Speed control valve SC*

● For ϕ 2.5 to ϕ 450 cylinders

* Refer to page 854 for line type.

Value in ( ) is for low speed or fine speed type.

Model / appearance	Model no.	Port size (Rc or R)											Applicable tube O.D.						Effective sectional area (mm²)		Flow (ℓ/min) ANR 0.5MPa		Applicable cylinder bore size (mm)	Page
		M3	M5	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	ϕ3.2	ϕ4	ϕ6	ϕ8	ϕ10	ϕ12	Free flow	Controlled flow	Free flow	Controlled flow		
● Miniature speed control valve 	SC-M3	●																	0.3	0.25	20	16	ϕ 2.5 to ϕ 10	858
	SC-M5		●																0.8	0.7 (0.1)	53	47 (6.7)	ϕ 6 to ϕ 25	
● Miniature in out Speed control valve 	SCD-M3	●																	0.2		13		ϕ 4 to ϕ 8	860
	SCD-M5		●																0.55 (0.1)		37 (6.7)		ϕ 6 to ϕ 25	
● Direct piping / elbow type 	SC3R-M5		●																1.2	0.7	80	47	ϕ 6 to ϕ 16	864
	SC3R-6			●															4.0	3.6	270	240	ϕ 15 to ϕ 32	
	SC3R-8				●														7.5	7	500	470	ϕ 20 to ϕ 50	
	SC3R-10					●													16	15	1100	1100	ϕ 32 to ϕ 75	
	SC3R-15						●												24	24	1600	1600	ϕ 40 to ϕ 110	
● Elbow type with push-in joint 	SC3W-M3-3	●											●						0.4 (0.3)	0.3 (0.08)	27 (20)	20 (5.9)	ϕ 4 to ϕ 8	866
	SC3W-M3-4	●												●					0.4 (0.3)	0.3 (0.08)	27 (20)	20 (5.9)	ϕ 4 to ϕ 8	
	SC3W-M5-3	●	●										●						1.3 (1.2)	1.2 (0.1)	87 (80)	80 (6.7)	ϕ 6 to ϕ 25	
	SC3W-M5-4		●											●					1.3 (1.2)	1.2 (0.1)	87 (80)	80 (6.7)	ϕ 6 to ϕ 25	
	SC3W-M5-6		●												●				1.3 (1.2)	1.2 (0.1)	87 (80)	80 (6.7)	ϕ 6 to ϕ 25	
	SC3W-6-4			●										●					3.2 (3.2)	2.8 (0.2)	210 (210)	190 (13)	ϕ 15 to ϕ 32	
	SC3W-6-6			●											●				4.0 (4.0)	3.6 (0.2)	270 (270)	240 (13)	ϕ 15 to ϕ 32	
	SC3W-6-8			●												●			4	3.6	270	240	ϕ 15 to ϕ 32	
	SC3W-8-6				●										●				7	6.5	470	430	ϕ 20 to ϕ 50	
	SC3W-8-8				●											●			7.5	7	500	470	ϕ 20 to ϕ 50	
	SC3W-8-10				●												●		8	7	530	470	ϕ 20 to ϕ 50	
	SC3W-10-6					●									●				10	10	650	650	ϕ 32 to ϕ 75	
	SC3W-10-8					●										●			15	14	1000	930	ϕ 32 to ϕ 75	
	SC3W-10-10					●											●		16	15	1100	1000	ϕ 32 to ϕ 75	
	SC3W-10-12					●												●	16	15	1100	1000	ϕ 32 to ϕ 75	
	SC3W-15-10						●										●		22	22	1500	1500	ϕ 40 to ϕ 100	
	SC3W-15-12						●											●	24	24	1600	1600	ϕ 40 to ϕ 100	

Value in ( ) is for low speed type.

Model / appearance	Model no.	Port size (Rc or R)											Applicable tube O.D.						Effective sectional area (mm^2)		Flow (ℓ/min) ANR 0.5MPa		Applicable cylinder bore size (mm)	Page
		M3	M5	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	φ3.2	φ4	φ6	φ8	φ10	φ12	Free flow	Controlled flow	Free flow	Controlled flow		
● Universal type with push-in joint 	SC3WU-M3-3	●											●						0.4 (0.3)	0.3 (0.08)	27 (20)	20 (5.9)	φ 4 to φ 8	870
	SC3WU-M3-4	●												●					0.4 (0.3)	0.3 (0.08)	27 (20)	20 (5.9)	φ 4 to φ 8	
	SC3WU-M5-3		●										●						1.3 (1.2)	1.2 (0.1)	87 (80)	80 (6.7)	φ 6 to φ 25	
	SC3WU-M5-4		●											●					1.3 (1.2)	1.2 (0.1)	87 (80)	80 (6.7)	φ 6 to φ 25	
	SC3WU-M5-6		●												●				1.3 (1.2)	1.2 (0.1)	87 (80)	80 (6.7)	φ 6 to φ 25	
	SC3WU-6-4			●										●					2.6 (0.5)	2.1 (0.2)	170 (32)	135 (13)	φ 15 to φ 32	
	SC3WU-6-6			●											●				3.5 (0.5)	2.3 (0.2)	230 (32)	150 (13)	φ 15 to φ 32	
	SC3WU-6-8			●												●			5	4.8	325	310	φ 15 to φ 32	
	SC3WU-8-6				●										●				3.5	2.3	230	150	φ 20 to φ 45	
	SC3WU-8-8				●											●			5	4.8	325	310	φ 20 to φ 45	
	SC3WU-8-10				●												●		8.7	8.2	565	530	φ 20 to φ 45	
	SC3WU-10-8					●										●			5	4.8	325	310	φ 32 to φ 75	
	SC3WU-10-10					●											●		8.7	8.2	565	530	φ 32 to φ 75	
	SC3WU-10-12					●												●	11.2	11.3	730	735	φ 32 to φ 75	
	SC3WU-15-10						●										●		8.7	8.2	565	530	φ 40 to φ 100	
	SC3WU-15-12						●											●	11.2	11.3	730	735	φ 40 to φ 100	
● Medium bore size type Rc1/8 to Rc1/2 	SC1-6			●															11	8	730	530	φ 20 to φ 50	876
	SC1-8				●														14	13	930	870	φ 32 to φ 75	
	SC1-10					●													39	22	2600	1500	φ 50 to φ 140	
	SC1-15						●												43	36	2900	2400	φ 80 to φ 160	
● Large bore size type Rc3/4 to Rc2 	SC-20A							●											155	125	10300	8300	φ 100 to φ 200	878
	SC-25A								●										260	280	17400	18700	φ 140 to φ 250	
	SC-32A									●									1000	1000	68000	68000	φ 300 to φ 450	
	SC-40A										●								1000	1000	68000	68000	φ 300 to φ 450	
	SC-50A											●							1500	1400	97000	91000	φ 450 to	

Value in ( ) is for low speed or fine speed type.

Model / appearance	Model no.	Port size (Rc or R)												Applicable tube O.D.							Effective sectional area (mm^2)		Flow (ℓ/min) ANR 0.5MPa		Applicable cylinder bore size (mm)	Page
		M3	M5	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2		φ1.8	φ3.2	φ4	φ6	φ8	φ10	φ12	Free flow	Controlled flow	Free flow	Controlled flow		
● Line type with push-in joint 	SCL2-04-H22													●							(0.2)	(0.15)	(13)	(10)	φ 4 to φ 25	880
	SCL2-04-H42													●		●					(0.2)	(0.15)	(13)	(10)	φ 4 to φ 25	
	SCL2-04-H24													●		●					(0.2)	(0.15)	(13)	(10)	φ 4 to φ 25	
	SCL2-04-H44															●					1.9	1.9 (0.2)	130	130 (13)	φ 4 to φ 25	
	SCL2-06-H66																●				4.5	4.5 (0.2)	300	130 (13)	φ 6 to φ 40	
	SCL2-08-H66																●				6	6	400	400	φ 20 to φ 50	
	SCL2-08-H88																	●			8	8	550	550	φ 20 to φ 50	
	SCL2-10-H88																	●			13.5	13.5	900	900	φ 32 to φ 75	
	SCL2-10-H1010																		●		16.5	16.5	1100	1100	φ 32 to φ 75	
	SCL2-10-H1212																			●	18	18	1200	1200	φ 32 to φ 75	
● In out / line type with push-in joint  	SCD2-04-H22													●							-	(0.15)	-	(10)	φ 4 to φ 25	880
	SCD2-04-H42													●		●					-	(0.15)	-	(10)	φ 4 to φ 25	
	SCD2-04-H44															●					-	1.5 (0.2)	-	100 (13)	φ 4 to φ 25	
	SCD2-06-H66																●				-	3.7 (0.2)	-	250 (13)	φ 6 to φ 40	
	SCD2-08-H66																●				-	5	-	330	φ 20 to φ 50	
	SCD2-08-H88																	●			-	6	-	400	φ 20 to φ 50	
	SCD2-10-H88																	●			-	11	-	750	φ 32 to φ 75	
	SCD2-10-H1010																		●		-	12.5	-	850	φ 32 to φ 75	
	SCD2-10-H1212																			●	-	13	-	900	φ 32 to φ 75	
● Needle valve  	SCL2-N-04-H44-010															●					-	0.2	-	13	-	884
	SCL2-N-04-H44-050															●					-	0.7	-	50	-	
	SCL2-N-06-H66-010																●				-	0.2	-	13	-	
	SCL2-N-06-H66-050																●				-	0.7	-	50	-	
	SCL2-N-06-H66-150																●				-	2.2	-	150	-	
	SCL2-N-08-H66-300																●				-	4.5	-	300	-	
	SCL2-N-08-H88-300																	●			-	4.5	-	300	-	

Safety precautions

Always read this section before starting use.
Refer to Intro 67 for general precautions, and to "⚠ Safety precautions" in this section for details on each series.

Design & Selection

⚠CAUTION

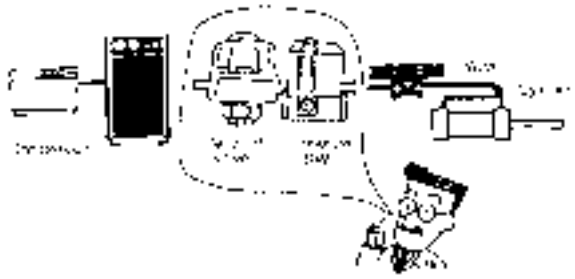
■ Use this product in accordance with the specifications range.
Consult with CKD when using the product for special applications.
- Use with exceeding the specifications range may result in insufficient performance, and safety can not be secured.
- This product could not use in special applications and environment.
  For example, use for special applications including nuclear energy, railway, aircraft, marine vessel, vehicle, medical equipment, equipment, or applications coming into contact with beverage or food, amusement equipment, emergency shutoff circuits, press machine, brake circuits, or for safeguard.

■ Confirm that the product will withstand the working environment.
- This product cannot be used in environments where functional obstacles could occur.
  Such environments include high temperatures, a chemical atmosphere, or where chemicals, vibration, moisture, water drip, or gas are present; or where ozone is generated.
- Do not use the product in the place that the product could directly contact with coolant or spatter, etc.,

■ Understand compressed air features before designing a pneumatic circuit.
- The same functions as mechanical, hydraulic, and electrical methods cannot be anticipated if instantaneous service interruption and holding are required during an emergency stop.
- Pop-out, air discharge, or leakage due to air compression and expansion could occur.

■ This valve can not be used as a stop valve that has no leakage. Slight leakage is allowed in product specifications.

■ Install a "pressure switch" and "shut-off valve" on the device's compressed air supply side.
- The pressure switch will disable operation until set pressure is reached. The shut-off valve will exhaust compressed air in the pneumatic pressure circuit, and will prevent accidents caused by operation of pneumatic components by residual pressure.



■ Confirm that PTFE can be used.
The sealant contains PTFE (polytetrafluoroethylene resin) powder. Check that this poses no problem during use.

■ Indicate the maintenance conditions in the device's instruction manual.
- The product's function can drop markedly with working status, working environment, and maintenance, and can prevent safety from being attained. With correct maintenance, the product functions can be used to the fullest.

■ Consult with CKD if ozone could occur in supplied air.
(Ozone proof products are available.)

■ Rubber parts deteriorate and life is shortened if ultra dry air is used.

Installation & Adjustment

Piping

⚠CAUTION

■ Do not remove the package or seal cap on the piping port until just before piping the product.
- If the piping port cap is removed from the piping port before piping work is started, foreign matter could enter the pneumatic component from the piping port and result in faults or faulty operation.

■ When connecting pipes, wrap sealing tape in the opposite direction from threads starting 2 mm inside from the end of piping threads.
- If sealing tape protrudes from pipe threads, it could be cut when screwed in. This could cause the tape to enter the pneumatic components and lead to faults.

■ M3 and M5 screws are sealed with the gasket.

■ Handling push-in joints and tubes
- Refer to Cautions of joint and tube, and "Safety Precautions" (pages 936 to 939) for handling push-in joints and tubes.

■ Always flush just before piping pneumatic component.
- Any foreign matter that has entered during piping must be removed so it does not enter the pneumatic component.

■ When supplying compressed air for the first time after connecting pipes, do not apply high pressure suddenly.
- Piping connection could be dislocated or the piping tube fly off, leading to accidents.

