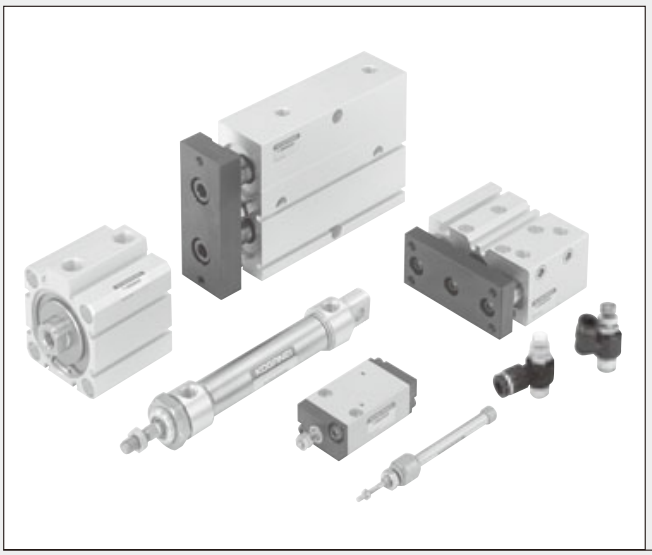


KOGANEI

ACTUATORS GENERAL CATALOG

LOW SPEED CYLINDERS

CONTENTS

⚠ **Caution** **Before use, be sure to read the "Safety Precautions" on p. 57.**

Low Speed Cylinders

Slow, smooth, and stable operation!

- **Enable stable operation from 1mm/s [0.04in./sec.].**[Note]
- **Smooth operation without stick-slips.**
- **Suitable for low speed transfer of fragile workpieces.**
- **Cylinder's outer dimensions are the same as the standard product.**
- **Wide range of cylinders are available: 6 types and 10 bore sizes.**
- **Speed controllers for low speed cylinders are also available.**

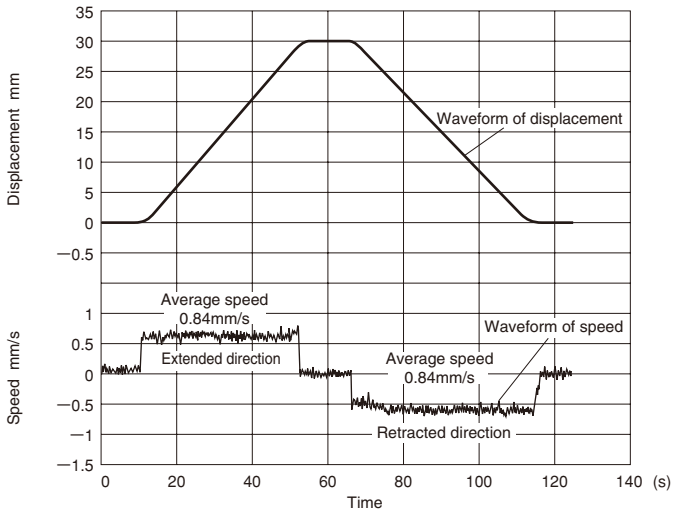
Note : Excluding Jig cylinders with guides.

Slow and sm

⚠ CAUTION

Always wash your hands thoroughly whenever you happen to touch the grease used in the Low Speed Cylinders. If you light a cigarette with greasy hands, the grease adhered to the cigarette could release toxic gases as it burns. (While the grease used in the Low Speed Cylinder is very stable in chemical terms at room temperature, it would release toxic gases if heated to 250°C [482°F] or higher.)

Waveform of Speed and Displacement

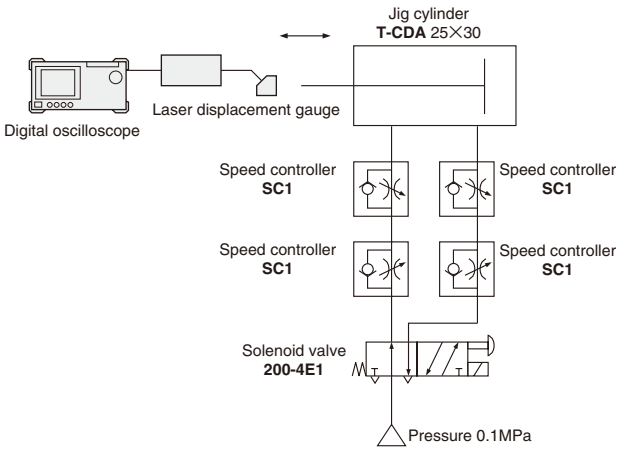


Remarks 1 : The average speed is obtained by dividing the stroke by the time required to travel the stroke. The above average speed values were obtained by tests undertaken at Koganei. They do not imply guaranteed values of the product.

2 : The speed value reads positive when the cylinder is extended.

1mm/s = 0.03944in./sec. 1mm = 0.0394in.

