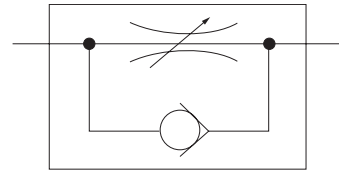


# SPEED CONTROLLERS WITH QUICK FITTINGS

## Standard Type, Mini Type

- Fittings for controlling the speed of actuators, such as cylinders.
- Superior flow rate characteristics and fine tuning adjustments in the low flow range are easy.

## Symbol



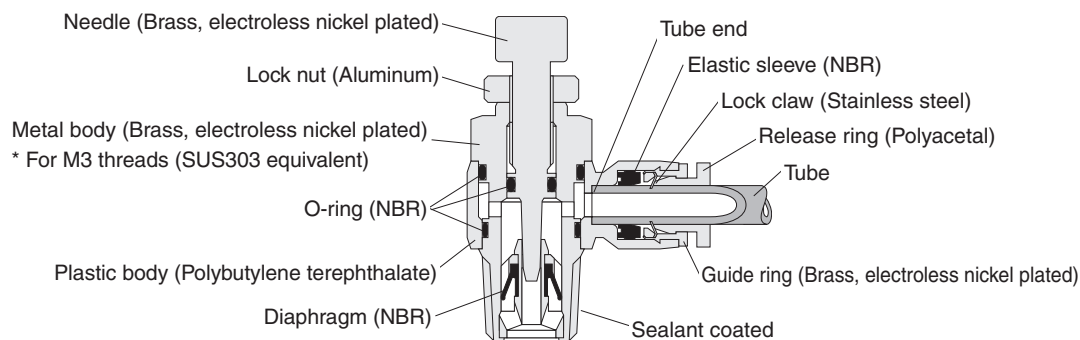
## Specifications

Item	Model	Standard type	Mini type
Mounting method		Attached directly to cylinder	
Media		Air (cannot be used for vacuum)	
Operating pressure range		0.1~0.9 MPa [15~131 psi]	
Cracking pressure		0.05 MPa [7 psi]	
Operating temperature range		0~60°C [32~140°F]	
Recommended tube		Nylon tube, urethane tube	
Sales unit		1 pc.	

Remarks: Gasket or seal is already attached.

## Inner Construction, Major Parts and Materials

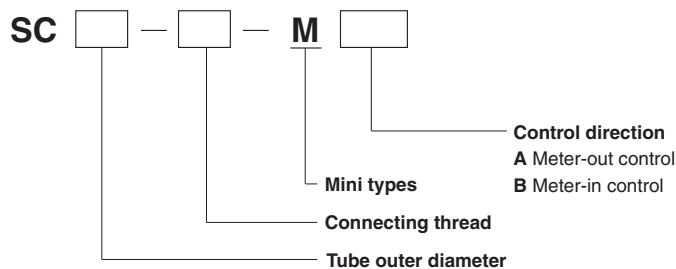
- Standard type
- Mini type





Tube size
3
4
6
8
10
12

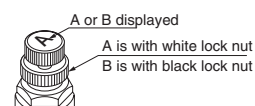
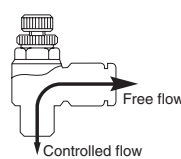
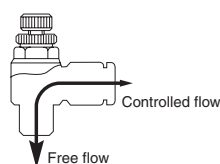
## Order codes



