   ③ Equipment specifically used for safety purposes.

⚠ Warning

1. Do not use PISCO products under the following conditions.
   ① Beyond the specifications or conditions stated in the catalog, or the instructions.
   ② Under the direct sunlight or outdoors.
   ③ Excessive vibrations and impacts.
   ④ Exposure / adhere to corrosive gas, inflammable gas, chemicals, seawater, water and vapor. *
   * Some products can be used under the condition above(④), refer to the details of specification and condition of each product.
2. Do not disassemble or modify PISCO products, which affect the performance, function, and basic structure of the product.
3. Turn off the power supply, stop the air supply to PISCO products, and make sure there is no residual air pressure in the pipes before maintenance and inspection.
4. Do not touch the release-ring of push-in fitting when there is a working pressure. The lock may be released by the physical contact, and tube may fly out or slip out.
5. Frequent switchover of compressed air may generate heat, and there is a risk of causing burn injury.
6. Avoid any load on PISCO products, such as a tensile strength, twisting and bending. Otherwise, there is a risk of causing damage to the products.
7. As for applications where threads or tubes swing / rotate, use Rotary Joints, High Rotary Joints or Multi-Circuit Rotary Block only. The other PISCO products can be damaged in these applications.
8. Use only Die Temperature Control Fitting Series, Tube Fitting Stainless SUS316 Series, Tube Fitting Stainless SUS316 Compression Fitting Series or Tube Fitting Brass Series under the condition of over 60℃ (140° F) water or thermal oil. Other PISCO products can be damaged by heat and hydrolysis under the condition above.
9. As for the condition required to dissipate static electricity or provide an antistatic performance, use EG series fitting and antistatic products only, and do not use other PISCO products. There is a risk that static electricity can cause system defects or failures.
10. Use only Fittings with a characteristic of spatter-proof such as Anti-spatter or Brass series in a place where flame and weld spatter is produced. There is a risk of causing fire by sparks.
11. Turn off the power supply to PISCO products, and make sure there is no residual air pressure in the pipes and equipment before maintenance. Follow the instructions below in order to ensure safety.
    ① Make sure the safety of all systems related to PISCO products before maintenance.
    ② Restart of operation after maintenance shall be proceeded with care after ensuring safety of the system by preventive measures against unexpected movements of machines and devices where pneumatic equipment is used.
    ③ Keep enough space for maintenance when designing a circuit.
12. Take safety measures such as providing a protection cover if there is a risk of causing damages or fires on machine / facilities by a fluid leakage.

⚠ Caution

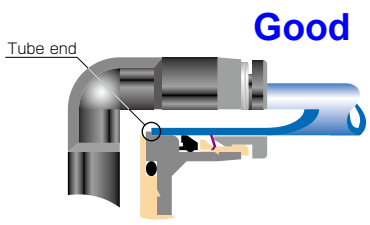
1. Remove dusts or drain before piping. They may get into the peripheral machine / facilities and cause malfunction.
2. When inserting an ultra-soft tube into push-in fitting, make sure to place an Insert Ring into the tube edge. There is a risk of causing the escape of tube and a fluid leakage without using an Insert Ring.
3. The product incorporating NBR as seal rubber material has a risk of malfunction caused by ozone crack. Ozone exists in high concentrations in static elimination air, clean-room, and near the high-voltage motors, etc. As a countermeasure, material change from NBR to HNBR or FKM is necessary. Consult with PISCO for more information.
4. Special option "Oil-free" products may cause a very small amount of a fluid leakage. When a fluid medium is liquid or the products are required to be used in harsh environments, contact us for further information.
5. In case of using non-PISCO brand tubes, make sure the tolerance of the outer tube diameter is within the limits of Table 1.

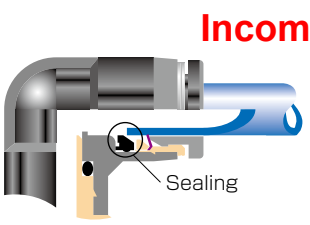
● Table 1. Tube O.D. Tolerance

mm size	Nylon tube	Polyurethane tube
ø1.8mm	—	±0.05mm
ø3mm	—	±0.15mm
ø4mm	±0.1mm	±0.15mm
ø6mm	±0.1mm	±0.15mm
ø8mm	±0.1mm	±0.15mm
ø10mm	±0.1mm	±0.15mm
ø12mm	±0.1mm	±0.15mm
ø16mm	±0.1mm	±0.15mm

inch size	Nylon tube	Polyurethane tube
ø1/8	±0.1mm	±0.15mm
ø5/32	±0.1mm	±0.15mm
ø3/16	±0.1mm	±0.15mm
ø1/4	±0.1mm	±0.15mm
ø5/16	±0.1mm	±0.15mm
ø3/8	±0.1mm	±0.15mm
ø1/2	±0.1mm	±0.15mm
ø5/8	±0.1mm	±0.15mm

6. Instructions for Tube Insertion
   ① Make sure that the cut end surface of the tube is at right angle without a scratch on the surface and deformations.
   ② When inserting a tube, the tube needs to be inserted fully into the push-in fitting until the tubing edge touches the tube end of the fitting as shown in the figure below. Otherwise, there is a risk of leakage.





Tube is not fully inserted up to tube end.

   ③ After inserting the tube, make sure it is inserted properly and not to be disconnected by pulling it moderately.

※. When inserting tubes, Lock-claws may be hardly visible in the hole, observed from the front face of the release-ring. But it does not mean the tube will surely escape. Major causes of the tube escape are the followings;
①Shear drop of the lock-claws edge
②The problem of tube diameter (usually small)
Therefore, follow the above instructions from ① to ③, even lock-claws is hardly visible.

