4 Port Solenoid Valve Common Specifications Series SJ2000/3000 ()

Manifold Specifications

			D-sub connector		Flat ribbon cable		Serial	wiring	Individual wiring			
	Model		Type 60F	Type 60P	Type 60PG Type 60J Type 60G	Type 60PH	Type 60S⊡ (EX180)	Type 60S6B (EX510)	Type 60			
Manifold	type				Plug-in, Cor	nnector type			Non-plug-in			
1(P: SUP)), 3/5(E: EX	(H)			C	ommon SUP, EX	н					
Valve stations 2 to 24 stations 2 to 18 stations (Type PG) 2 to 16 stations (Type J, Type G) 2 to 8 stations 2 to 32 stations 2 to						2 to 16 stations	2 to 20 stations					
Applicable connector			D-sub connector Conforming to MIL-C-24308 JIS-X-5101	Conforming to MIL type MIL type					_			
Internal w	viring					Non-polar, +COM	l					
4(A), 2(B)	port	Location				Valve						
piping sp	ec.	Direction	Horizontal, Upward, Downward (Using elbow fittings for upward or downward)									
	1(P), 3/5(E	E) port		С	6, C8, N7, N9 (In	ch size elbow fittir	ng is not available	e.)				
Port size 4(A), 2(B) SJ2000				C	C2, C4, N1, N3, M	3						
port SJ3000					C2, C	C4, C6, N1, N3, N	7, M5					
	(g) ^{Note 2)} er of SUP/E pht of DIN r			W = 51n + m + 133								

Note 1) When many valves are operated simultaneously, use B type (SUP/EXH both sides), applying pressure to the 1(P) ports on both sides and exhaust from the 3/5(E) ports on both sides.

Note 2) The weight W is the value for the D-sub connector manifold only with internal pilot, SUP/EXH block straight fittings specifications. To obtain the weight with solenoid valves attached, add the solenoid valve weights given on page 3 for the appropriate number of stations. Refer to page 61 for the weight of DIN rail. (Please contact SMC for the weight of external pilot specifications, elbow fittings.)

Flow Characteristics

SJ2000

Port si	ze	Flow characteristics							
1(P)	4, 2		1→2/4 (P→A/B)		4/2→3/5 (A/B→E)				
3/5(E)	(A, B)	C [dm ³ /(s·bar)]	b	Cv	C [dm³/(s · bar)]	b	Cv		
	C2	0.13	0.55	0.04	0.13	0.50	0.04		
C8	C4	0.33	0.16	0.08	0.36	0.13	0.08		
	MЗ	0.18	0.52	0.06	0.20	0.29	0.06		

