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KOGANEI

ACCESSORIES GENERAL CATALOG

AIR TREATMENT, AUXILIARY, VACUUM, AND FLUORORESIN PRODUCTS

SPEED CONTROLLERS WITH QUICK FITTINGS

CONTENTS

⚠ Caution **Before use, be sure to read the "Safety Precautions" on p. 49.**

Order Codes

●Low pressure type

□ □ — □ □ **L**

- **Low pressure type**
- **Control direction**
  - **A** —— Meter-out control
  - **B** —— Meter-in control
  - ●For the union straight type, leave blank.
  - ●For the NCU specification, see p.423.
- **Connecting thread**
- **Tube outer diameter**
- **Fitting model**

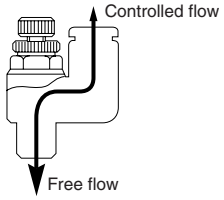
※For the fitting models, the tube size, and thread size combinations, see the table below.

Caution: The low pressure type can be identified by the AK, BK, or K mark on the needle head.
AK : Elbow, low pressure, meter-out
BK : Elbow, low pressure, meter-in
K : Union straight, low pressure

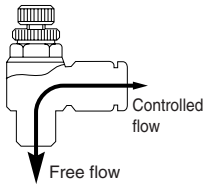
Body configuration and control direction

A: Meter-out control (lock nut: white)

Straight type SS

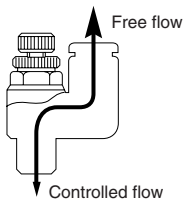


Elbow type SC

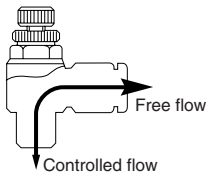


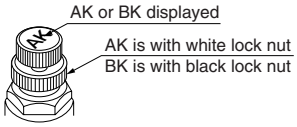
B: Meter-in control (lock nut: black)

Straight type SS



Elbow type SC





※The meter-out or meter-in control can be identified by the AK or BK mark on the needle head and lock nut color.

●**Union straight type**

※For the union straight type, no order code is available for control direction. To determine the mounting direction, check the speed controller's symbol on the side of the plastic body.

●SS Straight 412

Tube size	Thread size		
	M5×0.8	R1/8	R1/4
4	M5	01	—
6	M5	01	02

●SC Elbow 412

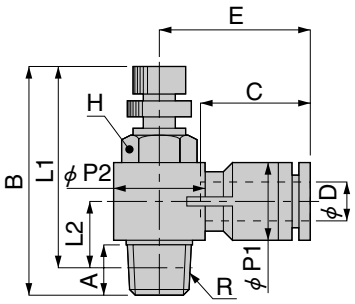
Tube size	Thread size		
	M5×0.8	R1/8	R1/4
4	M5	01	—
6	M5	01	02

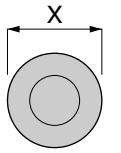
●SSU Union straight 413

Tube size
4
6

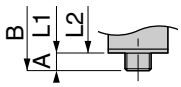
Dimensions (Low Pressure Type) (mm)

Elbow
SC□-□□L





Release ring

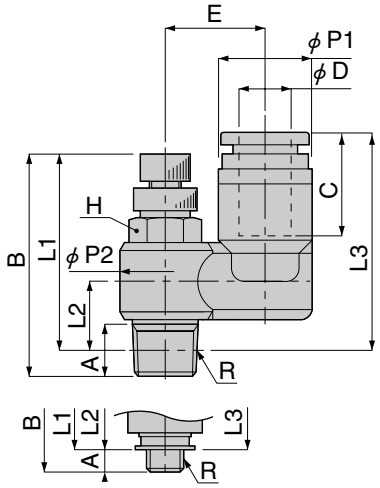


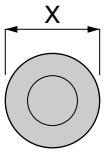
Metric thread type

Model	Tube outer diameter φ D	R	A	B		L1 Note 1		L2 Note1	φ P1	φ P2	C	E	H	X	Mass (g) [oz.]
				MAX	MIN	MAX	MIN								
SC4-M5-□L	4	M5X0.8	2.9	29.7	27	26.8	24.1	7.2	9.9	9.8	14.9	19.9	8	9.9	8.5 [0.300]
SC4-01-□L		R1/8	8	40.7	34.4	36.7	30.4	9.7	10	14.4		21.4	10		18 [0.63]
SC6-M5-□L	6	M5X0.8	2.9	29.7	27	26.8	24.1	8.4	12.4	9.8	17	24	8	11.8	9.6 [0.339]
SC6-01-□L		R1/8	8	40.7	34.4	36.7	30.4	10.9		14.4		23.5	10		19 [0.67]
SC6-02-□L		R1/4	11.1	47.8	41.4	41.8	35.4	12.2		18.4		25.5	14		36 [1.27]

