

# Air Cylinder

ø10, ø16

New

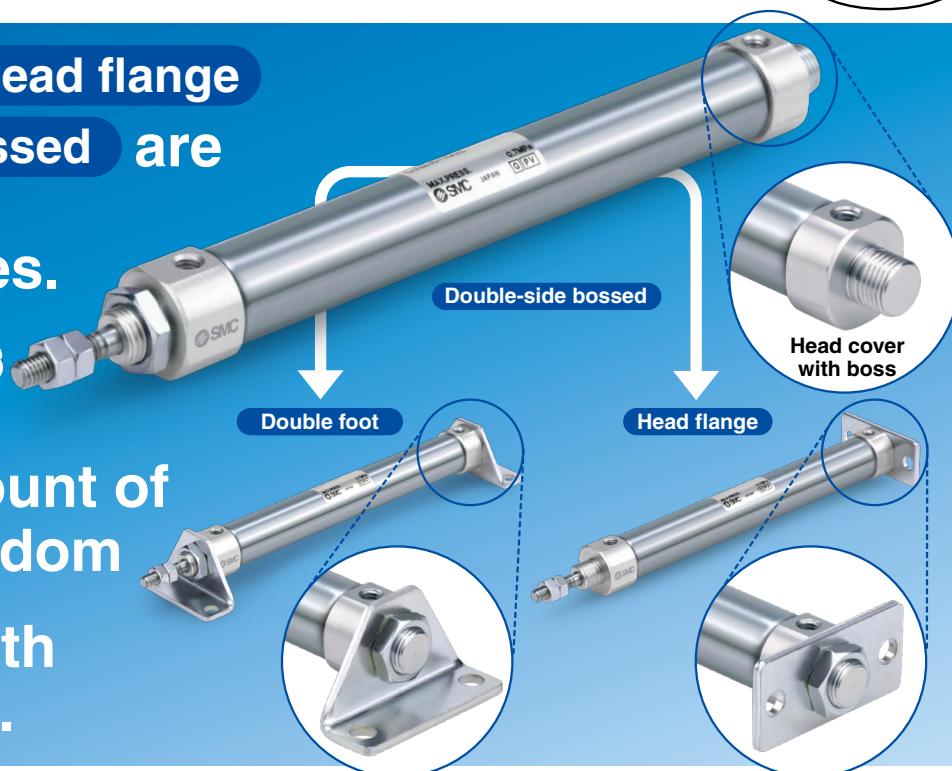
RoHS

Double foot Head flange  
Double-side bossed are  
added to the  
mounting types.

4 types → 7 types

Improved amount of  
mounting freedom

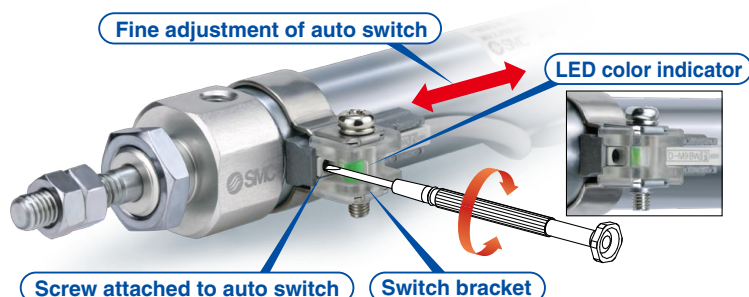
Head cover with  
boss is added.



## Easy fine adjustment of auto switch position

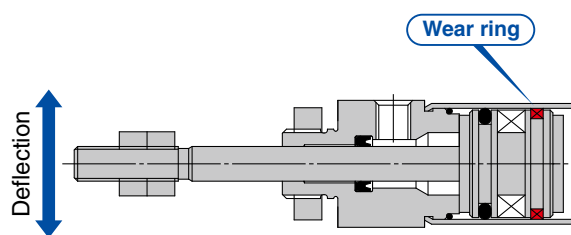
Fine adjustment of the auto switch position is possible by simply loosening the screw attached to the auto switch.

Transparent switch bracket improves  
visibility of indicator LED.



## Rod end deflection accuracy improved

Rod end deflection is reduced by mounting a wear ring to the piston as standard.



## Series/Made to Order set additionally

- Standard type: Double rod, Single acting • Non-rotating rod type
- Direct mount type • Direct mount, Non-rotating rod type
- Made to Order: Heat resistant cylinder (-XB6), Dual stroke cylinder (-XC10, 11) etc. are added.

