

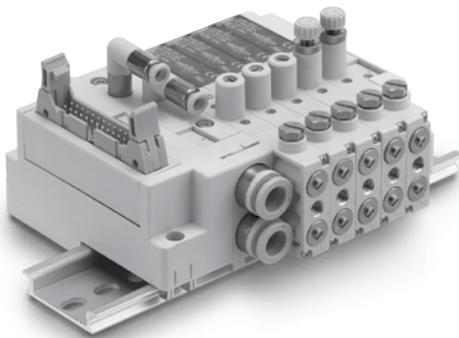
Vacuum Release Valve with Restrictor

Series *SJ3A6*

Plug-in Type

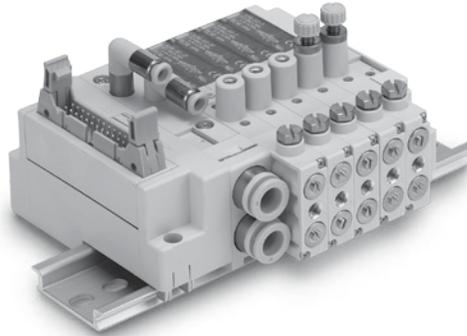
P.85 Connector Connection

D-sub Connector
Flat Ribbon Cable
PC Wiring
Serial Wiring: EX180
Serial Wiring: EX510



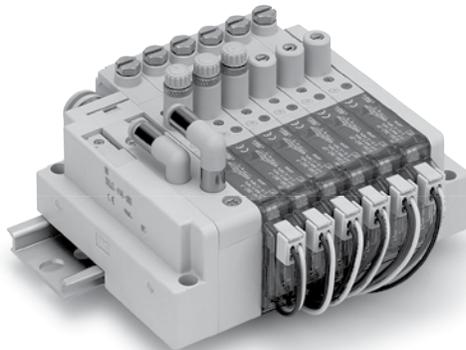
P.87 Cable Connection

D-sub Connector
Flat Ribbon Cable



Non Plug-in Type Individual Wiring

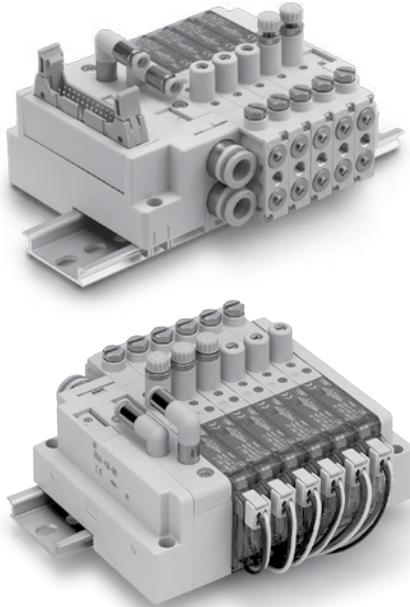
P.91 Individual Wiring



Vacuum Release Valve with Restrictor Series SJ3A6 Common Specifications



Manifold Valve Specifications



Valve construction		3 position 3 port valve with restrictor
Fluid		Air
Operating pressure range psi (MPa)	Release pressure port 1(P)	36 to 102 (0.25 to 0.7)
	Vacuum pressure port 3/5(E)	-14.5 to 102 (-100 kPa to 0.7) <small>Note 1)</small>
	Pilot X port	14 to 102 (0.25 to 0.7) <small>Note 2)</small>
Ambient and fluid temperature		14 to 122°F (-10 to 50°C) (No freezing)
Max. operating frequency (Hz)		3
Manual override (Manual operation)		Non-locking push type Push-turn locking slotted type
Restrictor operation		Manual Slotted locking type
Pilot method		External pilot/Pilot valve individual exhaust
Lubrication		Not required
Mounting orientation		Unrestricted
Impact/Vibration resistance (m/s²) <small>Note 3)</small>		150/30
Enclosure		Dustproof

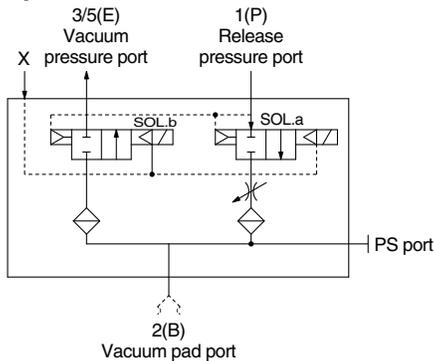
Note 1) Can be used with positive pressure to suit the application.

Note 2) Please use with pilot X port pressure equal to or higher than the release port 1(P) pressure.

Note 3) Impact resistance: No malfunction occurred when it is tested in the axial direction and at the right angles to the main valve and armature in both energized and de-energized states every once for each condition. (Values at the initial period)

Vibration resistance: No malfunction occurred in a one-sweep test between 45 and 2000 Hz. Test was performed at both energized and de-energized states in the axial direction and at the right angles to the main valve and armature. (Values at the initial period)

Symbol



Solenoid Specifications

Coil rated voltage		24 VDC, 12 VDC
Allowable voltage fluctuation		±10% of rated voltage*
Power consumption (W)	Standard	0.4
	With power saving circuit (Continuous duty type)	0.15
Surge voltage suppressor		Diode
Indicator type		LED

* For the allowable voltage fluctuation for Z/T type (with power saving circuit), please observe the following range because they have voltage drop due to internal circuit.

Z type 24 VDC: -7% to +10%
12 VDC: -4% to +10%

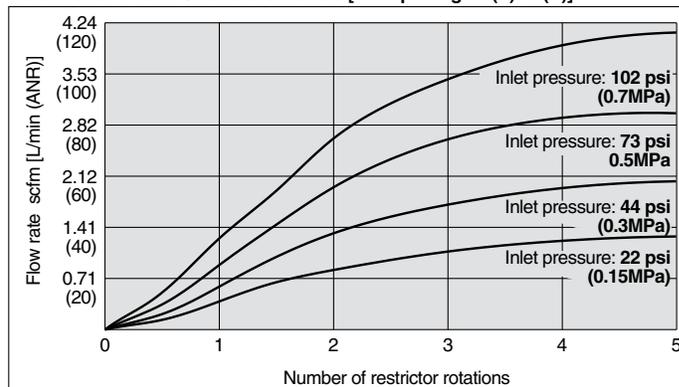
T type 24 VDC: -5% to +10%
12 VDC: -6% to +10%

Flow Characteristics

Flow Characteristics (When restrictor is fully open)

Valve model	Fluid passage 2(B) Port size	1(P)→2(B)			2(B)→3/5(E)		
		C[dm ³ /(s·bar)]	b	Cv	C[dm ³ /(s·bar)]	b	Cv
SJ3A6-□□-□	M5	0.24	0.19	0.05	0.40	0.18	0.10

Restrictor Flow Characteristics [Fluid passage: 1(P)→2(B)]



Response Time

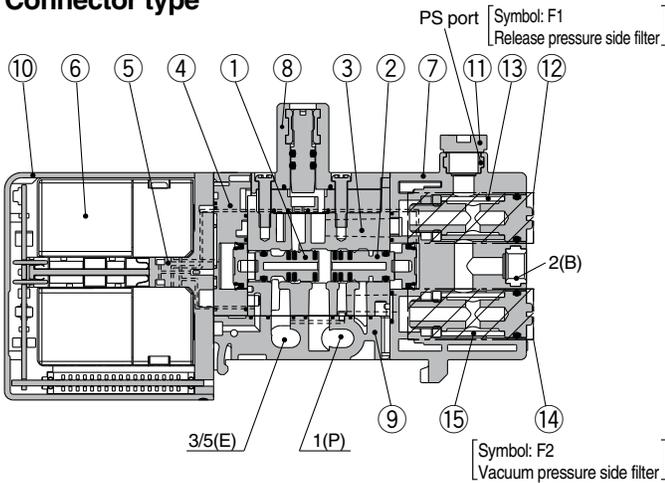
Valve model	Response time ms (at 73 psi (0.5 MPa))
SJ3A6-□□-□	19 or less

Weight

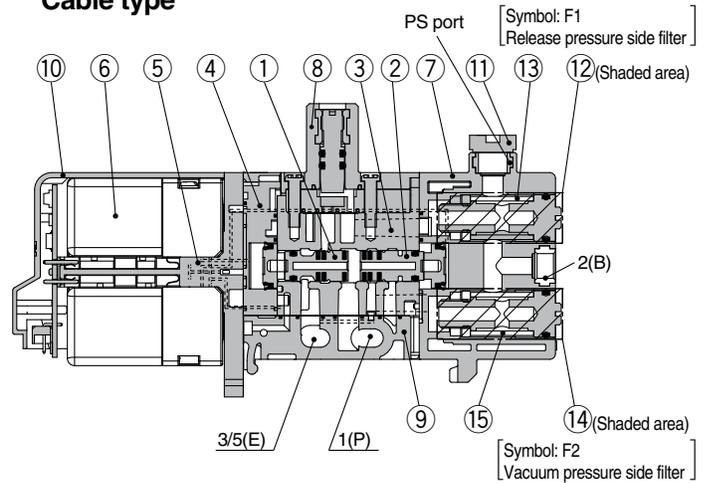
Valve model	Weight (g)
SJ3A6-□□-P	79

Construction

Connector type



Cable type



Component Parts

No.	Description	Material	Note
1	Spool valve assembly	Resin/HNBR	A side (for release pressure switching)
2	Spool valve assembly	Resin/HNBR	B side (for vacuum pressure switching)
3	Body	Zinc die-cast	—
4	Adapter plate	Resin	White
5	Pilot adapter	Resin	White
6	Pilot valve assembly	—	—
7	End cover	Resin	White
8	Restrictor block assembly ^{Note}	Resin	White
9	Bottom cover	Resin	White
10	Light cover	Resin	Light blue

Note) Set the operating torque of the restrictor of the restrictor block assembly to 0.3 N·m or less.

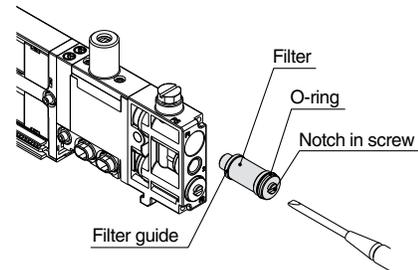
Component Parts

No.	Description	Part no.	Note
11	Plug	M-5P	PS port with plug
12	Filter assembly	SJ3000-110-1A	1 μm White <Release pressure side>
13	Filter	SJ3000-107-1A	1 μm White <Release pressure side>, 5 pcs. included
14	Filter assembly	SJ3000-110-2A	30 μm Light purple <Vacuum pressure side>
15	Filter	SJ3000-107-2A	30 μm Light purple <Vacuum pressure side>, 5 pcs. included

<Filter replacement instructions>

If there are situations such as filter clogging, a drop in suction force, or slow response time, stop operation and replace the filter.