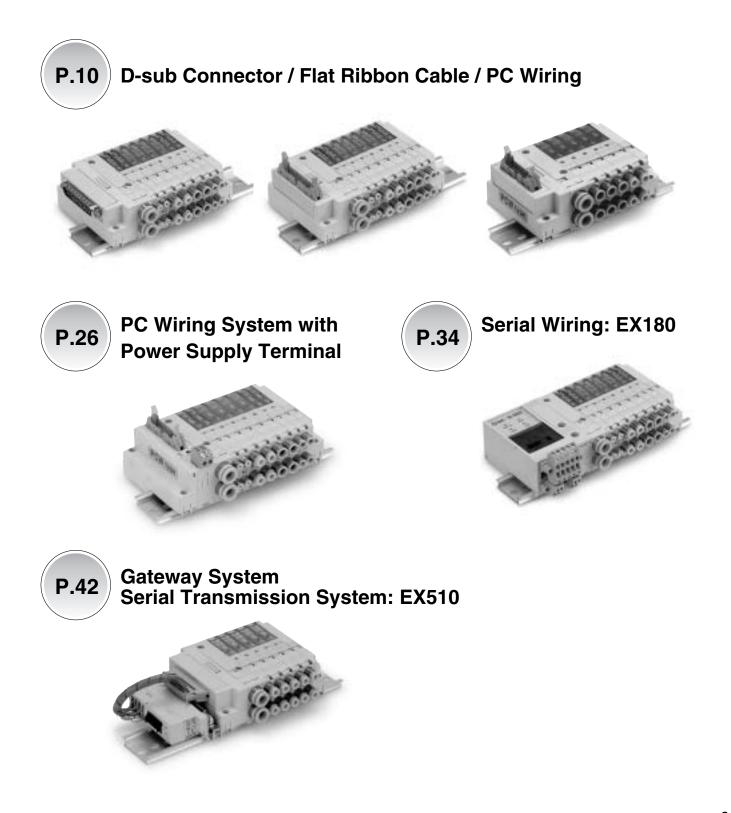
SJ3000

Port si	ize	Flow characteristics						
1(P)	4, 2		1→2/4 (P→A/B)		4/2→3/5 (A/B→E)			
3/5(E)	(A, B)	C [dm³/(s·bar)]	b	Cv	C [dm³/(s · bar)] b		Cv	
	C2	0.13	0.56	0.04	0.14	0.51	0.04	
C8	C4	0.42	0.17	0.11	0.45	0.16	0.11	
	C6	0.55	0.10	0.12	0.56	0.11	0.12	
	M5	0.40	0.28	0.11	0.45	0.15	0.11	

Note) The value is for manifold base with 5 stations and individually operated 2 position type. Please contact SMC for 4 position dual 3 port valves.

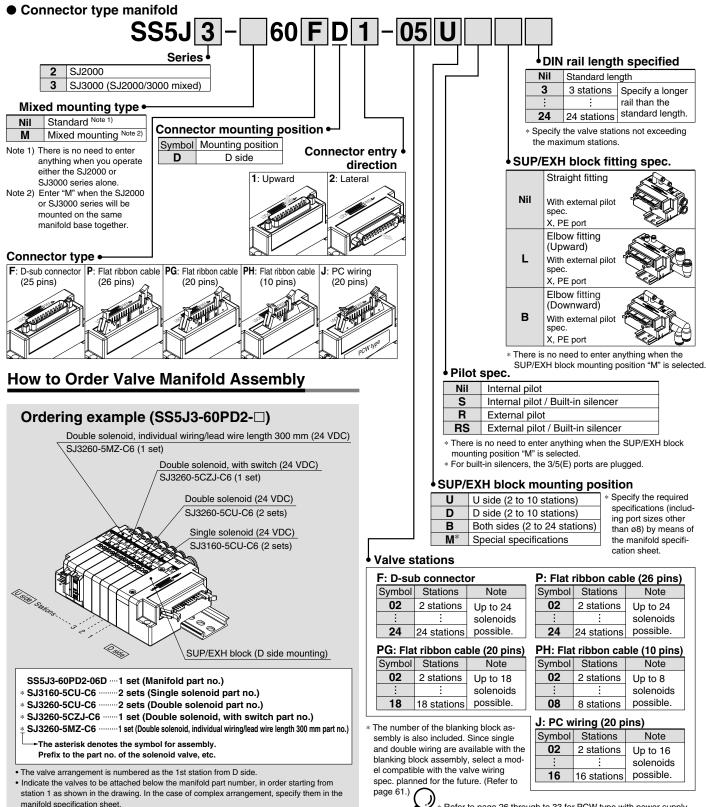






Plug-in Connector Type D-sub Connector / Flat Ribbon Cable / PC Wiring Series SJ2000/3000 (f

How to Order

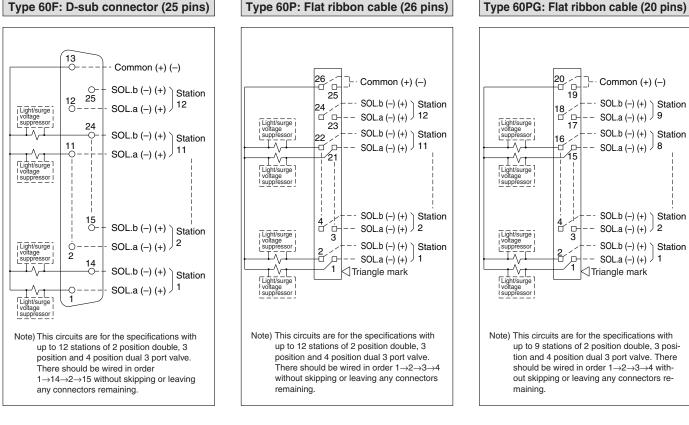


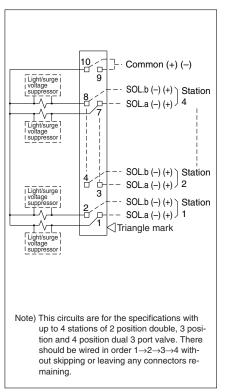
SMC

Manifold Electrical Wiring (Non-polar type)