■ After connecting piping, check pipe connections for air leaks before supplying compressed air.
- Apply a leakage detection agent on pipe connections with a brush, and check for air leaks.

■ Apply recommended tightening torque when connecting pipes.
- To prevent air leak and to protect thread.
- Tighten by hand at first so that threads are not damaged, then use a tool.
- Do not tighten while pressure is applied.

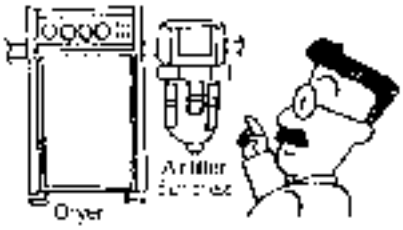
(Recommended tightening torque)

Port thread	Tightening torque N·m
M3	0.3 to 0.6
M5	1.0 to 1.5
Rc1/8	3 to 5
Rc1/4	6 to 8
Rc3/8	13 to 15
Rc1/2	16 to 18
Rc3/4	19 to 40
Rc1	41 to 70

■ Pipe so that piping connections do not become dislocated due to device movement, vibration, or tension, etc.
- Control of actuator speed will be disabled if piping on the exhaust side of the pneumatic circuit is disengaged.
- When using the chuck holding mechanism, the chuck will be released creating a hazardous state.

■ Ensure spaces around the pneumatic component for installation, removal, wiring, and piping work.

■ Install an air filter just before the pneumatic component in the circuit.



■ Check that lock nuts are not loose.
- Actuator speed cannot be controlled if the lock nut is loose.

■ Check the needle valve speed of rotation.
- The needle valve has dislocation prevention that could break if the needle is turned too far. Check the number of turns for the product used.

■ Confirm the flow direction.
- If the product is installed in reverse, speed adjustment will not function and the actuator pop out, posing hazards.

■ Fully close the needle, and open to adjust speed.
- If the needle is opened, the actuator could pop out suddenly and pose a hazard. Open the needle after confirming that it is fully closed.
- The needle closes when turned to the right and opens when turned to the left.

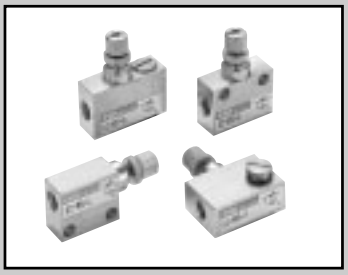
■ Avoid use in applications involving continuous turning or swaying.
● Joints could be damaged.

■ Avoid using this product in places with high vibration or impact.

During Use & Maintenance

⚠WARNING

■ Before replacing tubing, stop the air flow and confirm that no pressure remains.



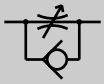
Miniature speed control valve

SC-M3/M5

Compact and light weight for space saving piping. Low speed and fine speed type are also available.

JIS symbol

SC-M5-S
SC-M5-F



SC-M5-L
SC-M5-A

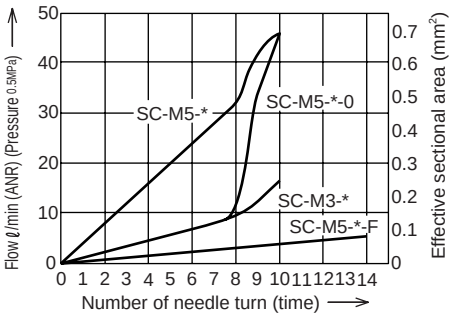
RoHS CAD

Specifications

Descriptions		SC-M3-S	SC-M3-L	SC-M3-F	SC-M3-A	SC-M5-S	SC-M5-L	SC-M5-F	SC-M5-A
Working fluid		Compressed air							
Max. working pressure MPa		0.7							
Min. working pressure MPa		0.1							
Withstanding pressure MPa		1.05							
Fluid temperature ℃		5 to 60 (no freezing) Note 1							
Ambient temperature ℃		0 to 60 (no freezing)							
Port size		M3				M5			
Product weight g		1.7	1.5	2.4	2.4	5.6 (6)	4.8 (5.2)	7.9 (8.3)	8.5 (8.9)
Applicable cylinder bore size mm		ϕ 2.5 to ϕ 10				ϕ 6 to ϕ 25			
Number of needle turn		10				10 (14)			
Free flow	Flow ℓ/min (ANR)	20				53			
	Effective sectional area mm^2	0.3				0.8			
Controlled flow	Flow ℓ/min (ANR)	16				47 (6.7)			
	Effective sectional area mm^2	0.25				0.7 (0.1)			

Note 1: Freezing could occur by adiabatic expansion depending on air quality (dew point).
Note 2: Flow rate is the atmospheric pressure conversion value at pressure 0.5MPa.
Note 3: Value in ( ) is for fine speed type.

Flow characteristics



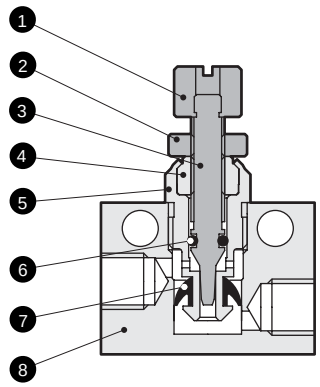
How to order

SC – M3 – A – I F

Symbol	Descriptions
A Port size	
M3	M3 x 0.5
M5	M5 x 0.8
B Shape	
S	Straight
L	Elbow
F	Flat
A	Adjustable
C Control method	
Blank	Meter-out type
I	Meter-in type
D Flow characteristics	
Blank	Standard type
O	Low speed type (only M5)
F	Fine speed type (only M5)

Note 1: For fine speed type, outside of lock nut is painted with blue.
Note 2: Model no. of SC-*-S-I can not be selected. Install SC-*-S with reversing IN and OUT side.

Internal structure and parts list

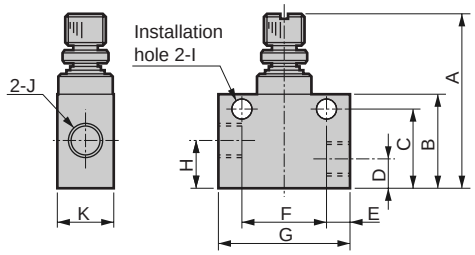


No.	Parts name	Material
1	Knob	Aluminum alloy
2	Lock nut	Aluminum alloy
3	Needle	Stainless steel
4	Needle guide	Aluminum alloy
5	Check bracket	Aluminum alloy
6	O ring	Nitrile rubber
7	Packing seal	Hydrogen nitrile rubber
8	Body	Aluminum alloy

Note: For fine speed type, material of needle guide is stainless steel.

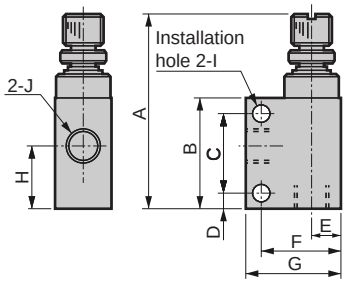
Dimensions CAD

● SC- M3/M5 -S (straight)



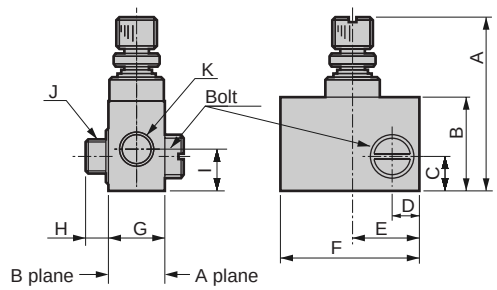
Model no.	A	B	C	D	E	F	G	H	I	J	K
SC-M3-S	18.5 (max21)	9	7.3	2.5	2.5	8	13	4.2	ϕ2.2	M3 x 0.5	5
SC-M5-S	25 (max28.5)	13.5	11.2	4.2	3.5	12	19	6.5	ϕ3.2	M5 x 0.8	8

● SC- M3/M5 -L (elbow)



Model no.	A	B	C	D	E	F	G	H	I	J
SC-M3-L	20.3 (max22.8)	10.5	7	1.9	2.5	6.5	9	5.7	ϕ2.2	M3 x 0.5
SC-M5-L	27.5 (max31)	16	11.5	2.2	4.3	11.2	13.5	9	ϕ3.2	M5 x 0.8

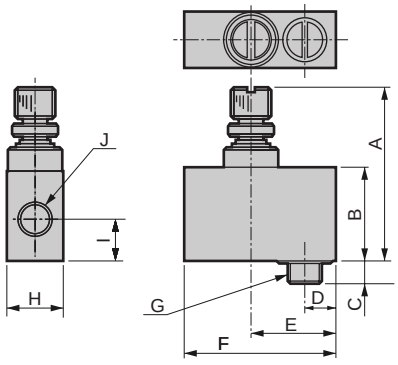
● SC- M3/M5 -F (flat)



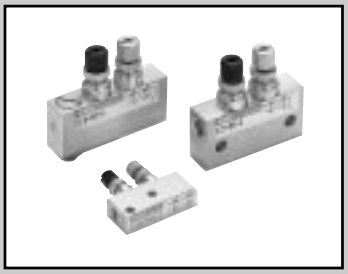
Model no.	A	B	C	D	E	F	G	H	I	J	K
SC-M3-F	18.5 (max21)	9	3.4	2.7	6.5	13	5	3	4.2	M3 x 0.5	M3 x 0.5
SC-M5-F	25 (max28.5)	13.5	5.1	4	10.5	20	8	3.5	6.5	M5 x 0.8	M5 x 0.8

Note: The bolt can be removed from the main body and installed from either side the A or B.

● SC- M3/M5 -A (adjustable)



Model no.	A	B	C	D	E	F	G	H	I	J
SC-M3-A	18.5 (max21)	9	3	3.2	8	14.5	M3 x 0.5	5	4.2	M3 x 0.5
SC-M5-A	25 (max28.5)	13.5	3.5	4.5	12.5	22	M5 x 0.8	8	6.5	M5 x 0.8



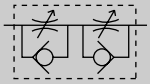
Miniature in-out speed control valve

SCD-M3/M5 Series

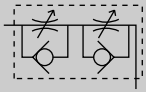
Small, light weight and thin body. Speed control valve for air supply and exhaust.

JIS symbol

● SCD-M*-S (Straight)



● SCD-M*-A (Adjustable)



RoHS CAD

Specifications

Descriptions	SCD-M3-S	SCD-M3-A	SCD-M5-S	SCD-M5-A	SCD-M5-S-F	SCD-M5-A-F
Working fluid	Compressed air					
Max. working pressure MPa	0.7					
Min. working pressure MPa	0.1					
Withstanding pressure MPa	1.05					
Fluid temperature ℃	5 to 60 (no freezing Note 1)					
Ambient temperature ℃	0 to 60 (no freezing)					
Port size	M3 x 0.5		M5 x 0.8			
Applicable cylinder bore size mm	φ 4 to φ 8		φ 6 to φ 25			
Number of needle turn	10				14	
Product weight g	3.1	3.9	10	11.7	10.8	12.5
Control flow ℓ /min (ANR)	13		37		6.7	
Effective sectional area mm²	0.2		0.55		0.1	

Note 1: Freezing could occur by adiabatic expansion depending on air quality (dew point).
Note 2: Flow rate is the atmospheric pressure conversion value at pressure 0.5MPa.

How to order

SCD - M3 - S - F

Model no.

Ⓐ Port size

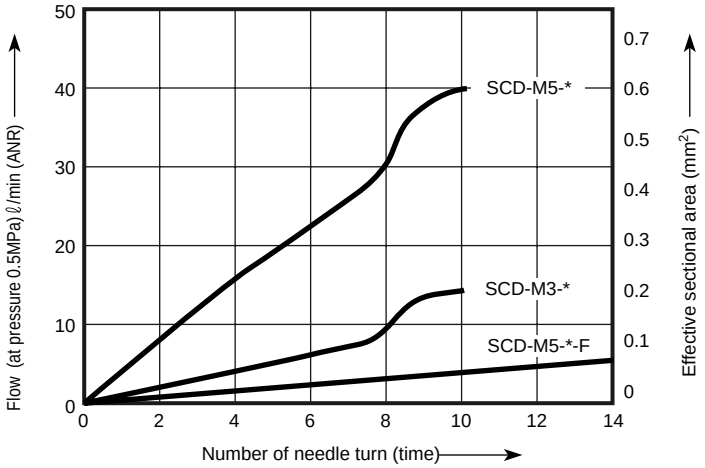
Ⓑ Shape

Ⓒ Flow characteristics

Symbol	Descriptions
Ⓐ Port size	
M3	M3 x 0.5
M5	M5 x 0.8
Ⓑ Shape	
S	Straight
A	Adjustable
Ⓒ Flow characteristics	
Blank	Standard type
F	Fine speed type (only M5)

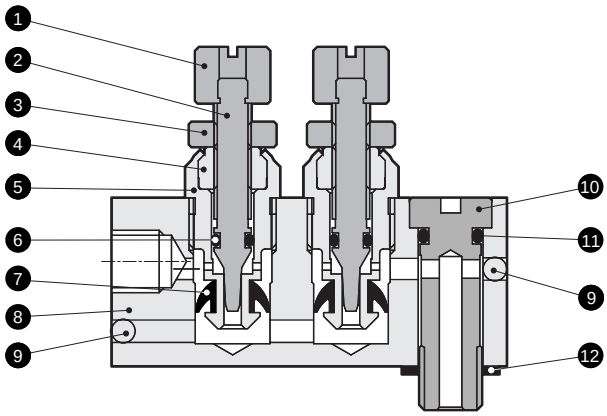
Note 1: For fine speed type, outside of lock nut is painted with blue.