Notes : 1. The L1, L2 dimensions for the tapered thread type are the reference dimensions after the fittings are assembled.
2. In the blank box of the model order code, enter **A** for meter-out control or **B** for meter-in control.

Straight
SS□-□□L





Release ring

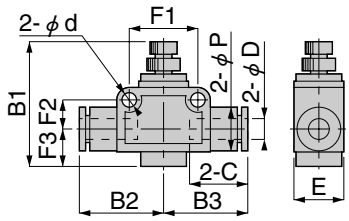
Metric thread type

Model	Tube outer diameter φ D	R	A	B		L1 Note 1		L2 Note1	L3 Note1	φ P1	φ P2	C	E	H	X	Mass (g) [oz.]
				MAX	MIN	MAX	MIN									
SS4-M5-□L	4	M5X0.8	2.9	29.7	27	26.8	24.1	6.8	23.9	10.2	9.8	14.9	10.5	8	9.9	9.1 [0.321]
SS4-01-□L		R1/8	8	40.7	34.4	36.7	30.4	10.9	28.9		14.4		13	10		19 [0.67]
SS6-M5-□L	6	M5X0.8	2.9	29.7	27	26.8	24.1	6.8	26	12.6	9.8	17	12.2	8	11.8	10 [0.35]
SS6-01-□L		R1/8	8	40.7	34.4	36.7	30.4	10.9	31		14.4		14.2	10		21 [0.74]
SS6-02-□L		R1/4	11.1	47.8	41.4	41.8	35.4	12	32.1		18.4		17.2	14		38 [1.34]

Notes : 1. The L1, L2 and L3 dimensions for the tapered thread type are the reference dimensions after the fittings are assembled.
2. In the blank box of the model order code, enter **A** for meter-out control or **B** for meter-in control.

Dimensions (Low Pressure Type) (mm)

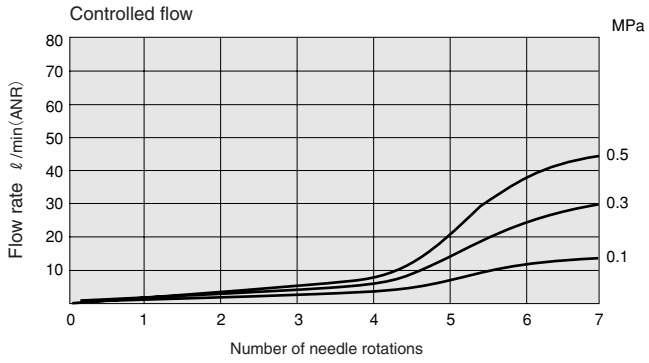
Union straight
SSU□L

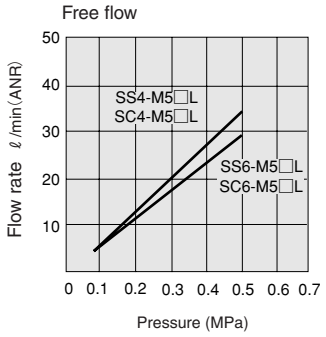


Model	Tube outer diameter ϕ D	B1		B2	B3	ϕ P	E	C	ϕ d	F1	F2	F3	Mass (g) [oz.]
		MAX	MIN										
SSU4L	4	28.6	25.9	20.4	20.4	10.5	11	14.9	3.2	14	6.5	6.5	13 [0.46]
SSU6L	6	41.5	35.7	24.9	24.9	13	15	16.9	4.3	20	8.5	11	29 [1.02]

Flow Rate Characteristics (Low Pressure Type, Elbow/Straight)