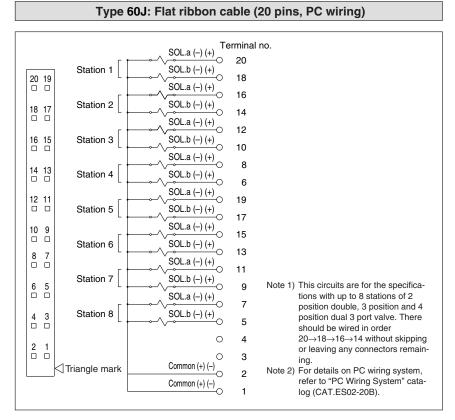
Type 60F: D-sub connector (25 pins)

Type 60PG: Flat ribbon cable (20 pins)





Type 60PH: Flat ribbon cable (10 pins)



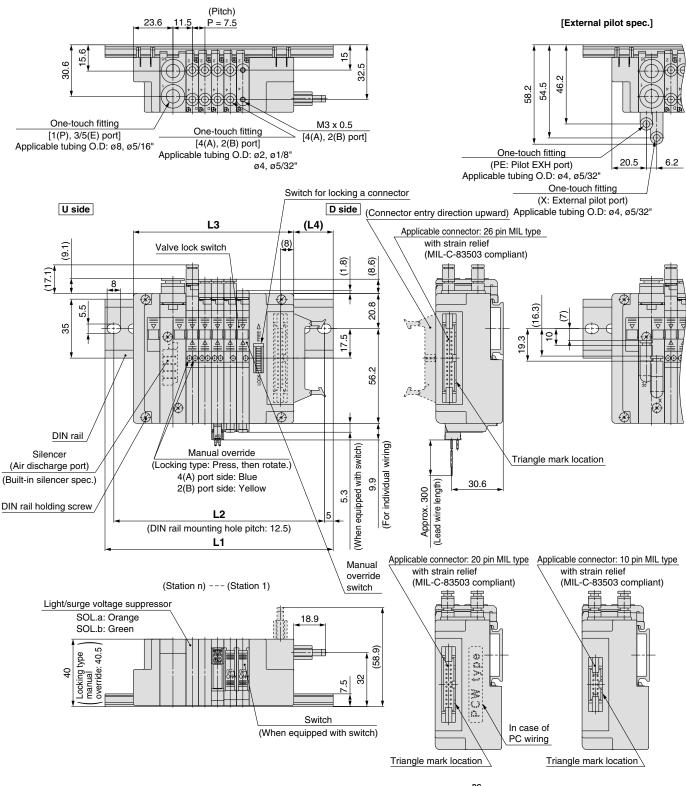
▲ Caution

When the non-polar U type valves are used, either negative COM or positive COM wiring of the manifold is possible. However, the valve does not switch with negative COM if a Z type is used. Be sure to use positive COM.

SMC

Dimensions: SJ2000 for Flat Ribbon Cable / PC Wiring

$SS5J2\text{-}60_{\text{J}}^{\text{P}}D_{2}^{1}\text{-}\overline{\text{Stations}}U\text{ (S, R, RS)}$



In case of 60^{PG}_J (20 pins)