Flow characteristics



Internal structure and parts list

● Adjustable type

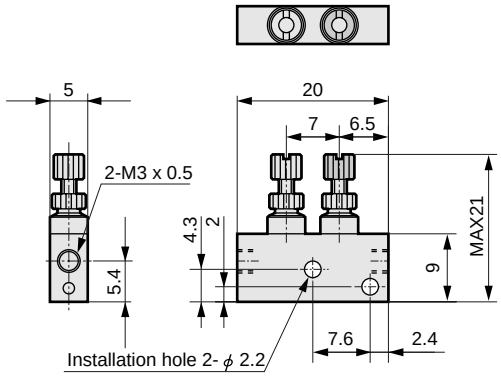


No.	Parts name	Material
1	Knob	Aluminum alloy
2	Needle	Stainless steel
3	Lock nut	Aluminum alloy
4	Needle guide	Aluminum alloy (Stainless steel for fine speed type)
5	Check bracket	Aluminum alloy
6	O ring	Nitrile rubber
7	Packing seal	Hydrogen nitrile rubber
8	Body	Aluminum alloy
9	Steel ball	Stainless steel
10	Bolt	Brass
11	O ring	Nitrile rubber
12	Gasket	Steel + nitrile rubber

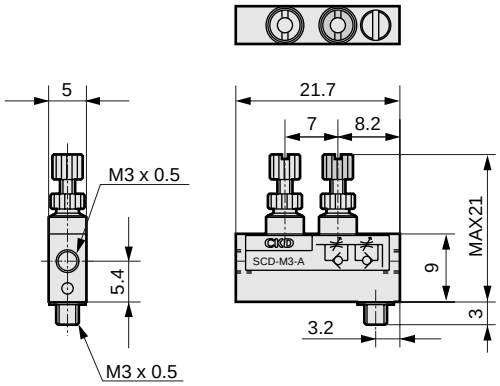
Note 1: For outside of handle, one side is painted with black.
(For adjustable type, black indicates meter in side)
Note 2: Same materials are used for straight type (without ⑩⑪⑫).
Note 3: Brass parts are plated with electroless nickeling.

Dimensions CAD

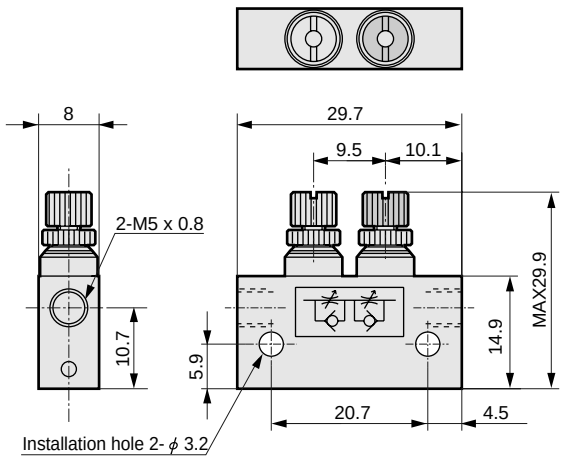
● SCD-M3-S (straight)



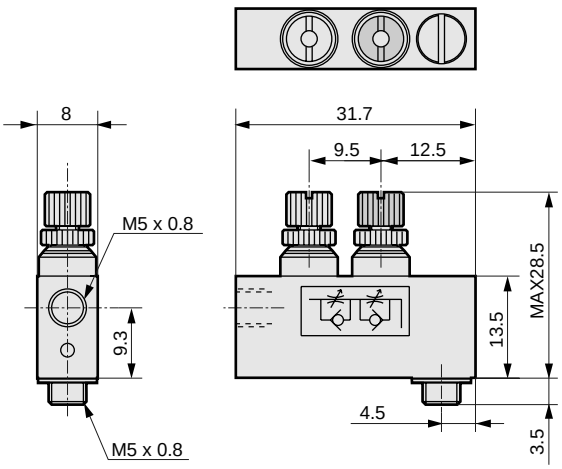
● SCD-M3-A (adjustable)



● SCD-M5-S (straight)



● SCD-M5-A (adjustable)



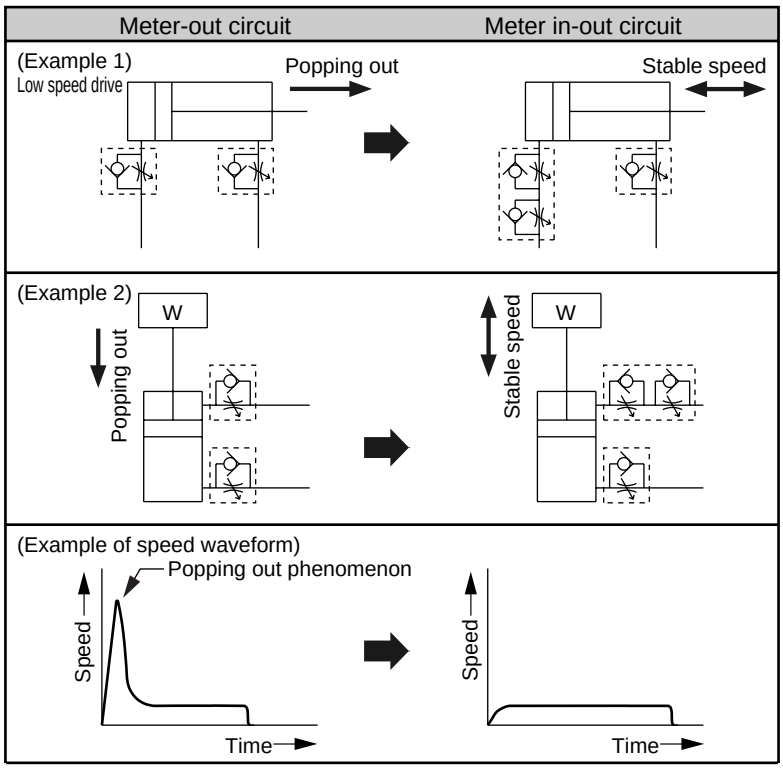
Applications

1 Speed is stabilized by controlling with an in-out speed control valve.

[E.g. 1] In low-speed control with a single rod air cylinder, the cylinder pops out immediately after the PUSH side operates if a meter-out circuit is used.

[E.g. 2] At vertical installation, the cylinder pops out immediately after operation because of the load's weight.

Speed is stabilized by using a meter in-out circuit.



(Cause of popping out)

When using the meter-out circuit, flow on the exhaust side is restricted, so both sides reach the same pressure immediately after the valve is switched. The thrust equivalent to the difference in the piston's pressurized area or the thrust equivalent to the load's weight causes popping out.

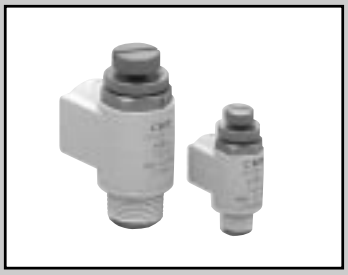
When the piston moves, exhaust pressure rises, speed decelerates, and the set speed is reached.

If popping out is caused by this phenomenon, fluctuation in sudden thrust is suppressed by restricting the flow on the supply side, and popping out is resolved.

2 Hazards can be prevented by suppressing popping out at beginning of movement after residual pressure is released.

3 Reciprocating speed control is possible with a single acting cylinder.

4 The flow rate of the air operated valve and drip prevention valve can be finely adjusted.



Speed control valve Direct piping elbow type

SC3R Series

● Port size: M5, Rc1/8 to Rc1/2

JIS symbol

RoHS CAD

Specifications

Descriptions		SC3R-M5	SC3R-6	SC3R-8	SC3R-10	SC3R-15
Working fluid		Compressed air				
Max. working pressure MPa		1.0				
Min. working pressure MPa		0.05				
Withstanding pressure MPa		1.5				
Fluid temperature ℃		5 to 60 (no freezing) Note 2				
Ambient temperature ℃		0 to 60 (no freezing)				
Port size		M5	Rc1/8	Rc1/4	Rc3/8	Rc1/2
Product weight g		14	40	70	110	190
Applicable cylinder bore size mm		φ6 to φ16	φ15 to φ32	φ20 to φ50	φ32 to φ75	φ40 to φ110
Number of needle turn		11	14	14	14	16
Free flow	Flow ℓ/min (ANR)	80	270	500	1100	1600
	Effective sectional area mm²	1.2	4.0	7.5	16	24
Controlled flow	Flow ℓ/min (ANR)	47	240	470	1100	1600
	Effective sectional area mm²	0.7	3.6	7.0	15	24

Note 1: Flow rate is the atmospheric pressure conversion value at pressure 0.5MPa.
Note 2: Freezing could occur by adiabatic expansion depending on air quality (dew point).

SC3R – **M5** – **I**

Ⓐ Port size

Ⓑ Option

Symbol	Descriptions
Ⓐ Port size	
M5	M5 x 0.8
6	Rc1/8
8	Rc1/4
10	Rc3/8
15	Rc1/2
Ⓑ Option	
I	Meter-in type
Blank	Meter-out type

Ozone specifications (Ending 9)

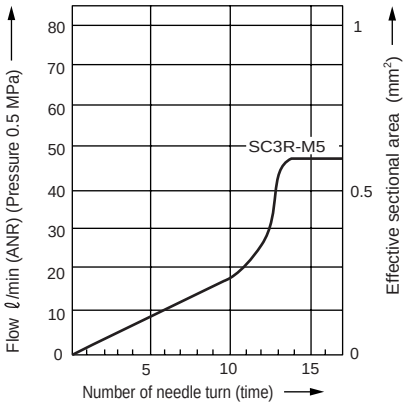
SC3R - ····· - **P11**

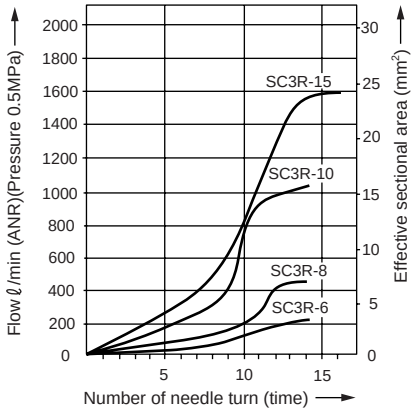
Clean room specifications (catalog No. CB-033SA)

● Dust generation preventing structure for use in cleanrooms

SC3R - ····· - **P7***

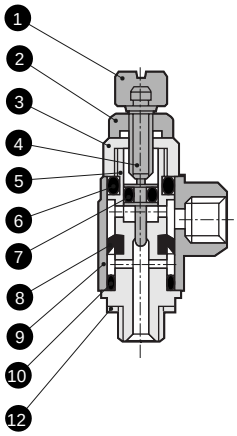
Flow characteristics



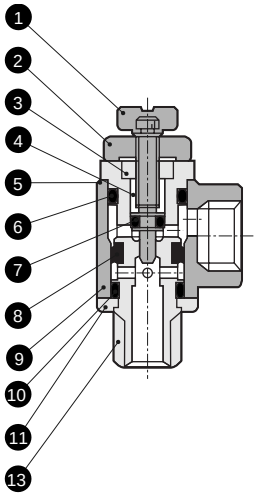


Internal structure and parts list

● SC3R-M5



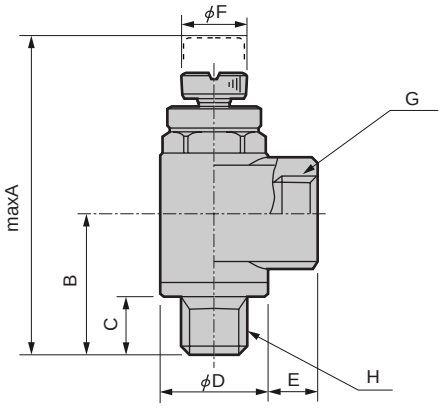
● SC3R-6 to 15



No.	Parts name	Material
1	Knob	Brass
2	Lock nut	Brass
3	Gland nut	Brass
4	Needle	Stainless steel
5	Rotary shaft	Brass
6	O ring	Nitrile rubber
7	O ring	Nitrile rubber
8	Packing seal	Hydrogen nitrile rubber
9	Rotor	Zinc alloy die casting (brass)
10	O ring	Nitrile rubber
11	Snap ring	PBT resin
12	M5 gasket	Nitrile rubber + steel
13	Sealant	Fluorine system resin

* Material in ( ) is for SC3R-M5
* All the brass parts are plated with electroless nickeling

Dimensions



Model no.	A	B	C	D	E	F	G	H
SC3R-M5	33.4	13.5	4.0	10.0	4.7	6	M5 x 0.8	M5 x 0.8
SC3R-6	42.5	18.8	7.7	15.0	6.7	9	Rc1/8	R1/8
SC3R-8	51.2	23.2	10.7	19.0	9.4	12	Rc1/4	R1/4
SC3R-10	60.2	27.0	11.7	22.5	10.0	14	Rc3/8	R3/8
SC3R-15	66.7	30.0	14.7	27.0	13.7	16	Rc1/2	R1/2