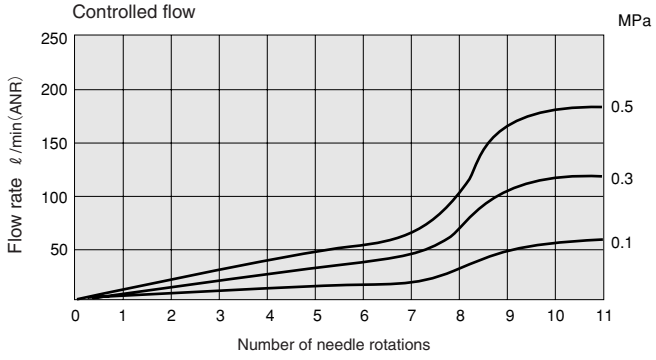
SC4-M5-□L SC6-M5-□L
SS4-M5-□L SS6-M5-□L

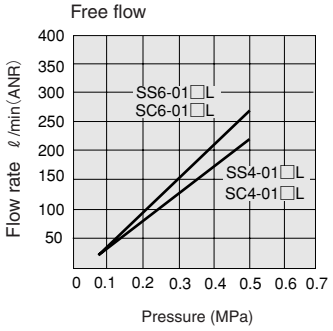




1MPa = 145psi. 1ℓ/min = 0.0353ft³/min.

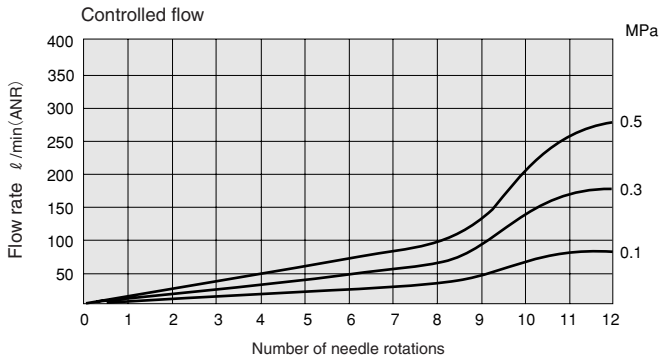
SC4-01-□L SC6-01-□L
SS4-01-□L SS6-01-□L

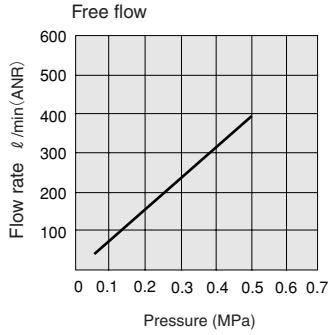




1MPa = 145psi. 1ℓ/min = 0.0353ft³/min.

SC6-02-□L SS6-02-□L

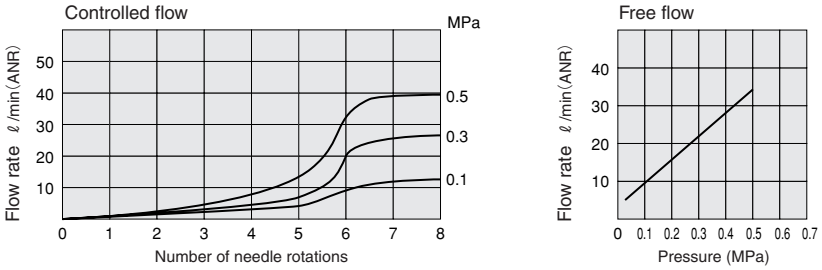




1MPa = 145psi. 1ℓ/min = 0.0353ft³/min.

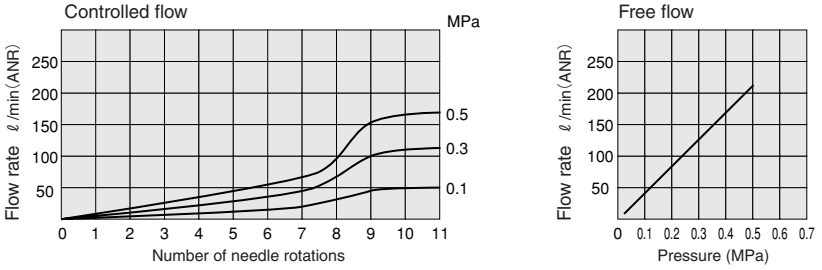
Flow Rate Characteristics (Low Pressure Type, Union Straight)

SSU4L



1MPa = 145psi. 1ℓ/min = 0.0353ft³/min.

SSU6L



1MPa = 145psi. 1ℓ/min = 0.0353ft³/min.