### Body configuration and control direction

A: Meter-out control  
Free type SSF

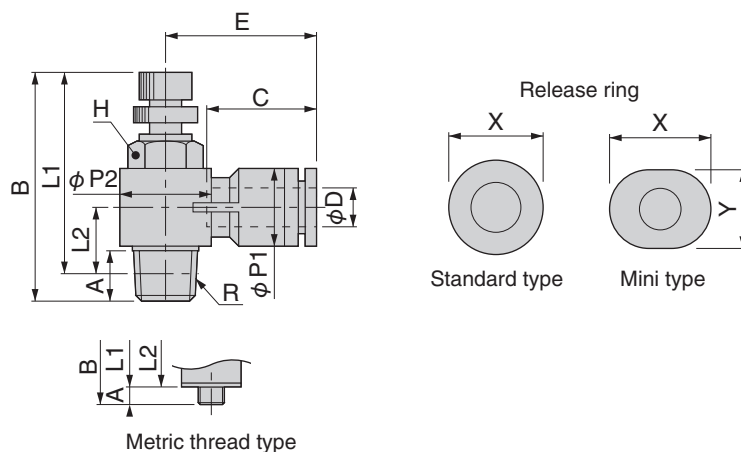
B: Meter-in control  
Free type SSF



## Dimension diagram (standard type, mini type) (mm)

### Elbow (standard)

SC



Model	Tube outer diameter φD	R	A	B		L1 <sup>Note 1</sup>		L2 <sup>Note 1</sup>	φP1	φP2	C	E	Width across flats H	X	Y	Mass g
				MAX	MIN	MAX	MIN									
SC3-M3-M□	3	M3×0.5	2.5	29.2	26.5	26.7	24	6.6	8	9.8	11	15.4	8	9.8	7.8	6.6
SC3-M5-M□		M5×0.8	2.9	29.7	27	26.8	24.1	6.7								7.3
SC4-M3-M□	4	M3×0.5	2.5	29.2	26.5	26.7	24	6.6	8	9.8	11	15.4	8	9.8	7.8	6.6
SC4-M5-M□		M5×0.8	2.9	29.7	27	26.8	24.1	6.7								7.2
SC4-01-M□	6	R1/8	8	41.5	34.9	37.5	30.9	10.7	10.5	14.4	11.6	17.5	8	11.8	9.8	17
SC6-M5-M□		M5×0.8	2.9	29.7	27	26.8	24.1	7.5								7.9
SC6-01-M□		R1/8	8	41.5	34.9	37.5	30.9	10.7								18
SC6-02-M□		R1/4	11.1	48.9	42.2	42.8	36.1	11.9								35
SC6-03-□	8	R3/8	13.2	54.4	46.9	48	40.5	15.4	14.4	22	17	29	19	11.8	—	65
SC8-01-□		R1/8	8	41.5	34.9	37.5	30.9	11.9								21
SC8-02-□		R1/4	11.1	48.9	42.2	42.8	36.1	13.2								38
SC8-03-□		R3/8	13.2	54.4	46.9	48	40.5	15.4								65
SC8-04-□	10	R1/2	16	59.7	52.4	51.5	44.2	18	17.6	22	20.2	30.9	14	16.8	—	101
SC10-02-□		R1/4	11.1	48.9	42.2	42.8	36.1	14.8								41
SC10-03-□		R3/8	13.2	54.4	46.9	48	40.5	16.7								69
SC10-04-□		R1/2	16	59.7	52.4	51.5	44.2	18								104
SC12-03-□	12	R3/8	13.2	54.4	46.9	48	40.5	18.4	21	22	23.4	36.9	19	19.8	—	72
SC12-04-□		R1/2	16	59.7	52.4	51.5	44.2	19.7								107

Note 1: The L1 and L2 dimensions for the tapered thread type are the reference dimensions after the fittings are assembled.

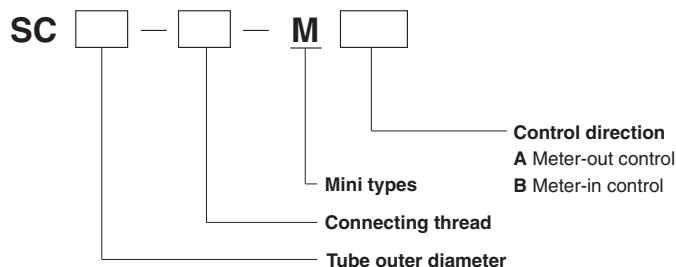
2: Enter an A in the empty square □ in the model number for meter-out control or enter a B for meter-in control.

The □ model is a mini type.



Tube size
0.118
0.157
0.236
0.315
0.394
0.472

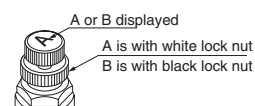
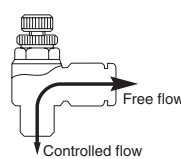
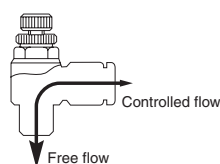
## Order codes