Series **CJ2**



CAT.ES20-226B

# Air Cylinder

## Part numbers with rod end bracket and/or pivot bracket available

Not necessary to order a bracket for the applicable cylinder separately

Note) Mounting bracket is shipped together with the product, but not assembled.

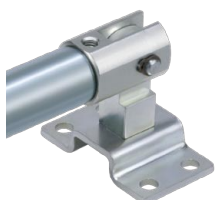
Example) **CDJ2D16-50Z- N W -M9BW-B**

### Pivot bracket

Nil	None
N	Pivot bracket is shipped together with the product, but not assembled.

\* Only for CJ2D (double clevis) type

### N: Kit of pivot bracket and double clevis



### Rod end bracket

Nil	None
V	Single knuckle joint
W	Double knuckle joint
T	Rod end cap (Flat type)
U	Rod end cap (Round type)

### With rod end bracket

V: Single knuckle joint



W: Double knuckle joint



### Rod end cap

T: Flat type

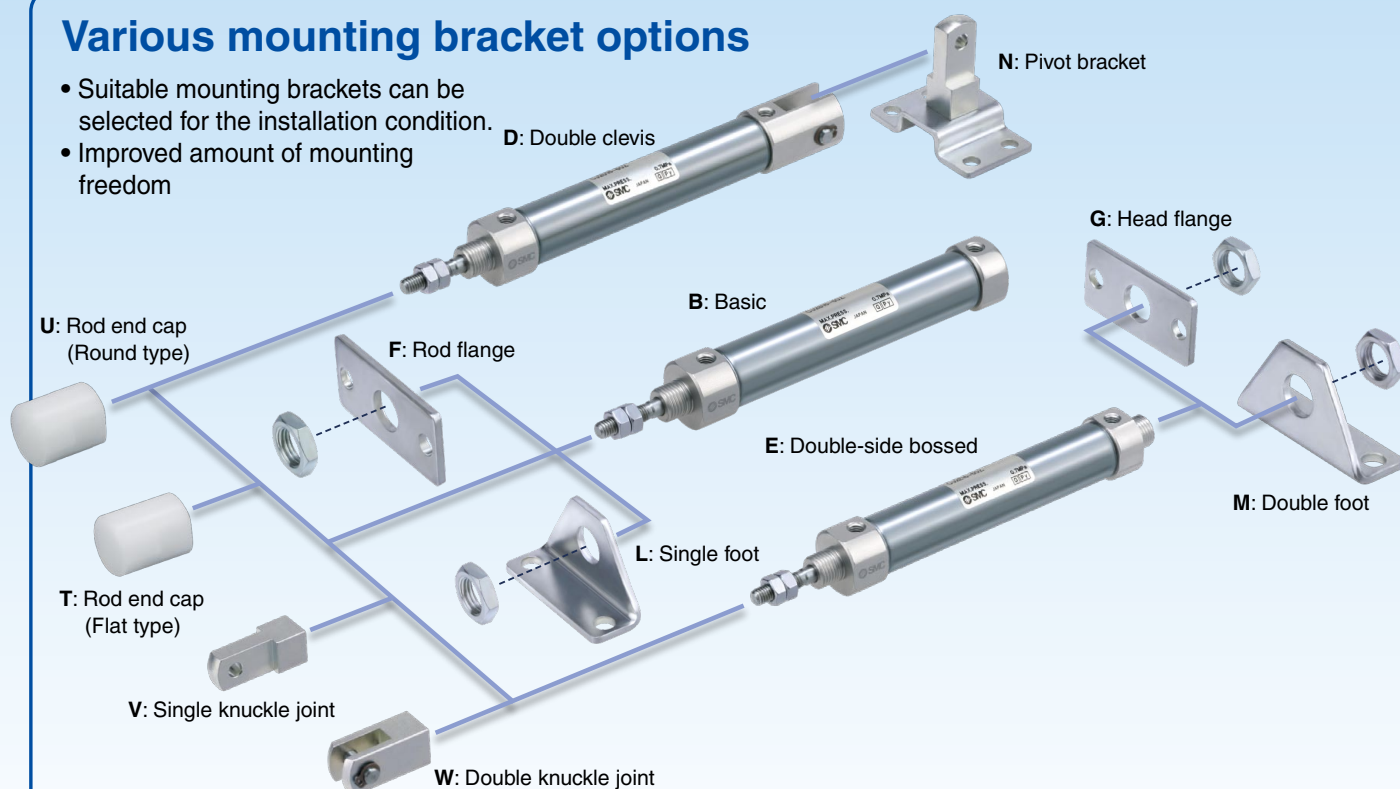


U: Round type



## Various mounting bracket options

- Suitable mounting brackets can be selected for the installation condition.
- Improved amount of mounting freedom



### 2 mounting types of compact auto switches

- Band mounting
- Rail mounting

The auto switch mounting type, band or rail can be selected with the model number.