SPEED CONTROLLERS WITH QUICK FITTINGS

NCU Specification

●For specifications, see p.397, 404.
●The dimensions, inner construction, major parts and materials for the **NCU** specification shown below are the same as the standard type. See inner construction, major parts and materials on p.397, 404, and dimensions on p.399, 408～413.
The sealant is not applied to the R taper thread portion of the **NCU** specification fittings.

Caution: For delivery, consult us.

NCU Specification

●Order codes

□ — □ — □ — **NCU** — □

- **Control direction**
  A : Meter-out control
  B : Meter-in control
  ● For the union straight type, leave this box blank.
- **NCU specification**
- **Connecting thread**
- **Tube outer diameter**
- **Speed controller model**

※For the fitting models, the tube size and thread combinations, see the table below. Columns showing the "←" symbol indicate that standard products can be used as the NCU specification. In these cases, place orders for the standard products.

●Model Table (NCU Specification)

Type	Tube outer diameter	Thread	Standard type model (reference)	NCU specification model
Standard type elbow **SC**	4	M5×0.8	SC4-M5-A	←
			SC4-M5-B	←
		R1/8	SC4-01-A	SC4-01-NCU-A
			SC4-01-B	SC4-01-NCU-B
	6	M5×0.8	SC6-M5-A	←
			SC6-M5-B	←
		R1/8	SC6-01-A	SC6-01-NCU-A
			SC6-01-B	SC6-01-NCU-B
		R1/4	SC6-02-A	SC6-02-NCU-A
			SC6-02-B	SC6-02-NCU-B
		R3/8	SC6-03-A	SC6-03-NCU-A
			SC6-03-B	SC6-03-NCU-B
	8	R1/8	SC8-01-A	SC8-01-NCU-A
			SC8-01-B	SC8-01-NCU-B
		R1/4	SC8-02-A	SC8-02-NCU-A
			SC8-02-B	SC8-02-NCU-B
		R3/8	SC8-03-A	SC8-03-NCU-A
			SC8-03-B	SC8-03-NCU-B
		R1/2	SC8-04-A	SC8-04-NCU-A
			SC8-04-B	SC8-04-NCU-B
	10	R1/4	SC10-02-A	SC10-02-NCU-A
			SC10-02-B	SC10-02-NCU-B
		R3/8	SC10-03-A	SC10-03-NCU-A
			SC10-03-B	SC10-03-NCU-B
		R1/2	SC10-04-A	SC10-04-NCU-A
			SC10-04-B	SC10-04-NCU-B
	12	R3/8	SC12-03-A	SC12-03-NCU-A
			SC12-03-B	SC12-03-NCU-B
		R1/2	SC12-04-A	SC12-04-NCU-A
			SC12-04-B	SC12-04-NCU-B

Type	Tube outer diameter	Thread	Standard type model (reference)	NCU specification model
Standard type straight **SS**	4	M5×0.8	SS4-M5-A	←
			SS4-M5-B	←
		R1/8	SS4-01-A	SS4-01-NCU-A
			SS4-01-B	SS4-01-NCU-B
	6	M5×0.8	SS6-M5-A	←
			SS6-M5-B	←
		R1/8	SS6-01-A	SS6-01-NCU-A
			SS6-01-B	SS6-01-NCU-B
		R1/4	SS6-02-A	SS6-02-NCU-A
			SS6-02-B	SS6-02-NCU-B
	8	R1/8	SS8-01-A	SS8-01-NCU-A
			SS8-01-B	SS8-01-NCU-B
		R1/4	SS8-02-A	SS8-02-NCU-A
			SS8-02-B	SS8-02-NCU-B
		R3/8	SS8-03-A	SS8-03-NCU-A
			SS8-03-B	SS8-03-NCU-B
	10	R1/4	SS10-02-A	SS10-02-NCU-A
			SS10-02-B	SS10-02-NCU-B
		R3/8	SS10-03-A	SS10-03-NCU-A
			SS10-03-B	SS10-03-NCU-B
	12	R3/8	SS12-03-A	SS12-03-NCU-A
			SS12-03-B	SS12-03-NCU-B
		R1/2	SS12-04-A	SS12-04-NCU-A
			SS12-04-B	SS12-04-NCU-B

●Model Table (NCU Specification)