### Body configuration and control direction

A: Meter-out control  
Free type SSF

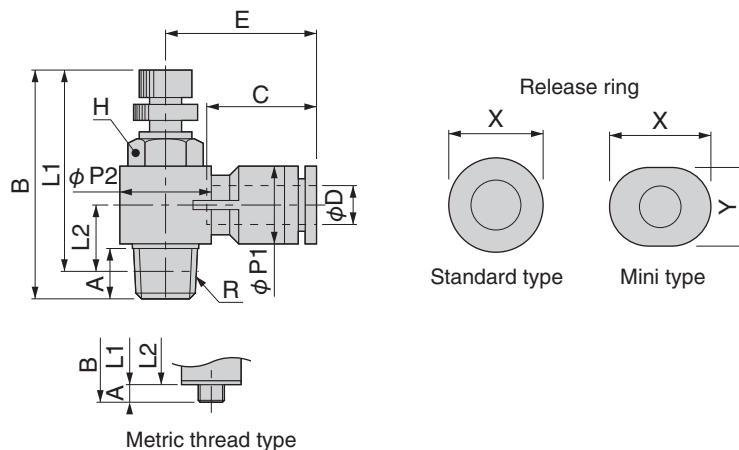
B: Meter-in control  
Free type SSF



## Dimension diagram (standard type, mini type) (in)

### Elbow (standard)

SC



Model	Tube outer diameter $\phi D$	R	A	B		L1 <sup>Note 1</sup>		L2 <sup>Note 1</sup>	$\phi P1$	$\phi P2$	C	E	Width across flats H	X	Y	Mass oz
				MAX	MIN	MAX	MIN									
SC3-M3-M <span style="border: 1px solid black; padding: 0 2px;"> </span>	0.118	M3×0.5	0.098	1.150	1.043	1.051	0.945	0.260	0.315	0.386	0.433	0.606	0.315	0.386	0.307	0.233
SC3-M5-M <span style="border: 1px solid black; padding: 0 2px;"> </span>		M5×0.8	0.114	1.169	1.063	1.055	0.949	0.264								0.257
SC4-M3-M <span style="border: 1px solid black; padding: 0 2px;"> </span>	0.157	M3×0.5	0.098	1.150	1.043	1.051	0.945	0.260	0.315	0.386	0.433	0.606	0.315	0.386	0.307	0.233
SC4-M5-M <span style="border: 1px solid black; padding: 0 2px;"> </span>		M5×0.8	0.114	1.169	1.063	1.055	0.949	0.264								0.254
SC4-01-M <span style="border: 1px solid black; padding: 0 2px;"> </span>	0.236	R1/8	0.315	1.634	1.374	1.476	1.217	0.421	0.413	0.567	0.457	0.689	0.394	0.465	0.386	0.600
SC6-M5-M <span style="border: 1px solid black; padding: 0 2px;"> </span>		M5×0.8	0.114	1.169	1.063	1.055	0.949	0.295								0.279
SC6-01-M <span style="border: 1px solid black; padding: 0 2px;"> </span>		R1/8	0.315	1.634	1.374	1.476	1.217	0.421								0.635
SC6-02-M <span style="border: 1px solid black; padding: 0 2px;"> </span>		R1/4	0.437	1.925	1.661	1.685	1.421	0.469								1.235
SC6-03- <span style="border: 1px solid black; padding: 0 2px;"> </span>	0.315	R3/8	0.520	2.142	1.846	1.890	1.594	0.606	0.567	0.866	0.669	1.142	0.748	0.465	--	2.293
SC8-01- <span style="border: 1px solid black; padding: 0 2px;"> </span>		R1/8	0.315	1.634	1.374	1.476	1.217	0.469								0.741
SC8-02- <span style="border: 1px solid black; padding: 0 2px;"> </span>		R1/4	0.437	1.925	1.661	1.685	1.421	0.520								1.340
SC8-03- <span style="border: 1px solid black; padding: 0 2px;"> </span>		R3/8	0.520	2.142	1.846	1.890	1.594	0.606								2.293
SC8-04- <span style="border: 1px solid black; padding: 0 2px;"> </span>	0.394	R1/2	0.630	2.350	2.063	2.028	1.740	0.709	0.693	0.866	0.795	1.228	0.748	0.661	-	3.6
SC10-02- <span style="border: 1px solid black; padding: 0 2px;"> </span>		R1/4	0.437	1.925	1.661	1.685	1.421	0.583								1.446
SC10-03- <span style="border: 1px solid black; padding: 0 2px;"> </span>		R3/8	0.520	2.142	1.846	1.890	1.594	0.657								2.434
SC10-04- <span style="border: 1px solid black; padding: 0 2px;"> </span>		R1/2	0.630	2.350	2.063	2.028	1.740	0.709								3.7
SC12-03- <span style="border: 1px solid black; padding: 0 2px;"> </span>	0.472	R3/8	0.520	2.142	1.846	1.890	1.594	0.724	0.827	0.866	0.921	1.453	0.748	0.780	-	2.540
SC12-04- <span style="border: 1px solid black; padding: 0 2px;"> </span>		R1/2	0.630	2.350	2.063	2.028	1.740	0.776								3.8

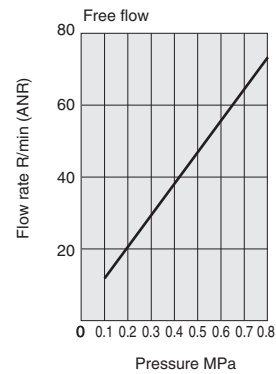
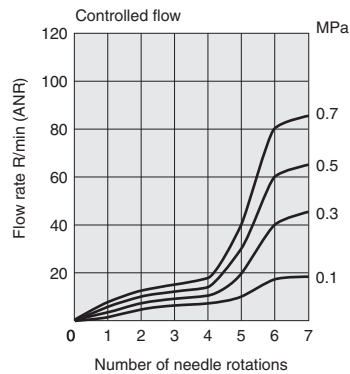
Note 1: The L1 and L2 dimensions for the tapered thread type are the reference dimensions after the fittings are assembled.

2: Enter an A in the empty square   in the model number for meter-out control or enter a B for meter-in control.

The   model is a mini type.

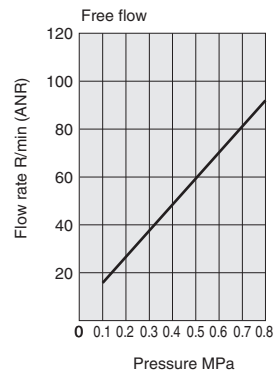
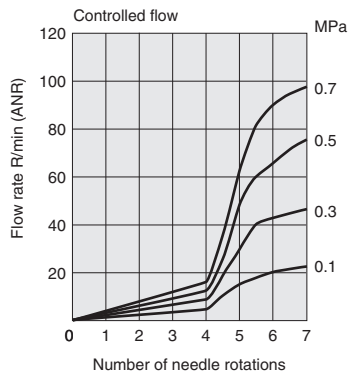
# Flow Rate Characteristics (Mini Type)

## SC3-M3-M



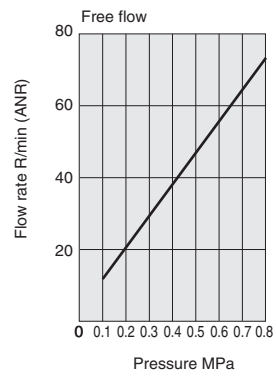
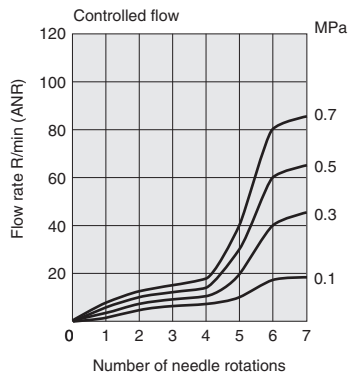
1 ℓ/min (ANR) = 0.03532 ft<sup>3</sup>/min (SCFM)  
1 MPa = 145 psi