### Water resistant compact auto switch now available

- Solid state auto switch D-M9□A(V)

Applicable to lead wire perpendicular entry type



Band mounting



Rail mounting

### Head cover

4 types of head cover shape are available.

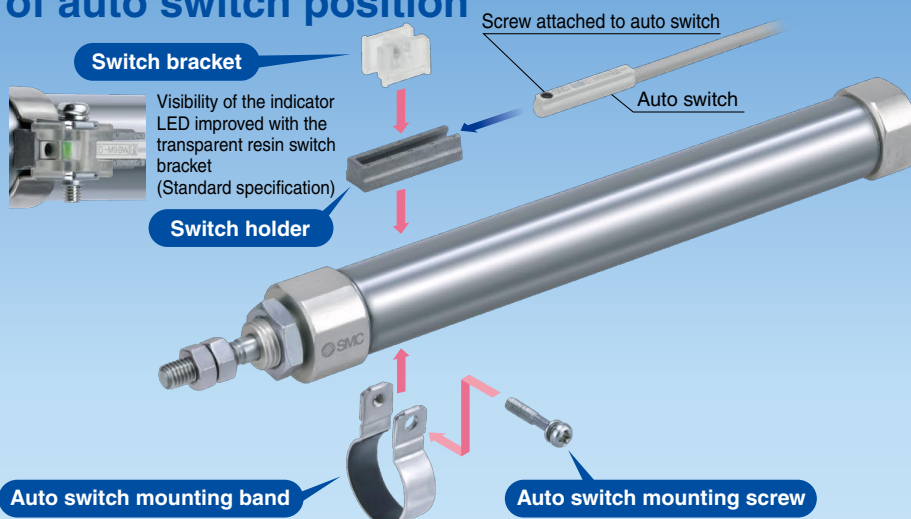
Basic	Double clevis
Axial piping	With boss

No environmental hazardous substances used

Specifications and dimensions are the same as the existing product.

## Easy fine adjustment of auto switch position

Fine adjustment of the auto switch set position can be performed by loosening the auto switch attached screw without loosening the auto switch mounting band. Operability improved compared with the conventional auto switch set position adjustment, where the complete switch mounting band requires loosening.



## Stroke Variations

Bore size (mm)	Standard stroke (mm)									
	15	30	45	60	75	100	125	150	175	200
10	●	●	●	●	●	●	●	●	●	●
16	●	●	●	●	●	●	●	●	●	●

## Series Variations

### Series CJ2-Z

Series	Action	Type	Bore size (mm)		Variations		Page
			10	16	Built-in magnet	Air cushion	
Standard CJ2-Z	Double acting	Single rod	●	●	●	●	Page 1
	Double acting	Double rod	●	●	●	●	Page 13
	Single acting	Single rod Spring return/extend	●	●	●	●	Page 20
Non-rotating rod CJ2K-Z	Double acting	Single rod	●	●	●	●	Page 32
	Single acting	Single rod Spring return/extend	●	●	●	●	Page 39
Built-in speed controller CJ2Z-Z	Double acting	Single rod	●	●	●	●	Page 51
	Double acting	Double rod	●	●	●	●	Page 58
Direct mount CJ2R-Z	Double acting	Single rod	●	●	●	●	Page 63
	Single acting	Single rod Spring return/extend	●	●	●	●	Page 67
Direct mount, Non-rotating rod CJ2RK-Z	Double acting	Single rod	●	●	●	●	Page 71
	Single acting	Single rod Spring return/extend	●	●	●	●	Page 74
Smooth Cylinder CJ2Y-Z	Double acting	Single rod	●	●	●	●	CAT.ES20-235
Low Speed Cylinder CJ2X-Z	Double acting	Single rod	●	●	●	●	CAT.ES20-235

\* For standard type with bore size of 6 mm, refer to the conventional CJ2 series (WEB catalog or Best Pneumatics No. 2).

\* For details about the clean series, refer to the WEB catalog.