Measurement method

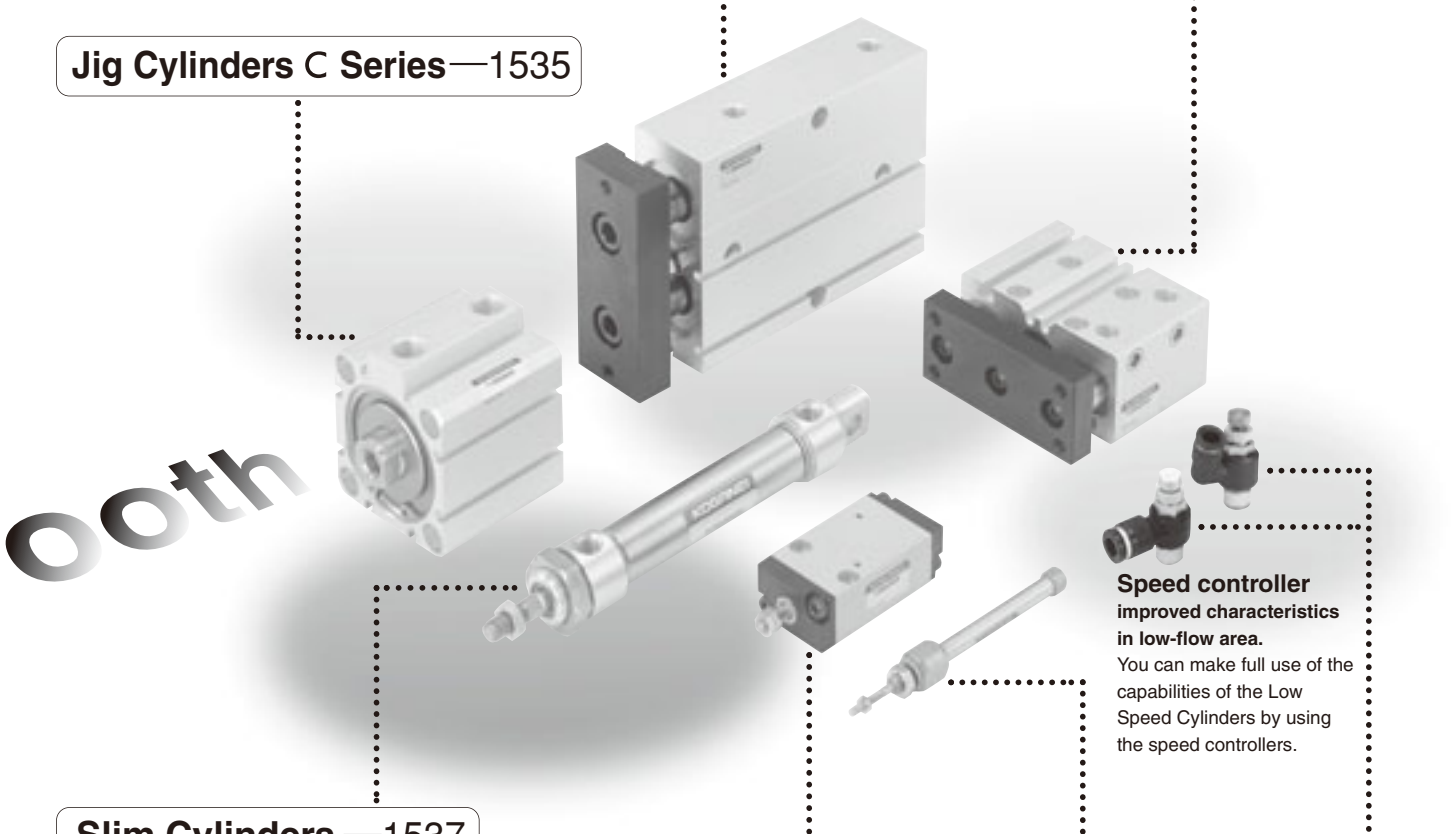


Low Speed Cylinder Variations

Twin Rod Cylinders —1538

Jig Cylinders with Guides —1539

Jig Cylinders C Series—1535



Speed controller
improved characteristics in low-flow area.
You can make full use of the capabilities of the Low Speed Cylinders by using the speed controllers.