Speed control valve Elbow type with push-in joint

SC3W Series

● Port size: M3, M5, R1/8 to R1/2

JIS symbol

RoHS CAD

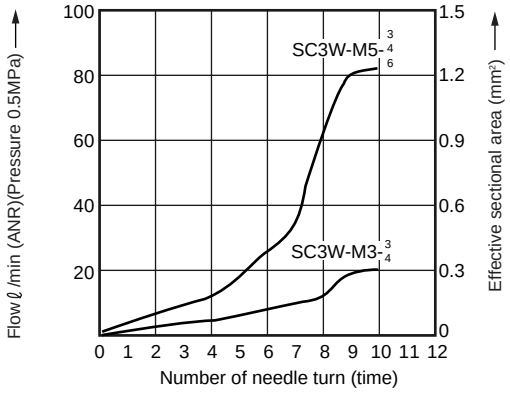
Specifications

Descriptions		SC3W																	
		SC3W-M3		SC3W-M5			SC3W-6			SC3W-8			SC3W-10				SC3W-15	
Applicable tube outer diameter mm		φ3.2	φ4	φ3.2	φ4	φ6	φ4	φ6	φ8	φ6	φ8	φ10	φ6	φ8	φ10	φ12	φ10	φ12
Working fluid		Compressed air																
Max. working pressure MPa		1.0																
Min. working pressure MPa		0.05																
Withstanding pressure MPa		1.5																
Fluid temperature ℃		5 to 60 (no freezing Note 3)																
Ambient temperature ℃		0 to 60 (no freezing)																
Port size		M3		M5			R1/8			R1/4			R3/8				R1/2	
Product weight g		4.9	5.7	7.9	8.8	9.6	25	26	27	50	51	54	63.7	75	78	81	134	138
Number of needle turn (cycle)		10 (14) and over		10 (16) and over			10 (15) and over			13 and over			13 and over				14 and over	
Free flow	Flow ℓ/min.(ANR)	27 (20)		87 (80)			210 (210)	270 (270)	270	470	500	530	650	1000	1100		1500	1600
	Effective sectional area mm²	0.4 (0.3)		1.3 (1.2)			3.2 (3.2)	4.0 (4.0)	4.0	7	7.5	8	10	15	16		22	24
Controlled flow	Flow ℓ/min.(ANR)	20 (5.9)		80 (6.7)			190 (13)	240 (13)	240	430	470	470	650	930	1000		1500	1600
	Effective sectional area mm²	0.3 (0.08)		1.2 (0.1)			2.8 (0.2)	3.6 (0.2)	3.6	6.5	7	7.0	10	14	15		22	24

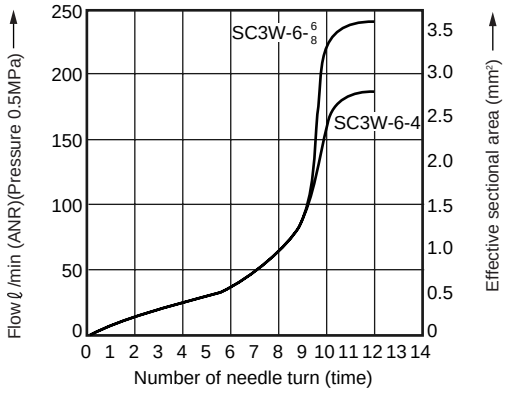
Note 1: Flow rate is the atmospheric pressure conversion value at pressure 0.5MPa.
Note 2: Value in ( ) is for low speed type.
Note 3: Freezing could occur by adiabatic expansion depending on air quality (dew point).

Flow characteristics

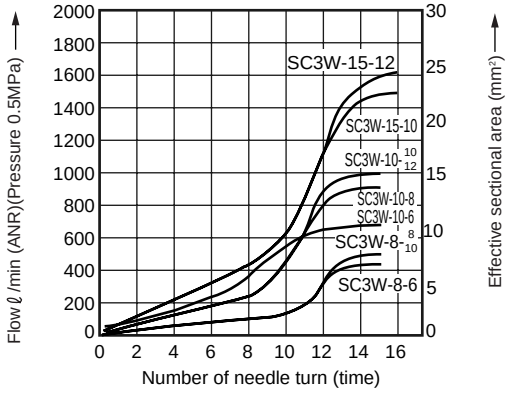
● Standard type (port size M3, M5)



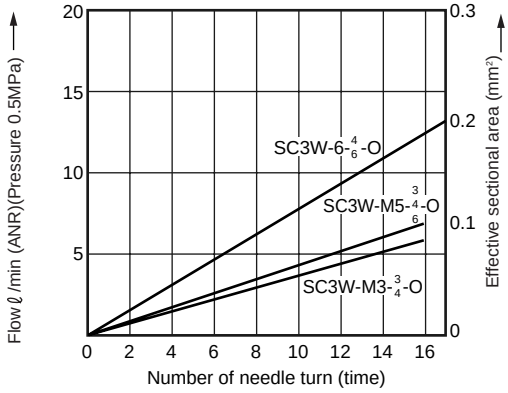
● Standard type (port size 1/8)



● Standard type (port size 1/4 to 1/2)



● Low speed type



How to order

SC3W - M5 - 4 - I

Model no.

Ⓐ Port size

Ⓑ Applicable tube outer diameter

Ⓒ Option Note 1
Note 2
Note 3

Symbol	Descriptions
Ⓐ Port size	
M3	M3 x 0.5
M5	M5 x 0.8
6	R1/8
8	R1/4
10	R3/8
15	R1/2

Ⓑ Applicable tube outer diameter

		Port size					
		M3	M5	6	8	10	15
3	ϕ 3.2	●	●				
4	ϕ 4	●	●	●			
6	ϕ 6		●	●	●	●	
8	ϕ 8			●	●	●	
10	ϕ 10				●	●	●
12	ϕ 12					●	●

Ⓒ Option

Blank	Meter-out
I	Meter-in (push ring color: black)
K	Hexagon head lock nut
O	Low speed type
P6	Copper and PTFE free

not available.

⚠ Note on model no. selection

Note 1: Options are indicated as alphabetic order.
Note 2: "K" can be selected for only port size M3, M5.
Note 3: "O" can be selected for applicable tube outer diameter "4" (ϕ4), "6" (ϕ 6) for port size M3, M5 and "6" (R1/8).

<Example of model number>

SC3W-M5-4-I

Ⓐ Port size : M5 x 0.8
Ⓑ Applicable tube outer diameter : ϕ 4
Ⓒ Option : Meter-in

Ozone specifications (Ending 9)

SC3W - ····· - **P11**

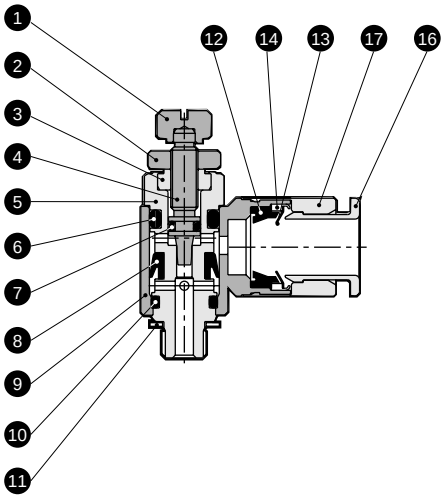
Clean room specifications (catalog No. CB-033SA)

● Dust generation preventing structure for use in cleanrooms

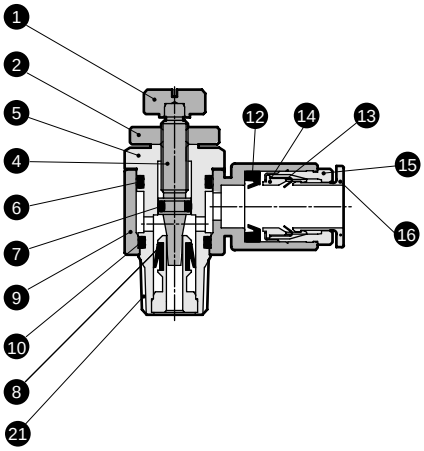
SC3W - ····· - **P7***

Internal structure and parts list

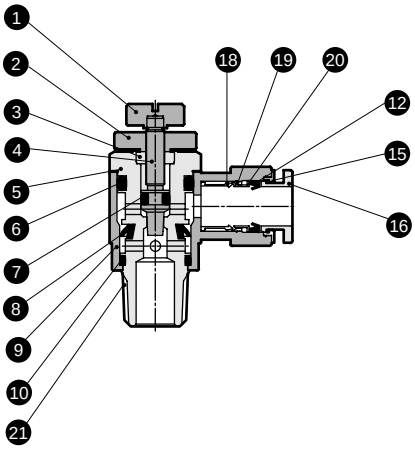
● Port size: M3, M5



● Port size: 1/8, 3/8 (only ϕ6)



● Port size: 1/4 to 1/2



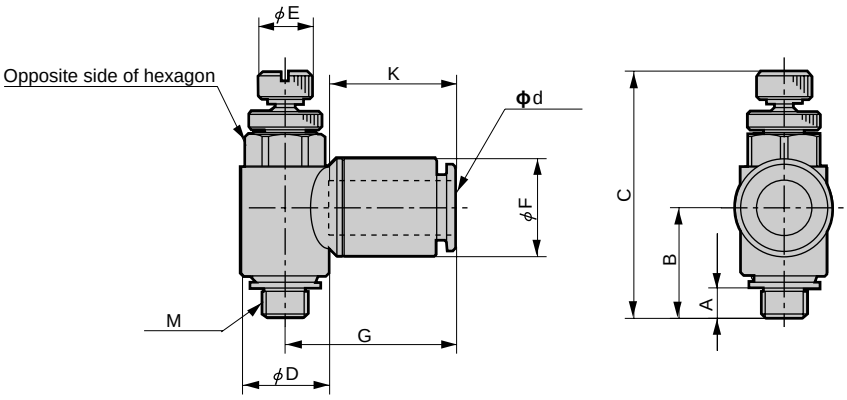
No.	Parts name	Material
1	Knob	Brass
2	Lock nut	Brass
3	Gland nut	Brass
4	Needle	Stainless steel
5	Rotary shaft	Brass (M3 is stainless steel)
6	O ring	Nitrile rubber
7	O ring	Nitrile rubber
8	Packing seal	Hydrogen nitrile rubber
9	Rotor	PBT (flame resistance resin *2)
10	O ring	Nitrile rubber

No.	Parts name	Material	
11	Gasket	Steel + nitrile rubber (only M5)	
12	Packing seal	Nitrile rubber	
13	Chuck	Stainless steel	
14	Chuck holder	M3,M5	Brass
		R1/8	polyacetal
15	Outer ring	Brass	
16	Push ring	PBT (flame resistance resin *2)	
17	Joint	Copper alloy	
18	Chucking ring	Brass	
19	Chucking guide	Brass	
20	Release ring	Brass	
21	Sealant	Fluorine system resin	

*1 All the brass parts are plated with electroless nickeling
*2 Equivalent to UL94 standards V-O

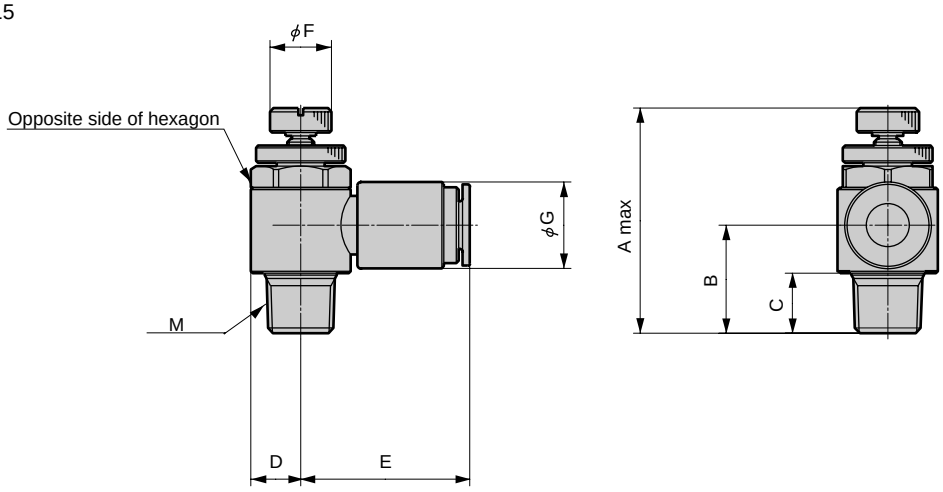
Dimensions

● SC3W-M$\begin{matrix}3\\5\end{matrix}$-*



Model no.	φd (Applicable tube O. D.)	M	A	B	C		D	E	F	G	K (tube insertion length)	Opposite side of hexagon
					MAX	MIN						
SC3W-M3-3	φ 3.2	M3 x 0.5	2.4	11.4	27.6	25.1	7.4	5	7.5	15.5	11.7	7
SC3W-M3-4	φ 4	M3 x 0.5	2.4	11.4	27.6	25.1	7.4	5	8.8	16.6	12.9	7
SC3W-M5-3	φ 3.2	M5 x 0.8	3.4	12.4	30.2	27.2	9.6	6	7.5	16.0	11.7	8
SC3W-M5-4	φ 4	M5 x 0.8	3.4	12.4	30.2	27.2	9.6	6	8.8	17.2	12.9	8
SC3W-M5-6	φ 6	M5 x 0.8	3.4	12.4	30.2	27.2	9.6	6	10.8	18.8	14.0	8

