

Vacuum Release Valve with Restrictor Common Specifications

Series SJ3A6



Manifold Valve Specifications

Valve construction		3 position 3 port valve with restrictor
Fluid		Air
Operating pressure range (MPa)	Release pressure port 1(P)	0.25 to 0.7
	Vacuum pressure port 3/5(E)	-100 kPa to 0.7 ^{Note 1)}
	Pilot X port	0.25 to 0.7 ^{Note 2)}
Ambient and fluid temperature (°C)		-10 to 50 (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) ^{Note 3)}		150/30
Enclosure		Dustproof

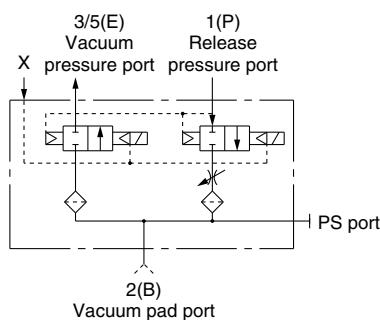
Note 1) Can be used with positive pressure to suit the application.

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)

JIS 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%

Response Time

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

Weight

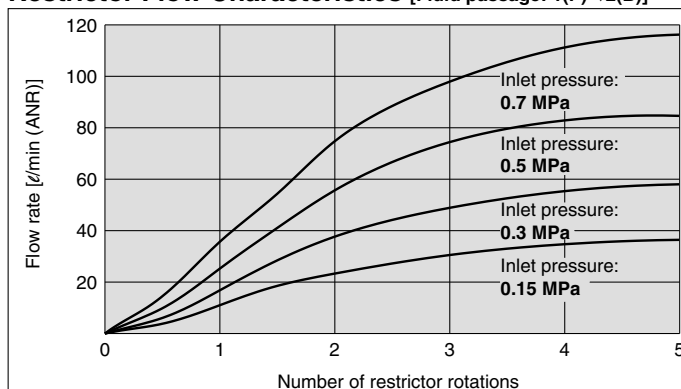
Valve model	Weight (g)
SJ3A6-□□-P	79

Flow Characteristics

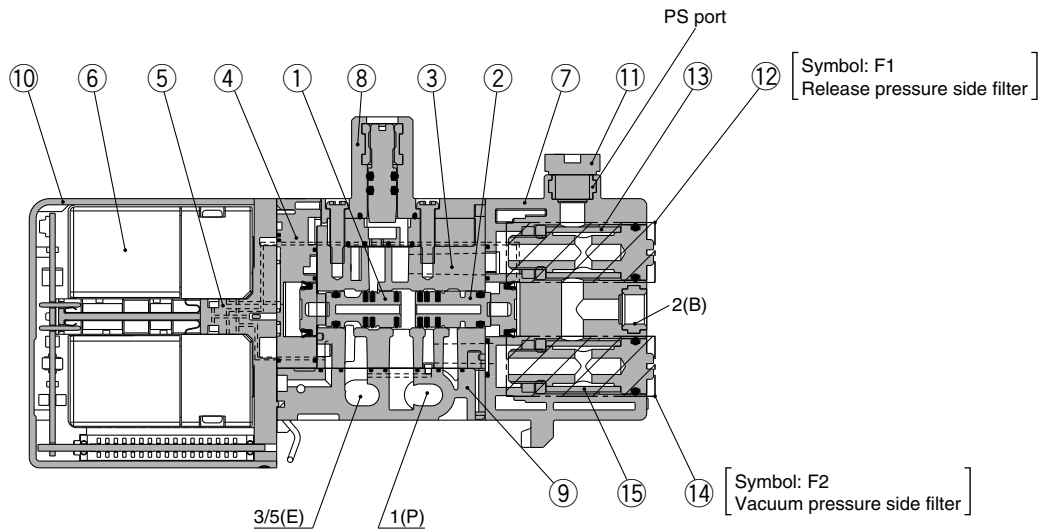
Flow Characteristics (When restrictor is fully open)

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)]



Construction



Component Parts

No.	Description	Material	Note
1	Spool valve assembly	Resin/H-NBR	A side (for release pressure switching)
2	Spool valve assembly	Resin/H-NBR	B side (for vacuum pressure switching)
3	Body	Zinc die-cast	—
4	Adaptor plate	Resin	White
5	Pilot adaptor	Resin	White
6	Pilot valve assembly	—	—
7	Body cover	Resin	White
8	Restrictor block assembly <small>(Note)</small>	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.