### Series CJ2

Series	Action	Type	Bore size (mm)		Variations		For details, refer to the WEB catalog or the following page.
			10	16	Built-in magnet	Air cushion	
With end lock CBJ2	Double acting	Single rod	●	●	●	●	Best Pneumatics Page 130

# Combinations of Standard Products and Made to Order Specifications

## Series CJ2

● : Standard
◎ : Made to Order
○ : Special product (Please contact SMC for details.)
— : Not available

<div>● : Standard</div> <div>⊙ : Made to Order</div> <div>○ : Special product (Please contact SMC for details.)</div> <div>— : Not available</div>		Series	CJ2 (Standard type)				CJ2K (Non-rotating rod type)			
		Action/ Type	Double acting		Single acting		Double acting	Single acting		
			Single rod	Double rod	Single rod (spring return)	Single rod (spring extend)	Single rod	Single rod (spring return)	Single rod (spring extend)	
		Page	Page 1	Page 13	Page 20		Page 32	Page 39		
Symbol	Specifications	Applicable bore size	ø10, ø16				ø10, ø16			
Standard	Standard	ø10, ø16	●	●	●	●	●	●	●	
D	Built-in magnet		●	●	●	●	●	●	●	
CJ2□-□A	Air cushion		●	●	—	—	—	—	—	
10-, 11-	Clean series <small>Note 1)</small>		●	●	○	○	—	—	—	
25A	Copper (Cu) and Zinc (Zn)-free <small>Note 6)</small>		●	○	○	○	○	○	○	
XB6	Heat resistant cylinder (–10 to 150°C) <small>Note 3) Note 4)</small>	ø10, ø16	⊙	⊙	○	○	○	○	○	
XB7	Cold resistant cylinder (–40 to 70°C) <small>Note 3) Note 4)</small>		⊙	⊙	○	○	○	○	○	
XB9	Low speed cylinder (10 to 50 mm/s) <small>Note 4)</small>		⊙	—	—	—	—	—	—	
XC3	Special port position <small>Note 2) Note 4)</small>		⊙	○	—	—	⊙	—	—	
XC8	Adjustable stroke cylinder/ Adjustable extension type <small>Note 4)</small>		⊙	—	○	○	○	○	○	
XC9	Adjustable stroke cylinder/ Adjustable retraction type <small>Note 4)</small>		⊙	—	○	—	⊙	○	—	
XC10	Dual stroke cylinder/Double rod type <small>Note 4)</small>		⊙	—	○	○	⊙	○	○	
XC11	Dual stroke cylinder/Single rod type <small>Note 4)</small>		⊙	—	—	—	○	—	—	
XC22	Fluororubber seal <small>Note 4)</small>		⊙	⊙	⊙	⊙	⊙	○	○	
XC51	With hose nipple		⊙	⊙	⊙	⊙	⊙	⊙	⊙	
XC85	Grease for food processing equipment		⊙	⊙	⊙	⊙	⊙	⊙	⊙	
X446	PTFE grease		⊙	⊙	⊙	⊙	⊙	⊙	⊙	

Note 1) Mounting style: Not compatible with the clevis type.

An auto switch is available in the band mounting type only.

Note 2) An auto switch is available in the band mounting type only.

Note 3) The products with an auto switch are not compatible.

Note 4) The products with an air cushion are not compatible.

Note 5) For details about the smooth cylinder and low speed cylinder, refer to the **WEB catalog** or "CAT.ES20-235" catalog.

Note 6) For details, refer to the **WEB catalog**.



	CJ2Z (Built-in speed controller type)		CJ2R (Direct mount type)			CJ2RK (Direct mount, Non-rotating rod type)			CJ2Y <sup>Note 5)</sup> Smooth Cylinder	CJ2X <sup>Note 5)</sup> Low Speed Cylinder	
	Double acting		Double acting	Single acting		Double acting	Single acting		Double acting	Double acting	
	Single rod	Double rod	Single rod	Single rod (spring return)	Single rod (spring extend)	Single rod	Single rod (spring return)	Single rod (spring extend)	Single rod	Single rod	
	Page 51	Page 58	Page 63	Page 67		Page 71	Page 74		—	—	
	ø10, ø16								ø10, ø16	ø10, ø16	Symbol
	●	●	●	●	●	●	●	●	●	●	Standard
	●	●	●	●	●	●	●	●	●	●	D
	—	—	○	—	—	—	—	—	—	—	CJ2□-□A
	—	—	●	○	○	—	—	—	—	—	10-, 11-
	○	○	○	○	○	○	○	○	○	○	25A
	○	○	○	○	○	○	○	○	—	—	XB6
	○	○	○	○	○	○	○	○	—	—	XB7
	—	—	—	—	—	—	—	—	—	—	XB9
	—	—	○	—	—	○	—	—	◎	○	XC3
	○	—	○	○	○	○	○	○	—	—	XC8
	—	—	◎	○	—	◎	○	—	◎	—	XC9
	○	—	○	○	○	○	○	○	○	—	XC10
	—	—	○	—	—	○	—	—	—	—	XC11
	○	○	◎	○	○	○	○	○	—	—	XC22
	◎	◎	◎	◎	◎	◎	◎	◎	—	—	XC51
	◎	◎	◎	◎	◎	◎	◎	◎	—	—	XC85
	◎	◎	◎	◎	◎	◎	◎	◎	—	—	X446