Slim Cylinders —1537

Multi Mount Cylinders —1536

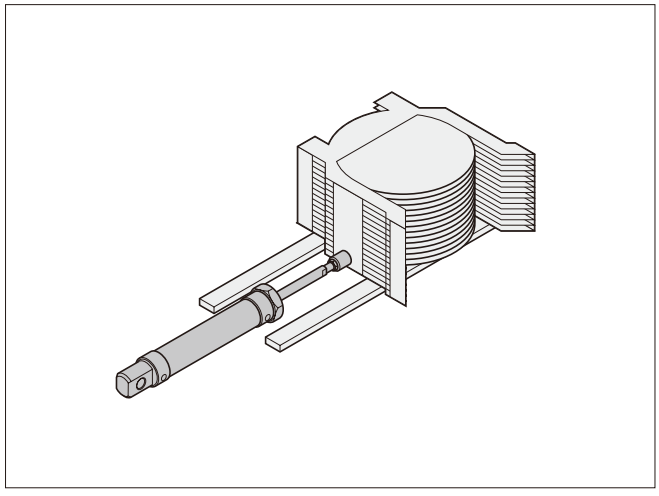
Pen Cylinders—1534

Low speed Control Type Speed Controllers with Quick Fittings —1540

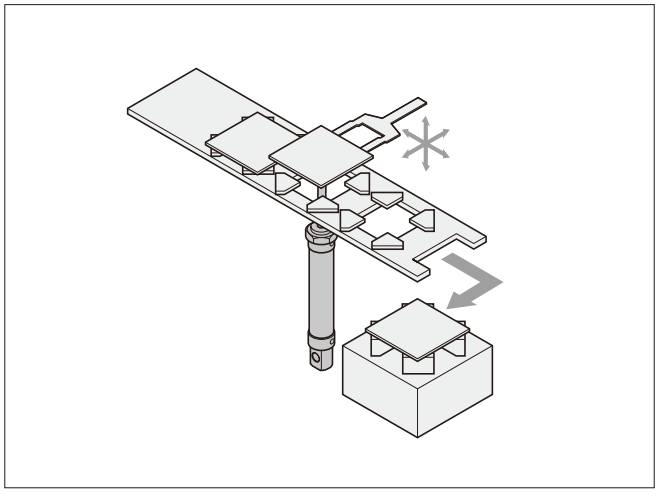
Handling Instructions and Precautions —1533

Application Examples

●**Positioning a wafer stacker**



●**Transfer of a liquid crystal display panel**



General precautions

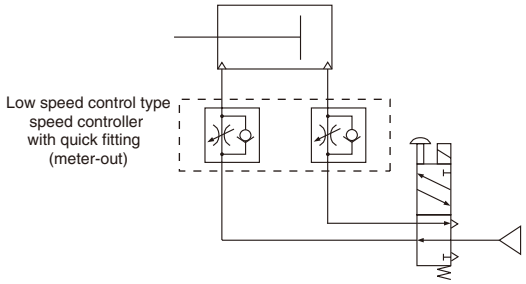
1. Always thoroughly blow off (use compressed air) the tubing before piping. Entering metal chips, sealing tape, rust, etc., generated during piping work could result in air leaks or other defective operation.
2. Use air for the media. For the use of any other media, consult us.
3. Air used for the cylinder should be clean air that contains no deteriorated compressor oil, etc. Install an air filter (filtration of a minimum 40 µm) near the cylinder or valve to remove collected liquid or dust. In addition, drain the air filter periodically.
   Collected liquid or dust entering the cylinder may cause improper operation.

Piping

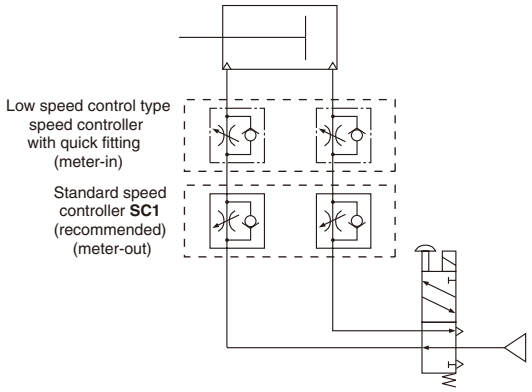
See the diagrams below for piping with the Low Speed Cylinder.

Recommended circuit

❶Basic circuit
Use meter-out speed controllers.



❷Jump start prevention circuit
Use in combination with speed controllers, as shown in the diagram below, is effective for low speed control as well as jump start prevention.

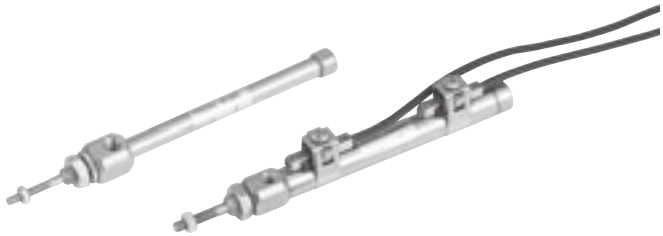


Note: Locate the cylinder and speed controller as close to each other as possible.

LOW SPEED CYLINDERS

Pen Cylinders

Operating speed range
1~200 mm/s
[0.04~7.87in./sec.]



Order Codes

■Function
Blank：Standard type
S：With magnet type

■Cylinder bore size
6：ϕ6 [0.236in.]
10：ϕ10 [0.394in.]
16：ϕ16 [0.630in.]

■Stroke

■Head cover piping
Blank：Axial direction piping
A：Lateral direction piping
M：Lateral direction piping with mounting threads

■Connection port
Blank：M5×0.8
M3：M3×0.5 (Only for ϕ6 [0.236in.])

■Mounting type
Blank：Basic type
1：Double foot mounting type
1A：Single foot mounting type
3：Flange mounting type

■Sensor switch
Blank：No sensor switch
ZC253：3-lead wire, Solid state type
ZC230：2-lead wire, Solid state type
ZC201：Without indicator lamp, Reed switch type[Note1]
ZC205：With indicator lamp, Reed switch type[Note1]

■Lead wire length
A：1000mm [39in.]
B：3000mm [118in.]