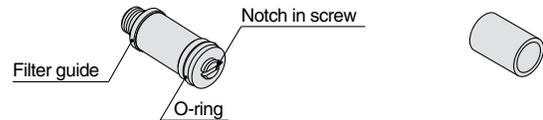
- Using a precision driver, remove the filter assembly (12 or 14) from the main unit.
- Turn the filter guide by hand and remove.
- Replace the filter (13 or 15) and gently hand tighten the filter guide. At this time, check that there is no foreign matter on the O-ring of the filter assembly.
- Return the filter assembly to the main unit. (Tightening torque: 0.88 lbf·ft (0.12 N·m))



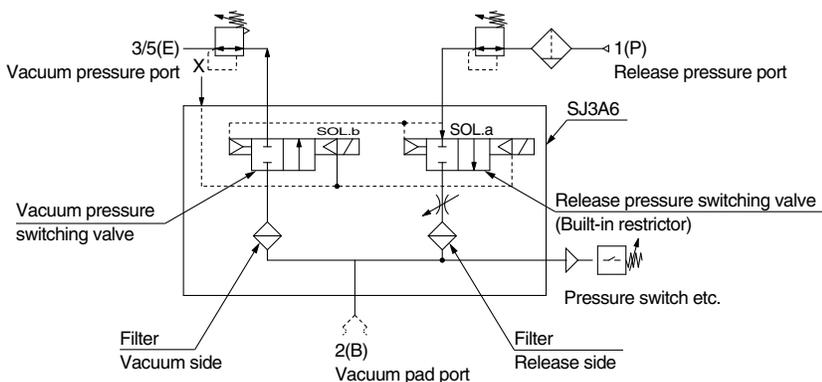
After tightening the plug (M-5P) with a tightening torque of 0.74 lbf·ft (1 N·m), or manually tightening, use the tightening tool and tighten it by 1/4 turn.

⑫⑭ Filter assembly (with filter)

⑬⑮ Filter (5 pcs. included)



Adsorbing and Transferring System Circuit Example



Plug-in Connector Type Vacuum Release Valve with Restrictor Series **SJ3A6**



An order cannot be placed with only the manifold part no. Be sure to order solenoid valves for mounting at the same time while referring to the ordering example.

How to Order

● Vacuum release valve manifold with restrictor

SS3J3 - V 60 [] [] - **05 U** [] []

Vacuum release valve with restrictor type

Connector type

Symbol	Mounting position	Page	Note
FD	D-sub connector	P.15	Parallel wiring
PD	Flat ribbon cable 26 pins		
PGD	Flat ribbon cable 20 pins		
PHD	Flat ribbon cable 10 pins		
JD	Flat ribbon cable (PC wiring, without power supply terminal)	P.33	
GD	Flat ribbon cable (PC wiring, with power supply terminal)		
S□	EX180 serial transmission	P.41	Serial wiring
S6B	EX510 serial transmission	P.49	

Connector entry

With parallel wiring specifications, it is necessary to select the connector entry direction (1: upward, 2: lateral). (Only upward is available for GD.) For details, refer to pages 15 and 33.

● DIN rail length specified

Nil	Standard length
2	2 stations
⋮	⋮
16	16 stations

Specify a longer rail than the standard length.

* Specify the valve stations not exceeding the maximum stations.

● SUP/EXH block mounting position

U	U side (1 to 10 stations)
D	D side (1 to 10 stations)
B	Both sides (1 to 16 stations)
M*	Special specifications

* Specify the required specifications (including port sizes other than ø8) by means of the manifold specification sheet.

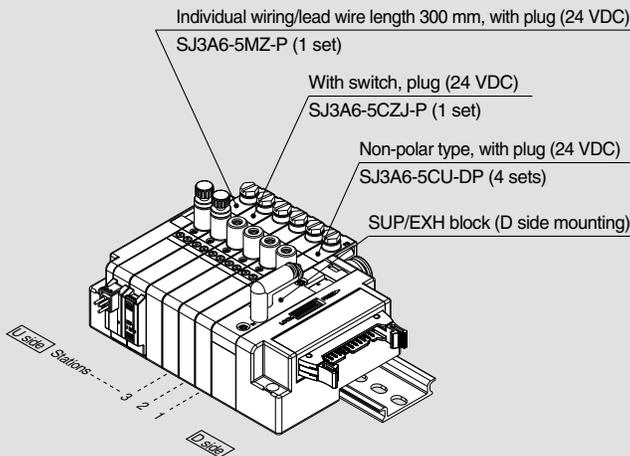
● SUP/EXH block fitting spec.

Nil	Straight fitting	
L	Elbow fitting (Upward)	
B	Elbow fitting (Downward)	

* There is no need to enter anything when the SUP/EXH block mounting position "M" is selected. Also, this manifold comes standard with external pilot specifications.

How to Order Manifold Assembly

Ordering example (SS3J3-V60PD2-□)



SS3J3-V60PD2-06D 1 set (Manifold part no.)
 * **SJ3A6-5CU-DP** 4 sets (Non-polar type, with plug part no.)
 * **SJ3A6-5CZJ-P** 1 set (With switch, plug part no.)
 * **SJ3A6-5MZ-P** 1 set (Individual wiring, lead wire length 300 mm, with plug part no.)
 The asterisk denotes the symbol for assembly. Prefix to the part no. of the solenoid valve, etc.

- The valve arrangement is numbered as the 1st station from D side.
- Indicate the valves to be attached below the manifold part number, in order starting from station 1 as shown in the drawing. In the case of complex arrangement, specify them in the manifold specification sheet.
- Note) When ordering a manifold, specify the part nos. of valves to be mounted together. (An order cannot be placed with only the manifold part no.)

● Valve stations

F: D-sub connector

Symbol	Stations
01	1 station
⋮	⋮
12	12 stations

PG: Flat ribbon cable (20 pins)

Symbol	Stations
01	1 station
⋮	⋮
09	9 stations

J: Flat ribbon cable (PC wiring)

Symbol	Stations
01	1 station
⋮	⋮
08	8 stations

G: Flat ribbon cable (PC wiring, with power supply terminal)

Symbol	Stations
01	1 station
⋮	⋮
08	8 stations

S□: EX180 serial transmission

Symbol	Stations	Note
01	1 station	There are limitations on the station number, depending on the serial type. Refer to page 41 for details.
⋮	⋮	
16	16 stations	

P: Flat ribbon cable (26 pins)

Symbol	Stations
01	1 station
⋮	⋮
12	12 stations

PH: Flat ribbon cable (10 pins)

Symbol	Stations
01	1 station
⋮	⋮
04	4 stations

S6B: EX510 serial transmission

Symbol	Stations
01	1 station
⋮	⋮
08	8 stations

* The number of the blanking block assembly is also included. For the blanking block assembly, please select double wiring specifications.

How to Order Solenoid Valves (3 Position 3 Port with Restrictor)

Standard

SJ3A6 - 5 C U - P

With switch

SJ3A6 - 5 C Z J - P

Individual wiring
[For plug-in mixed mounting]

SJ3A6 - 5 M Z - P

Note 1) Refer to pages 91 and 92 for the dedicated non plug-in individual wiring.

Coil spec.

Nil	Standard
T	With power saving circuit (Continuous duty type)

* Be sure to select "with power saving circuit" when the solenoid valve will be energized continuously for long period.

Rated voltage

5	24 VDC
6	12 VDC

* Only 24 VDC is available for manifolds compatible with serial wiring and PC wiring.

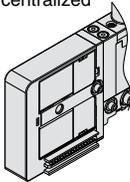
Common specifications

Nil	Positive common
N	Negative common

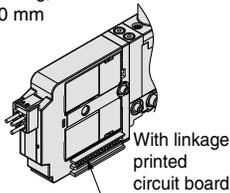
* Only positive common is available for manifolds compatible with PC wiring.
* For the non-polar type, there is no need to select a symbol.
* When the manifold applicable to the serial transmission system and the valve with the standard type switch are used, select common specifications suitable for the SI unit common specifications.

Connector entry

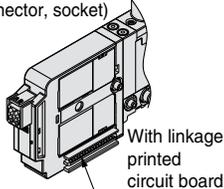
C: Dedicated for centralized wiring



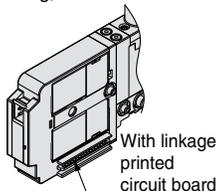
M: Individual wiring, With lead wire Length 300 mm



MN: Individual wiring, Without lead wire (With connector, socket)



MO: Individual wiring, Without connector

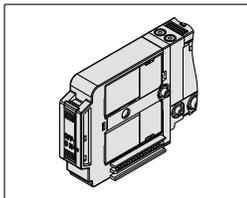


Light/surge voltage suppressor

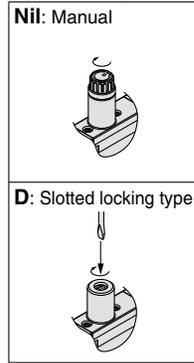
U	With light/surge voltage suppressor (Non-polar type)
Z	With light/surge voltage suppressor (Polar type)

* When the types with power saving circuit, with switches, and/or individual wiring are used, the non-polar type cannot be selected.

With switch

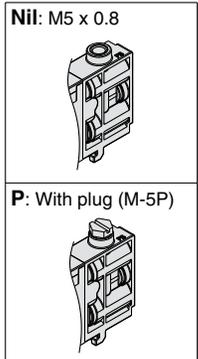


Needle operation



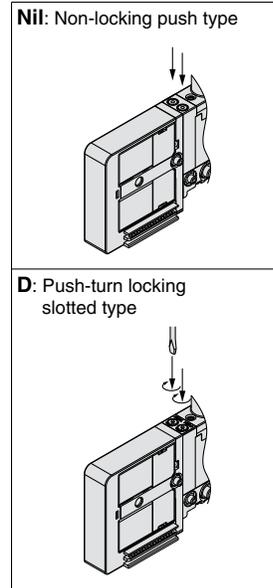
* Set operation torque to 0.3 N·m or less.