Standard	Double Acting, Double Rod	CJ2W	Double Acting, Single Rod	CJ2
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K	Double Acting, Single Rod	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z	Double Acting, Double Rod	CJ2ZW
Direct Mount	Double Acting, Single Rod	CJ2R	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2R	Double Acting, Single Rod	CJ2RK
Auto Switch				
Made to Order				

# Air Cylinder: Standard Type Double Acting, Single Rod

## Series CJ2

ø10, ø16

RoHS



### How to Order

**With auto switch** **CJ2B16-60AZ-V-**

**CDJ2D16-60AZ-NW-M9BW-B-**

**Built-in magnet**

**Bore size**

10	10 mm
16	16 mm

**Standard stroke**

Bore size (mm)	Standard stroke
10	15, 30, 45, 60, 75, 100, 125, 150
16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200

\* Manufacture of intermediate strokes in 1 mm intervals is possible. (Spacers are not used.) Produced upon receipt of order.

**Mounting**

B	Basic
E	Double-side bossed
D	Double clevis
L	Single foot
M	Double foot
F	Rod flange
G	Head flange

\* Foot/Flange brackets are shipped together with the product, but not assembled.

**Pivot bracket**

Nil	None
N	Pivot bracket is shipped together with the product, but not assembled.

\* Only for CJ2D (double clevis)  
\* Pivot bracket is shipped together with the product, but not assembled.

**Head cover port location**

Nil	Perpendicular to axis
R	Axial

**Cushion**

Nil	Rubber bumper
A	Air cushion

\* For double clevis, the product is perpendicular to the cylinder axis.  
\* For double-side bossed, the product is perpendicular to the cylinder axis.

**Rod end bracket**

Nil	None
V	Single knuckle joint
W	Double knuckle joint
T	Rod end cap (Flat type)
U	Rod end cap (Round type)

\* Rod end bracket is shipped together with the product, but not assembled.  
\* A knuckle joint pin is not provided with the single knuckle joint.

**Made to Order**  
Refer to page 2 for details.

**Auto switch mounting type**

A	Rail mounting
B	Band mounting

\* For rail mounting, screws and nuts for 2 auto switches come with the rail.  
\* Refer to page 84 for auto switch mounting brackets.

**Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

**Auto switch**

Nil	Without auto switch
-----	---------------------

\* For applicable auto switches, refer to the table below.

**Applicable Auto Switches**/Refer to the **WEB catalog** or Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load	
					DC	AC	Band mounting		Rail mounting		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)			
							Perpendicular	In-line	Perpendicular	In-line								
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
		3-wire (PNP)		M9PV				M9P	M9PV	M9P	●	●	●	○	○			
		Connector		2-wire				M9BV	M9B	M9BV	M9B	●	●	●	○	○		
		—		H7C				J79C	—	●	—	●	●	●	—			
	Diagnostic indication (2-color indication)	Grommet	3-wire (NPN)	24 V	5 V, 12 V	—	M9NWV	M9NW	M9NWV	M9NW	●	●	●	○	○	IC circuit		
			3-wire (PNP)				M9PWV	M9PW	M9PWV	M9PW	●	●	●	○	○			
			2-wire				M9BWV	M9BW	M9BWV	M9BW	●	●	●	○	○			
			3-wire (NPN)				M9NAV**	M9NA**	M9NAV**	M9NA**	○	○	●	○	○			
	Water resistant (2-color indication)	Grommet	3-wire (PNP)	24 V	5 V, 12 V	—	M9PAV**	M9PA**	M9PAV**	M9PA**	○	○	●	○	○	IC circuit		
			2-wire				M9BAV**	M9BA**	M9BAV**	M9BA**	○	○	●	○	○			
			4-wire (NPN)				—	H7NF	—	F79F	●	—	●	○	○			
			With diagnostic output (2-color indication)				—	—	—	—	—	—	—	—	—		—	
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	24 V	5 V	—	A96V	A96	A96V	A96	●	—	●	—	—	IC circuit	
				—				200 V	—	—	A72	A72H	●	—	●	—		—
				100 V				A93V	A93	A93V	A93	●	—	●	●	—		
				100 V or less				A90V	A90	A90V	A90	●	—	●	—	—		
		Connector	No	2-wire	12 V	—	C73C	A73C	—	●	—	●	●	●	—	IC circuit		
						24 V or less	—	C80C	A80C	—	●	—	●	●	●		—	
	Diagnostic indication (2-color indication)	Grommet	Yes	2-wire	24 V	—	—	—	A79W	—	●	—	●	—	—	—		
							—	—	—	—	—	—	—	—	—		—	
							—	—	—	—	—	—	—	—	—		—	
							—	—	—	—	—	—	—	—	—			