■Number of sensor switches
1：With 1 sensor switch
2：With 2 sensor switches
3：With 3 sensor switches
n：With n sensor switches

T - PB DA × ☐☐☐☐☐☐☐☐☐

Double acting type
Pen Cylinder
Low speed type

	Note2 6	×	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60	Blank -A -M	Blank -M3	Blank -1 -1A -3	Blank -ZC253 -ZC230 -ZC201 -ZC205	A B	1 2 3 n
S		×							
	Note2 10	×	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60						
S		×							
	16	×	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 75, 100						
S		×							

※The double rod cylinder and the cylinder for clean systems require special specifications. For details, consult us.

Notes: 1. If using reed-type sensor switches, maintain an operating speed of 30mm/s [1.2in./sec.] or higher.
2. When using ϕ6 [0.236in.] or ϕ10 [0.394in.] bore size at 1mm/s [0.04in./sec.], apply air pressure of 0.4MPa [58psi.] or more.

● Except the items listed below, all outer dimensions, cylinder specifications, sensor switch specifications, and handling instructions are the same as the standard product. For details, see p.254.

1. Operating speed range: 1~200mm/s [0.04~7.87in./sec.]
2. Lubrication prohibited

LOW SPEED CYLINDERS

Jig Cylinders C Series

Operating speed range
1~200 mm/s
[0.04~7.87in./sec.]

Order Codes

■Function
Blank：Standard type
S：With magnet type

■Rod end specifications
Blank：Female thread
B：Male thread

■Bumper
Blank：No bumper
R：With bumper

■Sensor switch
Blank：No sensor switch
ZE135：2-lead wire, Solid state type
ZE155：3-lead wire, Solid state type
ZE235：2-lead wire, Solid state type
ZE255：3-lead wire, Solid state type
ZE101：Without indicator lamp, Reed switch type[Note1]
ZE102：With indicator lamp, Reed switch type[Note1]
ZE201：Without indicator lamp, Reed switch type[Note1]
ZE202：With indicator lamp, Reed switch type[Note1]

■Lead wire length
A：1000mm [39in.]
B：3000mm [118in.]

■Cylinder bore size
12：φ12 [0.472in.]
16：φ16 [0.630in.]
20：φ20 [0.787in.]
25：φ25 [0.984in.]
32：φ32 [1.260in.]
40：φ40 [1.575in.]
50：φ50 [1.969in.]
63：φ63 [2.480in.]

■Centering location
Blank：No centering location
G：With centering location (For φ16 [0.630in.] or larger)

■Mounting type
Blank: Basic type
1 : Foot mounting type
3 : Flange mounting type (excluding -G of φ40 [1.575in.])

■Stroke

■Number of sensor switches
1：With 1 sensor switch
2：With 2 sensor switches
3：With 3 sensor switches
n：With n sensor switches

T - C DA × ☐☐☐☐☐☐☐☐☐☐☐

Double acting type
Jig Cylinder C series
Low speed type

		Note2	×	Stroke	Blank / -B	Blank / -R	Blank / -G	Blank / -1 / -3	Blank / -ZE135 / -ZE155 / -ZE235 / -ZE255 / -ZE101 / -ZE102 / -ZE201 / -ZE202	A / B	1 / 2 / 3 / n
		12	×	5, 10, 15, 20, 25, 30	Blank	Blank	Blank	Blank	Blank	A	1
S			×		-B	-R	-G	-1	-ZE135	B	2
		16	×					-3	-ZE155		3
S			×						-ZE235		n
		20	×	5, 10, 15, 20, 25, 30, 35, 40, 45, 50					-ZE255		
S			×						-ZE101		
		25	×						-ZE102		
S			×						-ZE201		
		32	×	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100					-ZE202		
S			×								
		40	×								
S			×								
		50	×	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100							
S			×								
		63	×								
S			×								

※The double rod cylinder and the cylinder for clean systems require special specifications. For details, consult us.

Notes: 1. If using reed-type sensor switches, maintain an operating speed of 30mm/s [1.2in./sec.] or higher.
2. When using φ12 [0.472in.] bore size at 1mm/s [0.04in,/sec.], apply air pressure of 0.15MPa [22psi.] or more.

● Except the items listed below, all outer dimensions, cylinder specifications, sensor switch specifications, and handling instructions are the same as the standard product. For details, see p.132.

1. Operating speed range: 1~200mm/s [0.04~7.87in./sec.]
2. Lubrication prohibited

LOW SPEED CYLINDERS

Multi Mount Cylinders

Operating speed range
1~*200* mm/s
[0.04～7.87in./sec.]

Order Codes

■**Function**
Blank：Standard type
S：With magnet type

■**Cylinder bore size**
6：ϕ6 [0.236in.]
10：ϕ10 [0.394in.]
16：ϕ16 [0.630in.]

■**Stroke**

■**Mounting type**
Blank：Side mounting type
1A：Foot A mounting type
3A：Flange A mounting type
3B：Flange B mounting type

■**Sensor switch**
Blank：No sensor switch
ZC130：2-lead wire, Solid state type
ZC153：3-lead wire, Solid state type
CS5T：Without indicator lamp, Reed switch type[Note1]
CS11T：With indicator lamp, Reed switch type[Note1]

■**Lead wire length**
A：1000mm [39in.]
B：3000mm [118in.]