PS port for detection



* When mounting a pressure sensor etc., select "Nil."

Manual override



* No slide locking type manual override setting is provided.

Note 2) There is no valve block switch for linking the neighboring valve, etc. to the 3 position 3 port solenoid valve with restrictor. Consult SMC if you wish to use the SJ2000/3000 valve with a valve block switch, or an end block or SUP/EXH block assembly.

* Connector entries with the symbol "M□" can not use the switch signal from the common wiring on the manifold.
* When ordering a connector assembly separately, refer to pages 101 and 102.

Protective class class III (Mark: ⚡)

Plug-in Cable Type

Vacuum Release Valve with Restrictor

Series SJ3A6



An order cannot be placed with only the manifold part no. Be sure to order solenoid valves for mounting at the same time while referring to the ordering example.

How to Order

● Vacuum release valve manifold with restrictor

SS3J3 - V 60 L [] D [] - 05 U [] []

Vacuum release valve with restrictor type

Cable type

Connector type

Symbol	Mounting position	Page	Note
F	D-sub connector	P.17	Parallel wiring
P	Flat ribbon cable 26 pins		
PG	Flat ribbon cable 20 pins		
PH	Flat ribbon cable 10 pins		

Connector mounting position

Symbol	Mounting position
D	D side

Connector entry

With parallel wiring specifications, it is necessary to select the connector entry direction (1: upward, 2: lateral). For details, refer to page 17.

● DIN rail length specified

Nil	Standard length	
3	3 stations	Specify a longer rail than the standard length.
:	:	
10	10 stations	

* When specifying a rail longer than the standard length, select the valve stations not exceeding the maximum stations.

● SUP/EXH block fitting spec.

Nil	Straight fitting	
	X, PE port: elbow fitting	
L	Elbow fitting (Upward)	
	X, PE port: straight fitting	
B	Elbow fitting (Downward)	
	X, PE port: elbow fitting	

* There is no need to enter anything when the SUP/EXH block mounting position "M" is selected. Also, this manifold comes standard with external pilot specifications.

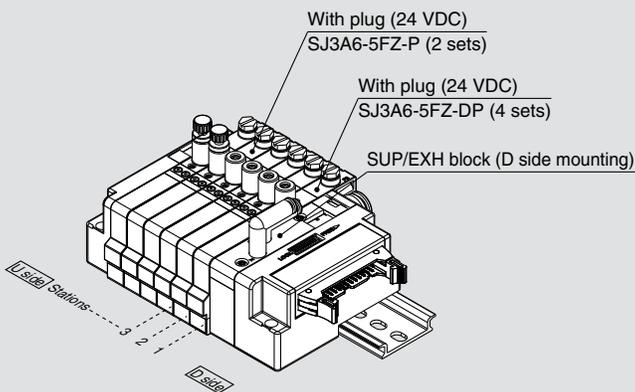
● SUP/EXH block mounting position

U	U side (2 to 10 stations)
D	D side (2 to 10 stations)
B	Both sides (2 to 10 stations)
M*	Special specifications

* For the special specifications, a port size of the SUP/EXH block assembly can be specified. At this time, the mounting position becomes only U, D, or B.

How to Order Valve Manifold Assembly

Ordering example (SS3J3-V60PD2-[])



SS3J3-V60LPD2-06D ... 1 set (Manifold part no.)
 * **SJ3A6-5FZ-DP** 4 sets (With plug part no.)
 * **SJ3A6-5FZ-P** 2 sets (With plug part no.)
 → The asterisk denotes the symbol for assembly. Prefix to the part no. of the solenoid valve, etc.

- The valve arrangement is numbered as the 1st station from D side.
- Indicate the valves to be attached below the manifold part number, in order starting from station 1 as shown in the drawing. In the case of complex arrangement, specify them in the manifold specification sheet.

● Valve stations

F: D-sub connector

Symbol	Stations
02	2 stations
:	:
10	10 stations

P: Flat ribbon cable (26 pins)

Symbol	Stations
02	2 stations
:	:
10	10 stations

PG: Flat ribbon cable (20 pins)

Symbol	Stations
02	2 stations
:	:
09	9 stations

PH: Flat ribbon cable (10 pins)

Symbol	Stations
02	2 stations
:	:
04	4 stations

- * The number of the blanking block assembly is also included.
- * The cable type is applicable to 2 or more stations.

How to Order Solenoid Valves (3 Position 3 Port with Restrictor)

SJ3A6 - **5** **FZ** - **P**

Coil spec.

Nil	Standard
T	With power saving circuit (Continuous duty type)

* Be sure to select "with power saving circuit" when the solenoid valve will be energized continuously for long period.

Rated voltage

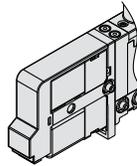
5	24 VDC
6	12 VDC

Common specifications

Nil	Positive common
N	Negative common

Connector entry

F: Dedicated for centralized wiring
Cable type

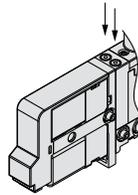


Light/surge voltage suppressor

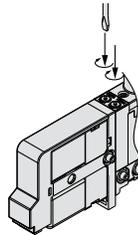
Z	With light/surge voltage suppressor
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Manual override

Nil: Non-locking push type



D: Push-turn locking slotted type



* No slide locking type manual override setting is provided.

PS port for detection

Nil: M5 x 0.8



P: With plug (M-5P)



* When mounting a pressure sensor etc., select "Nil."

Needle operation

Nil: Manual

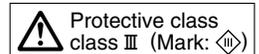


D: Slotted locking type



* Set operation torque to 0.3 N·m or less.

Note) There is no valve block switch for the 3 position 3 port solenoid valve with restrictor.

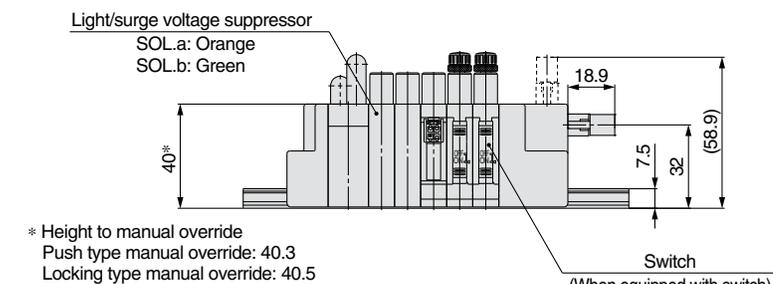
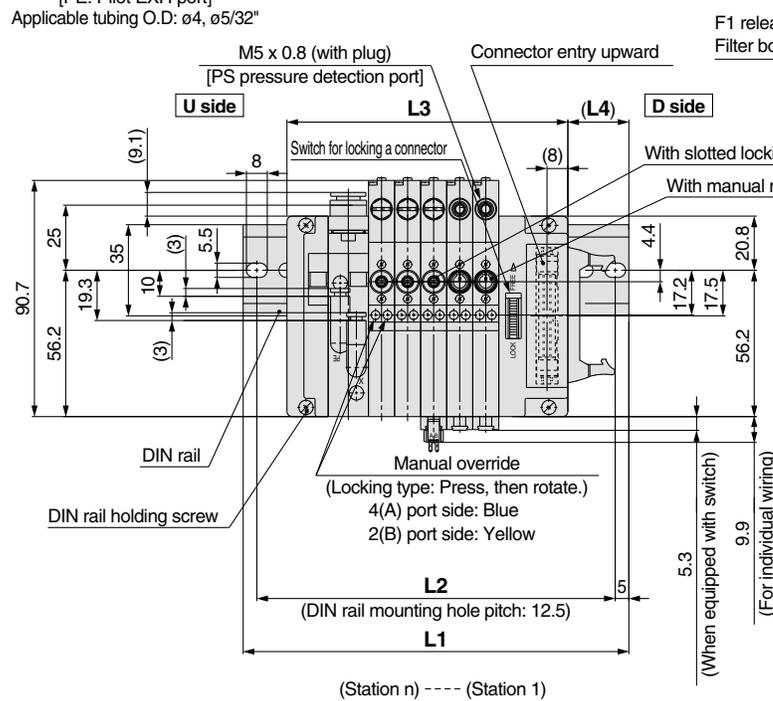
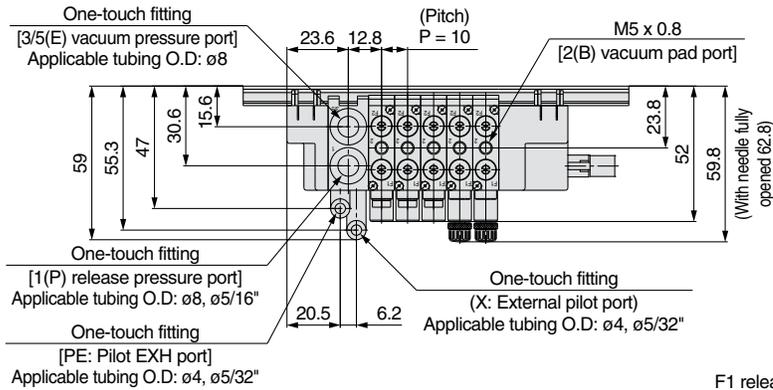