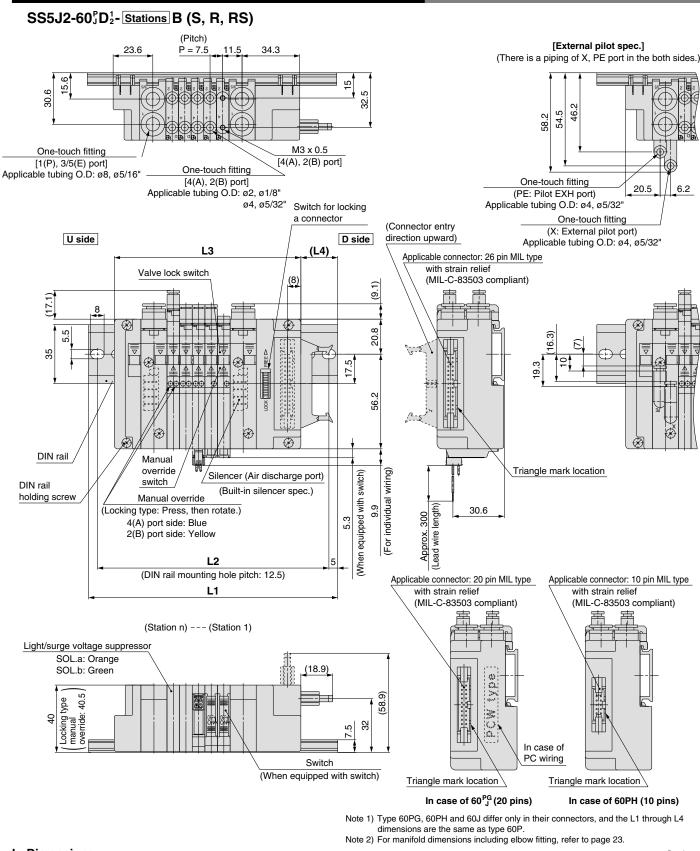
In case of 60PH (10 pins)

L: Di	L: Dimensions n: Stations											
L L	2	3	4	5	6	7	8	9	10			
L1	110.5	110.5	123	135.5	135.5	148	148	160.5	173			
L2	100	100	112.5	125	125	137.5	137.5	150	162.5			
L3	72.8	80.3	87.8	95.3	102.8	110.3	117.8	125.3	132.8			
L4	22	18.5	21	23.5	19.5	22	18.5	21	23.5			

Note 1) Type 60PG, 60PH and 60J differ only in their connectors, and the L1 through L4 dimensions are the same as type 60P.

Note 2) For manifold dimensions including elbow fitting, refer to page 23.

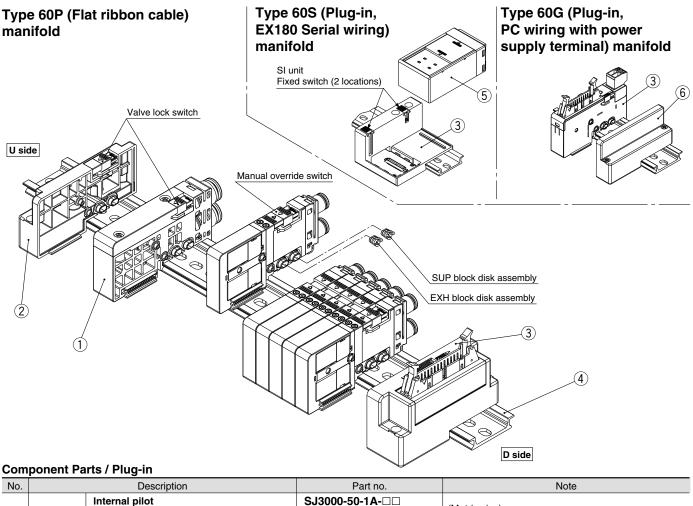
Dimensions: SJ2000 for Flat Ribbon Cable / PC Wiring



L: D	L: Dimensions n: Stations																						
L	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
L1	123	135.5	135.5	148	148	160.5	173	173	185.5	185.5	198	210.5	210.5	223	223	235.5	248	248	260.5	260.5	273	285.5	285.5
L2	112.5	125	125	137.5	137.5	150	162.5	162.5	175	175	187.5	200	200	212.5	212.5	225	237.5	237.5	250	250	262.5	275	275
L3	88.3	95.8	103.3	110.8	118.3	125.8	133.3	140.8	148.3	155.8	163.3	170.8	178.3	185.8	193.3	200.8	208.3	215.8	223.3	230.8	238.3	245.8	253.3
L4	20.5	23	19.5	22	18	20.5	23	19.5	22	18	20.5	23	19.5	22	18	20.5	23	19.5	22	18	20.5	23	19.5