■**Number of sensor switches**
1：With 1 sensor switch
n：With n sensor switches

T - B DA ×

	Note2 6	×	5, 10, 15, 20, 25, 30	Blank -1A -3A -3B	Blank -ZC130 -ZC153 -CS5T -CS11T	A B	1 n
S		×					
	Note2 10	×					
S		×					
	16	×					
S		×					

Double acting type
Multi Mount Cylinder
Low speed type

※The double rod cylinder is not available. In addition, the cylinder for clean systems requires special specifications. For details, consult us.

Notes: 1. If using reed-type sensor switches, maintain an operating speed of 30mm/s [1.2in./sec.] or higher.
2. When using ϕ6 [0.236in.] or ϕ10 [0.394in.] bore size at 1mm/s [0.04in./sec.], apply air pressure of 0.4MPa [58psi.] or more.

● Except the items listed below, all outer dimensions, cylinder specifications, sensor switch specifications, and handling instructions are the same as the standard product. For details, see p.94.

1. Operating speed range: 1～200mm/s [0.04～7.87in./sec.]
2. Lubrication prohibited

LOW SPEED CYLINDERS

Slim Cylinders

Operating speed range
1~200 mm/s
[0.04~7.87in./sec.]

Order Codes

■Function
Blank：Standard type
B：Slim Block Cylinder

■Cylinder bore size
16：ϕ16 [0.630in.]
20：ϕ20 [0.787in.]
25：ϕ25 [0.984in.]
32：ϕ32 [1.260in.]
40：ϕ40 [1.575in.]
50：ϕ50 [1.969in.]
63：ϕ63 [2.480in.]

■Head cover specifications
Blank：Standard head
A：Short head

■Stroke

■Mounting type
Blank：Basic type
1：Double foot mounting type
3：Flange mounting type
2：Side mounting type (Only for Slim Block Cylinders)
4：Front mounting type (Only for Slim Block Cylinders)

■Sensor switch
Blank：No sensor switch
ZG530：2-lead wire, Solid state type
ZG553：3-lead wire, Solid state type
CS3M：With indicator lamp, Reed switch type[Note]
CS4M：With indicator lamp, Reed switch type[Note]
CS5M：Without indicator lamp, Reed switch type[Note]
CS2F：With indicator lamp, Reed switch type[Note]
CS3F：With indicator lamp, Reed switch type[Note]
CS4F：With indicator lamp, Reed switch type[Note]
CS5F：Without indicator lamp, Reed switch type[Note]

■Lead wire length
A：1000mm [39in.]
B：3000mm [118in.]

■Number of sensor switches
1：With 1 sensor switch
2：With 2 sensor switches
3：With 3 sensor switches
n：With n sensor switches

T - DA

Slim Cylinder
Double acting type

Low speed type

B	16	×	15, 25, 50, 75, 100	Blank -A	Blank -1 -3 -2 -4	Blank ZG530 ZG553 CS3M CS4M CS5M CS2F CS3F CS4F CS5F	A B	1 2 3 n
	20	×	25, 50, 75, 100, 125, 150					
B		×						
	25	×	25, 50, 75, 100, 125, 200					
B		×						
	32	×						
B		×						
	40	×	25, 50, 75, 100, 125 150, 200, 250, 300					
B		×						
	50	×	25, 50, 75, 100, 150, 200, 250, 300					
B		×						
	63	×						
B		×						

※The double rod cylinder and the cylinder for clean systems require special specifications.
For details, consult us.
Note: If using reed-type sensor switches, maintain an operating speed of 30mm/s [1.2in./sec.] or higher.

● Except the items listed below, all outer dimensions, cylinder specifications, sensor switch specifications, and handling instructions are the same as the standard product. For details, see p.312.

1. Operating speed range: 1~200mm/s [0.04~7.87in./sec.]
2. Lubrication prohibited

LOW SPEED CYLINDERS

Twin Rod Cylinders

Operating speed range
1~200 mm/s
[0.04~7.87in./sec.]

Order Codes

■Cylinder bore size
- **6**：ϕ6 [0.236in.]
- **10**：ϕ10 [0.394in.]
- **16**：ϕ16 [0.630in.]
- **20**：ϕ20 [0.787in.]
- **25**：ϕ25 [0.984in.]
- **32**：ϕ32 [1.260in.]

■Stroke

■Sensor switch
- **Blank**：No sensor switch
- **ZC130**：2-lead wire, Solid state type
- **ZC153**：3-lead wire, Solid state type
- **CS5T**：Without indicator lamp, Reed switch type[Note1]
- **CS11T**：With indicator lamp, Reed switch type[Note1]
- **ZE135**：2-lead wire, Solid state type
- **ZE155**：3-lead wire, Solid state type
- **ZE235**：2-lead wire, Solid state type
- **ZE255**：3-lead wire, Solid state type
- **ZE101**：Without indicator lamp, Reed switch type[Note1]
- **ZE102**：With indicator lamp, Reed switch type[Note1]
- **ZE201**：Without indicator lamp, Reed switch type[Note1]
- **ZE202**：With indicator lamp, Reed switch type[Note1]

■Lead wire length
- **A**：1000mm [39in.]
- **B**：3000mm [118in.]