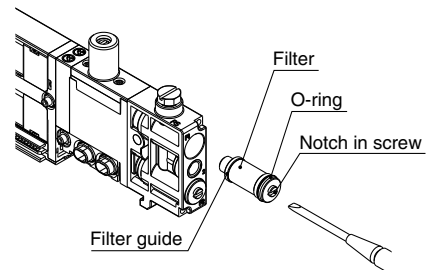
Component Parts

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.

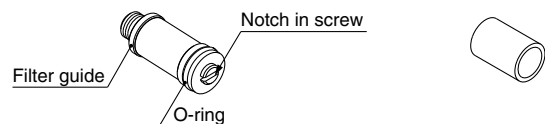
- Using a precision driver, remove the filter assembly (12 or 14) from the main unit.
- Turn the filter guide by hand and remove.
- Replace the filter (13 or 15) and gently hand tighten the filter guide. At this time, check that there is no foreign matter on the O-ring of the filter assembly.
- Return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



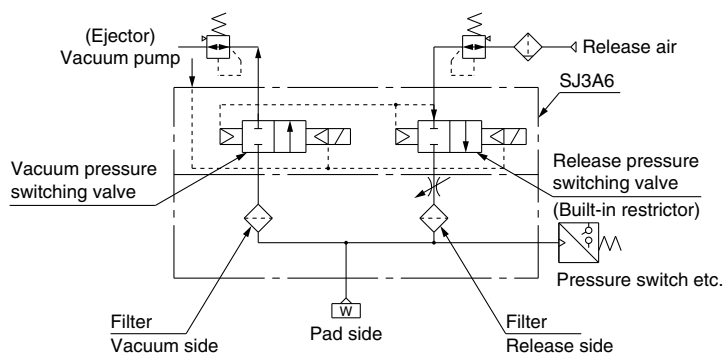
After tightening the plug (M-5P) with a tightening torque of 1 N·m, or manually tightening, use the tightening tool and tighten it by 1/4 turn.

12, 14 Filter assembly (with filter)

13, 15 Filter (5 pcs. included)



Adsorbing and Transferring System Circuit Example



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



How to Order

● Vacuum release valve manifold with restrictor

SS3J3-V60 - **05** **U**

Vacuum release valve with restrictor type

Connector type

Symbol	Mounting position	Note
FD	D-sub connector	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)	
GD	Flat ribbon cable (PC wiring, with power supply terminal)	Serial wiring
S <input type="checkbox"/>	EX180 serial transmission	
S6B	EX510 serial transmission	

Note) Refer to pages 10, 26, 34, and 42 for details.

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 page 10.

●DIN rail length specified

Nil	Standard length	Specify a longer rail than the standard length.
3	3 stations	
16	16 stations	

* Specify the valve stations not exceeding the maximum stations.