Series SJ3A6

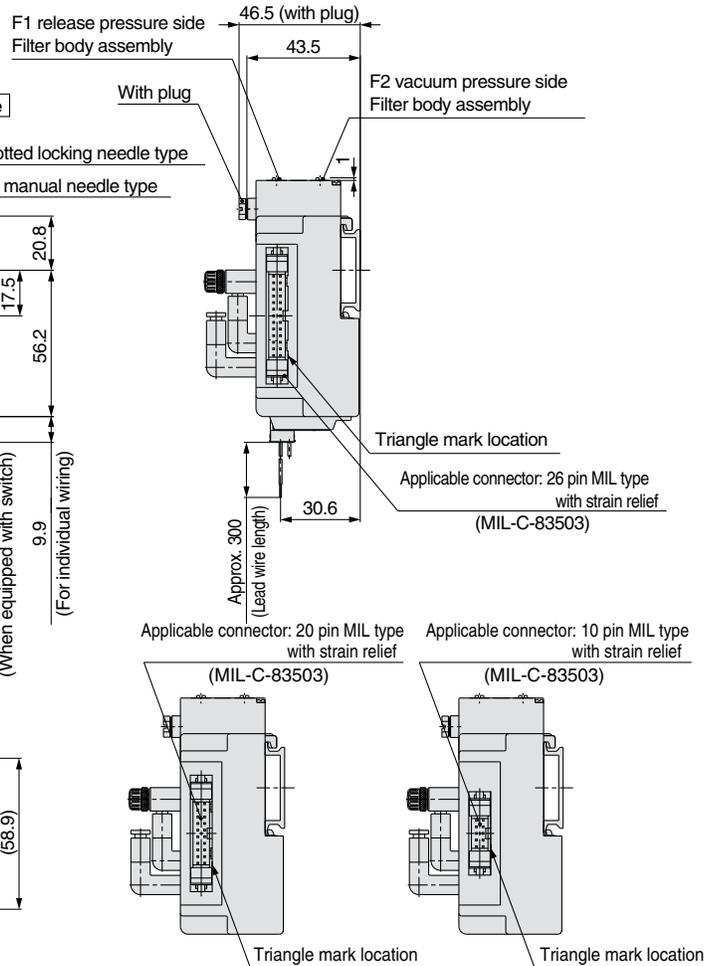
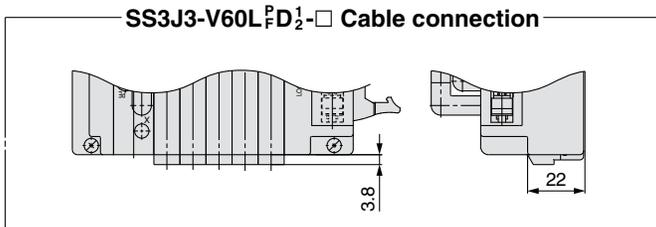
Dimensions

SS3J3-V60 $\begin{matrix} P \\ \square \\ D \\ 1 \end{matrix}$ - Stations U/D/B

$\begin{matrix} S \\ \square \\ 6 \\ B \end{matrix}$

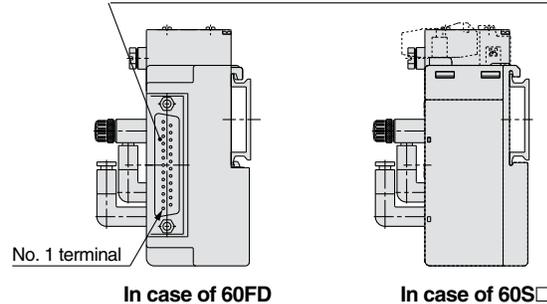


Since DIN rail dimensions are the same as the SS5J3-60 series, refer to the following pages.
 For D-sub connector: Page 23, 24
 For flat ribbon cable: Page 28, 29
 For EX180 serial wiring: Page 45, 46
 For EX510 serial wiring: Page 53, 54



In case of 60PG (20 pins) In case of 60PH (10 pins)

Applicable connector: D-SUB (JIS-X-5101, MIL-C-24308) equivalent



Non plug-in Individual Wiring Vacuum Release Valve with Restrictor Series **SJ3A6**



An order cannot be placed with only the manifold part no. Be sure to order solenoid valves for mounting at the same time while referring to the ordering example.

How to Order

● Individual wiring manifold

SS3J3 - V 60 - 05 U □ □

Vacuum release valve with restrictor type

Valve stations

Symbol	Stations
01	1 station
⋮	⋮
20	20 stations

* The number of the blanking block assembly is also included.

SUP/EXH block mounting position

U	U side (1 to 10 stations)
D	D side (1 to 10 stations)
B	Both sides (1 to 20 stations)
M*	Special specifications

* Specify the required specifications (Including port sizes other than $\phi 8$) by means of the manifold specification sheet.

● DIN rail length specified

Nil	Standard length
2	2 stations
⋮	⋮
20	20 stations

* Specify the valve stations not exceeding the maximum stations.

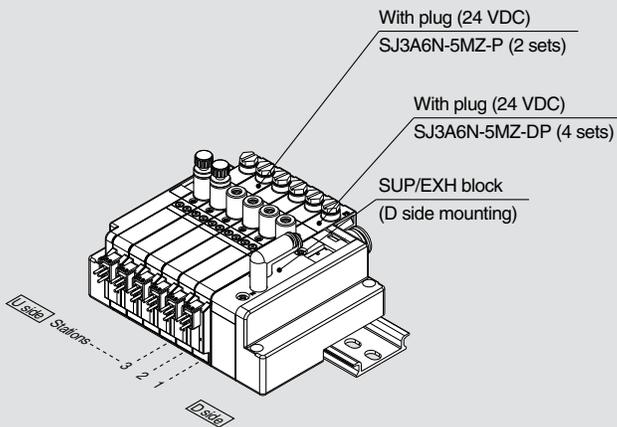
● SUP/EXH block fitting spec.

Nil	Straight fitting	
L	Elbow fitting (Upward)	
B	Elbow fitting (Downward)	

* There is no need to enter anything when the SUP/EXH block mounting position "M" is selected. Also, this manifold comes standard with external pilot specifications.

How to Order Manifold Assembly

Ordering example (SS3J3-V60-□)



SS3J3-V60-06D 1 set (Manifold part no.)

* **SJ3A6N-5MZ-DP** 4 sets (With plug part no.)

* **SJ3A6N-5MZ-P** 2 sets (With plug part no.)

→ The asterisk denotes the symbol for assembly. Prefix to the part no. of the solenoid valve, etc.

- The valve arrangement is numbered as the 1st station from D side.
- Indicate the valves to be attached below the manifold part number, in order starting from station 1 as shown in the drawing. In the case of complex arrangement, specify them in the manifold specification sheet.

How to Order Solenoid Valves (3 Position 3 Port with Restrictor)

SJ3A6 **N** - **5** **MZ** - **P**

Coil spec.

Nil	Standard
T	With power saving circuit (Continuous duty type)

* Be sure to select "with power saving circuit" when the solenoid valve will be energized continuously for long period.

For non plug-in only

Rated voltage

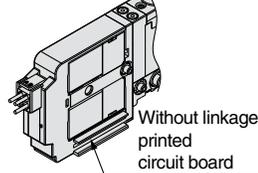
5	24 VDC
6	12 VDC

Common specifications

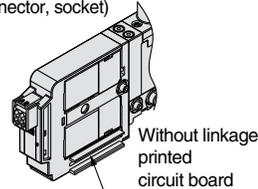
Nil	Positive common
N	Negative common

Connector entry

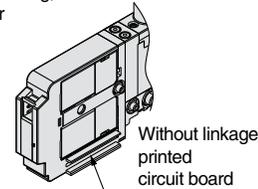
M: Individual wiring, With lead wire
Length 300 mm



MN: Individual wiring, Without lead wire
(With connector, socket)



MO: Individual wiring, Without connector



* When ordering a connector assembly separately, refer to pages 101 and 102.

With light/surge voltage suppressor

PS port for detection

Nil: M5 x 0.8



P: With plug (M-5P)



* When mounting a pressure sensor etc., select "Nil."

Needle operation

Nil: Manual



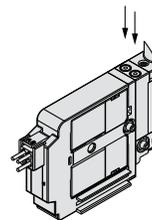
D: Slotted locking type



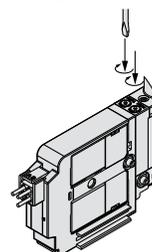
* Set operation torque to 0.22 lbf-ft (0.3 N-m) or less.

Manual override

Nil: Non-locking push type



D: Push-turn locking slotted type



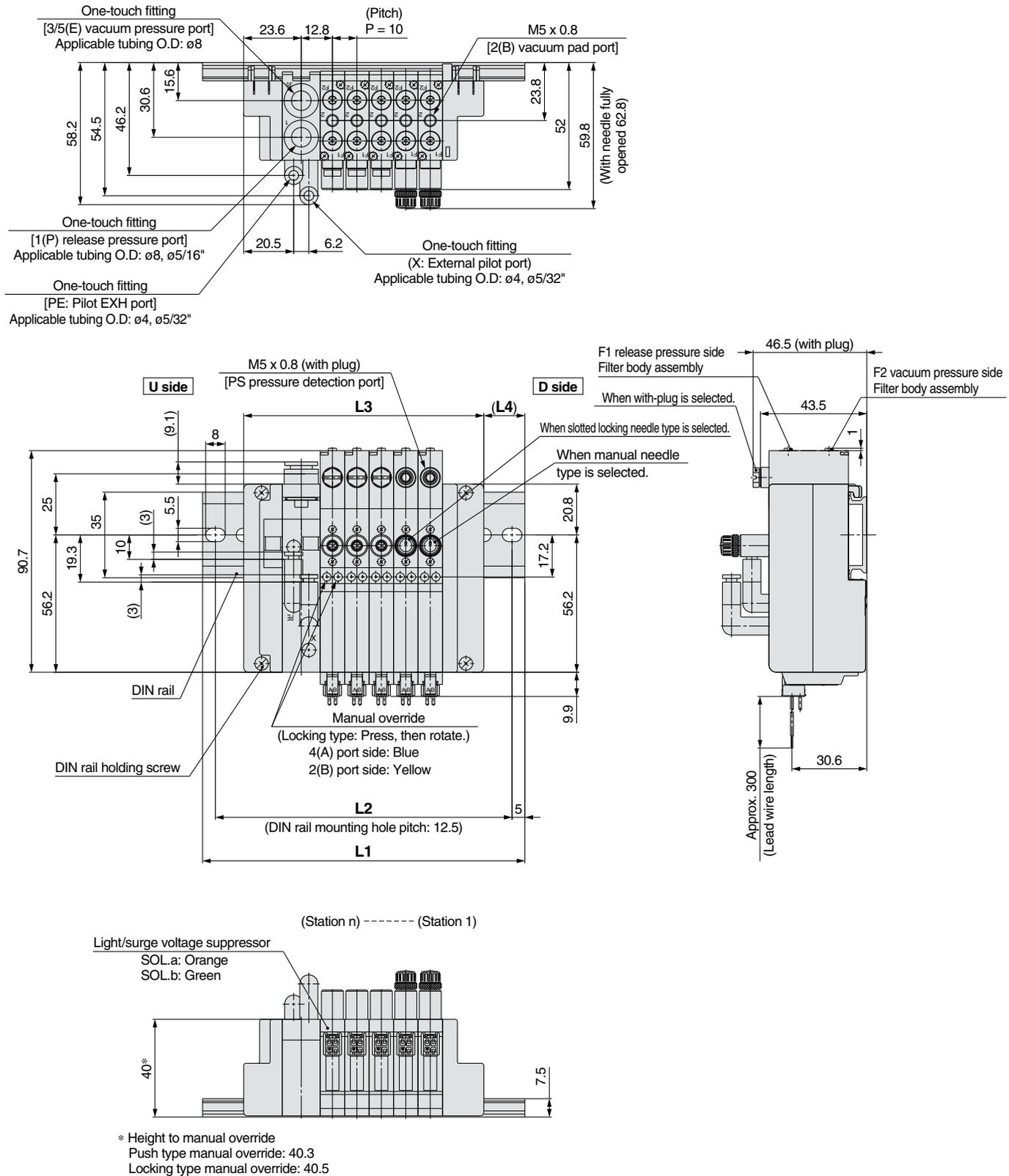
* No slide locking type manual override setting is provided.