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Please contact SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW  
1 m..... M (Example) M9NWM  
3 m..... L (Example) M9NWL  
5 m..... Z (Example) M9NWZ  
None..... N (Example) H7CN

\* Since there are other applicable auto switches than listed above, refer to page 85 for details.

\* For details about auto switches with pre-wired connector, refer to the **WEB catalog** or Best Pneumatics No. 2.

\* Solid state auto switches marked with "○" are produced upon receipt of order.

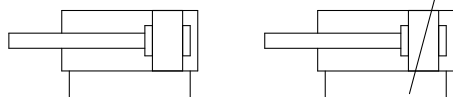
\* The D-A9□□/M9□□□/A7□□/A80□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only the auto switch mounting brackets are assembled before shipment.)



### Symbol

Rubber bumper

Air cushion



### Made to Order

(For details, refer to pages 87 to 95.)

Symbol	Specifications
-XA□	Change of rod end shape
-XB6	Heat resistant cylinder (-10 to 150°C) * Not available with switch & with air cushion
-XB7	Cold resistant cylinder (-40 to 70°C) * Not available with switch & with air cushion
-XB9	Low speed cylinder (10 to 50 mm/s) * Not available with air cushion
-XC3	Special port location * Not available with air cushion
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC10	Dual stroke cylinder/Double rod type
-XC11	Dual stroke cylinder/Single rod type
-XC22	Fluororubber seal * Not available with air cushion
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease

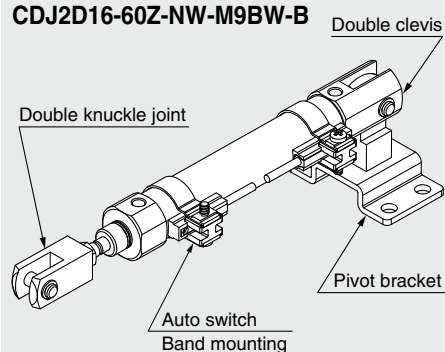
Refer to pages 78 to 85 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

## Ordering Example of Cylinder Assembly

### Cylinder model:

**CDJ2D16-60Z-NW-M9BW-B**



**Mounting D: Double clevis**  
**Pivot bracket N: Yes**  
**Rod end bracket W: Double knuckle joint**  
**Auto switch D-M9BW: 2 pcs.**  
**Auto switch mounting B: Band mounting**

\* Pivot bracket, double knuckle joint and auto switch are shipped together with the product, but not assembled.

## Specifications

Bore size (mm)		10	16
<b>Action</b>		Double acting, Single rod	
<b>Fluid</b>		Air	
<b>Proof pressure</b>		1 MPa	
<b>Maximum operating pressure</b>		0.7 MPa	
<b>Minimum operating pressure</b>	Rubber bumper	0.06 MPa	
	Air cushion	0.1 MPa	
<b>Ambient and fluid temperature</b>		Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing)	
<b>Cushion</b>		Rubber bumper/Air cushion	
<b>Lubrication</b>		Not required (Non-lube)	
<b>Piston speed</b>	Rubber bumper	50 to 750 mm/s	
	Air cushion	50 to 1000 mm/s	
<b>Allowable kinetic energy</b>	Rubber bumper	0.035 J	0.090 J
	Air cushion (Effective cushion length)	0.07 J (9.4 mm)	0.18 J (9.4 mm)
<b>Stroke length tolerance</b>		+1.0 0	

## Mounting and Accessories

For details, refer to page 12.