Manifold Exploded View



		Internal pilot	SJ3000-50-1A-□□				
		Internal pilot / Built-in silencer	SJ3000-50-1AS-□□	(Metric size) C6: With ø6 one-touch fitting (straight)			
	SUP/EXH	External pilot	SJ3000-50-1AR- □□ (X, PE port: Metric size ø4 Inch size ø5/32")	C8: With ø8 one-touch fitting (straight) L6: With ø6 one-touch fitting (elbow upward entry) L8: With ø8 one-touch fitting (elbow upward entry)			
1	block assembly	External pilot / Built-in silencer	SJ3000-50-1ARS-□□ (X port: Metric size ø4 Inch size ø5/32")	B6: With ø6 one-touch fitting (elbow downward entry) B8: With ø8 one-touch fitting (elbow downward entry) B8: With ø8 one-touch fitting (elbow downward entry)			
		For different pressures, internal pilot Note 1)	SJ3000-50-3A-□□	(Inch size)			
		For different pressures Note 1) Internal pilot / Built-in silencer	SJ3000-50-3AS-□□	N7: With 1/4" one-touch fitting (straight) N9: With 5/16" one-touch fitting (straight)			
2	End block	assembly	SJ3000-53-1A	For U side			
3	Connector	block assembly	SJ3000-42-□A-□ SJ3000-76-2A-□	Refer to the connector block assembly part no. shown below.			
4	DIN rail		VZ1000-11-1-□	Refer to page 61.			
5	SI unit		EX180-□□	Refer to the SI unit part numbers on page 34.			
6	End block	assembly	SJ3000-53-2A	For D side			

Note 1) The valves cannot be operated only with the SUP/EXH block assembly for different pressure, select them in combination with the SUP/EXH block assembly for internal/ external pilot.

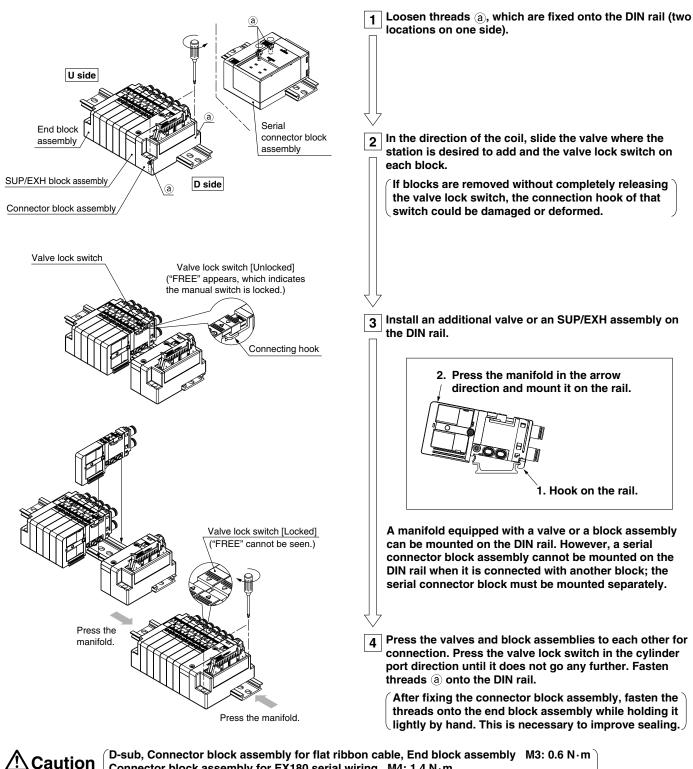
Note 2) Refer to page 60 about the SUP/EXH block disk assembly and method of handling of parts at different pressures.

Connector Block Assembly Part No.

Connector specifications	Mounting position	Part no.	Note
For D-sub connector		SJ3000-42-1A-□	
For flat ribbon cable 26 pins		SJ3000-42-2A-□	
For flat ribbon cable 20 pins		SJ3000-42-3A-□	
For flat ribbon cable 10 pins	D side	SJ3000-42-4A-□	□: 1 (Connector upward)
For PC wiring 20 pins	D Side	SJ3000-42-6A-□	□: 2 (Connector lateral)
For EX180 serial wiring Note)		SJ3000-42-5A	
For PC wiring 20 pins with power supply terminal		SJ3000-76-2A-05	

Note) SI unit is not included.