## SC3-M5-M



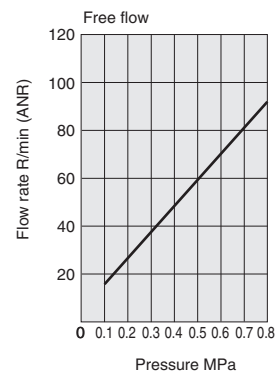
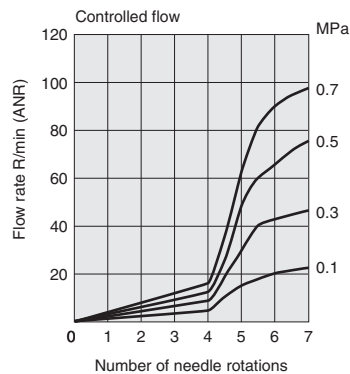
1 ℓ/min (ANR) = 0.03532 ft<sup>3</sup>/min (SCFM)  
1 MPa = 145 psi

## SC4-M3-M



1 ℓ/min (ANR) = 0.03532 ft<sup>3</sup>/min (SCFM)  
1 MPa = 145 psi

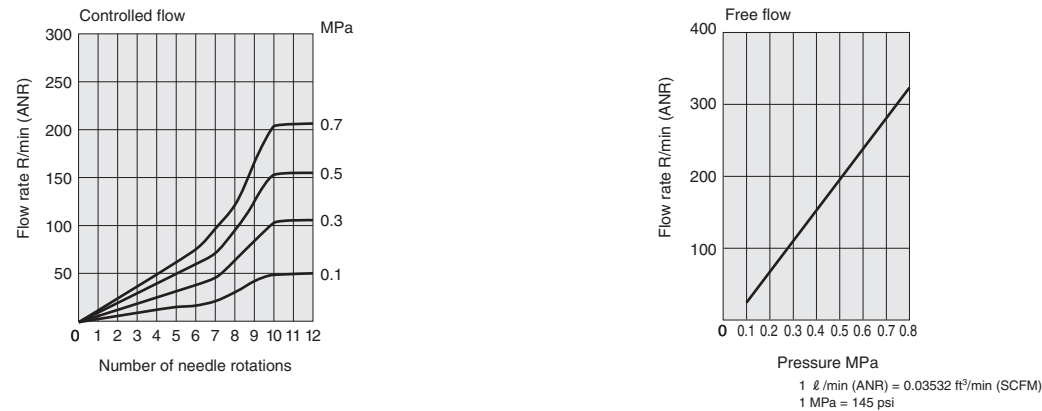
## SC4-M5-M



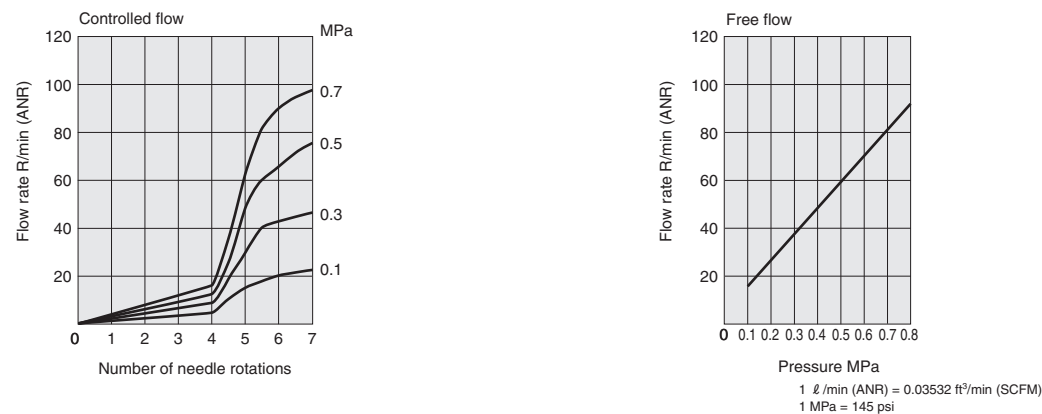
1 ℓ/min (ANR) = 0.03532 ft<sup>3</sup>/min (SCFM)  
1 MPa = 145 psi