● SC3W-$\begin{matrix}6\\8\\10\\15\end{matrix}$-* (as same as low speed type/standard (SC3W-6))



Model no.	M	Applicable tube O. D.	A	B	C	D	E	F	G	Opposite side of hexagon
SC3W-6-4	R1/8	φ 4	38.4	16.2	8	7.3	23.1	9	10.0	13
SC3W-6-6		φ 6	38.4	15.7	8	7.3	24.1	9	12.5	13
SC3W-6-8		φ 8	38.4	15.4	8	7.3	25.3	9	14.5	13
SC3W-8-6	R1/4	φ 6	51.2	24.9	11	9.5	27.2	12	13.8	17
SC3W-8-8		φ 8	51.2	24.9	11	9.5	28.5	12	16.3	17
SC3W-8-10		φ 10	51.2	23.9	11	9.5	32.0	12	19.3	17
SC3W-10-6	R3/8	φ 6	52.4	23.1	12	11.3	28.3	14	12.5	19
SC3W-10-8		φ 8	60.2	29.8	12	11.3	30.3	14	16.3	19
SC3W-10-10		φ 10	60.2	30.0	12	11.3	33.8	14	19.3	19
SC3W-10-12		φ 12	60.2	29.3	12	11.3	37.8	14	21.3	19
SC3W-15-10	R1/2	φ 10	66.7	33.8	15	13.5	36.0	16	19.3	24
SC3W-15-12		φ 12	66.7	33.8	15	13.5	40.0	16	21.3	24

Flow control valve
Universal type / push in joint

SC3U Series

• Port diameter: M3, M5, R1/8 to R1/2

JIS symbol


RoHS

Specifications

Descriptions	SC3U-M3		SC3U-M5			SC3U-6			SC3U-8			SC3U-10			SC3U-15	
Applicable tube outer diameter mm	φ3.2	φ4	φ3.2	φ4	φ6	φ4	φ6	φ8	φ6	φ8	φ10	φ8	φ10	φ12	φ10	φ12
Working fluid	Compressed air															
Max. working pressure Mpa	1.0															
Min. working pressure Mpa	0.05															
Withstanding pressure Mpa	1.5															
Fluid temperature ℃	5 to 60 (to be unfrozen Note 3)															
Ambient temperature ℃	0 to 60 (to be unfrozen)															
Port size	M3		M5			R1/8			R1/4			R3/8			R1/2	
Product mass g	6.3	7.2	10	11	12	24	26	27	52	54	57	83	85	87	140	143
Number of needle turn (cycle)	10 (14) and over		10 (16) and over			10 (15) and over		10 and over	13 and over			13 and over			14 and over	
Free flow — Flow rate ℓ/min (ANR)	31 (24)		95 (95)		105 (95)	215 (215)	270 (245)	270	475	510	540	985	1090		1500	1630
Free flow — Effective sectional area mm²	0.45 (0.35)		1.4 (1.4)		1.6 (1.4)	3.2 (3.2)	4 (3.7)	4	7	7.5	8	14.5	16		22	24
Controlled flow — Flow rate ℓ/min (ANR)	34 (5.4)		95 (9.5)			190 (17)	260 (17)	260	440	475		950	1150	1220	1500	1630
Controlled flow — Effective sectional area mm²	0.5 (0.08)		1.4 (0.14)			2.8 (0.25)	3.8 (0.25)	3.8	6.5	7		14	17	18	22	24

Note 1: Flow rate is the atmospheric pressure conversion at 0.5MPa.
Note 2: The number in ( ) is for low speed type.
Note 3: Could be frozen by adiabatic expansion depending on air quality (dew point).

How to order

SC3U - M5 - 4 - I

Model

Ⓐ Piping size

Ⓑ Applicable tube outer diameter

Ⓒ Option Note 1 Note 2 Note 3

Symbol	Descriptions
Ⓐ Piping size	
M3	M3 X 0.5
M5	M5 X 0.8
6	R1/8
8	R1/4
10	R3/8
15	R1/2

Ⓑ Applicable tube outer diameter

		Piping size					
		M3	M5	6	8	10	15
3	3.2 dia.	●	●				
4	4 dia.	●	●	●			
6	6 dia.		●	●	●		
8	8 dia.			●	●	●	
10	10 dia.				●	●	●
12	12 dia.					●	●

Ⓒ Option	
Blank	Meter out
I	Meter in (Push ring color: Black)
K	Hexagon head lock nut
O	Low speed type
P6	Copper and PTFE free

not available.

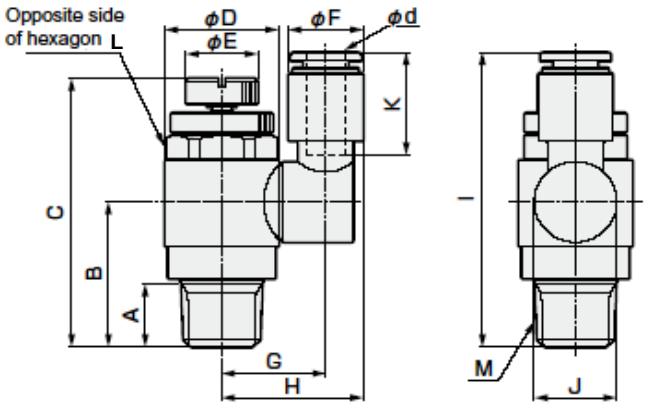
Note on model No. selection

Note 1: Options are indicated as alphabetic order.
Note 2: "K" can be selected for piping size M3 and M5.
Note 3: "O" can be selected for applicable tube outer diameter "4" (4 dia.) or "6" (6 dia.) for port size M3, M5, and "6" (R1/8).

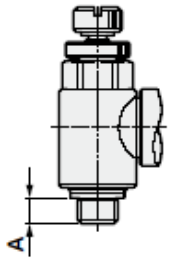
SC3U Series

Dimensions

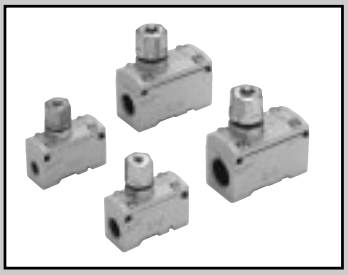
● SC3U-※-※



● SC3U-M3 M5 A



MODEL	Φd	M	A	B	C		D	E	F	G	H	I	J	K	L
					MAX	MIN									
SC3U-M3-3	φ3.2	M3×0.5	2.4	11.4	28.5	26	7.4	5	8.5	10	14.3	28.9	9.8	12.5	7
SC3U-M3-4	φ4								10		15	32.5		16	
SC3U-M5-3	φ3.2	M5×0.8	3.4	12.4	30.8	27.8	9.6	6	8.5	11.1	15.4	30	9.8	12.5	8
SC3U-M5-4	φ4								10		16.1	33.5		16	
SC3U-M5-6	φ6								12.5	12.1	18.4	35		17.5	
SC3U-6-4	φ4	R1/8	8	15.4	39.2	33.4	14.5	9	10	14.5	19.5	39	13	16	13
SC3U-6-6	φ6								12.5	14.6	20.8	40.5		17.5	
SC3U-6-8	φ8								14.5	15.6	22.8	42		19	
SC3U-8-6	φ6	R1/4	11	24.9	51.2	46.1	19	12	12.5	17.3	23.6	50.5	13.8	17.5	17
SC3U-8-8	φ8								14.5	17.8	25.1	52		19	
SC3U-8-10	φ10								17.5	19.3	28.1	55.5		21.5	
SC3U-10-8	φ8	R3/8	12	29.8	60.2	53.1	22.5	14	14.5	19.6	26.8	57.9	16.7	19	19
SC3U-10-10	φ10								17.5	21.1	29.8	60.9		21.5	
SC3U-10-12	φ12								20	22.3	32.3	63.2		23	
SC3U-15-10	φ10	R1/2	15	33.8	66.7	59.1	27	16	17.5	23.3	32.1	65.9	18.8	21.5	24
SC3U-15-12	φ12								20	24.5	34.5	68.2		23	



Speed control valve Medium bore size type

SC1 Series

Light weight enables disassembly while piped.

● Port size: Rc1/8 to Rc1/2

JIS symbol 

RoHS CAD

Specifications

Descriptions		SC1-6	SC1-8	SC1-10	SC1-15
Working fluid		Compressed air			
Max. working pressure MPa		1.0			
Min. working pressure MPa		0.05			
Withstanding pressure MPa		1.5			
Fluid temperature ℃		5 to 60 (no freezing Note 2) (5℃ to 120℃ for heat resistance / ozone specifications)			
Ambient temperature ℃		0 to 60 (no freezing) (5℃ to 120℃ for heat resistance / ozone specifications)			
Port size Rc		1/8	1/4	3/8	1/2
Product weight g		100	95	205	195
Applicable cylinder bore size mm		φ 20 to φ 50	φ 32 to φ 75	φ 50 to φ 140	φ 80 to φ 160
Number of needle turn		10	10	10	10
Free flow	Flow ℓ/min (ANR)	730	930	2600	2900
	Effective sectional area mm²	11	14	39	43
Controlled flow	Flow ℓ/min (ANR)	530	870	1500	2400
	Effective sectional area mm²	8	13	22	36

Note 1: Flow rate is the atmospheric pressure conversion value at pressure 0.5MPa.
Note 2: Freezing could occur by adiabatic expansion depending on air quality (dew point).

How to order

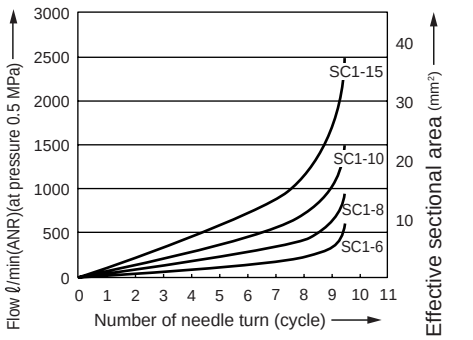
SC1 – 6 – X1

Ⓐ Port size

Ⓑ Option

Symbol	Descriptions
Ⓐ Port size	
6	Rc1/8
8	Rc1/4
10	Rc3/8
15	Rc1/2
Ⓑ Option	
Blank	No option
X1	Heat resistance (120℃ or less)/ ozone specifications
P6	Copper and PTFE free

Flow characteristics

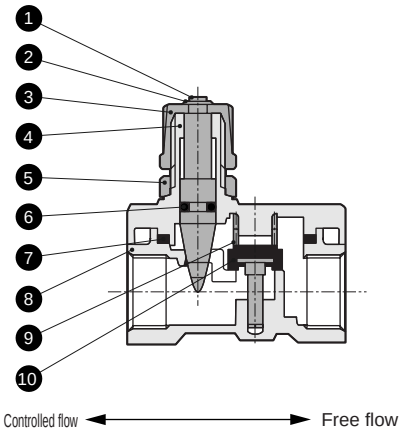


Clean room specifications (catalog No. CB-033SA)

● Dust generation preventing structure for use in cleanrooms

SC1- ····· - **P7***

Internal structure and parts list

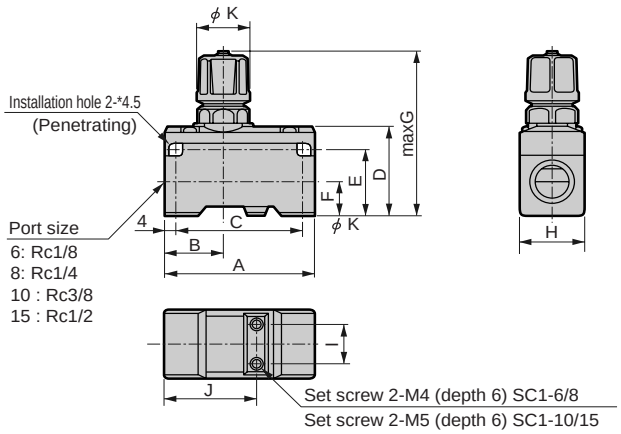


No.	Parts name	Material
1	Needle	Brass
2	E type snap ring	Steel
3	Dial	Zinc alloy die casting
4	Needle guide	Aluminum alloy die-casting
5	Lock nut	Zinc alloy die casting
6	O ring	Nitrile rubber (fluoro rubber)
7	Gasket	Nitrile rubber (fluoro rubber)
8	Body	Aluminum alloy die-casting
9	Spring	Stainless steel
10	Valve seat	Brass, nitrile rubber (brass, fluoro rubber)

Note 1: Materials in ( ) are for heat resistance / ozone specifications

Dimensions CAD

● SC1

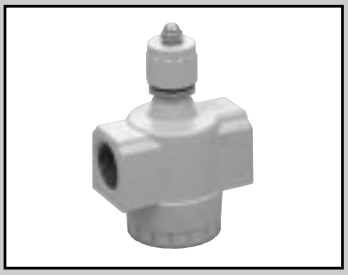


Model no.	A	B	C	D	E	F	G	H	I	J	K
SC1-6·8	50	20	42	31	23	11	67	22	12	31	19
SC1-10·15	63	21	55	40	31	15	83	30	18	37	23

Safety Precautions

● When using in low pressure range (0.05MPa or less), when piping, etc. before and after the product are restricted excessively, when cylinder speed is rapid, or when differential pressure is small, vibration and sound are easily generated.