Series SJ3A6

Dimensions

SS3J3-V60- Stations U/D/B



Since DIN rail dimensions are the same as the SS5J3-60-□ series, refer to pages 65 and 66.

Manifold Exploded View 1

Connector Type/Individual Wiring

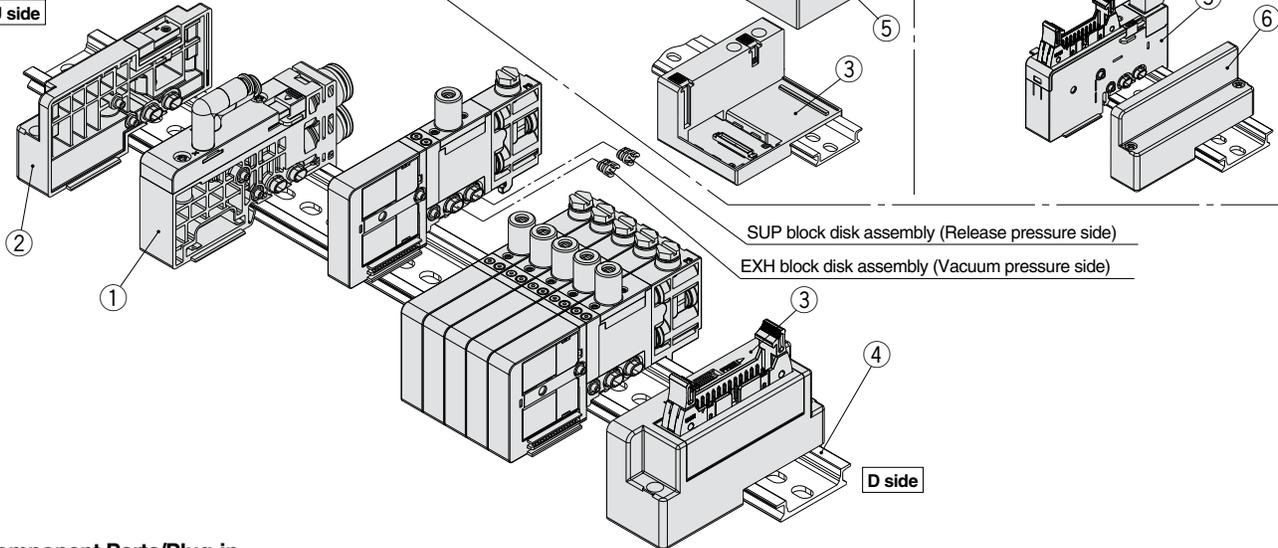
Type V60P (Vacuum release valve with restrictor) manifold

Note) Refer to page 58 for "How to Increase Manifold Stations."

Type V60S (Plug-in, EX180 Integrated type (for output serial transmission system) manifold

Type V60G (Plug-in, PC wiring with power supply terminal) manifold

U side



Component Parts/Plug-in

No.	Description	Part no.	Note
1 Note 1)	SUP/EXH block assembly	External pilot specification SJ3000-50-1AR-□□-N (X, PE port: Metric size ø4 Inch size ø5/32")	(Metric size) C6: With ø6 One-touch fitting (straight) 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) B6: With ø6 One-touch fitting (elbow downward entry) B8: With ø8 One-touch fitting (elbow downward entry)
		For different pressures Note 2) SJ3000-50-3A-□□-N	(Inch size) N7: With 1/4" One-touch fitting (straight) N9: With 5/16" One-touch fitting (straight)
2 Note 1)	End block assembly	SJ3000-53-1A-N	For U side
3	Connector block assembly	SJ3000-42-□A-□ SJ3000-76-2A-05	Refer to the connector block assembly part no. shown below.
4	DIN rail	VZ1000-11-1-□	Refer to page 71.
5	SI unit	EX180-□□	Refer to the SI unit part numbers on page 41.
6	End block assembly	SJ3000-53-2A	For D side

Connector Block Assembly Part No.

Connector specifications	Mounting position	Part no.	Note
For D-sub connector (Locking bracket: Metric size thread)	D side	SJ3000-42-1A-□	□: 1 (Connector upward) □: 2 (Connector lateral)
For D-sub connector (Locking bracket: Unified thread)		SJ3000-42-1AU-□	
For flat ribbon cable 26 pins		SJ3000-42-2A-□	
For flat ribbon cable 20 pins		SJ3000-42-3A-□	
For flat ribbon cable 10 pins		SJ3000-42-4A-□	
For PC wiring 20 pins		SJ3000-42-6A-□	
For EX180 serial wiring Note)		SJ3000-42-20A	
For EX510 serial wiring Note)		SJ3000-42-3A-2	
For PC wiring 20 pins with power supply terminal		SJ3000-76-2A-05	

Note) SI unit is not included.

Component Parts/Non plug-in (Individual Wiring)

No.	Description	Part no.	Note
1 Note 1)	SUP/EXH block assembly	External pilot specification SJ3000-50-5AR-□□-N (X, PE port: Metric size ø4 Inch size ø5/32")	(Metric size) C6: With ø6 One-touch fitting (straight) 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) B6: With ø6 One-touch fitting (elbow downward entry) B8: With ø8 One-touch fitting (elbow downward entry)
		For different pressures Note 2) SJ3000-50-6A-□□-N	(Inch size) N7: With 1/4" One-touch fitting (straight) N9: With 5/16" One-touch fitting (straight)
2 Note 1)	End block assembly	SJ3000-53-1A-N	For U side
4	DIN rail	VZ1000-11-1-□	Refer to page 71.
6	End block assembly	SJ3000-53-2A	For D side

Note 1) For the SJ3A6 series, valve block and manual switches are not available.

Note 2) The valves cannot be operated only with the SUP/EXH block assembly for different pressure, select in combination with the SUP/EXH block assembly for external pilot.

Note 3) Refer to page 69 about the SUP/EXH block disk assembly and method of handling of parts at different pressure.

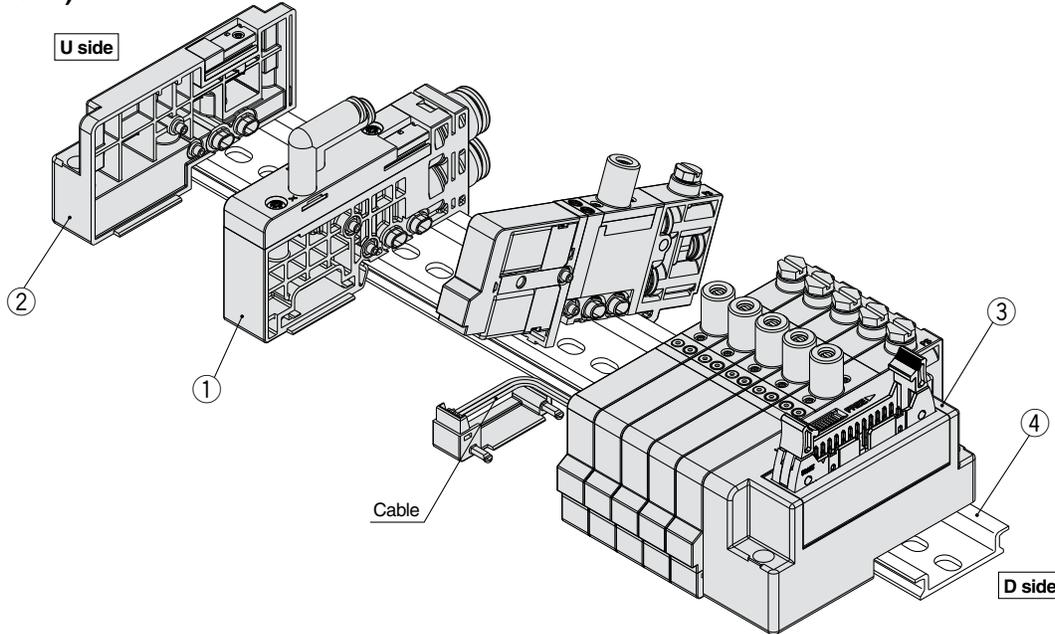
Series SJ3A6

Manifold Exploded View 2

Cable Type

Type V60LP (Vacuum release valve with restrictor) manifold

Note) Refer to page 59 for "How to Increase Manifold Stations."



Component Parts/Plug-in (Cable Type)

No.	Description	Part no.	Note
1 ^{Note 1)}	SUP/EXH block assembly	External pilot specification	(Metric size) C6: With ø6 One-touch fitting (straight) 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) B6: With ø6 One-touch fitting (elbow downward entry) B8: With ø8 One-touch fitting (elbow downward entry) (Inch size) N7: 1/4" One-touch fitting (straight) N9: 5/16" One-touch fitting (straight)
		For different pressures ^{Note 2)}	
2 ^{Note 1)}	End block assembly	SJ3000-53-1A-N	
3	Connector block assembly	SJ3000-42-□A-□	Refer to the connector block assembly part no. shown below.
4	DIN rail	VZ1000-11-1-□	Refer to page 71.

Note 1) For the SJ3A6 series, valve block and manual switches are not available.

Note 2) The valves cannot be operated only with the SUP/EXH block assembly for different pressure, select in combination with the SUP/EXH block assembly for external pilot.

Note 3) Refer to page 69 about the SUP/EXH block disk assembly and method of handling of parts at different pressure.

● Connector Block Assembly

SJ3000-42-□ A □ - □ - 05

Connector type

7	D-sub connector
8	Flat ribbon cable 26 pins
9	Flat ribbon cable 20 pins
10	Flat ribbon cable 10 pins

* All connector block assembly mounting positions become the D side.

* The connector block assembly includes the cables necessary for the number of stations.