# Flow Rate Characteristics (Mini Type)

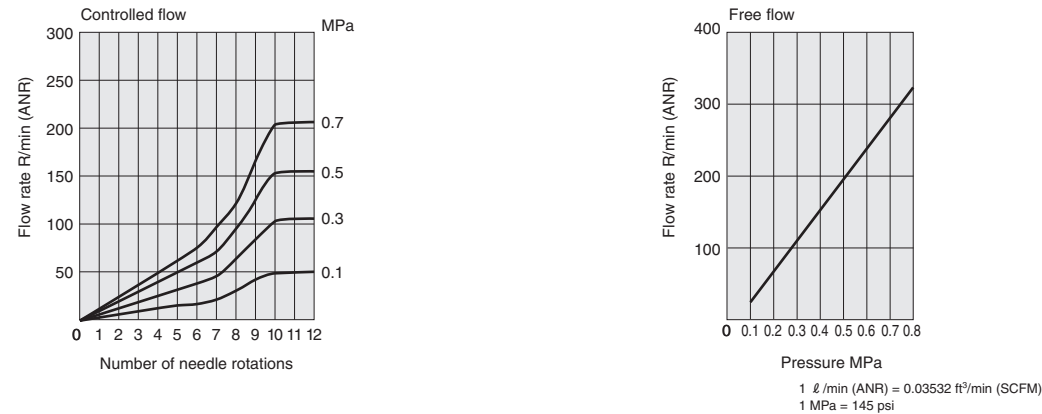
## SC4-01-M



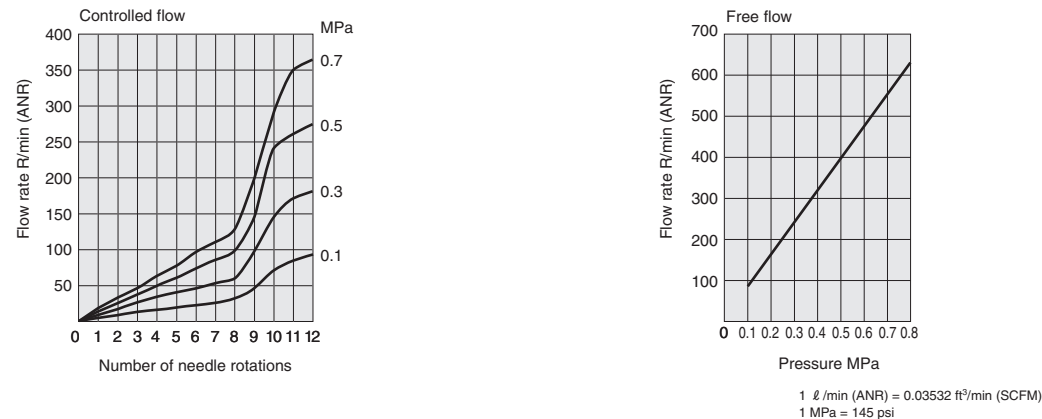
## SC6-M5-M



## SC6-01-M

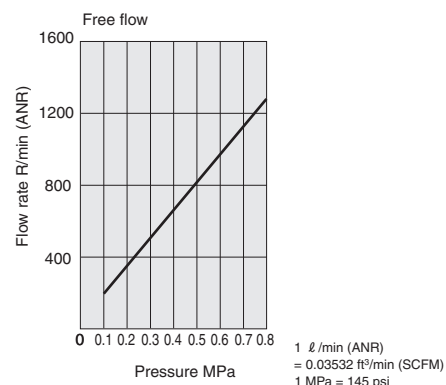
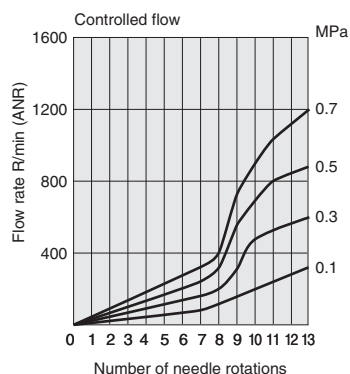


## SC6-02-M

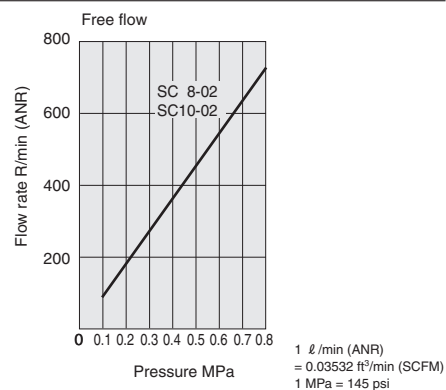
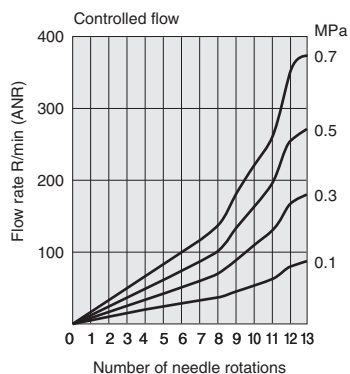


# Flow Rate Characteristics (Standard Type)

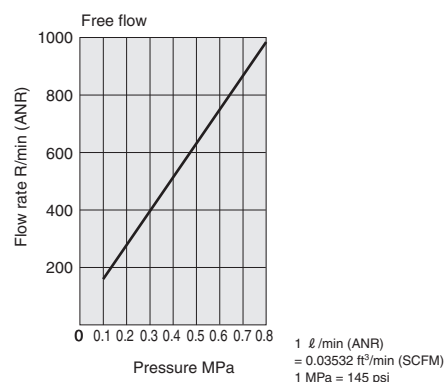
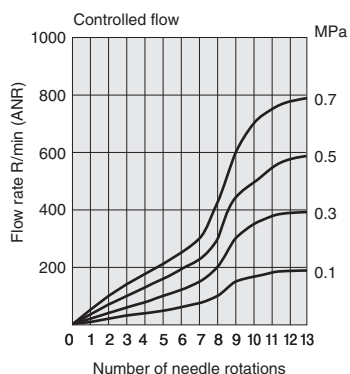
SC8-01-□



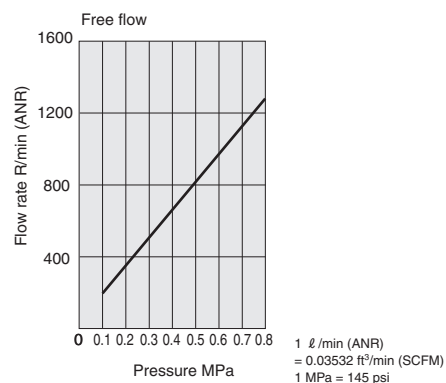
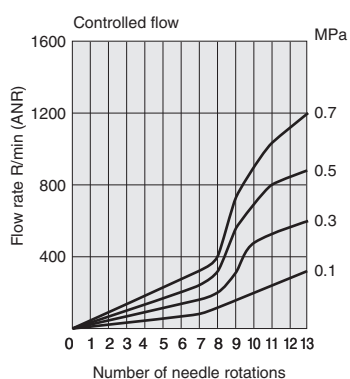
SC8-02-□  
SC10-02-□