●...Mounted on the product. ○...Please order these separately.

Mounting		Basic	Foot	Flange	Double* clevis	Double clevis (including T-bracket)
Standard	Mounting nut	●	●	●	—	—
	Rod end nut	●	●	●	●	●
	Clevis pin	—	—	—	●	●
Option	Single knuckle joint	○	○	○	○	○
	Double knuckle joint*	○	○	○	○	○
	Rod end cap (Flat/Round type)	○	○	○	○	○
	T-bracket	—	—	—	○	●

\* A pin and retaining rings are included with double clevis and/or double knuckle joint.

## Mounting Brackets/Part No.

Mounting bracket	Bore size (mm)	
	10	16
Foot	CJ-L010C	CJ-L016C
Flange	CJ-F010C	CJ-F016C
T-bracket*	CJ-T010C	CJ-T016C

\* T-bracket is used with double clevis (D).

## Weights

Bore size (mm)		Rubber bumper		Air cushion	
		10	16	10	16
Basic weight (When the stroke is zero)	Basic	22	46	39	66
	Axial piping	22	46	39	66
	Double clevis (including clevis pin)	24	54	43	74
	Head-side bossed	23	48	40	68
Additional weight per 15 mm of stroke		4	7	4	7
Mounting bracket weight	Single foot	8	25	8	25
	Double foot	16	50	16	50
	Rod flange	5	13	5	13
	Head flange	5	13	5	13
Accessories	Single knuckle joint	17	23	17	23
	Double knuckle joint (including knuckle pin)	25	21	25	21
	Rod end cap (Flat type)	1	2	1	2
	Rod end cap (Round type)	1	2	1	2
	T-bracket	32	50	32	50

\* Mounting nut and rod end nut are included in the basic weight.

Note) Mounting nut is not included in the basic weight for the double clevis.

Calculation:

Example) **CJ2L10-45Z**

- Basic weight ..... 22 (ø10)
- Additional weight ..... 4/15 stroke
- Cylinder stroke ..... 45 stroke
- Mounting bracket weight ... 8 (Axial foot)

$$22 + 4/15 \times 45 + 8 = 42 \text{ g}$$

# Series CJ2

## ⚠ Precautions

Refer to page 96 before handling.

### Clean Series

10-CJ2 Mounting style Bore size – Stroke Head cover port location Z

#### • Clean Series

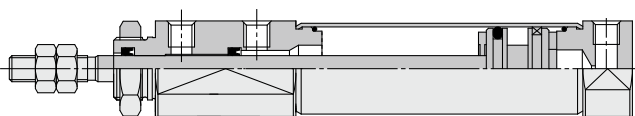
Air cylinder which is applicable for the system which discharges leakage from the rod section directly into the outside of clean room by relief port and making an actuator's rod section having a double seal construction.



### Specifications

Action	Double acting, Single rod
Bore size (mm)	10, 16
Maximum operating pressure	0.7 MPa
Minimum operating pressure	0.08 MPa
Cushion	Rubber bumper/Air cushion
Standard stroke (mm)	Same as standard type. (Refer to page 1.)
Auto switch	Mountable (Band mounting type)
Mounting	Basic, Double-side bossed, Single/Double foot, Rod/Head flange

### Construction



For the detailed specifications, refer to the "Pneumatic Clean Series" (WEB catalog).

### Low Speed Cylinder

CJ2 X Mounting style Bore size – Stroke Z

#### • Low Speed Cylinder

Smooth operation with a little sticking and slipping at low speed.

Can start smoothly with a little ejection even after being rendered for hours.



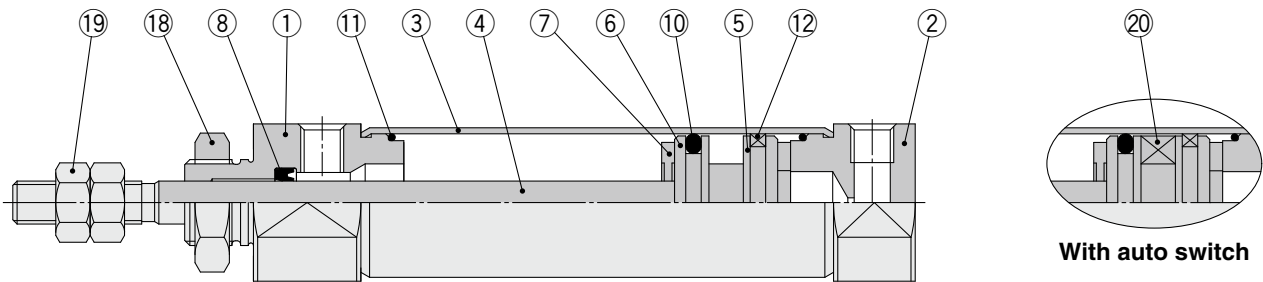
The dimensions are the same as the double acting, single rod type. Refer to Best Pneumatics No.3 for details.