Valve stations

02 to 10	D-sub connector
02 to 10	Flat ribbon cable 26 pins
02 to 09	Flat ribbon cable 20 pins
02 to 04	Flat ribbon cable 10 pins

Connector entry

1	Connector upward
2	Connector lateral

Locking bracket

Nil	Metric size thread
U	Unified thread

* D-sub connector only.



Series SJ2000/3000 Specific Product Precautions 1

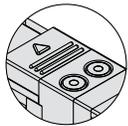
Be sure to read before handling.

Refer to page104 for Safety Instructions and "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valve Precautions.

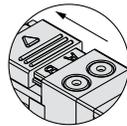
Manual Override Switch Operation

Warning

For manual override operation, move the manual override switch to a position where letters A and B can be seen. [Manual override switch release status (refer to the figure below)] Operation with the manual override switch in a locked status can cause damage to the manual override and air leakage, so be sure to release the manual override switch before use. After manual override operation, lock the manual switch for use (when the manual override of the push-turn locking slotted type is locked, a manual override switch cannot be locked).



Manual override switch locked status



Manual override switch unlocked status

Manual override switch slide direction

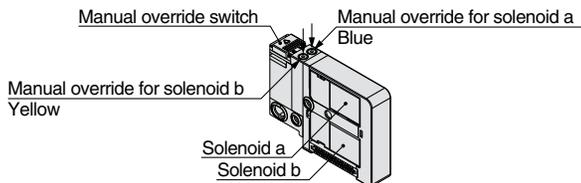
Manual Override Operation

Warning

When the manual override is operated, connected equipment will be actuated. Confirm safety before operating.

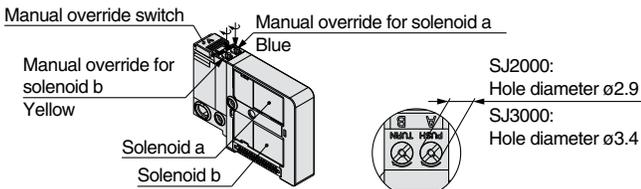
■ Non-locking push type

Press in the direction of the arrow.



■ Push-turn locking slotted type

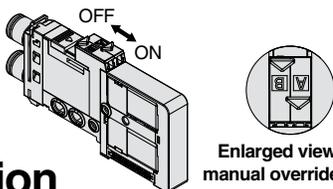
While pressing, turn in the direction of the arrow (90 ° clockwise). If it is not turned, it can be used in the same way as the non-locking push type.



Enlarged view of manual override part

■ Slide locking type (manual override)

Slide the manual override all the way to the ON side in the arrow direction. The manual override is then locked. To unlock the manual override, slide it toward the OFF side in the arrow direction.



Enlarged view of manual override part

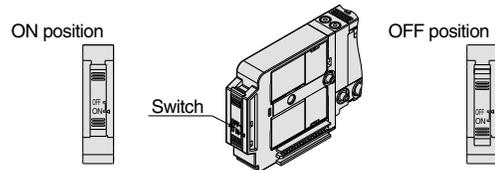
Caution

When you operate the D type with a screw driver, turn it gently using a watchmaker's screw driver. [Torque: under 0.05 N·m] When you lock the manual override of the D type, be sure to push it before turning. [Load: 10 N or less] Turning without pushing can cause damage to the manual override and trouble such as air leakage, etc.

Valve with Switch

Warning

When turning OFF the valve using the switch, move it to the position where the valve is locked. If the switch is at an improper position and is energized, equipment connected to the valve could be actuated. Also, if the switch is turned OFF on the valve in the energized state, be careful because any actuators connected to a single solenoid, a dual 3 port valve or a 3 position valve will actuate.

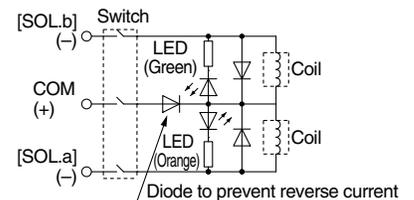


Normal operation: The valve is switched according to electric signals from the connector on the manifold side.

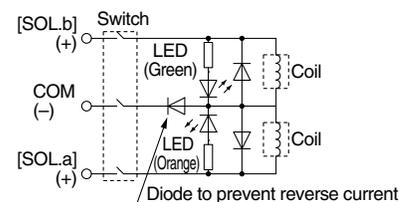
The valve coil is kept in a deenergized state even when there is an electric signal from the connector on the manifold side.

Electric circuit diagram

(with positive common and light/surge voltage suppressor)



(with negative common and light/surge voltage suppressor)



Built-in Back Pressure Check Valve Type

Caution

Valves with built-in back pressure check valve is to protect the back pressure inside a valve. For this reason, use caution the valves with external pilot specification cannot be pressurized from exhaust port [3/5(E)].

As compared with the types which do not integrate the back pressure check valve, C value of the flow characteristics (sonic conductance) goes down. For details, please contact SMC.

Exhaust Restriction

Caution

Since the SJ series is a type in which the pilot valve exhaust joins the main valve exhaust inside the valve, use caution, so that the piping from the exhaust port is not restricted.

Series SJ2000/3000 Specific Product Precautions 2



Be sure to read before handling.

Refer to page 104 for Safety Instructions and "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valve Precautions.

When Using a 4 Port Valve as a 3 Port Valve

⚠ Caution

■ When using a 4 port valve as a 3 port valve

The SJ2000/3000 series can be used as normally closed (N.C.) or normally open (N.O.) 3 port valves by plugging one of the cylinder ports 4(A) or 2(B). However, exhaust ports should be left open. It is convenient when a double solenoid 3 port valve is required.

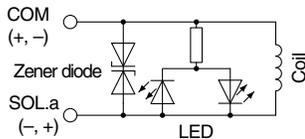
Plug position	2(B) port	4(A) port
Type of actuation	N.C.	N.O.
Number of solenoids	Single	
	Double	

Light/Surge Voltage Suppressor

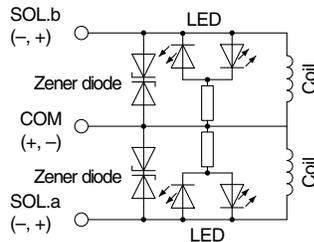
⚠ Caution

■ Non-polar type

Single solenoid

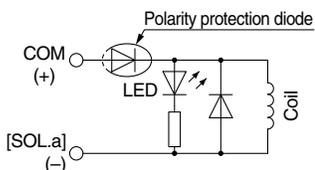


Double solenoid, 3 position type

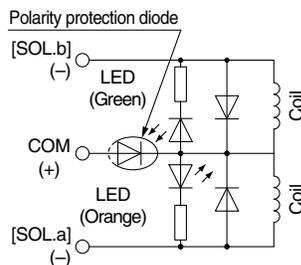


■ Positive common

Single solenoid

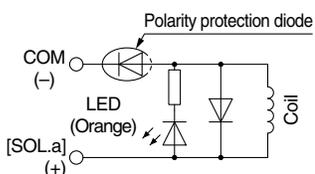


Double solenoid, 3 position type

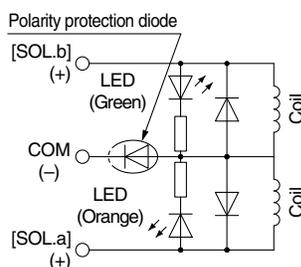


■ Negative common

Single solenoid



Double solenoid, 3 position type



Continuous Duty

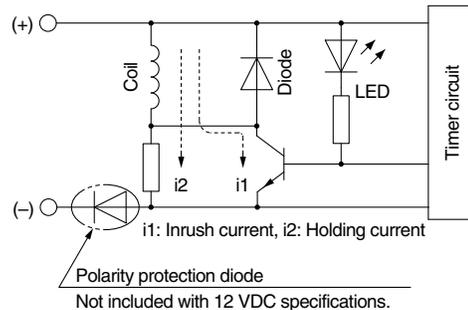
⚠ Caution

If a valve is energized continuously for a long time, the rise in temperature due to heat-up of the coil may cause a decline in solenoid valve performance, reduce service life, or have adverse effects on peripheral equipment. If a valve will be energized continuously, please be sure to use the "Continuous duty type" with a power saving circuit. In particular, there will be a large increase in temperature if 3 or more neighboring stations are simultaneously continuously energized for a long time, or if the A and B sides are simultaneously continuously energized for a long time in a dual 3 port valve. Please be very careful in such cases. If the continuously energized time exceeds three hours, contact SMC.

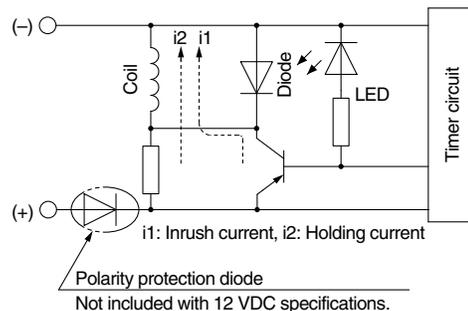
■ With power saving circuit

Compared to the standard products, power consumption is reduced down to approx. 1/3 (in case of SJ3□60T) by cutting the unnecessary wattage required to hold the valve in an energized state. (Effective energizing time is over 67 ms at 24 VDC.)

Electric circuit diagram (with power saving circuit) In case of positive common, single solenoid



In case of negative common, single solenoid



Series SJ2000/3000

Specific Product Precautions 3



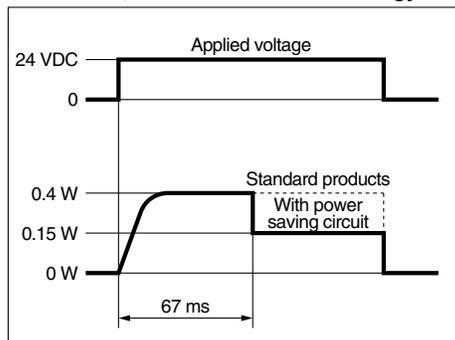
Be sure to read before handling.

Refer to page 104 for Safety Instructions and "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valve Precautions.

Working Principle

With the circuit of page 93, the current consumption, when holding, is reduced to save energy. Please refer to the electric wave form data below.