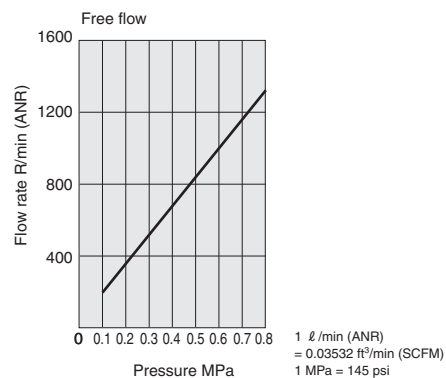
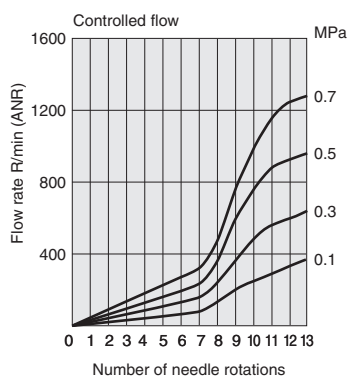
SC6-03-□



SC8-03-□

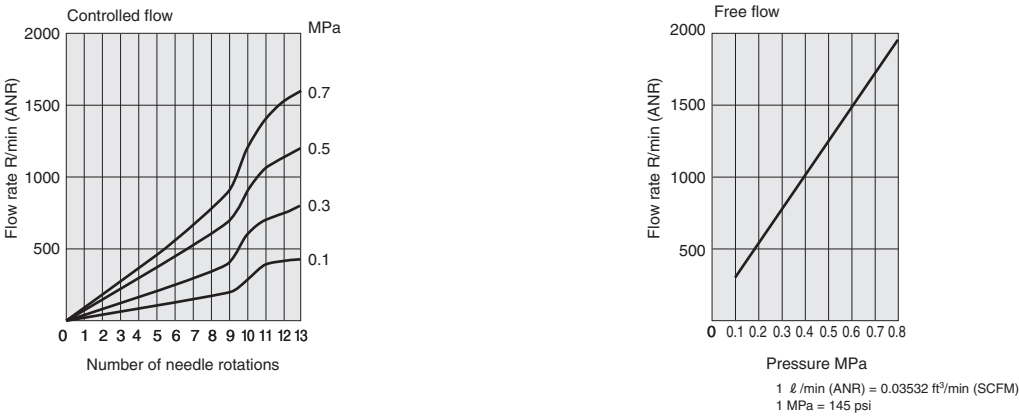


SC10-03-□

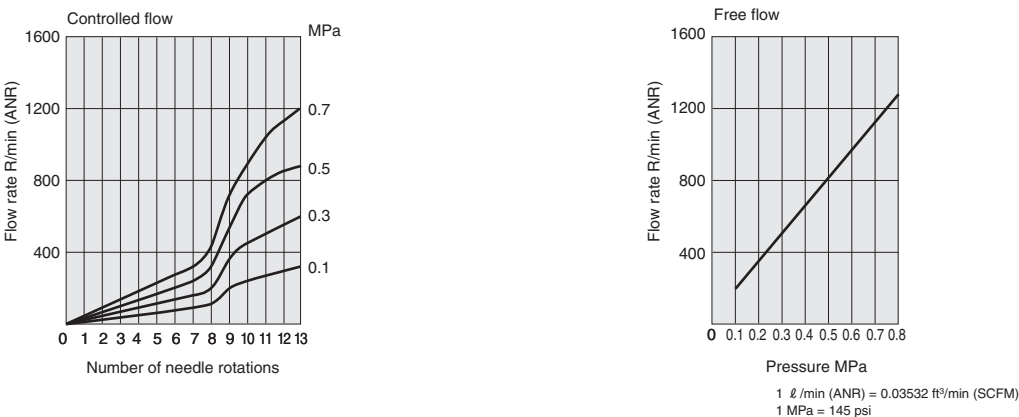


Flow Rate Characteristics (Standard Type)