●SUP/EXH block mounting position

U	U side (2 to 10 stations)
D	D side (2 to 10 stations)
B	Both sides (2 to 16 stations)
M*	Special specifications

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

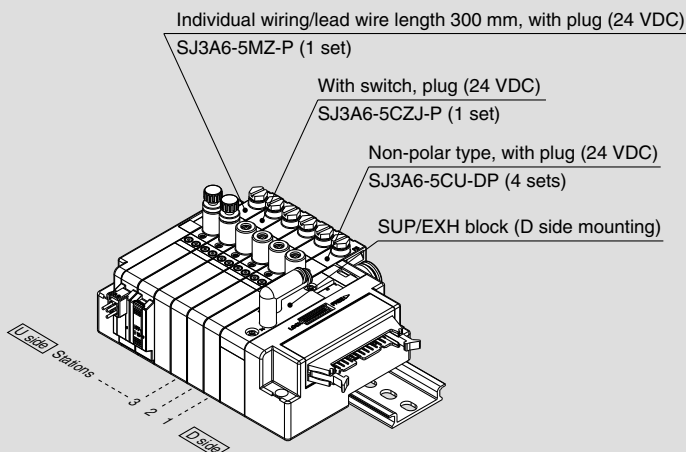
●SUP/EXH block fitting spec.

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 Valve 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.

●Valve stations

F: D-sub connector

Symbol	Stations
02	2 stations
12	12 stations

PG: Flat ribbon cable (20 pins)

Symbol	Stations
02	2 stations
09	9 stations

J: Flat ribbon cable (PC wiring)

Symbol	Stations
02	2 stations
08	8 stations

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

Symbol	Stations
02	2 stations
08	8 stations

S: EX180 serial transmission

Symbol	Stations	Note
02	2 stations	There are limitations on the station number, depending on the serial type. Refer to page 34 for details.
16	16 stations	

P: Flat ribbon cable (26 pins)

Symbol	Stations
02	2 stations
12	12 stations

PH: Flat ribbon cable (10 pins)

Symbol	Stations
02	2 stations
04	4 stations

S6B: EX510 serial transmission

Symbol	Stations
02	2 stations
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] Note 1)

SJ3A6 - 5 M Z - P

Note) Refer to pages 74 and 75 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.

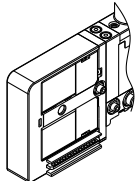
Rated voltage

5	24 VDC
6	12 VDC

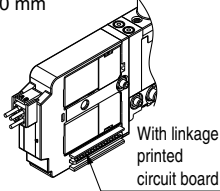
* Only 24 VDC is available for manifolds compatible with serial wiring and PC wiring.

Connector entry

C: Dedicated for centralized wiring

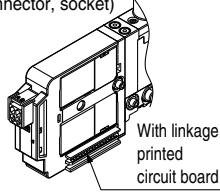


M: Individual wiring, With lead wire
Length 300 mm



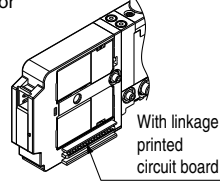
With linkage printed circuit board

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



With linkage printed circuit board

MO: Individual wiring, Without connector



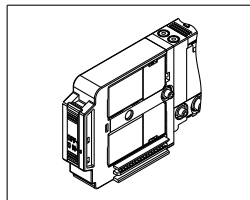
With linkage printed circuit board

Light/surge voltage suppressor

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

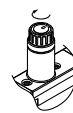
* When the types with power saving circuit, with switches, and/or individual wiring are used, the non-polar type cannot be selected.
* "Z" is +COM. spec.

With switch

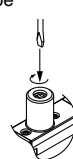


Needle operation

Nil: Manual




D: Slotted locking type




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

PS port for detection

Nil: M5 x 0.8



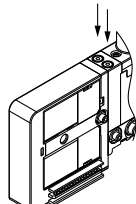
P: With plug (M-5P)



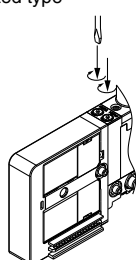
* When mounting a pressure sensor etc., select "Nil."

Manual override

Nil: Non-locking push type



D: Push-turn locking slotted type



* 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 back page 8.

Note 2) The electrical connection to the manifold will be +COM. spec. when light/surge voltage suppressor is "Z" (Polar type).