In case of SJ3□60T, electric waveform of energy saving type

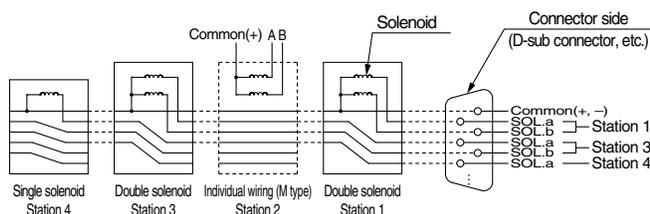


- When a power saving circuit is installed, a diode to prevent reverse current is not available for 12 VDC spec. Therefore, use caution not to connect in reverse.
- Be careful about the allowable voltage fluctuation since a voltage drop of about 0.5 V occurs due to a transistor. (Refer to the solenoid specifications of each valve for details.)

Measures to prevent detours of surge voltage

When the DC power supply is shut off, by the emergency breaking circuit for example, valve misoperation may occur due to surge voltage produced by other electrical parts (such as electromagnetic coils). Please take measures to prevent surges from detouring to the valve (surge protection diode etc.), or use a valve with diode to prevent reverse current (polar: Z type). However, surge counter-measures are provided on the serial unit side of the serial type.

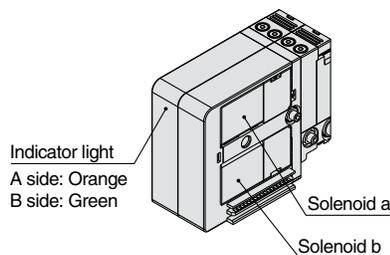
Circuit example



Light Indication

Caution

When equipped with light/surge voltage suppressor, the light window turns orange when solenoid a is energized, and it turns green when solenoid b is energized.

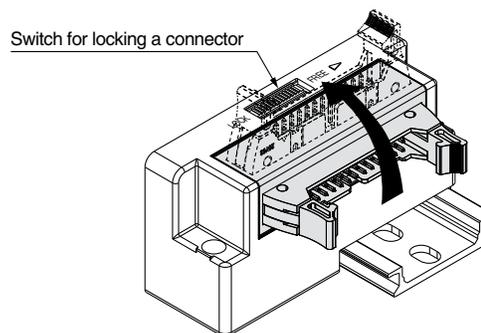


Changing the Connector Entry Direction

Caution

To change the connector's entry direction, set the switch on the top of the connector block to the FREE position, before turning the connector. Make sure to set the switch back to the LOCK position before connecting the connector. (When the switch is difficult to slide, move the connector a little so that it will slide easier.)

If an excessive force is applied on the connector in the LOCK position, the connector block may be damaged. Also, using in such a way that the connector floats in the FREE position, it may cause the lead wire, etc. to break. Thus, refrain from using in these ways.



Manifold Mounting

When attaching a manifold to a mounting surface, etc., with bolts, if the entire bottom surface of the DIN rail contacts the mounting surface in a horizontal mounting, it can be used by simply securing both ends of the DIN rail. However, for any other mounting method or for side facing and rear facing, etc., secure the DIN rail with bolts at uniform intervals using the following as a guide: 2 to 5 stations at 2 locations, 6 to 10 stations at 3 locations, 11 to 15 stations at 4 locations, 16 to 20 stations at 5 locations, 21 to 25 stations at 6 locations, 26 to 30 stations at 7 locations and more than 30 stations at 8 locations.

In addition, even in the case of a horizontal mounting, if the mounting surface is subject to vibration, etc., take the same measures indicated above. If secured at fewer than the specified number of locations, warping or twisting may occur in the DIN rail and manifold, causing trouble such as air leakage.



Series SJ2000/3000 Specific Product Precautions 4

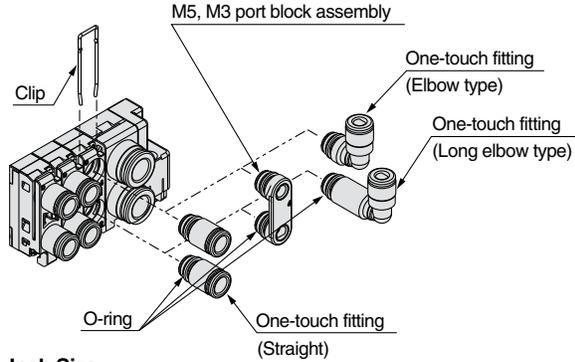
Be sure to read before handling.

Refer to page 104 for Safety Instructions and "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valve Precautions.

Fitting Replacement

Caution

By replacing a valve's fitting assembly, it is possible to change the port size of the 4(A), 2(B), 1(P), and 3/5(E) ports. When replacing it, pull out the fitting assembly after removing the clip with a flat brade screw driver, etc. To mount a new fitting assembly, insert it into place and then fully reinsert the clip.



Fitting Assembly Part No.

Metric Size

Port	Port size	Part no.
SJ2000 4(A) 2(B)	ø2 One-touch fitting (Straight)	KJH02-C1
	ø4 One-touch fitting (Straight)	KJH04-C1
	ø2 One-touch fitting (Elbow type)	KJL02-C1
	ø4 One-touch fitting (Elbow type)	KJL04-C1-N
	ø2 One-touch fitting (Long elbow type)	KJW02-C1
	ø4 One-touch fitting (Long elbow type)	KJW04-C1-N
	M3 port block assembly	SJ2000-56-1A
SJ3000 4(A) 2(B)	ø2 One-touch fitting (Straight)	KJH02-C2
	ø4 One-touch fitting (Straight)	KJH04-C2
	ø6 One-touch fitting (Straight)	KJH06-C2
	ø2 One-touch fitting (Elbow type)	KJL02-C2
	ø4 One-touch fitting (Elbow type)	KJL04-C2
	ø6 One-touch fitting (Elbow type)	KJL06-C2-N
	ø2 One-touch fitting (Long elbow type)	KJW02-C2
	ø4 One-touch fitting (Long elbow type)	KJW04-C2
	ø6 One-touch fitting (Long elbow type)	KJW06-C2-N
	M5 port block assembly	SJ3000-56-1A
	1(P) 3/5(E)	ø6 One-touch fitting (Straight)
ø6 One-touch fitting (Elbow type)		SZ3000-74-1A-L6
ø6 One-touch fitting (Long elbow type)		SZ3000-74-2A-L6
ø8 One-touch fitting (Straight)		VVQ1000-51A-C8
ø8 One-touch fitting (Elbow type)		SZ3000-74-1A-L8
ø8 One-touch fitting (Long elbow type)		SZ3000-74-2A-L8

Inch Size

Port	Port size	Part no.
SJ2000 4(A) 2(B)	ø1/8" One-touch fitting (Straight)	KJH01-C1
	ø5/32" One-touch fitting (Straight)	KJH03-C1
	ø1/8" One-touch fitting (Elbow type)	KJL01-C1
	ø5/32" One-touch fitting (Elbow type)	KJL03-C1
	ø1/8" One-touch fitting (Long elbow type)	KJW01-C1
	ø5/32" One-touch fitting (Long elbow type)	KJW03-C1
SJ3000 4(A) 2(B)	ø1/8" One-touch fitting (Straight)	KJH01-C2
	ø5/32" One-touch fitting (Straight)	KJH03-C2
	ø1/4" One-touch fitting (Straight)	KJH07-C2
	ø1/8" One-touch fitting (Elbow type)	KJL01-C2
	ø5/32" One-touch fitting (Elbow type)	KJL03-C2
	ø1/4" One-touch fitting (Elbow type)	KJL07-C2
	ø1/8" One-touch fitting (Long elbow type)	KJW01-C2
	ø5/32" One-touch fitting (Long elbow type)	KJW03-C2
1(P) 3/5(E)	ø1/4" One-touch fitting (Straight)	VVQ1000-51A-N7
	ø5/16" One-touch fitting (Straight)	VVQ1000-51A-N9

Note 1) To change the port size of the 1(P), 3/5(E) ports into the port sizes other than ø8 (straight), specify the change by means of the manifold specification sheet.

Note 2) Be careful to avoid damage or contamination to the O-rings, as this can cause air leakage.

Note 3) When removing a straight-type fitting from a valve, after removing the clip, attach tubing or a plug (KJP-02, KQ2P-□□) to the One-touch fitting, and pull it out while holding the tubing or plug. If it is pulled out while holding the release button of the fitting (resin part), the release button may be damaged.

Note 4) 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 starting any work.

Note 5) While inserting a tubing into an elbow-type fitting, hold the main body of the fitting by hand. Failure to do so will exert an undue force on the valve or the fitting, resulting in air leakage or damage.

Note 6) Each fitting assembly part no. contains 1 pc. Additionally, when the piping is constructed in the same direction using the elbow-type fitting, order the elbow-type and/or long elbow-type fitting.

Clip Part No.

Part no.		Note
SJ2000	SJ3000	
SJ2000-CL-1	SJ3000-CL-1	These part numbers contain 10 pcs. each.

O-ring for Valve Connection (Common to SJ2000/3000)

Part no.	Note
SJ3000-96-1A	The part numbers shown on the left includes parts for 5 units. (10 pcs. each for P, E port and X port)



Series SJ2000/3000 Specific Product Precautions 6

Be sure to read before handling.

Refer to page 104 for Safety Instructions and "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valve Precautions.

How to Use Plug Connector

⚠ Caution

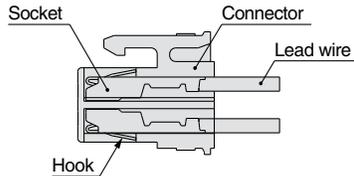
3. Lead wires with sockets attachment/detachment

• Attachment

Insert the sockets into the square holes of the connector (with A, B, C, and N indication), and continue to push the sockets all the way in until the lock by hooking into the seats in the connector. (When they are pushed in, their hooks open and they are locked automatically.) Next, confirm that they are locked by pulling lightly on the lead wires.

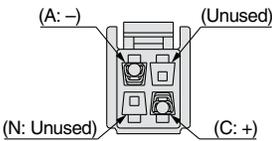
• Detachment

To detach a socket from a connector, pull out the lead wire while pressing the socket's hook with a stick having a thin tip (approx. 1 mm). If the socket is used again, spread the hook outward.

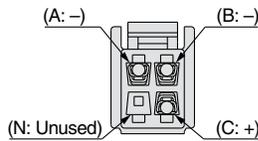


<Positive common>

Single solenoid

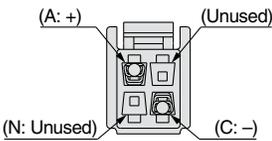


Double solenoid

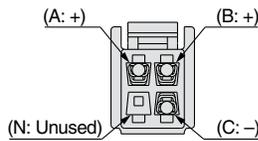


<Negative common>

Single solenoid



Double solenoid



Plug Connector Lead Wire Length

⚠ Caution

Plug connector lead wires have a standard length of 300 mm, however, the following lengths are also available.