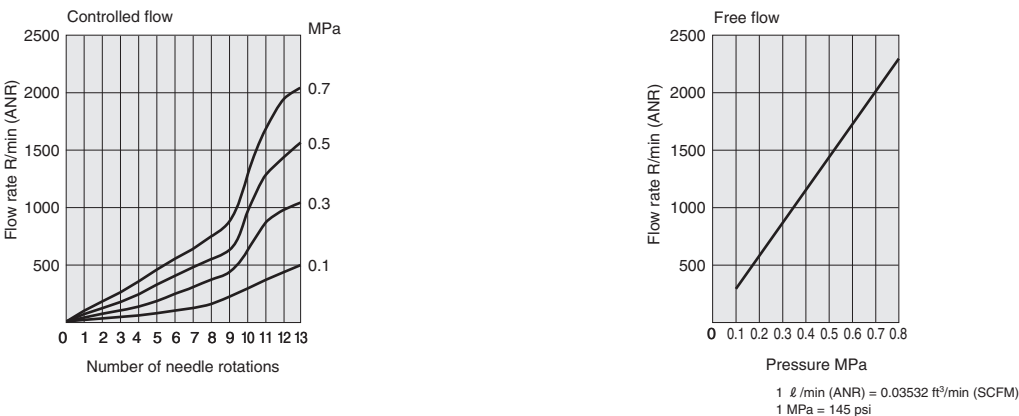
SC8-04-□



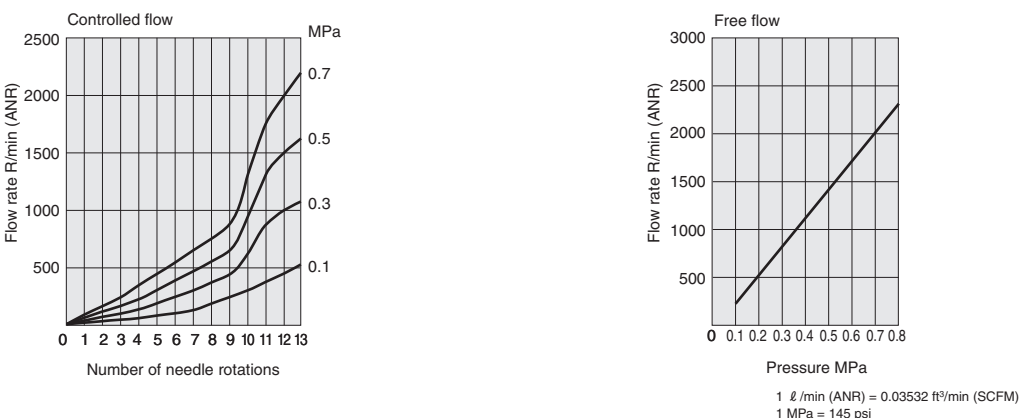
SC12-03-□



SC10-04-□



SC12-04-□



## Safety precautions (speed controllers with quick fittings)

The safety precautions for the speed controllers with quick fittings are shown below. Be sure to read the material in the front of the General Personal Catalog regarding safety precautions other than those below.

### WARNING

- Air control direction varies depending on the product. Before using a product, confirm the direction as noted in this document and by identifying the product. Orienting the control direction incorrectly creates the risk of personal injury and machine damage.
- When adjusting the speed of the actuator, start with the product's needle fully closed and then gradually open it to adjust the speed. There is a risk of the actuator popping out if the needle is open. Note that the needle closes when turned to the right and opens when turned to the left.
- Do not forcibly twist or rotate products with rotating plastic bodies. Doing so causes a risk of leakage or damage to the body.

## Handling instructions and precautions

### ● Mounting

#### Precautions for mounting fitting

- ① Use the appropriate tool to tighten the hex nuts on the fitting.
- ② Refer to the following table of recommended tightening torques when attaching the threaded parts. If you use more than the recommended torque when tightening the threaded parts, you may cause leaks by fracturing the threads or deforming the gaskets. Also, if you use less than the recommended torque when tightening the threaded parts, it may result in looseness or leaks.

Recommended tightening torque

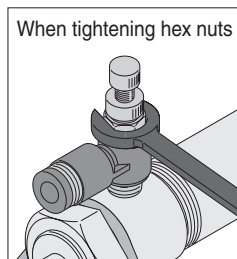
Thread type	Thread size	Tightening torque
Metric thread	M3×0.5	0.7 N·m [6.196 in·lbf]
	M5×0.8	1.5~1.9 N·m [13.277~16.817 in·lbf]
Tapered threads for pipes	R1/8	7~9 N·m [61.957~79.659 in·lbf]
	R1/4	12~14 N·m [106.212~123.914 in·lbf]
	R3/8	22~24 N·m [194.722~212.424 in·lbf]
	R1/2	28~30 N·m [247.828~265.530 in·lbf]

#### Precautions for disconnecting fittings

- ① Use the appropriate tool to remove the hex nuts from the fitting.
- ② Remove the sealant from the threads on the other parts. If the sealant is stuck to the other parts, it may get into peripheral devices and cause a malfunction.

#### Tightening threaded parts

- ① Tightening threaded parts  
Use a wrench on the hex nut to tighten the threaded parts.



The sealant on the quick fittings can be reused multiple times, as is. However, the sealant may stick to the threaded parts of other devices. Be sure to clean the inside of the female threads on the devices.

- When tightening the lock nut on a product, tighten it firmly by hand without using a tool. The lock nut or body may be damaged if tightened with a tool. However, if it is not firmly tightened, the lock nut may become loose and deviate from the initial settings.

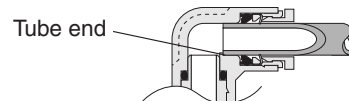
### CAUTION

- Speed controllers have an allowable leakage, so do not use them if zero leakage is required.

### ● Attaching and detaching tubes

#### Precautions for attaching tubes

- ① Confirm that the cut surface of the tube is cut straight across, that the outer surface of the tube is not damaged, and that the tube has not become oval shaped.
- ② When connecting tubes, if you do not insert the tube all the way to the tube end, it may result in leaks.



- ③ After installing the tube, pull on it to check that it does not come off.
- ④ Do not meaninglessly press on the release ring before attaching a tube. Doing so may cause the tube to become detached.

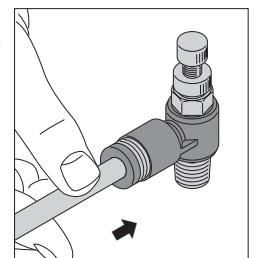
#### Precautions for removing tubes

- ① Before removing tubing, be sure to confirm that the pressure inside the tubing is zero.
- ② Uniformly press the release ring inwards as far as it goes and then pull out the tubing. If you do not fully press in on the release ring, the tube may not come out, or the tubing may become scratched causing debris to be left inside the fitting.

#### How to attach and detach tubes

##### ① Attaching tubes

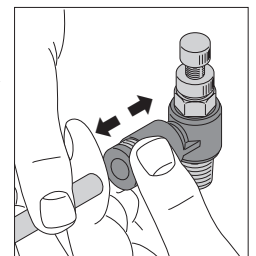
The quick fitting speed controller is equipped with a lock claw that holds the tube in place when it has been pushed all the way to the end, and with an elastic sleeve for sealing the tube periphery.