● When tightening, do not tighten needle or lock nut section excessively.
(Tightening torque approx. 3N·m)

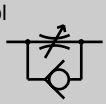


Speed control valve Large bore size type

SC Series

● Port size: Rc3/4 to Rc2

JIS symbol



RoHS CAD

Specifications

Descriptions		SC-20A	SC-25A	SC-32A	SC-40A	SC-50A
Working fluid		Compressed air				
Max. working pressure	MPa	1.0		0.7		
Min. working pressure	MPa	0.05		0.05		
Withstanding pressure	MPa	1.5		1.05		
Fluid temperature	℃	5 to 60 (no freezing) Note 2				
Ambient temperature	℃	0 to 60 (no freezing)				
Port size	Rc	3/4	1	1 1/4	1 1/2	2
Product weight	kg	0.8	1.4	4.0	4.0	4.0
Applicable cylinder bore size	mm	ϕ 100 to ϕ 200	ϕ 140 to ϕ 250	ϕ 300 to ϕ 450	ϕ 300 to ϕ 450	ϕ 450 to
Number of needle turn		10	10	10	10	10
Mounting attitude		The handle (nut) for flow control must be installed vertically facing upward or downward.				
Free flow	Flow ℓ/min (ANR)	10300	17400	68000	68000	97000
	Effective sectional area mm²	155	260	1000	1000	1500
Controlled flow	Flow ℓ/min (ANR)	8300	18700	68000	68000	91000
	Effective sectional area mm²	125	280	1000	1000	1400

Note 1: Flow rate is atmospheric pressure conversion value at pressure 0.5MPa.
Note 2: Freezing could occur by adiabatic expansion depending on air quality (dew point).

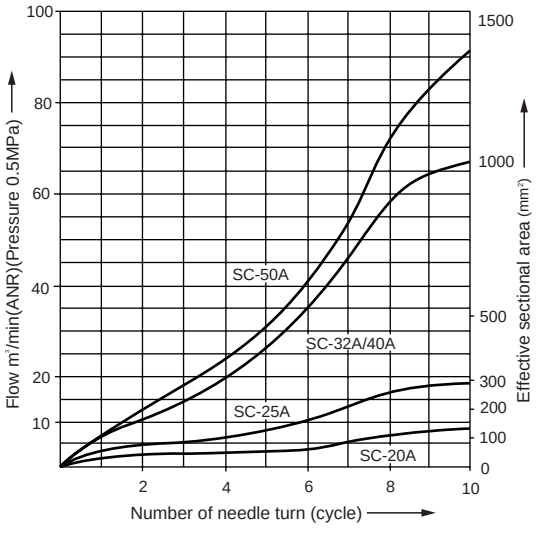
How to order

SC – **20A**

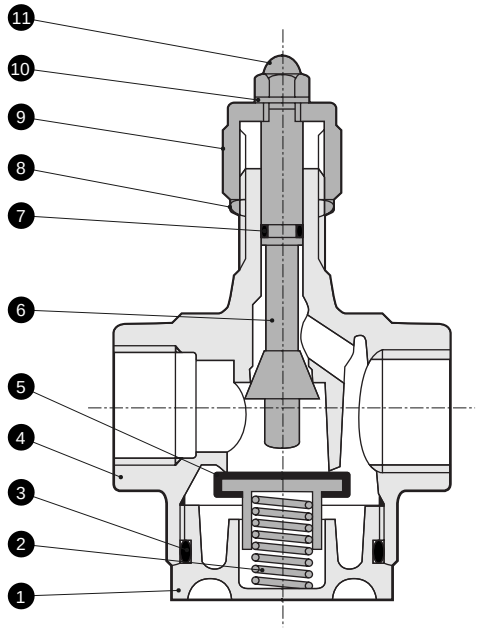
Ⓐ Port size

Symbol	Descriptions
Ⓐ **Port size**	
20A	Rc3/4
25A	Rc1
32A	Rc1 1/4
40A	Rc1 1/2
50A	Rc2

Flow characteristics



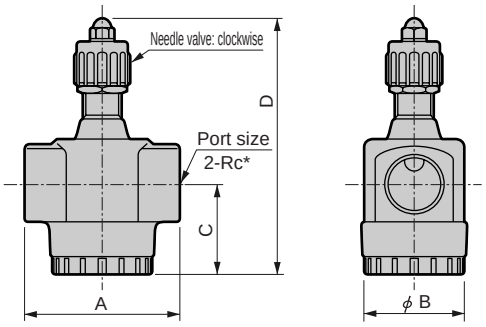
Internal structure and parts list



No.	Parts name	Material
1	Cap	Zinc alloy die casting
2	Spring	Stainless steel
3	O ring	Nitrile rubber
4	Body	Zinc alloy die casting
5	Valve seat	Brass
6	Rod	Brass
7	O ring	Nitrile rubber
8	Nut	Carbon steel
9	Nut	Zinc alloy die casting
10	The internal tooth washer	Stainless steel
11	Cap nut	Steel

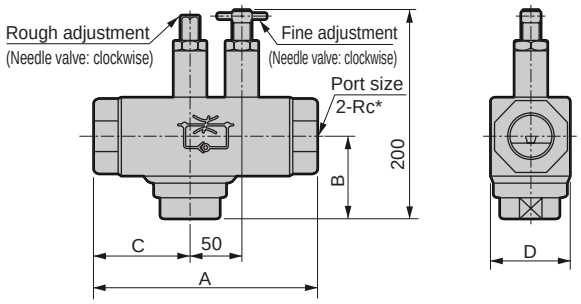
Dimensions CAD

● SC- 20 / 25 A



Model no.	A	B	C	D	Port size
SC-20A	74	50	42	115	Rc3/4
SC-25A	90	61	55	156	Rc1

● SC- 32 / 45 / 50 A



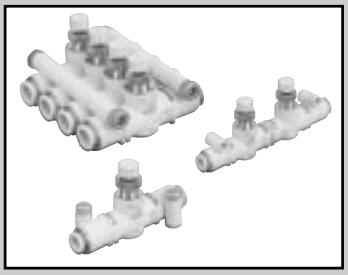
Model no.	A	B	C	D	Port size
SC-32A	210	77	92	75	Rc1 1/4
SC-40A	210	77	92	75	Rc1 1/2
SC-50A	222	79	96	84	Rc2

Safety Precautions

When connecting SC Series, do not tighten the product with a torque more than right.

- When using in low pressure range (0.05MPa or less), when piping, etc. before and after the product are restricted excessively, when cylinder speed is rapid, or when differential pressure is small, vibration and sound are easily generated.
- When tightening, do not tighten needle or lock nut section excessively. (Tightening torque approx. 3N·m)

Port thread	Tightening torque N·m
Rc3/4	51
Rc1	70
Rc1 1/4	80
Rc1 1/2	85
Rc2	120



Speed control valve Line type with push-in joint

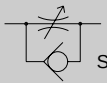
SCL2 Series

In - out speed control valve Line type with push-in joint

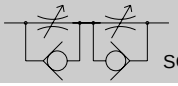
SCD2 Series

● Port size: ϕ1.8, ϕ 4, ϕ 6, ϕ 8, ϕ 10, ϕ12

JIS symbol



SCL2 Series



SCD2 Series

RoHS CAD

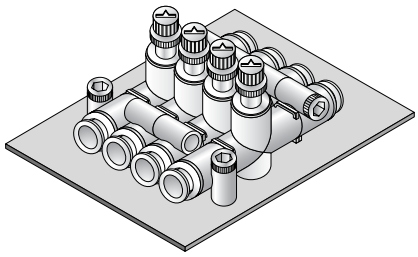
Overview

● The SCL2 Series is an inline speed control valve useful for remote or central actuator control.
● The SCD2 Series is an integrated metering in-out speed control valve that controls both air intake and exhaust flow. Depending on the circuit, the actuator can be prevented from popping out, speed can be stabilized, and reciprocating single-acting cylinder speed can be controlled.

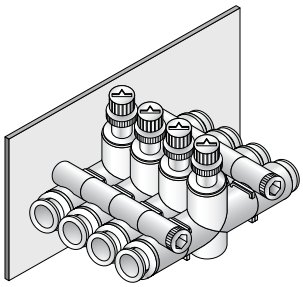
Features

Random installation attitude

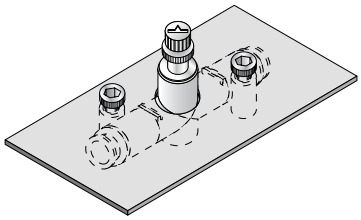
The installation area rotates by 360°, enabling installation and the installation method to be from base, side, or panel.
An installation bracket is not required.



Example of base installation



Example of wall surface installation



Example of panel mount

Wide range of choices

Fiber tubing specifications and large bore types have been added to the diverse lineup, expanding the size of applicable tubing to ϕ 1.8 to ϕ12 diameter.

Large flow rate with compact type

The large flow rate achieved even with a compact body extends the selection range for cylinder size and speed control.

Fine speed type available

Low and fine speed and small bore size are easily controlled.

Quick connection

Push-in joints simplify tubing connection.

Standard ozone-resistant materials

Ozone-resistant materials are used as standard for check packing to prevent deterioration.

Standard flame-resistant resin: UL94 Standard V-O or equivalent

Refer to page 887 for SCL2/SCD2 Safety Precautions.

Specifications

● Speed control valve line type SCL2

Model no.			SCL2-04			SCL2-06	SCL2-08		SCL2-10		
Applicable tube outer diameter		mm	φ1.8	φ1.8/φ4	φ4	φ6	φ6	φ8	φ8	φ10	φ12
Working fluid			Compressed air								
Max. working pressure		MPa	0.7		1.0						
Min. working pressure		MPa	0.1								
Withstanding pressure		MPa	1.05		1.5						
Fluid temperature		℃	5 to 60 (no freezing Note 3)								
Ambient temperature		℃	0 to 60 (no freezing)								
Product weight		g	13	12	11.5	16	32	33	53	57	59
Number of needle turn			12[15]								
Free flow	Flow	ℓ/min (ANR)	[13]		130	300	400	550	900	1100	1200
	Effective sectional area	mm²	[0.2]		1.9	4.5	6	8	13.5	16.5	18
Controlled flow	Flow	ℓ/min (ANR)	[10]		130 [13]	300 [13]	400	550	900	1100	1200
	Effective sectional area	mm²	[0.15]		1.9 [0.2]	4.5 [0.2]	6	8	13.5	16.5	18

● In out speed control valve line type SCD2

Model no.		SCD2-04			SCD2-06	SCD2-08		SCD2-10		
Applicable tube outer diameter mm		φ1.8	φ1.8/φ4	φ4	φ6	φ6	φ8	φ8	φ10	φ12
Working fluid		Compressed air								
Max. working pressure	MPa	0.7		1.0						
Min. working pressure	MPa	0.1								
Withstanding pressure	MPa	1.05		1.5						
Fluid temperature	℃	5 to 60 (no freezing Note 3)								
Ambient temperature	℃	0 to 60 (no freezing)								
Product weight	g	23	22	21.5	29	63	64	108	112	114
Number of needle turn		12[15]								
Flow	ℓ/min (ANR)	[10]	[10]	100 [13]	250 [13]	330	400	750	850	900
Effective sectional area	mm²	[0.15]	[0.15]	1.5 [0.2]	3.7 [0.2]	5	6	11	12.5	13

Note 1: Flow rate is the atmospheric pressure conversion value at pressure 0.5MPa.
Note 2: Value in ( ) is for fine speed type.
Note 3: Freezing could occur by adiabatic expansion depending on air quality (dew point).

Clean room specifications (catalog No. CB-033SA)

● Dust generation preventing structure for use in cleanrooms

SCL2 - ····· - P7*

How to order

● Speed control valve line type

SCL2 - 04 - H44 - ○

● In out speed control valve line type

SCD2 - 04 - H44 - ○

Model no. SCL2 / SCD2

Ⓐ Body size: 04

Ⓑ Applicable tube outer diameter: H44

Ⓒ Flow characteristics: Blank

Symbol	Descriptions
Ⓐ Body size	
04	M5 screw or equivalent
06	1/8 screw or equivalent
08	1/4 screw or equivalent
10	3/8 screw or equivalent
Ⓑ Applicable tube outer diameter	
H22	ϕ1.8
H42	A side: ϕ4 B side: ϕ1.8
H24 (Note 1)	A side: ϕ1.8 B side: ϕ4
H44	ϕ 4
H66	ϕ 6
H88	ϕ 8
H1010	ϕ 10
H1212	ϕ 12
Ⓒ Flow characteristics	
Blank	Standard type
F	Fine speed type

See the table at right for body size, applicable tube outer diameter, and flow characteristic combinations.

Note on model no. selection

Note 1: H24 cannot be used with SCD2. Use H42.