Type	Tube outer diameter	Thread	Standard type model (reference)	NCU specification model
Free type **SSF**	4	M5×0.8	SSF4-M5-A	←
			SSF4-M5-B	←
		R1/8	SSF4-01-A	SSF4-01-NCU-A
			SSF4-01-B	SSF4-01-NCU-B
	6	M5×0.8	SSF6-M5-A	←
			SSF6-M5-B	←
		R1/8	SSF6-01-A	SSF6-01-NCU-A
			SSF6-01-B	SSF6-01-NCU-B
		R1/4	SSF6-02-A	SSF6-02-NCU-A
			SSF6-02-B	SSF6-02-NCU-B
	8	R1/8	SSF8-01-A	SSF8-01-NCU-A
			SSF8-01-B	SSF8-01-NCU-B
		R1/4	SSF8-02-A	SSF8-02-NCU-A
			SSF8-02-B	SSF8-02-NCU-B
		R3/8	SSF8-03-A	SSF8-03-NCU-A
			SSF8-03-B	SSF8-03-NCU-B
	10	R1/4	SSF10-02-A	SSF10-02-NCU-A
			SSF10-02-B	SSF10-02-NCU-B
		R3/8	SSF10-03-A	SSF10-03-NCU-A
			SSF10-03-B	SSF10-03-NCU-B
	12	R3/8	SSF12-03-A	SSF12-03-NCU-A
			SSF12-03-B	SSF12-03-NCU-B
		R1/2	SSF12-04-A	SSF12-04-NCU-A
			SSF12-04-B	SSF12-04-NCU-B
Horizontal free type **SSF**	4	M5×0.8	SSF4-M5-A-P	←
			SSF4-M5-B-P	←
Mini type elbow **SC**	3	M3×0.5	SC3-M3-MA	←
			SC3-M3-MB	←
		M5×0.8	SC3-M5-MA	←
			SC3-M5-MB	←
	4	M3×0.5	SC4-M3-MA	←
			SC4-M3-MB	←
		M5×0.8	SC4-M5-MA	←
			SC4-M5-MB	←
		R1/8	SC4-01-MA	SC4-01-NCU-MA
			SC4-01-MB	SC4-01-NCU-MB
	6	M5×0.8	SC6-M5-MA	←
			SC6-M5-MB	←
		R1/8	SC6-01-MA	SC6-01-NCU-MA
			SC6-01-MB	SC6-01-NCU-MB
		R1/4	SC6-02-MA	SC6-02-NCU-MA
			SC6-02-MB	SC6-02-NCU-MB
Mini type straight **SS**	3	M3×0.5	SS3-M3-MA	←
			SS3-M3-MB	←
		M5×0.8	SS3-M5-MA	←
			SS3-M5-MB	←
	4	M3×0.5	SS4-M3-MA	←
			SS4-M3-MB	←
		M5×0.8	SS4-M5-MA	←
			SS4-M5-MB	←
		R1/8	SS4-01-MA	SS4-01-NCU-MA
			SS4-01-MB	SS4-01-NCU-MB
	6	M5×0.8	SS6-M5-MA	←
			SS6-M5-MB	←
		R1/8	SS6-01-MA	SS6-01-NCU-MA
			SS6-01-MB	SS6-01-NCU-MB