How to Add Manifold Stations



Connector block assembly for EX180 serial wiring M4: 1.4 N·m Mounting bracket for EX510 serial wiring M4: 0.6 N·m

ACaution

- 1. When increasing the number of stations from 10 or below to 11 or above, increase the number of SUP/EXH assemblies as well.
- 2. Be sure to turn off the power and stop the supply of air before disassembly. Furthermore, since air may remain inside the actuator, piping and manifold, confirm that the air is completely exhausted before performing any work.
- 3. After assembly and disassembly, air leakage could occur if blocks are not well connected or a thread is not tightly fastened onto the end block assembly. Before supplying air, make sure that no gaps exist in between blocks and that the valve and block are tightly fastened onto the DIN rail. Also, make sure that air is not leaking before use.
- 4. For the SJ3A6 series manifold with vacuum release valve with restrictor, there is no valve lock switch for connecting, so when mounting, tighten the screws after checking that there are no gaps between valves.

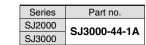


Series SJ2000/3000 Manifold Options

SUP block disk assembly

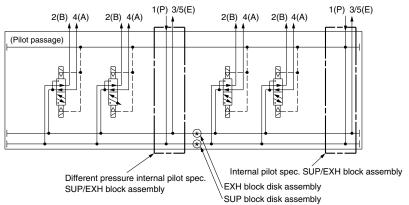
By placing a SUP block disk in a manifold valve's pressure supply passage, two different high and low pressures can be supplied to one manifold. When supplying different pressures using the manifold of the internal pilot, fill out a manifold specification sheet to place an order for an SUP/EXH assembly for the internal pilot specifications and another SUP/EXH assembly for the different-pressure internal pilot specifications (Refer to Circuit Diagram 1).



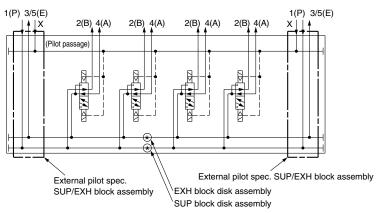


[Different pressure pneumatic circuit diagram]

- The SJ series supplies air to the pilot port of each valve using a 1(P) port of the SUP/EXH block assembly. When using in situations such as where there are different pressures, combine SUP/EXH block assemblies for internal pilot, external pilot and different-pressure by referring to the circuit below.
- 1. Different-pressure spec. using the internal pilot

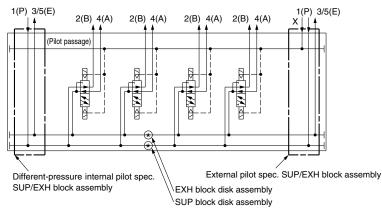


2. Different-pressure spec. using the external pilot (For using the SUP/EXH block assembly for external pilot)



3. Different-pressure spec. using the external pilot

(For using the SUP/EXH block assembly for different-pressure internal pilot spec.)



Note 1) When operating under the different-pressure spec., supply the higher pressure to the pilot passage

Note 2) If there is a need to partition the pilot passage, consult SMC.



EXH block disk assembly

By installing an EXH block disk in a manifold valve's exhaust passage, the valve's exhaust can be separated so that it will not affect other valves.

	Series	Part no.
$S(\mathbb{Z})$	SJ2000	SJ3000-44-1A
	SJ3000	5J3000-44-1A
<u> </u>		

Label for block disk

These labels are attached to manifolds in which SUP and EXH block disks have been installed, in order to identify the installed locations. (Three sheets each included.)



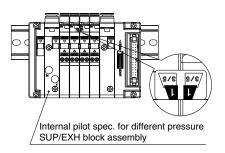




Label for EXH block disk

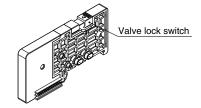


* When a block disk is concurrently ordered by specifying on the manifold specification sheet, etc., a label will be stuck on the position where block disk is mounted.



Blanking block assembly

These are mounted when later addition of valves is planned, etc.

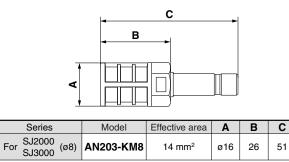


Series	Part no.	Note	Width
SJ2000	SJ3000-49-1A	Single wiring	
SJ3000	SJ3000-49-2A	Double wiring	7.5 mm
SJ3A6	SJ3000-49-2A-N	Double wiring Note)	

Note) Valve lock switch is not available for the SJ3A6.

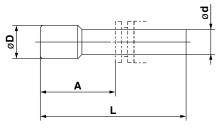
■ Silencer with one-touch fitting

This silencer can be mounted on the manifolds' port 3/5 (E: Exhaust) with a single touch.