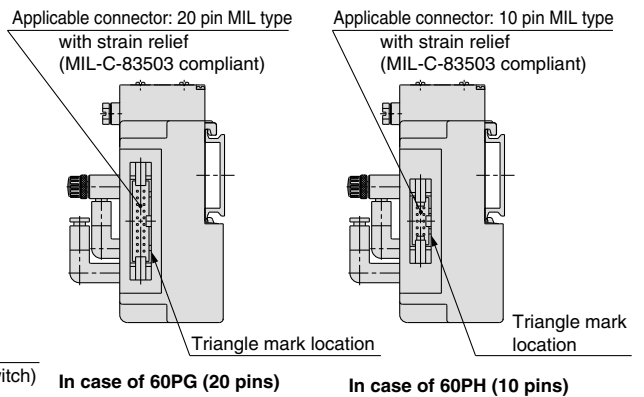
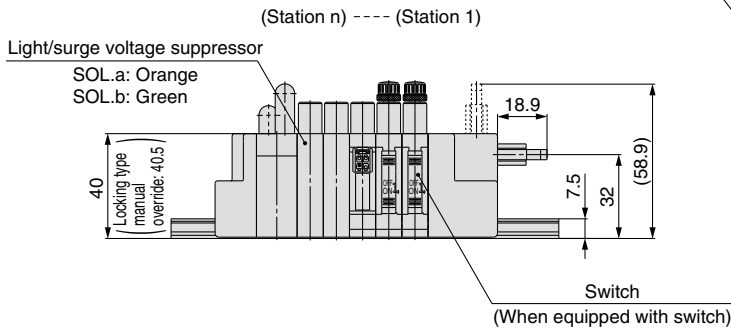
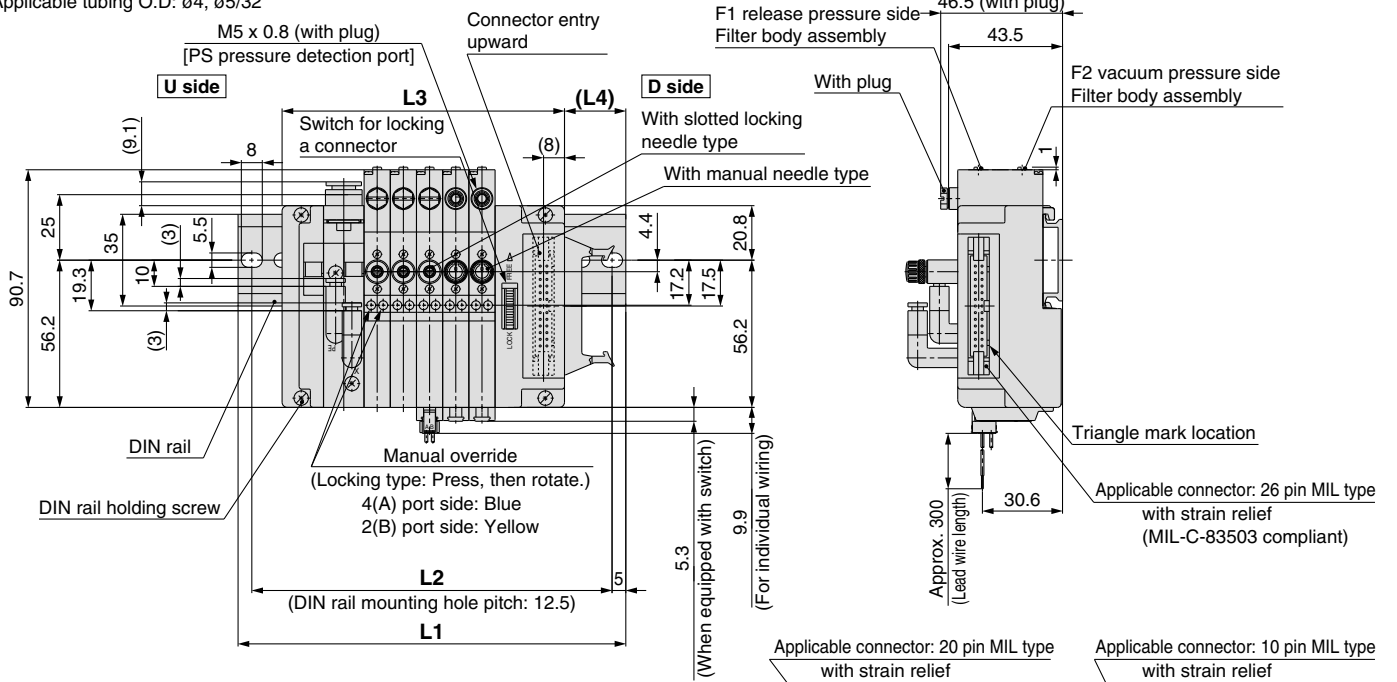
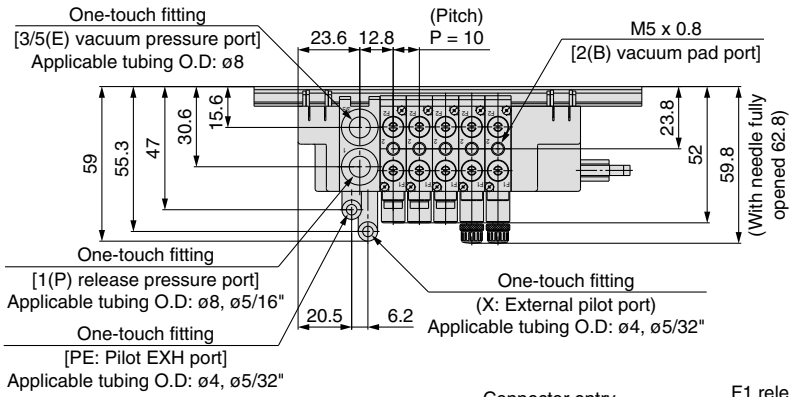
Note 3) There is no valve block switch for linking the neighboring valve, etc. to the 3 position 3 port solenoid valve with restrictor. Consult SMC if you wish to use the SJ2000/3000 valve with a valve block switch, or an end block or SUP/EXH block assembly.