■Number of sensor switches
- **1**：With 1 sensor switch
- **2**：With 2 sensor switches

T - □ DA □ ×

6[Note2]	×	**10, 20, 30, 40, 50**	**Blank -ZC130 -ZC153 -CS5T -CS11T**	**A**	**1**
10	×	**10, 20, 30, 40, 50, 60, 70**	**Blank -ZE101 -ZE135 -ZE102 -ZE155 -ZE201 -ZE235 -ZE202 -ZE255**	**B**	**2**
16	×	**10, 20, 30, 40, 50, 60, 70, 80, 90, 100**			
20	×				
25	×				
32	×				

Double acting type

※The double rod cylinder is not available. In addition, the cylinder for clean systems requires special specifications. For details, consult us.

Notes: 1. If using reed-type sensor switches, maintain an operating speed of 30mm/s [1.2in./sec.] or higher.
2. When using ϕ6 [0.236in.] bore size at 1mm/s [0.04in./sec.], apply air pressure of 0.4MPa [58psi.] or more.

T：Twin Rod Cylinder (Only for ϕ6 [0.236in.])
TB：Twin Rod Cylinder B series

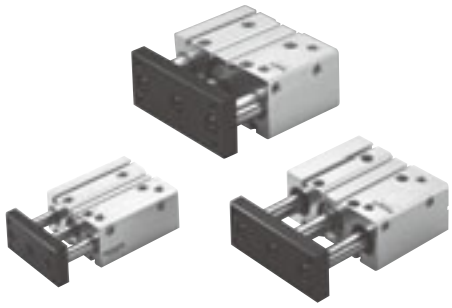
Low speed type

● Except the items listed below, all outer dimensions, cylinder specifications, sensor switch specifications, and handling instructions are the same as the standard product. For details, see p.744.

1. Operating speed range: 1~200mm/s [0.04~7.87in./sec.]
2. Lubrication prohibited

LOW SPEED CYLINDERS

Jig Cylinders with Guides



Operating speed range
5～200 mm/s
[0.20～7.87in./sec.]

Order Codes

T - SG DA Q

- T: Low speed type
- SG: Jig cylinder with guide
- DA: Double acting type
- Q: Rolling bearing type

■Cylinder bore size
- **12**：φ12 [0.472in.]
- **16**：φ16 [0.630in.]
- **20**：φ20 [0.787in.]
- **25**：φ25 [0.984in.]
- **32**：φ32 [1.260in.]
- **40**：φ40 [1.575in.]
- **50**：φ50 [1.969in.]
- **63**：φ63 [2.480in.]

■Stroke

■Sensor switch
- **Blank**：No sensor switch
- **ZE135**：2-lead wire, Solid state type
- **ZE155**：3-lead wire, Solid state type
- **ZE235**：2-lead wire, Solid state type
- **ZE255**：3-lead wire, Solid state type
- **ZE101**：Without indicator lamp, Reed switch type[Note]
- **ZE102**：With indicator lamp, Reed switch type[Note]
- **ZE201**：Without indicator lamp, Reed switch type[Note]
- **ZE202**：With indicator lamp, Reed switch type[Note]

■Lead wire length
- **A**：1000mm [39in.]
- **B**：3000mm [118in.]

■Number of sensor switches
- **1**：With 1 sensor switch
- **2**：With 2 sensor switches
- **3**：With 3 sensor switches
- **n**：With n sensor switches

		Stroke	Sensor switch	Lead wire length	Number of sensor switches
12	×	10, 20, 30, 40, 50, 75, 100	Blank -ZE135 -ZE155 -ZE235 -ZE255 -ZE101 -ZE102 -ZE201 -ZE202	A B	1 2 3 n
16	×				
20	×	10, 20, 30, 50, 75, 100, 125, 150, 175, 200			
25	×				
32	×				
40	×				
50	×				
63	×				

※The double rod cylinder is not available. In addition, the cylinder for clean systems requires special specifications. For details, consult us.

Note: If using reed-type sensor switches, maintain an operating speed of 30mm/s [1.2in./sec.] or higher.

● Except the items listed below, all outer dimensions, cylinder specifications, sensor switch specifications, and handling instructions are the same as the standard product. For details, see p.698.

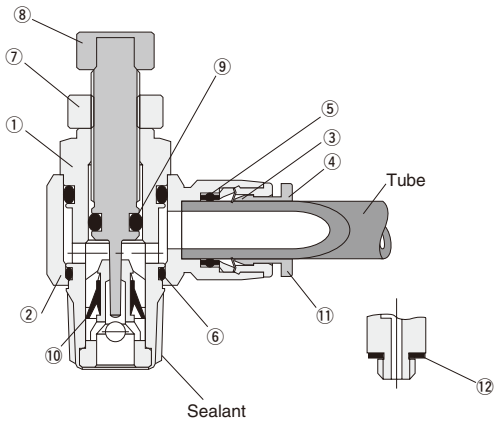
1. Operating speed range: 5～200mm/s [0.20～7.87in./sec.]
2. Lubrication prohibited

LOW SPEED CYLINDERS

Low Speed Control Type
Speed Controllers with Quick Fittings

● Specifications and handling instructions are the same as the standard product.
For details, see the General Catalog of Air Treatment, Auxiliary, Vacuum.