Type	Tube outer diameter	Thread	Standard type model (reference)	NCU specification model
Union straight **SSU**	4	———	SSU4	←
	6	———	SSU6	←
	8	———	SSU8	←
	10	———	SSU10	←
	12	———	SSU12	←
Large flow type elbow **SCG**	6	R1/8	SCG6-01-A	SCG6-01-NCU-A
		R1/4	SCG6-02-A	SCG6-02-NCU-A
	8	R1/8	SCG8-01-A	SCG8-01-NCU-A
		R1/4	SCG8-02-A	SCG8-02-NCU-A
		R3/8	SCG8-03-A	SCG8-03-NCU-A
	10	R1/4	SCG10-02-A	SCG10-02-NCU-A
		R3/8	SCG10-03-A	SCG10-03-NCU-A
	12	R3/8	SCG12-03-A	SCG12-03-NCU-A
		R1/2	SCG12-04-A	SCG12-04-NCU-A
Low pressure type elbow **SC**	4	M5×0.8	SC4-M5-AL	←
			SC4-M5-BL	←
		R1/8	SC4-01-AL	SC4-01-NCU-AL
			SC4-01-BL	SC4-01-NCU-BL
	6	M5×0.8	SC6-M5-AL	←
			SC6-M5-BL	←
		R1/8	SC6-01-AL	SC6-01-NCU-AL
			SC6-01-BL	SC6-01-NCU-BL
		R1/4	SC6-02-AL	SC6-02-NCU-AL
			SC6-02-BL	SC6-02-NCU-BL
Low pressure type straight **SS**	4	M5×0.8	SS4-M5-AL	←
			SS4-M5-BL	←
		R1/8	SS4-01-AL	SS4-01-NCU-AL
			SS4-01-BL	SS4-01-NCU-BL
	6	M5×0.8	SS6-M5-AL	←
			SS6-M5-BL	←
		R1/8	SS6-01-AL	SS6-01-NCU-AL
			SS6-01-BL	SS6-01-NCU-BL
		R1/4	SS6-02-AL	SS6-02-NCU-AL
			SS6-02-BL	SS6-02-NCU-BL
Free type low pressure **SSF**	4	M5×0.8	SSF4-M5-AL	←
			SSF4-M5-BL	←
		R1/8	SSF4-01-AL	SSF4-01-NCU-AL
			SSF4-01-BL	SSF4-01-NCU-BL
	6	M5×0.8	SSF6-M5-AL	←
			SSF6-M5-BL	←
		R1/8	SSF6-01-AL	SSF6-01-NCU-AL
			SSF6-01-BL	SSF6-01-NCU-BL
		R1/4	SSF6-02-AL	SSF6-02-NCU-AL
			SSF6-02-BL	SSF6-02-NCU-BL
	8	R1/8	SSF8-01-AL	SSF8-01-NCU-AL
			SSF8-01-BL	SSF8-01-NCU-BL
		R1/4	SSF8-02-AL	SSF8-02-NCU-AL
			SSF8-02-BL	SSF8-02-NCU-BL
	10	R1/4	SSF10-02-AL	SSF10-02-NCU-AL
			SSF10-02-BL	SSF10-02-NCU-BL
Horizontal free type for low pressure **SSF**	4	M5×0.8	SSF4-M5-AL-P	←
			SSF4-M5-BL-P	←
Low pressure type union straight **SSU**	4	———	SSU4L	←
	6	———	SSU6L	←

Safety Precautions (Speed Controllers with Quick Fittings)

The following is a safety precaution to Speed Controllers with Quick Fittings. For other safety precautions, be sure to read the precautions on p.49.

⚠ Warning

- Since the air control direction depends on the product, be sure to check this guide, and identification mark of the body, for use. An error in control direction is dangerous, resulting in injury to persons and damage to equipment.
- When adjusting the actuator speed, begin adjustment with the body needle in a completely closed state and then steadily open it up. When the needle is open, there is a danger of the actuator rod's popping out. Note that the needle is rotated clockwise to close and counterclockwise to open.
- Do not force the product to rotate or swing even if the plastic body is rotatable. Such application could cause damage or leakage in the body.
- Do not use a mechanical tool to tighten the product's lock nut, instead, manually tighten to firmly secure the lock nut in place. Using a mechanical tool to tighten could result in damage to the lock nut or the body. Also, if the lock nut is not firmly tightened, it could become loose, causing the initial setting to change.

⚠ Caution

- The speed controller allows a certain amount of leakage. Do not use for situations where zero leakage volume are required.

Handling Instructions and Precautions

●Mounting

Precautions for mounting the body

1. To mount the body, use a suitable tool to tighten it to the outer hexagonal section of the body.
2. When attaching fittings, tighten to the recommended tightening torque shown in the table below. Tightening to more than the recommended torque could result in broken threads or air leaks due to deformed gaskets. Tightening to less than the recommended torque could lead to loose screws or air leaks.

Recommended tightening torque

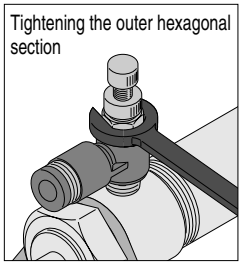
Thread type	Thread size	Tightening torque
Metric thread	M3×0.5	0.7N·m [6.2in·lbf]
	M5×0.8	1.5～1.9N·m [13.3～16.8in·lbf]
	M6×1	2～2.7N·m [17.7～23.9in·lbf]
Taper pipe thread	R1/8	7～9N·m [62～80in·lbf]
	R1/4	12～14N·m [106～124in·lbf]
	R3/8	22～24N·m [195～212in·lbf]
	R1/2	28～30N·m [248～266in·lbf]

Precautions for removing the body

1. To remove the body, use a suitable tool to loosen it from the outer hexagonal section of the body.
2. Clean off the sealant coating on the thread of the removed mating part. The coated sealant could enter other relating parts, and cause breakdowns.