Series SJ3A6

Dimensions

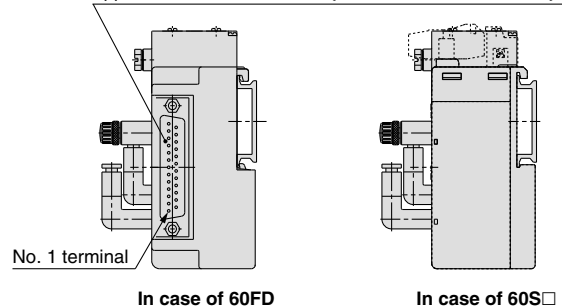
SS3J3-V60 □ $\frac{1}{2}$ - Stations U/D/B

□ D
□ JD
□ FD
□ S
□ S6B



Since DIN rail dimensions are the same as the SS5J3-60□ series, refer to the following pages.
For D-sub connector: Page 15, 16
For flat ribbon cable: Page 20, 21
For EX180 serial wiring: Page 38, 39
For EX510 serial wiring: Page 46, 47

Applicable connector: D-sub {JIS-X-5101, MIL-C-24308} equivalent



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



How to Order

● Individual wiring manifold

SS3J3-V60-05 U □ □

Vacuum release valve with restrictor type

Valve stations

Symbol	Stations
02	2 stations
⋮	⋮
20	20 stations

SUP/EXH block mounting position

U	U side (2 to 10 stations)
D	D side (2 to 10 stations)
B	Both sides (2 to 20 stations)
M*	Special specifications

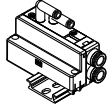
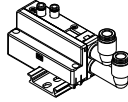
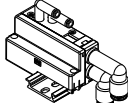
* Specify the required specifications (Including port sizes other than $\varnothing 8$) by means of the manifold specification sheet.