Plug

These are inserted in unused cylinder ports and P, E ports.



Dimensions

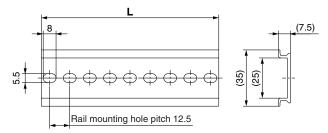
Applicable fitting size ød	Model	Α	L	D
2	KJP-02	8.2	17	3
4	KQ2P-04	16	32	6
6	KQ2P-06	18	35	8
8	KQ2P-08	20.5	39	10
1/8"	KQ2P-01	16	31.5	5
5/32"	KQ2P-03	16	32	6
1/4"	KQ2P-07	18	35	8.5
5/16"	KQ2P-09	20.5	39	10

DIN rail

VZ1000-11-1-

L dimension

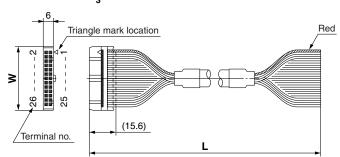
* Enter a number from the DIN rail dimension table shown below.



No.	0	1	2	3	4	5	6	7	8	9
\boldsymbol{L} dimension	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5
Weight (g)	17.6	19.9	22.1	24.4	26.6	28.9	31.1	33.4	35.6	37.9
No.	10	11	12	13	14	15	16	17	18	19
L dimension	223	235.5	248	260.5	273	285.5	298	310.5	323	335.5
Weight (g)	40.1	42.4	44.6	46.9	49.1	51.4	53.6	55.9	58.1	60.4
No.	20	21	22	23	24	25	26	27	28	29
L dimension	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5
Weight (g)	62.6	64.9	67.1	69.4	71.6	73.9	76.1	78.4	80.6	82.9



Flat ribbon cable assembly $AXT100 - FC \square - \frac{1}{2}$



Flat Ribbon Cable Assembly

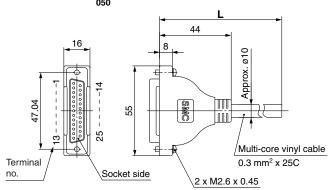
Cable length (L)	10 pins	20 pins	26 pins
1.5 m	AXT100-FC10-1	AXT100-FC20-1	AXT100-FC26-1
3 m	AXT100-FC10-2	AXT100-FC20-2	AXT100-FC26-2
5 m	AXT100-FC10-3	AXT100-FC20-3	AXT100-FC26-3
Connector width (W)	17.2	30	37.5

 For other commercial connectors, use a type with strain relief that conforms to MIL-C-83503.

Connector manufacturers:

- Hirose Electric Co., Ltd.
- Sumitomo 3M Limited
- Fujitsu Limited
- Japan Aviation Electronics Industry, Ltd.
- J.S.T. Mfg. Co., Ltd.

■ D-sub connector (25 pins)/Cable assembly AXT100-DS25-030 050



D-sub Connector Cable Assembly Cable Color List of Each Terminal No.

Terminal no.	Lead wire color	Dot marking
1	Black	None
2	Brown	None
3	Red	None
4	Orange	None
5	Yellow	None
6	Pink	None
7	Blue	None
8	Purple	White
9	Gray	Black
10	White	Black
11	White	Red
12	Yellow	Red
13	Orange	Red
14	Yellow	Black
15	Pink	Black
16	Blue	White
17	Purple	None
18	Gray	None
19	Orange	Black
20	Red	White
21	Brown	White
22	Pink	Red
23	Gray	Red
24	Black	White
25	White	None
25		None

D-sub Connector Cable Assembly

Cable length (L)	Assembly part no.	Note
1.5 m	AXT100-DS25-015	Cable 25
3 m	AXT100-DS25-030	cores x
5 m	AXT100-DS25-050	24AWG

* For other commercial connectors, use a 25 pins type with female connector conforming to MIL-C-24308.

Connector manufacturers:

- Hirose Electric Co., Ltd.
- Fujitsu Limited
- Japan Aviation Electronics Industry, Ltd.
- J.S.T. Mfg. Co., Ltd.

Electric Characteristics

Item	Charac- teristics	
Conductor resistance Ω/km, 20°C	65 or less	
Withstand pressure V, 1 min, AC	1000	
Insulation resistance MΩkm, 20°C	5 or less	

Note) The minimum bending radius for D-sub connector cables is 20 mm.