7. Instructions for Tube Disconnection
   ① Make sure there is no air pressure inside of the tube, before disconnecting it.
   ② Push the release-ring of the push-in fitting evenly and deeply enough to pull out the tube toward oneself. By insufficient pushing of the release-ring, the tube may not be pulled out or damaged by scratch, and tube shavings may remain inside of the fitting, which may cause the leakage later.
8. Instructions for Installing a fitting
   ① When installing a fitting, use proper tools to tighten a hexagonal-column or an inner hexagonal socket. When inserting a hex key into the inner hexagonal socket of the fitting, be careful so that the tool does not touch lock-claws. The deformation of lock-claws may result in a poor performance of systems or an escape of the tube.
   ② Refer to Table 2 which shows the recommended tightening torque. Do not exceed these limits to tighten a thread. Excessive tightening may break the thread part or deform the gasket and cause a fluid leakage. Tightening thread with tightening torque lower than these limits may cause a loosened thread or a fluid leakage.
   ③ Adjust the tube direction while tightening thread within these limits, since some PISCO products are not rotatable after the installation.

● Table 2: Recommended tightening torque / Sealock color / Gasket materials

Thread type	Thread size	Tightening torque	Sealock color	Gasket materials
Metric thread	M3 × 0.5	0.7N·m	—	SUS304 NBR
	M5 × 0.8	1.0 ~ 1.5N·m		
	M6 × 1	2 ~ 2.7N·m		
	M3 × 0.5	0.5 ~ 0.6N·m		POM
	M5 × 0.8	1 ~ 1.5N·m		
	M6 × 0.75	0.8 ~ 1N·m		
	M8 × 0.75	1 ~ 2N·m		
Taper pipe thread	R1/8	7 ~ 9N·m	White	—
	R1/4	12 ~ 14N·m		
	R3/8	22 ~ 24N·m		
	R1/2	28 ~ 30N·m		
Unified thread	No.10-32UNF	1.0 ~ 1.5N·m	—	SUS304、NBR
National pipe thread taper	1/16-27NPT	7 ~ 9N·m	White	—
	1/8-27NPT	7 ~ 9N·m		
	1/4-18NPT	12 ~ 14N·m		
	3/8-18NPT	22 ~ 24N·m		
	1/2-14NPT	28 ~ 30N·m		

※ These values may differ for some products. Refer to each specification as well.

9. Instructions for removing a fitting
   ① When removing a fitting, use proper tools to loosen a hexagonal-column or an inner hex bolt.
   ② Remove the sealant stuck on the mating equipment. The remained sealant may get into the peripheral equipment and cause malfunctions.
10. Arrange piping avoiding any load on fittings and tubes such as twist, tensile, moment load, shaking and physical impact. These may cause damages to fittings, tube deformations, bursting and the escape of tubes.

⚠ Common Safety Instructions for Solenoid Valve Series

Before selecting or using PISCO products, read the following instructions. Read the detailed instructions for individual series.

⚠ Warning

1. When piping, pipe flushing is required for pipes at both air supply and actuator sides. A filter (filtering accuracy should be 5μm or less) should be located close to a solenoid valve on the upstream side. Drain or dust can cause malfunctions.

2. Do not supply compressed air or dry air more than necessary. Deterioration of seal rubber or oil can cause malfunctions.

3. Do not use a solenoid valve in the location where it is exposed to water, oil and dust falling. Using in such circumstance may cause malfunctions or damages, since the valve is neither drip- nor dust- proof. (Protection Structure: IP30)

4. Solennoid valve is not explosive-proof. Do not use a solenoid valve in the location it is exposed to inflammable and explosive gasses or liquid. Using in such circumstance can cause a fire or explosion.

5. Do not use a solenoid valve in the location where it is exposed to corrosive gas. Using in such circumstance can cause trouble.

6. Do not use a solenoid valve in the location where it is exposed excessive vibrating or shock. Using in such circumstance can cause malfunctions or trouble.

7. Make sure a leakage current is 1mA or less before starting the valve. A leakage current more than 1mA can cause malfunctions.

8. The coil in a valve generates heat by the following (1) to (3) conditions. Heating can impair the product life or cause problems in operation. Heating can also cause getting burnt or damaging peripheral machines.
   Contact us when energization is necessary under the following conditions:
   (1) The power is continuously on for more than 2 hours.
   (2) High-cycle operation
   (3) The total operation time per day is longer than non-operation time even the generator is operated intermittently.

⚠ Caution

1. A solenoid valve allows air leakage. Do not use the valve for applications which requires air tightness.

2. Do not use a solenoid valve for a large air-blow. A drop of inner pressure can cause the internally pilotted-valve structure malfunctions.

3. When a solenoid valve is switched over by a manual operation, connected actuators start operation. Confirm the safety before the system is operated.

4. Make sure to turn off the power supply and wire colors before wiring.

5. Solenoid valves work without lubrication. When lubrication is necessary, use Turbine Oil Class 1 (ISO VG 32). If lubrication is stopped in the middle of the operation, it can cause malfunctions due to the loss of initial lubricant on valves. Keep providing lubricant.

6. Make sure each port by a marking on a solenoid valve body when piping.

7. Turn off the power and air supply and make sure the residual pressure becomes zero before maintenance. It should be noted that the residual pressure exists between a solenoid valve and an actuator in Three-Position Closed Center type.

8. Clogged element of a manifold with silencer increases the exhaust resistance. It can also cause impairing the performance in a whole pneumatic system. Carry out the maintenance periodically.

9. Thoroughly read and understand instructions and precautions in this catalog before replacing a silencer element.