DIN rail length specified

Nil	Standard length	
3	3 stations	Specify a longer rail than the standard length.
⋮	⋮	
20	20 stations	

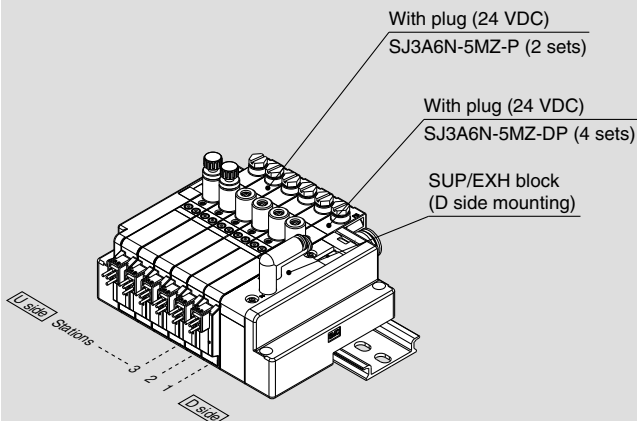
* Specify the valve stations not exceeding the maximum stations.

SUP/EXH block fitting spec.

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

How to Order Valve 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.

* 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 Solenoid Valves (3 Position 3 Port with Restrictor)

SJ3A6 **N** - **5** **M** **Z** - **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.

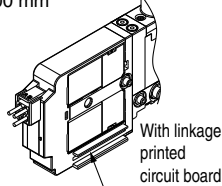
For non-plug-in only

Rated voltage

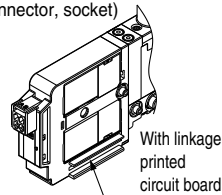
5	24 VDC
6	12 VDC

Connector entry

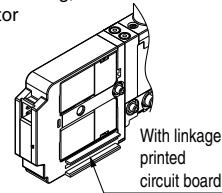
M: Individual wiring, With lead wire
Length 300 mm



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



MO: Individual wiring, Without connector



* When ordering a connector assembly separately, refer to back page 8.

With light/surge voltage suppressor (Note)

PS port for detection

Nil: M5 x 0.8



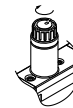
P: With plug (M-5P)



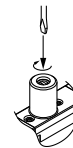
* When mounting a pressure sensor etc., select "Nil."

Needle operation

Nil: Manual



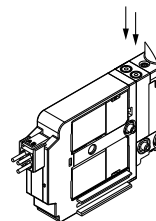
D: Slotted locking type



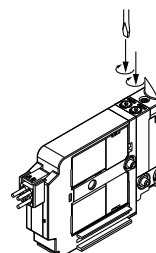
* Set operation torque to 0.3 N·m or less.