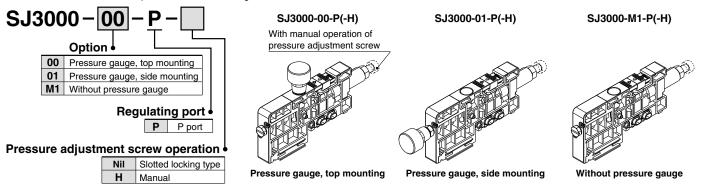


4 Port Solenoid Valve Series SJ2000/3000

Regulator block

How to Order Regulator Block

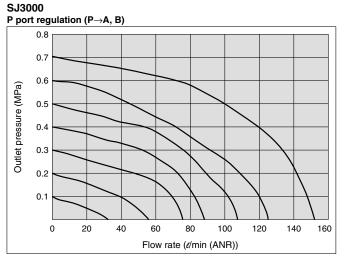
This is used to reduce the pressure supplied from the D side inside the manifold. All valves on the U side are depressurized from the regulator block.

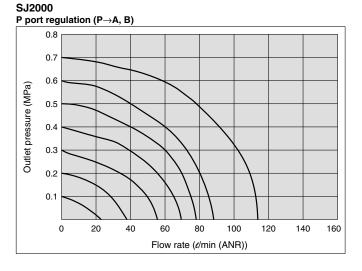


SMC

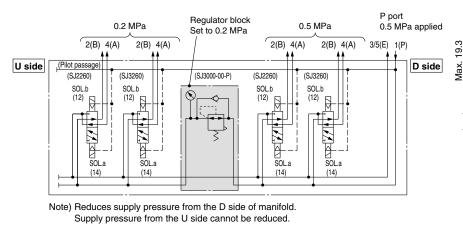
Note) When ordering with a regulator block installed in the manifold, please order using the manifold specification sheet.

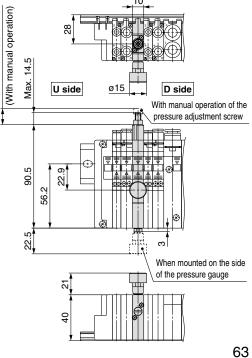
Flow Characteristics (Conditions: Inlet pressure 0.7 MPa 2 position solenoid valve mounting)





Pneumatic circuit (Regulator block mounting example)

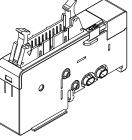




Intermediate connector block assembly

This connector block can be used by inserting it into the middle of the manifold.

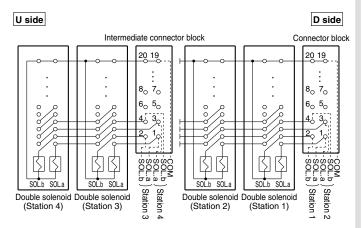
This can be used, for example, when you wish to separate electrical control of valves in the same manifold, or when the number of control points is insufficient.



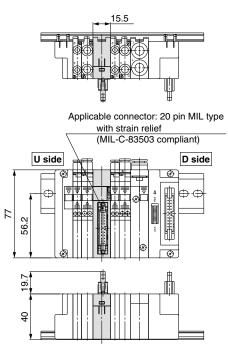
Series	Part no.	Note
SJ2000	SJ3000-76-1A	
SJ3000	SJ3000-76-2A-05	With power supply terminal (for PC wiring)

Note) When ordering with an intermediate connector block assembly installed in the manifold, please order using the manifold specification sheet.

Intermediate connector block assembly wiring example



* Enables control of U side solenoid valves from the position where the intermediate connector block assembly is installed.



■ Dual flow fitting (Set for SJ3000 series) SJ3000-120-1A-C8

Port size		
	C 8	ø8
	N9	ø5/16"

This is a fitting for cylinder ports which enables simultaneous actuation and increase in flow rate of valves for 2 stations. This is a one-touch fitting with port sizes of ø8 and ø5/16.

* When arranging mounted to the valve, arrange the valve part no. using the part no. without the one-touch fitting, and then add the part no. for the dual flow fitting. If the arrangement is complicated, please specify them by means of the manifold specification sheet.

Example) Valve type (without one-touch fitting)