##### ② Removing tubes

When removing a tube, pressing the release ring opens the lock claw and the tube can be pulled out.

Be sure to turn off the air before removing tubes.



KOGANEI



## Handling instructions and precautions

If removing pipes is difficult because the piping space is very constricted, consult your nearest Koganei sales office for a specialized tool that is available.

### Specialized tools for removing tubes

For  $\phi 3$  [0.118],  $\phi 4$  [0.157], and  $\phi 6$  [0.236] tubes  
Order codes: **UJ-1**



For  $\phi 6$  [0.236],  $\phi 8$  [0.315],  $\phi 10$  [0.394], and  $\phi 12$  [0.472] tubes  
Order codes: **UJ-2**



### Usable tubes

Use of both nylon tubing and urethane tubing are supported. Nylon tubing outside diameter precision should be within  $\pm 0.1$  mm [ $\pm 0.004$  in] (nominal) for nylon tubing and within  $\pm 0.15$  mm [ $\pm 0.006$  in] (nominal) for urethane tubing. Use tubing with ovality (difference between major axis and minor axis) within 0.2 mm [0.008 in] (use of Koganei tubing is recommended). Use of tubing that is not a Koganei genuine product or a compatible (recommended) product may result in tube disconnection, air leakage, or other problems. Be sure to check on tubing before building a pneumatic system. Also, note that you cannot use the conductive urethane tube U2A-B produced by Koganei.



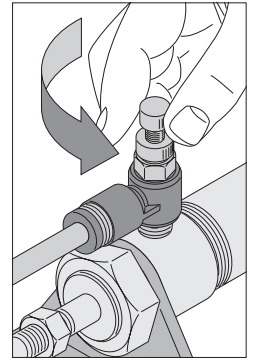
1. Use tubing with an exterior that is not damaged. If tubing becomes damaged after repeated use, cut off the damaged portion.
2. Do not allow tubing to become severely bent or twisted near the connection to a fitting. Such a condition creates the risk of air leakage. The table below shows minimum radius guidelines for nylon and urethane tubing.
3. Do not use extremely soft tubing, which causes a severe drop in pull-out strength.
4. Before removing any tubes, always turn off the air supply. Also, be sure to confirm that the air inside the pipes is completely vented before starting.

mm [in]

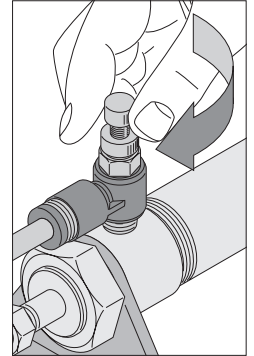
Tube size	Minimum bending radius	
	Nylon tube	Urethane tube
$\phi 1.8$ [0.071]	—	4 [0.157]
$\phi 3$ [0.118]	—	7 [0.276]
$\phi 4$ [0.157]	20 [0.787]	10 [0.394]
$\phi 6$ [0.236]	30 [1.181]	15 [0.591]
$\phi 8$ [0.315]	50 [1.969]	20 [0.787]
$\phi 10$ [0.394]	80 [3.150]	27 [1.063]
$\phi 12$ [0.472]	150 [5.9]	35 [1.378]

### Speed adjustment for actuators

- ① To increase the speed  
Start with the needle of the speed controller fully closed and turn it counterclockwise to increase the speed of the actuator. When you reach the desired speed, be sure to tighten the lock nut so that the speed setting does not deviate.












- ② To decrease the speed  
If you turn the needle of the speed controller too far (the speed is too fast), turn it clockwise to decrease the speed. When you reach the desired speed, be sure to tighten the lock nut so that the speed setting does not deviate.



## List of similar products

● Refer to the table below for how to differentiate products that look the same.

	Free type/straight type	Elbow type	Union Straight Type
<b>With quick fitting</b> <b>Speed Controllers</b>  <b>Standard type</b> <b>Mini type</b> <b>High flow rate type</b> <b>Low pressure type</b>	<p>Text engraved on top of needle knob</p> <p><b>A</b> — Standard, meter-out  <b>B</b> — Standard, meter-in  <b>AK</b> — Low pressure type, meter-out  <b>BK</b> — Low pressure type, meter-in</p> <p>Color of lock nut</p> <p>White — Standard meter-out  Low pressure type meter-out  Black — Standard, meter in  Low pressure type meter-in</p> 	<p>Text engraved on top of needle knob</p> <p><b>A</b> — Standard, meter-out  <b>B</b> — Standard, meter in  <b>AK</b> — Low pressure type, meter-out  <b>BK</b> — Low pressure type, meter-in  <b>AG</b> — High flow rate type, meter out</p> <p>Color of lock nut</p> <p>White — Standard meter-out  Low pressure type meter-out  Black — Standard, meter in  Low pressure type meter-in  Blue — High flow rate type, meter out</p> 	<p>Text engraved on top of needle knob</p> <p><b>K</b> — Low pressure type</p> 
<b>Throttle valve</b>	<p>Needle knob Has one line</p> <p>Color of lock nut</p> <p>White — No control direction</p> 	<p>Needle knob Has one line</p> 	<p>Needle knob Has one line</p> 
<b>Power reducer</b>	<p>Mark on top of needle knob</p>  <p>Needle knob Made of black plastic</p> 	<p>Mark on top of needle knob</p>  <p>Needle knob Made of black plastic</p> 