Manual override

Nil: Non-locking push type



D: Push-turn locking slotted type

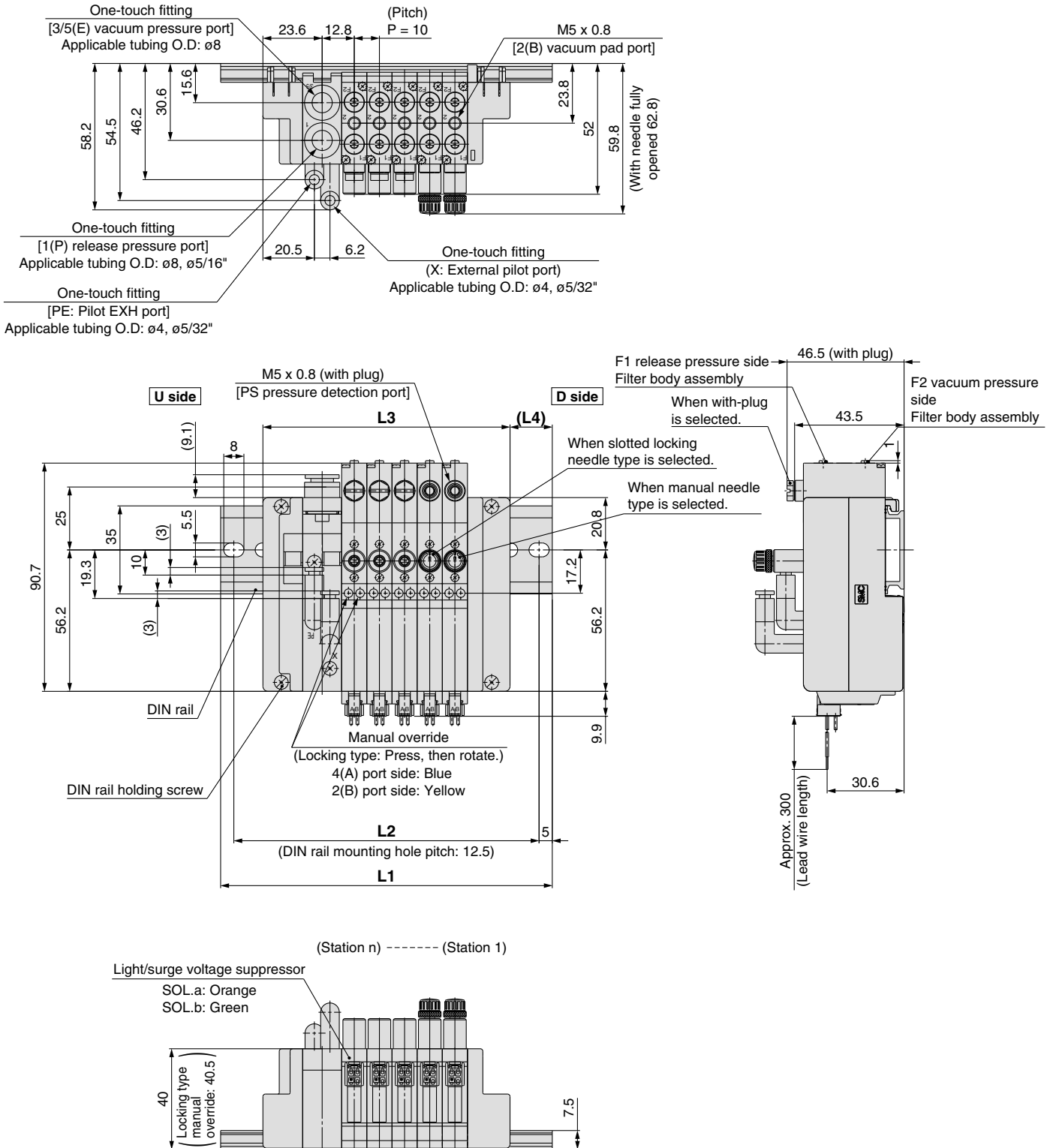


Note) The electrical connection will be +COM. spec.

Series SJ3A6

Dimensions

SS3J3-V60- Stations U/D/B



Since DIN rail dimensions are the same as the SS5J3-60-□ series, refer to pages 56 and 57.