Connector Assembly Part No.

Single solenoid

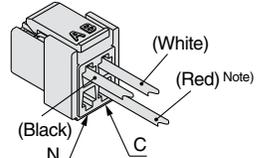
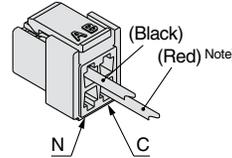
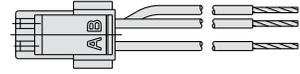
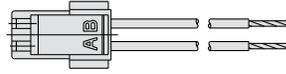
SJ3000-46-S-□ (for positive common)

SJ3000-47-S-□ (for negative common)

Double solenoid, 3 position type, 4 position type

SJ3000-46-D-□ (for positive common)

SJ3000-47-D-□ (for negative common)



Note) In case of negative common, the lead wire changes from red to yellow.

For single solenoid:

Lead wire length	Part No.
Nil	300 mm
6	600 mm
10	1000 mm
15	1500 mm
20	2000 mm
25	2500 mm
30	3000 mm
50	5000 mm

For double solenoid

For 3 position type :

For 4 position type

Common specifications	
46	For positive common
47	For negative common

For single solenoid

Without lead wire : SJ3000-46-S-N (positive/negative common)
(Connector, Socket x 2 pcs. only)

For double solenoid

Without lead wire : SJ3000-46-D-N (positive/negative common)
(Connector, Socket x 3 pcs. only)

How to Order

Include the connector assembly part number together with the part number for the plug connector's solenoid valve without connector.

(Example) In case of lead wire length 2000 mm and positive common

SJ3160-5MOZ-C6

SJ3000-46-S-20

Connector Assembly for Manifolds (for Junction Common)

⚠ Caution

Using the connector assembly (for junction common) for solenoid valves installed in the manifold reduces the labor involved in wiring work because common wiring for all solenoid valves is integrated into a single wire.

Series SJ2000/3000 Specific Product Precautions 7



Be sure to read before handling.

Refer to page 104 for Safety Instructions and "Handling Precautions for SMC Products" (M-E03-3) for 3/4/5 Port Solenoid Valve Precautions.

Connector Assembly Part No. (for Junction Common)

Single solenoid

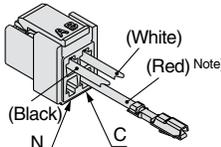
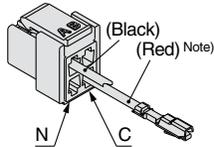
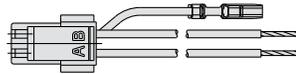
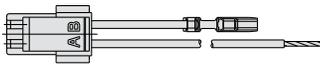
SJ3000-46-SC-□ (for positive common)

SJ3000-47-SC-□ (for negative common)

Double solenoid,
3 position type, 4 position type

SJ3000-46-DC-□ (for positive common)

SJ3000-47-DC-□ (for negative common)



Note) In case of negative common, the lead wire changes from red to yellow.

For single solenoid:

Lead wire length	Part No.
Nil	300 mm
6	600 mm
10	1000 mm
15	1500 mm
20	2000 mm
25	2500 mm
30	3000 mm
50	5000 mm

For double solenoid

For 3 position type :

For 4 position type

Lead wire length	Part No.
Nil	300 mm
6	600 mm
10	1000 mm
15	1500 mm
20	2000 mm
25	2500 mm
30	3000 mm
50	5000 mm

Common specifications

46	For positive common
47	For negative common

For junction common

How to Order

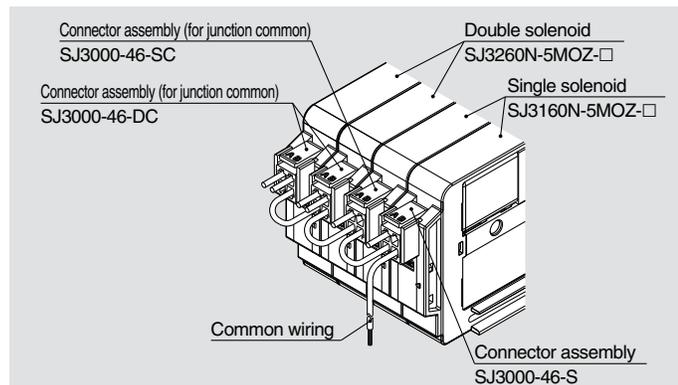
Indicate the part no. of the connector assembly for the manifold and solenoid valve.

If the arrangement is complicated, please specify them by means of the manifold specification sheet.

Note 1) Applications like connectors not wired to a valve is not possible.

Note 2) For the solenoid valve, please designate "No connector (MOZ)" for the connector type.

Note 3) Connector assembly with lead wire for place where the signals are transmitted to the common wiring. (Only the valves of first station and/or last station of manifold are compatible to connector with lead wire for common.)



(Example)

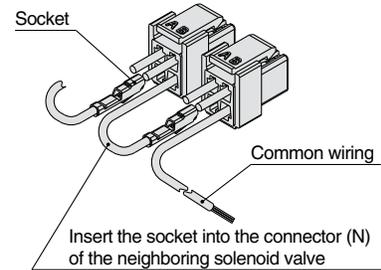
- SS5J3-60-04U 1set
- * SJ3160N-5MOZ-C6 2set
- * SJ3260N-5MOZ-C6 2set
- * SJ3000-46-S 1set (Connector assembly for single solenoid)
- * SJ3000-46-SC 1set (Connector assembly for single solenoid (for junction common))
- * SJ3000-46-DC 2set (Connector assembly for double solenoid (for junction common))

The asterisk denotes the symbol for assembly. Prefix it to the part nos. of the solenoid valve, etc.

Wiring Instructions for Connector Assembly (for Junction Common)

Caution

If only connector assembly (for junction common) is ordered, please wire according to the instructions in the diagram below. For details on socket mounting, please refer to "How to Use Plug Connector" on page 100.



How to Wire to PC Wiring System Compliant Power Supply Terminal

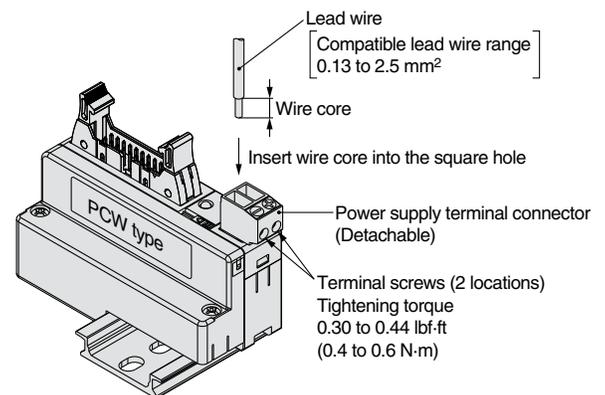
Caution

Wire connection instructions

- Strip 6.5 to 7.5 mm from the tip of the lead wire.
- Loosen the terminal screws (slotted head screws) of the power supply terminal connectors, plug the core wire of the lead wire into the square holes of the connector, tighten terminal screws at the proper torque, and fasten them securely. (Gently pull the lead wire and check that it is fastened.)

Precautions

- To remove the power supply terminal connector, pull it upward as is. When mounting, push it in until it makes a snapping noise.
- When connecting wire, be careful because using lead wire that is outside of compatible lead wire ranges, or that are tightened to anything other than the proper torque, creates a risk of defective contact and other problems.



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.

1. 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.
2. 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.
3. 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.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. 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.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. 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

1. 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.
2. 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.
3. 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

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. 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.

Revision history

Edition B * Addition of non plug-in type individual wiring manifold.

* Addition of EX510 serial wiring compatible type.

* Addition of PC wiring compatible type.

* Addition of regulator block and intermediate connector block as options.

* Addition of vacuum release valve with restrictor Series SJ3A6.

* Number of pages from 48 to 96

LZ

Edition C * Addition of plug-in cable type manifold.

* Addition of SUP/EXH block assembly with regulator and pressure switch, and valve with speed controller as options.

* Addition of slide locking type manual override.

* Number of pages from 96 to 112

RQ

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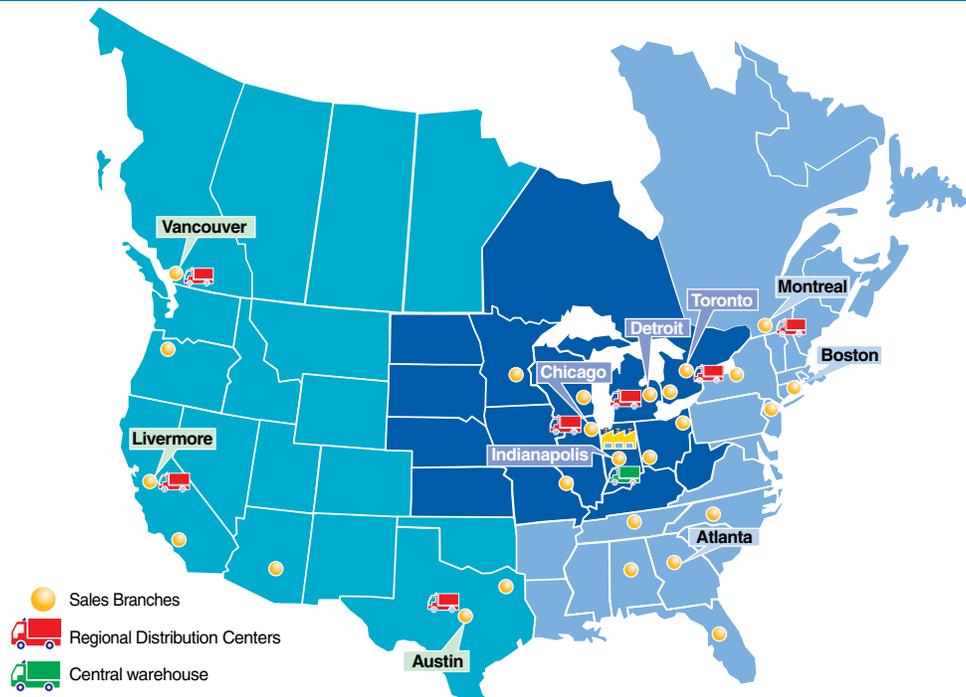
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