Inner Construction and Major Parts



No.	Name	Material
①	Metal body	Brass (nickel plated)
②	Plastic body	Polybutylene terephthalate
③	Lock claw	Stainless steel
④	Release ring	Polyacetal
⑤	Elastic sleeve	Synthetic rubber (NBR)
⑥	O-ring	Synthetic rubber (NBR)
⑦	Lock nut	Aluminum
⑧	Needle	Brass (nickel plated)
⑨	O-ring	Synthetic rubber (NBR)
⑩	Diaphragm	
⑪	Guide ring	Brass (electroless nickel plated)
⑫	Gasket	SPCC and synthetic rubber (NBR)

Order Codes

□ **C** □ - □ - □

Control direction
A : Meter-out control (marked AT)
B : Meter-in control (marked BT)

Connection thread
M5 : M5×0.8
01 : R1/8
02 : R1/4

Tube outer diameter
4 : φ4 [0.157in.]
6 : φ6 [0.236in.]
8 : φ8 [0.315in.]
10 : φ10 [0.394in.]

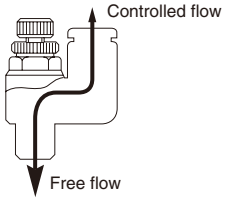
Low speed control type

Fitting type
SC : Elbow type
SS : Straight type

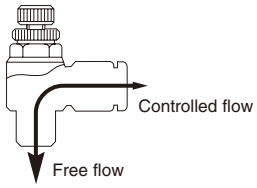
Body configurations and control directions

A : Meter-out control

Straight type SS

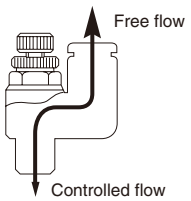


Elbow type SC

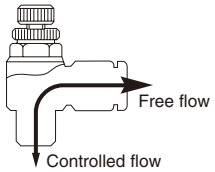


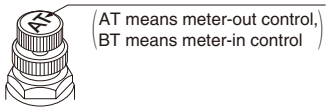
B : Meter-in control

Straight type SS



Elbow type SC





●SCC
Elbow

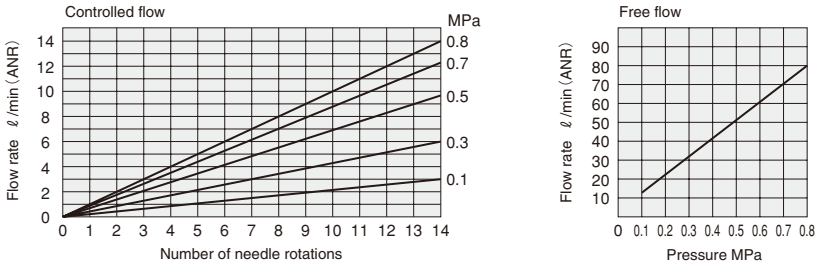
Tube size	Thread size		
	M5×0.8	R1/8	R1/4
4	M5	01	—
6	M5	01	02
8	—	01	02
10	—	—	02

●SSC
Straight

Tube size	Thread size		
	M5×0.8	R1/8	R1/4
4	M5	01	—
6	M5	01	02
8	—	01	02
10	—	—	02

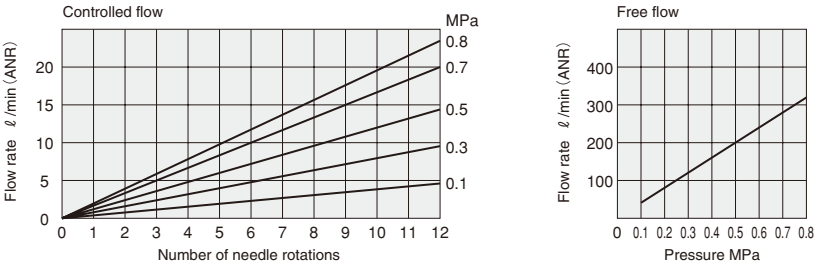
Flow Rate Characteristics (Low Speed Control Type)

SCC4-M5-□
SCC6-M5-□
SSC4-M5-□
SSC6-M5-□



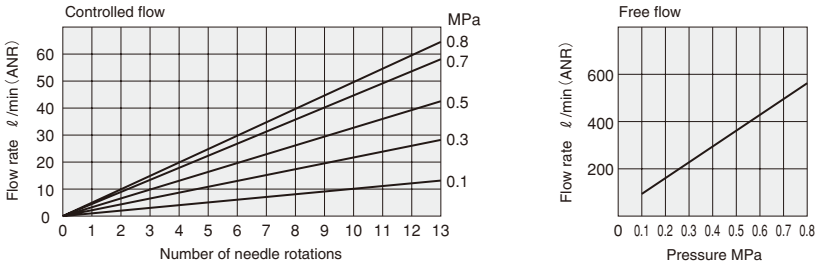
1 ℓ /min = 0.0353ft³/min., 1MPa = 145psi.