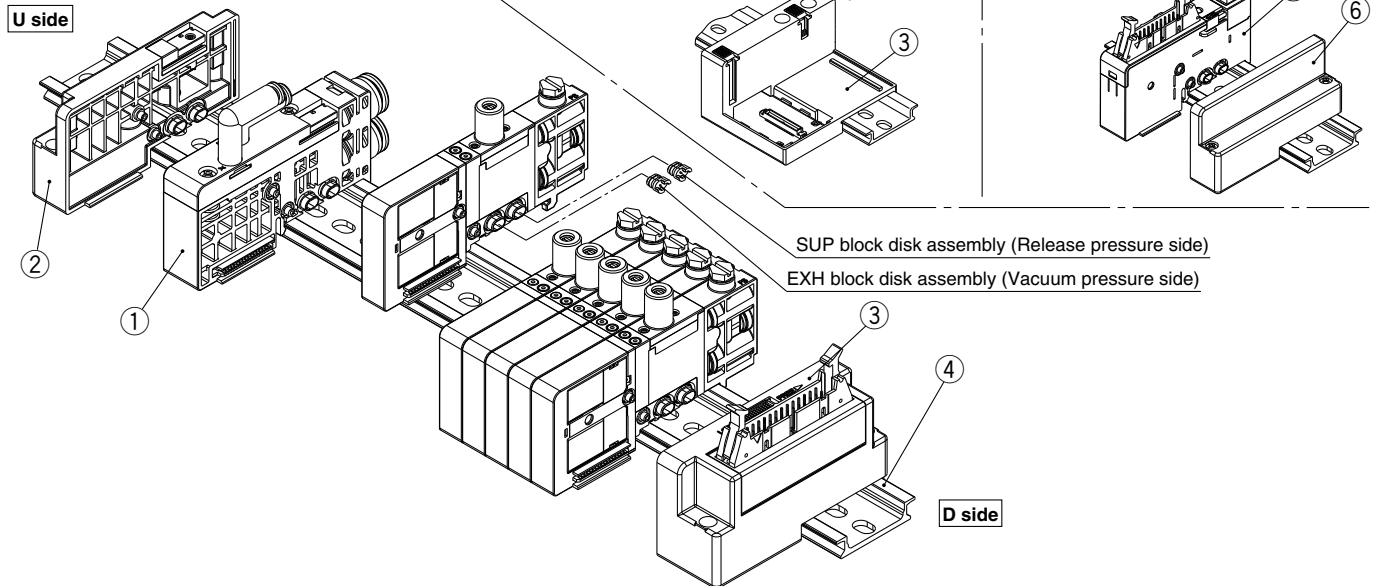
Manifold Exploded View

Type V60P (Vacuum release valve with restrictor) manifold

Note) Refer to page 50 for "How to Add Manifold Stations."

Type V60S (Plug-in, EX180 Serial wiring) manifold

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



Component Parts / Plug-in

No.	Description	Part no.	Note
1 Note 1)	SUP/EXH block assembly	External pilot specification (X, PE port: Metric size $\phi 4$ Inch size $\phi 5/32$ ")	(Metric size) C6: With $\phi 6$ one-touch fitting (straight) C8: With $\phi 8$ one-touch fitting (straight) L6: With $\phi 6$ one-touch fitting (elbow upward entry) L8: With $\phi 8$ one-touch fitting (elbow upward entry) B6: With $\phi 6$ one-touch fitting (elbow downward entry) B8: With $\phi 8$ one-touch fitting (elbow downward entry)
		For different pressures Note 2)	(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 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

Connector Block Assembly Part No.

Connector specifications	Mounting position	Part no.	Note
For D-sub connector	D side	SJ3000-42-1A-□	□: 1 (Connector upward) □: 2 (Connector lateral)
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)		SJ3000-42-5A	
For PC wiring 20 pins with power supply terminal		SJ3000-76-2A-05	

Note) SI unit is not included.

Component Parts / Non-plug-in

No.	Description	Part no.	Note
1 Note 1)	SUP/EXH block assembly	External pilot specification (X, PE port: Metric size $\phi 4$ Inch size $\phi 5/32$ ")	(Metric size) C6: With $\phi 6$ one-touch fitting (straight) C8: With $\phi 8$ one-touch fitting (straight) L6: With $\phi 6$ one-touch fitting (elbow upward entry) L8: With $\phi 8$ one-touch fitting (elbow upward entry) B6: With $\phi 6$ one-touch fitting (elbow downward entry) B8: With $\phi 8$ one-touch fitting (elbow downward entry)
		For different pressures Note 2)	(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 61.
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 internal/external pilot.

Note 3) Refer to page 60 about the SUP/EXH block disk assembly and method of handling of parts at different pressure.