Method for tightening screws

1. Tightening screws
   For tightening screws, use a wrench on outer hexagonal section.

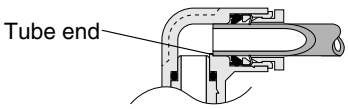


Caution: While the quick fitting sealant can be reused a number of times, the thread on the mating part may also be adhered with sealant. Always clean out the inside of the equipment's female thread.

●Tube connection and disconnection

Precautions for connecting the tube

1. Check that the cut section of the tube has been cut at straight angle, that the outer surface of the tube is not scratched, and that the tube has not become oval shaped.
2. When connecting a tube, failure to insert the tube all the way to the end could result in air leaks.



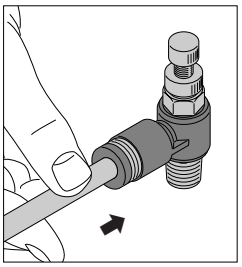
3. After connection, pull the tube to check that it will not disconnect.

Precautions for disconnecting the tube

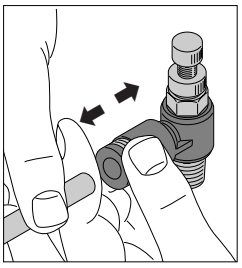
1. Before disconnecting a tube, check that the pressure inside the tube is down to zero.
2. Push the release ring evenly all the way to the end, and then pull the tube out. An insufficient push could make it impossible to pull the tube out, or could scratch the tube, leaving scratched tube material inside the fitting.

Tube connection and disconnection method

1. Tube connection
The Speed Controller with Quick Fitting 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. Tube disconnection
To disconnect the tube, first push on the release ring, releasing the lock claw, and then pull the tube out.
Always stop the air supply before removing the tube.



For cases where tight or cramped piping spaces hinder tube removal operations, a special tool is available. Consult us for details.

Special tool for tube removal

For ϕ 3 [0.118in.], ϕ 4 [0.157in.] and ϕ 6 [0.236in.] tubes
Order code : **UJ-1**

For ϕ 6 [0.236in.], ϕ 8 [0.315in.], ϕ 10 [0.394in.] and ϕ 12 [0.472in.] tubes
Order code : **UJ-2**

● Usable tubes

Either nylon or urethane tubes can be used. The tube outer diameter accuracy should be, for nylon tubes, within ±0.1mm [±0.004in.] of the nominal dimensions, and for urethane tubes, within ±0.15mm [±0.006in.] of the nominal dimensions, while the ovalness (difference between long diameter and short diameter) should be within 0.2mm [0.008in.].

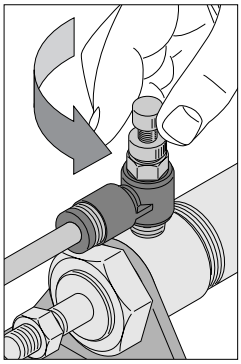
Cautions: 1. Use tubes with no visible scratches on the outer surface. If a scratch is made during repeated use, cut off the scratched portion.
2. Do not bend or twist the tube too much near the connection to the fitting. It could result in air leaks. The minimum bending radius for nylon tubes is as shown in the table below.

mm [in.]

Tube size	Minimum bending radius
ϕ 3 [0.118]	18 [0.7]
ϕ 4 [0.157]	20 [0.8]
ϕ 6 [0.236]	30 [1.2]
ϕ 8 [0.315]	50 [2.0]
ϕ 10 [0.394]	80 [3.2]
ϕ 12 [0.472]	150 [5.9]

●Speed adjustment of actuator

1. To increase the speed
From a completely closed position, rotate the speed controller needle in the counterclockwise direction to increase the speed of the actuator. When the desired speed has been reached, always tighten the lock nut to ensure that the speed setting does not change.



2. To reduce the speed
If the speed controller needle has been rotated too far (the speed is now too fast), rotate it in the clockwise direction to reduce the speed. When the desired speed has been reached, always tighten the lock nut to ensure that the speed setting does not change.