SCC4-01-□
SCC6-01-□
SCC8-01-□
SSC4-01-□
SSC6-01-□
SSC8-01-□



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

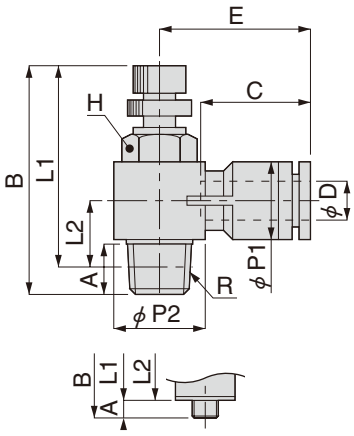
SCC6-02-□
SCC8-02-□
SCC10-02-□
SSC6-02-□
SSC8-02-□
SSC10-02-□



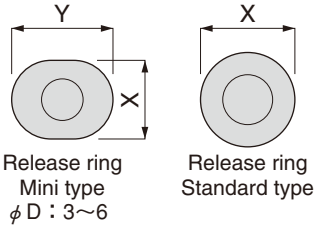
1 ℓ /min = 0.0353ft³/min., 1MPa = 145psi.

Dimensions (mm)

Elbow
SCC



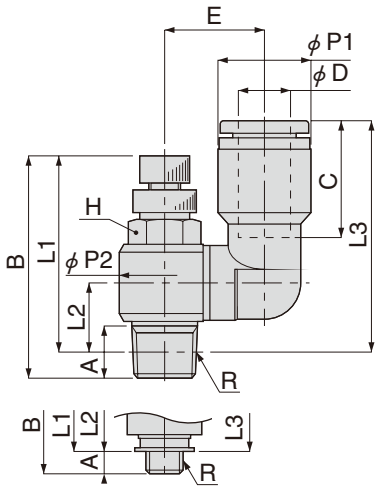
Metric thread type



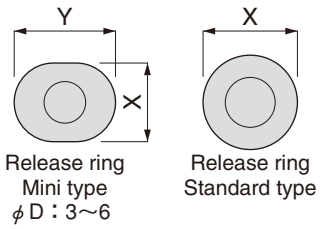
Model[Note2]	Tube outer diameter φD	R	A	B		L1 [Note1]		L2 [Note2]	φP1	φP2	C	E	Width across flats H	X	Y	Mass (g [oz.])
				MAX	MIN	MAX	MIN									
SCC4-M5-□	4	M5X0.8	2.9	33.4	30	30.5	27.1	6.7	8	9.8	11	15.4	8	7.8	9.8	7.2 [0.254]
SCC4-01-□		R1/8	8	41	35.9	37	31.9	10.7		14.4		17.7	10			17 [0.60]
SCC6-M5-□	6	M5X0.8	2.9	33.4	30	30.5	27.1	7.5	10.5	9.8	11.6	17.5	8	9.8	11.8	7.8 [0.275]
SCC6-01-□		R1/8	8	41	35.9	37	31.9	10.7		14.4		18.3	10			18 [0.63]
SCC6-02-□		R1/4	11.1	48.7	42.6	42.6	36.5	11.9		18.4		20.2	14			35 [1.23]
SCC8-01-□	8	R1/8	8	41	35.9	37	31.9	11.9	14.4	14.4	18.1	26.9	10	13.8	—	21 [0.74]
SCC8-02-□		R1/4	11.1	48.7	42.6	42.6	36.5	13.2		18.4		28.4	14			38 [1.34]
SCC10-02-□	10	R1/4	11.1	48.7	42.6	42.6	36.5	14.8	17.6	18.4	20.2	30.9	14	16.8	—	41 [1.45]

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

Straight
SSC



Metric thread type



Model[Note2]	Tube outer diameter φD	R	A	B		L1 [Note1]		L2 [Note1]	L3 [Note1]	φP1	φP2	C	E	Width across flats H	X	Y	Mass (g [oz.])
				MAX	MIN	MAX	MIN										
SSC4-M5-□	4	M5X0.8	2.9	33.4	30	30.5	27.1	6.7	22.8	8	9.8	11	10	8	7.8	9.8	7.6 [0.268]
SSC4-01-□		R1/8	8	41	35.9	37	31.9	10.7	26.8		14.4		12.2	10			17 [0.60]
SSC6-M5-□	6	M5X0.8	2.9	33.4	30	30.5	27.1	6.7	24.2	10.5	9.8	11.6	10.5	8	9.8	11.8	8.4 [0.296]
SSC6-01-□		R1/8	8	41	35.9	37	31.9	10.7	28.2		14.4		12.7	10			18 [0.63]
SSC6-02-□		R1/4	11.1	48.7	42.6	42.6	36.5	11.9	29.4		18.4		14.7	14			36 [1.27]
SSC8-01-□	8	R1/8	8	41	35.9	37	31.9	10.7	36.4	14.5	14.4	18.1	15.5	10	13.8	—	22 [0.78]
SSC8-02-□		R1/4	11.1	48.7	42.6	42.6	36.5	11.9	37.6		18.4		17.5	14			39 [1.38]
SSC10-02-□	10	R1/4	11.1	48.7	42.6	42.6	36.5	11.9	40.9	17.5	18.4	20.2	18	14	16.8	—	42 [1.48]

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