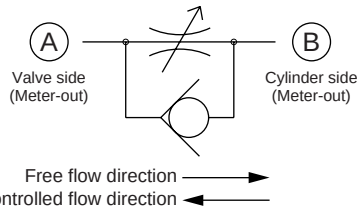
Note 2: There is no push-in joint compatible with Item (B) Applicable tube outer diameter 1.8. Refer to page 998 for line types with ϕ1.8 diameter push-in joints.

Combination of body size, applicable tube outer diameter and flow characteristics

Ⓑ Applicable tube outer diameter		Ⓐ Body size 04	06	08	10
H22	ϕ1.8	○			
H42	ϕ4/ ϕ1.8	○			
H24 (Note 1)	ϕ1.8/ ϕ4	○			
H44	ϕ 4	● ○			
H66	ϕ 6		● ○	●	
H88	ϕ 8			●	●
H1010	ϕ 10				●
H1212	ϕ 12				●

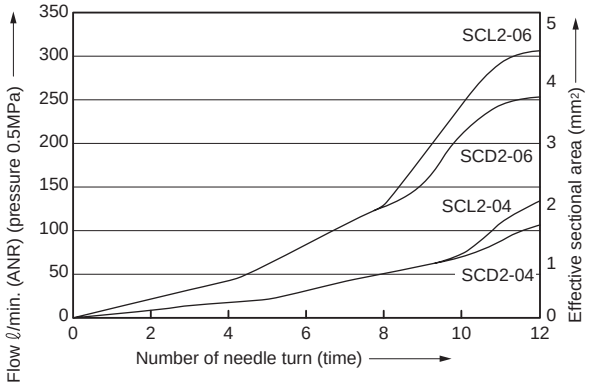
● Flow characteristics "Standard type "
○ Flow characteristics "Fine speed type "
not available

● Explanatory drawing of applicable tube outer diameter combinations (Only H24/H42)

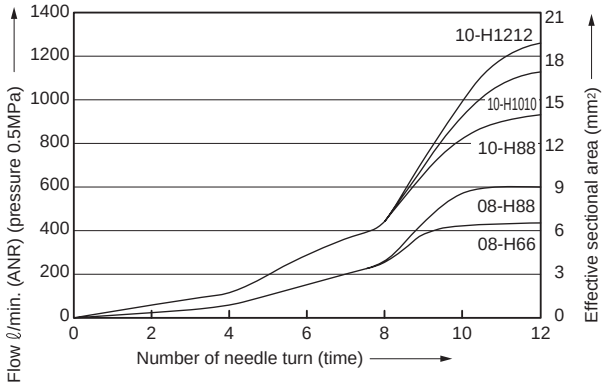


Flow characteristics

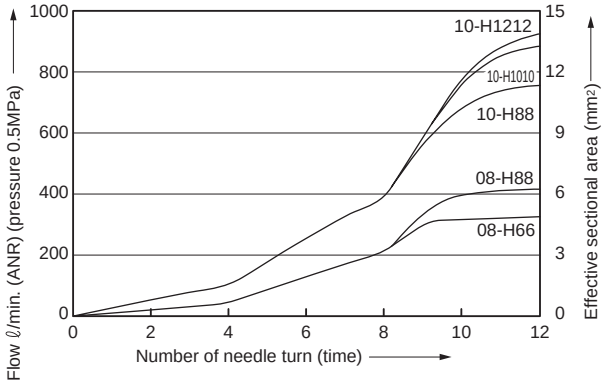
● Standard type
SCL2-04, SCL2-06, SCD-2-04, SCD2-06



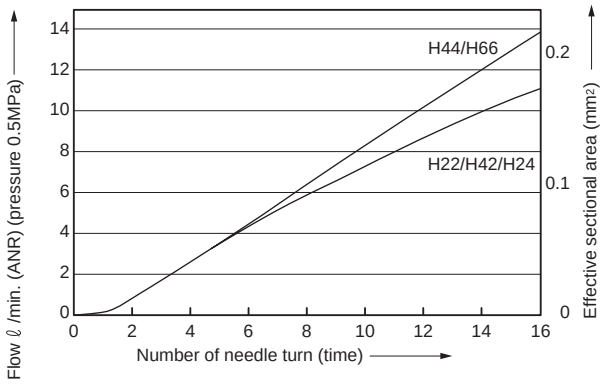
● Standard type
SCL2-08, SCL2-10



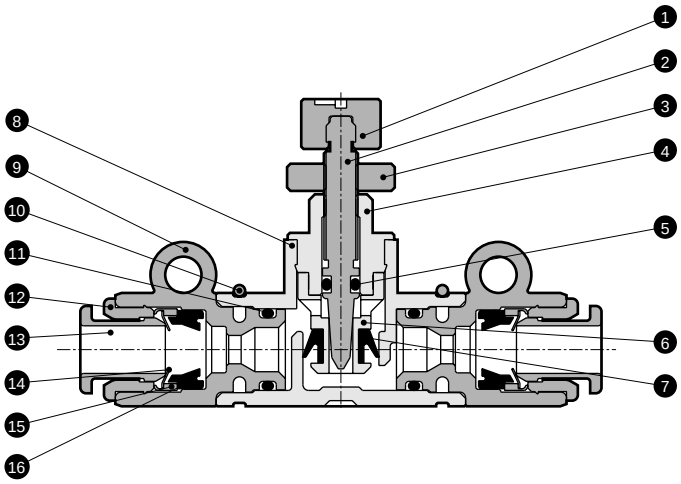
● Standard type
SCD2-08, SCD2-10



● Fine speed type



Internal structure and parts list



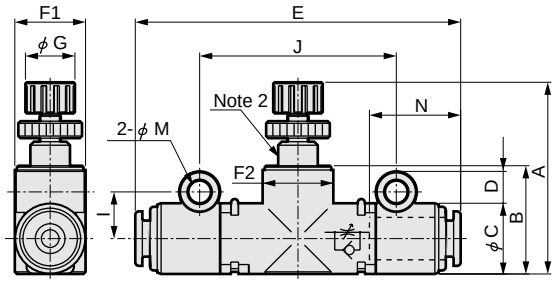
No.	Parts name	Material
1	Knob	PBT
2	Needle	Brass
3	Lock nut	Brass
4	Guide ring	Brass
5	O ring	Nitrile rubber
6	Check bracket	Brass
7	Check packing seal	Hydrogen nitrile rubber
8	Body	PBT
9	Joint case	PBT
10	Stopper ring	Stainless steel
11	O ring	Nitrile rubber
12	Outer ring	Brass
13	Push ring	PBT
14	Chuck	Stainless steel
15	Holder	Brass
16	Packing seal	Nitrile rubber

*1 All the brass parts are plated with electroless nickeling
*2 All resin parts are flame resistance. (equivalent to UL94 standards V-0)
Excluding applicable tube outer diameter ϕ1.8.

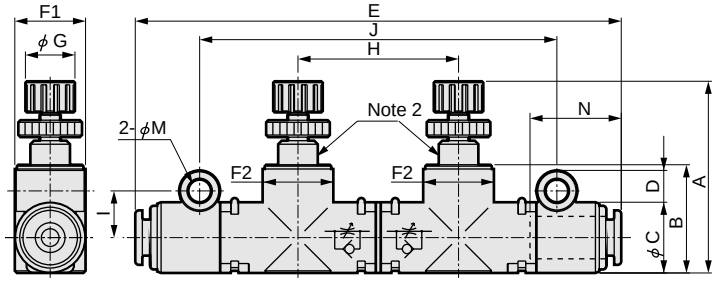
Dimensions

CAD

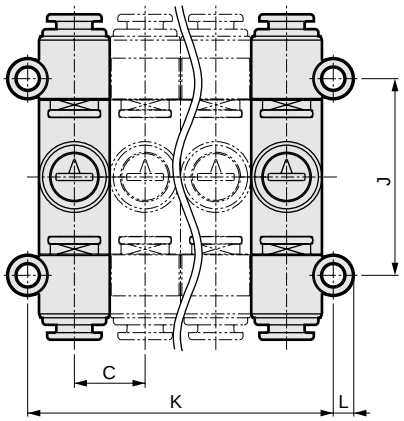
● SCL2 Series



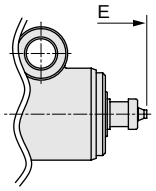
● SCD2 Series



● Installation spacing dimensions for manifolds

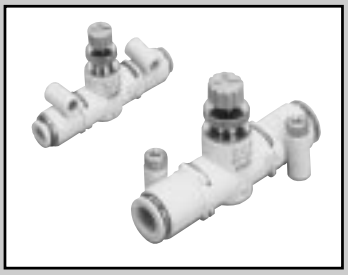


● Outline drawing of outer tubing connection diameter ϕ 1.8 joint



Model no.	Piping tube outer diameter	A MIN	A MAX	B	C	D	E	F1	F2	G	H	I	J	K	L	M (Installation hole dia.)	N (Tube insertion length)
SCL2-04-H22 Note 1	ϕ1.8	27.1	31.6	15.3	10	4.5	50.8	10	10.6	7	-	6.6	27.8	10 x n + 3.2	2.9	3.3	-
SCL2-04-H42 Note 1	ϕ 4/ϕ1.8						48.4										12.9/-
SCL2-04-H24 Note 1	ϕ 1.8/ϕ4						48.4										-/12.9
SCL2-04-H44	ϕ 4						46										12.9
SCL2-06-H66	ϕ 6	28.8	33.3	17.7	12	5.6	49.4	12	12.2	7	-	8.1	30.8	12 x n + 4.2	3.5	4.3	13.7
SCL2-08-H66	ϕ 6	38	44.5	22.9	15	5.6	64	15	15.5	11	-	9.5	41	15 x n + 4	3.6		18
SCL2-08-H88	ϕ 8						66.5										19
SCL2-10-H88	ϕ 8	44	50.5	29.7	20	5.1	71	20	20.5	11	-	11.5	47	20 x n + 3			19
SCL2-10-H1010	ϕ 10						75										21
SCL2-10-H1212	ϕ 12				20.4	4.9	79							20.4 x n + 3			22
SCD2-04-H22 Note 1	ϕ 1.8	27.1	31.6	15.3	10	4.5	73.5	10	10.6	7	22.7	6.6	50.5	10 x n + 3.2	2.9	3.3	-
SCD2-04-H42 Note 1	ϕ 4/ ϕ 1.8						71.1										12.9/-
SCD2-04-H44	ϕ 4						68.7										12.9
SCD2-06-H66	ϕ 6	28.8	33.3	17.7	12	5.6	73.9	12	12.2	7	24.5	8.1	55.3	12 x n + 4.2	3.5	4.3	13.7
SCD2-08-H66	ϕ 6	38	44.5	22.9	15	5.6	97.5	15	15.5	11	34	9.5	75	15 x n + 4	3.6		18
SCD2-08-H88	ϕ 8						100										19
SCD2-10-H88	ϕ 8	44	50.5	29.7	20	5.1	111	20	20.5	11	40.5	11.5	87.5	20 x n + 3			19
SCD2-10-H1010	ϕ 10						115										21
SCD2-10-H1212	ϕ 12				20.4	4.9	119							20.4 x n + 3			22

Note 1: Connection tubing is a joint dedicated to fiber tubing.
Note 2: There is a slit at this location on the fine speed type.
Note 3: F1 and F2 dimensions are oval.



Needle valve Line type with push-in joint

SCL2-N Series

● Port size: ϕ4, ϕ6, ϕ8

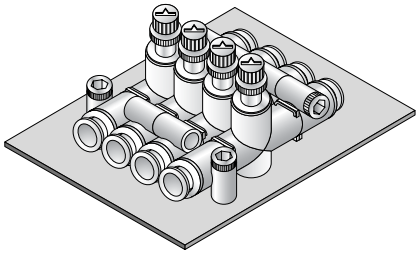
JIS symbol

RoHS CAD

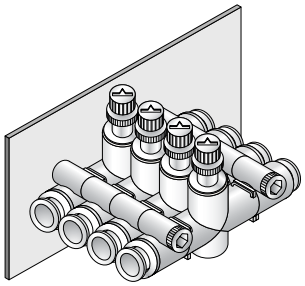
Features

Random installation attitude

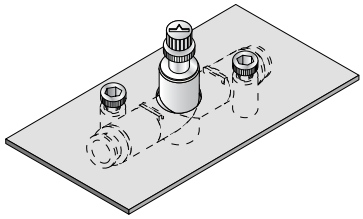
The installation area rotates by 360°, enabling installation and the installation method to be from base, side, or panel.
An installation bracket is not required.



Example of base installation



Example of wall surface installation



Example of panel mount

Low-evaporation grease

This series is suitable for oil-sensitive environments and systems. This product is also compatible with oil-free clean packaging "oil-prohibited specifications."

Linear flow characteristics

A flat dedicated needle for flow adjustment is used.

Specifiable flow size

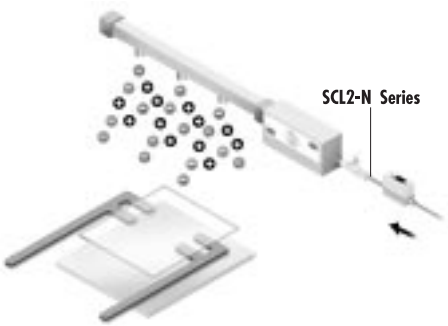
The flow size has been simplified with four stages - 13, 50, 150, and 300 ℓ/min at 0.5 MPa - to enable detailed flow adjustment.

Quick connection

Push-in joints simplify tubing connection.

Standard flame-resistant resin: UL94 Standard V-O or equivalent

■ SCL2-N Series applications



- Flow characteristics of ionizer purge gas
- Air blow in clean room
- N2 purge circuit
- Adjustment of work unloading blow rate for disk former
- Flow control at tension control

Specifications

Model no.	SCL2-N-04	SCL2-N-06	SCL2-N-08
Applicable tube outer diameter mm	φ4	φ6	φ6 or φ8
Working fluid	Compressed air / N_2 gas		
Max. working pressure MPa	1.0		
Negative pressure kPa	-100		
Withstanding pressure MPa	1.5		
Fluid temperature ℃	5 to 60 (no freezing note)		
Ambient temperature ℃	0 to 60 (no freezing)		
Product weight g	11.5	16	32
Number of needle turn	12 (flow type: 010 is 15 rotations)		

Note: Freezing could occur by adiabatic expansion depending on air quality (dew point).

Flow characteristics

Flow type symbol	010	050	150	300
Maximum flow rate (0.5MPa) ℓ/min (ANR)	13	50	150	300
Effective sectional area mm²	0.2	0.7	2.2	4.5

Note: The flow is atmospheric pressure conversion at pressure 0.5MPa.

How to order

● Needle valve line type

SCL2 - N - 04 - H44 - 010 - ( )

Model no.

Ⓐ Body size

Ⓑ Applicable tube outer diameter

See the table at right for the body size, applicable tube outer diameter, and flow type combinations

Ⓒ Flow type

Ⓓ Option

Symbol	Descriptions
Ⓐ Body size	
04	M5 screw or equivalent
06	1/8 screw or equivalent
08	1/4 screw or equivalent
Ⓑ Applicable tube outer diameter	
H44	φ4
H66	φ6
H88	φ8
Ⓒ Flow type	
010	Refer to flow characteristics graph and specifications
050	
150	
300	
Ⓓ Option	
Blank	Standard specifications
P80	Oil-prohibited specifications

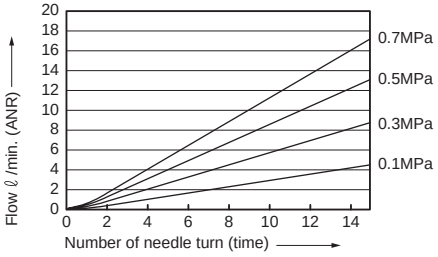
Combination of body size, applicable tube outer diameter, and flow type

Flow type	Ⓐ Body size- Ⓑ Applicable tube outer diameter			
	04-H44	06-H66	08-H66	08-H88
Ⓒ 010	●	●		
050	●	●		
150		●		
300			●	●

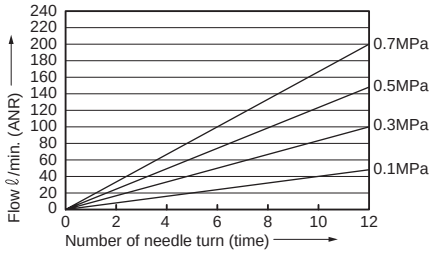
not available

Flow characteristics

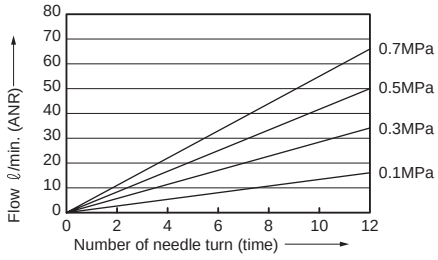
● Flow type "010"



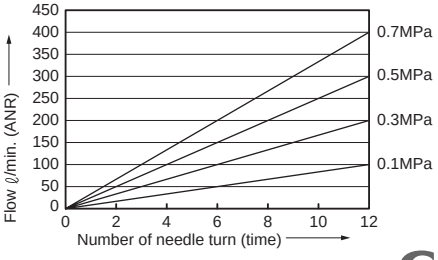
● Flow type "150"



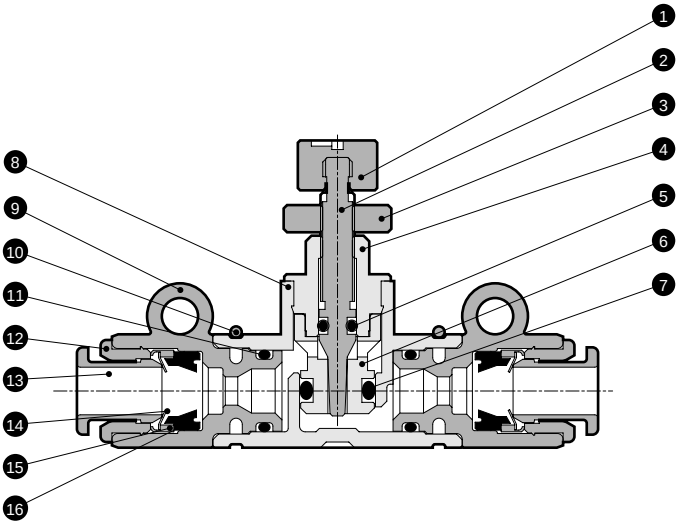
● Flow type "050"



● Flow type "300"



Internal structure and parts list

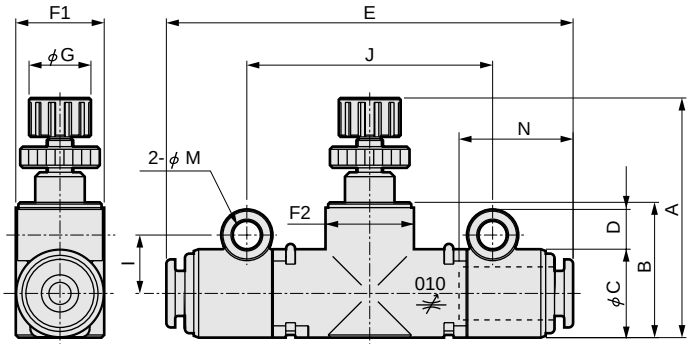


No.	Parts name	Material
1	Knob	PBT
2	Needle	Brass
3	Lock nut	Brass
4	Guide ring	Brass
5	O ring	Nitrile rubber
6	Check bracket	Brass
7	O ring	Nitrile rubber
8	Body	PBT
9	Joint case	PBT
10	Stopper ring	Stainless steel
11	O ring	Nitrile rubber
12	Outer ring	Brass
13	Push ring	PBT
14	Chuck	Stainless steel
15	Holder	Brass
16	Packing seal	Nitrile rubber

*1 All the brass parts are plated with electroless nickeling

Dimensions CAD

● SCL2-N Series



Model no.	Piping tube outer diameter	A		B	C	D	E	F1	F2	G	I	J	K	L	M (Installation hole dia.)	N (Tube insertion length)
		MIN	MAX													
SCL2-N-04-H44	ϕ4	27.1	31.6	15.3	10	4.5	46	10	10.6	7	6.6	27.8	10 x n + 3.2	2.9	3.3	12.9
SCL2-N-06-H66	ϕ6	28.8	33.3	17.7	12	5.6	49.4	12	12.2	7	8.1	30.8	12 x n + 4.2	3.5	4.3	13.7
SCL2-N-08-H66	ϕ6	38	44.5	22.9	15	5.6	64	15	15.5	11	9.5	41	15 x n + 4	3.8		18
SCL2-N-08-H88	ϕ8						66.5									19

Note: F1 and F2 dimensions are oval.

* The speed control valve is identified by dial color.
Speed control valve : Knob "white"
Needle valve : Knob "gray"

* The joint push ring is blue for option P80 (oil-prohibited specifications).

Design & Selection

⚠ CAUTION

■ Do not use this valve in circuits where ozone is generated intentionally.
Ozone resistance is sufficient for naturally generated ambient ozone. Packing deteriorates if ozone levels are high.

■ This valve can not be used as a stop valve that has no leakage. Slight leakage is allowed in product specifications.

■ Not all of the needle valve's resin parts are flame-resistant.

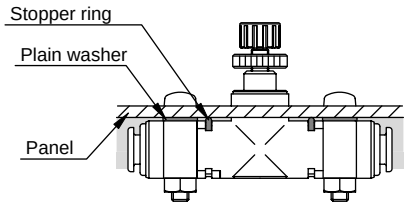
■ The flow path in the needle valve is not completely free of dust generation. A final clean filter should be used in circuits where dust generation could be a problem.

Installation & Adjustment

⚠ CAUTION

■ Rotate the mounting hole section at no pressurized state.

■ When installing on a panel, the stopper ring will interfere with the panel, so insert a flat washer between the mounting hole and panel.



■ Tighten bolts in mounting holes within the torque below.

Model no.	Tightening torque
SCL (D) 2-04	0.5N·m
SCL (D) 2-06/08/10	0.8N·m

■ Tubing could dislocated if the product sways or twists, so fix it with bolts or Insulock ties, etc., when piping.

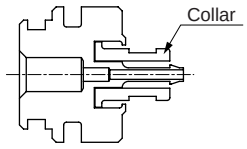
■ Do not turn the dial forcibly when fully closing or opening it (0.05 N.m or less). Do not use the lock nut to adjust the needle. Otherwise this could cause needle galling or damage.

■ When the option "P80 (oil prohibited specifications)" is selected, the adjustment dial may not turn easily because the use of oil is prohibited.

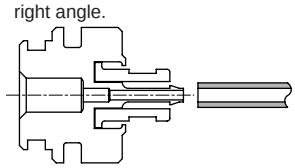
■ There is no direction for needle valve piping.

■ Connect fiber tubing (1.8 diameter joint) as follows (1 to 5):

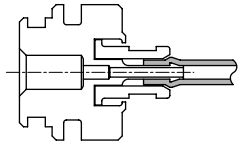
(1) Set the collar at the very back.



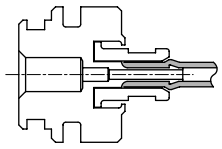
(2) Cut the end of fiber tubing at a right angle.



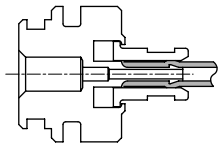
(3) Pass the collar through, and confirm that the fiber tube is correctly inserted while carrying out the work.



(4) Insert fiber tubing to the last position.



(5) Pull the collar forward to lock it.



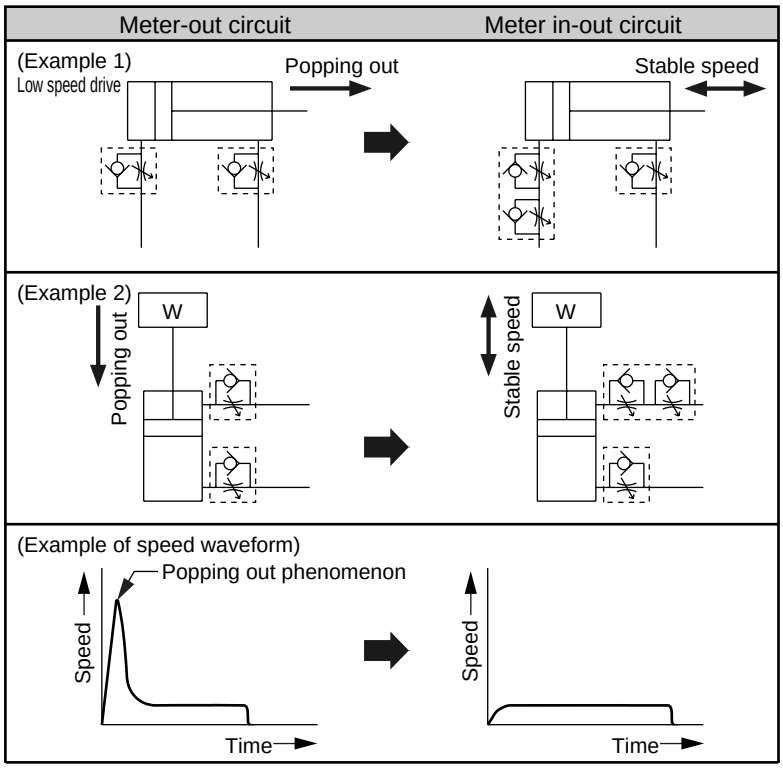
Example of in-out speed control valve

1 Speed is stabilized by controlling with an in-out speed control valve.

[E.g. 1] In low-speed control with a single rod air cylinder, the cylinder pops out immediately after the PUSH side operates if a meter-out circuit is used.

[E.g. 2] At vertical installation, the cylinder pops out immediately after operation because of the load's weight.

Speed is stabilized by using a meter in-out circuit.



(Cause of popping out)
When using the meter-out circuit, flow on the exhaust side is restricted, so both sides reach the same pressure immediately after the valve is switched. The thrust equivalent to the difference in the piston's pressurized area or the thrust equivalent to the load's weight causes popping out.
When the piston moves, exhaust pressure rises, speed decelerates, and the set speed is reached.
If popping out is caused by this phenomenon, fluctuation in sudden thrust is suppressed by restricting the flow on the supply side, and popping out is resolved.

2 Hazards can be prevented by suppressing popping out at beginning of movement after residual pressure is released.

3 Reciprocating speed control is possible with a single acting cylinder.