### Specifications

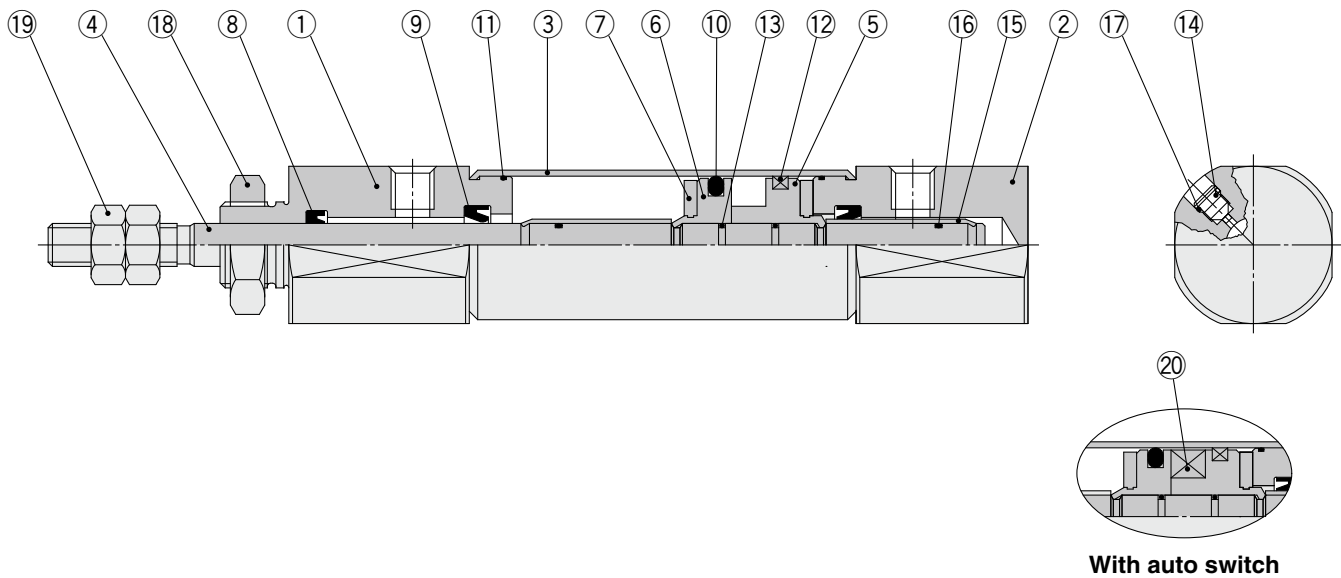
Action	Double acting, Single rod	
Bore size (mm)	10, 16	
Fluid	Air	
Proof pressure	1.05 MPa	
Maximum operating pressure	0.7 MPa	
Minimum operating pressure	0.06 MPa	
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C	
Cushion	Rubber bumper (Standard equipment)	
Lubrication	Not required (Non-lube)	
Stroke length tolerance	+1.0 0	
Piston speed	1 to 300 mm/s	
Allowable kinetic energy	ø10	0.035 J
	ø16	0.090 J



**Construction (Not able to disassemble)**



**With air cushion**



**Component Parts**

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Anodized
2	Head cover	Aluminum alloy	Anodized
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminum alloy	
6	Piston B	Aluminum alloy	
7	Bumper	Urethane	
8	Rod seal	NBR	
9	Check seal	NBR	
10	Piston seal	NBR	

No.	Description	Material	Note
11	Tube gasket	NBR	
12	Wear ring	Resin	
13	Piston gasket	NBR	
14	Cushion needle	Carbon steel	
15	Cushion ring	Aluminum alloy	
16	Cushion ring gasket	NBR	
17	Needle seal	NBR	
18	Mounting nut	Rolled steel	Zinc chromated
19	Rod end nut	Rolled steel	Zinc chromated
20	Magnet	—	

Standard	Double Acting, Double Rod	CJ2W
Standard	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
Built-in Speed Controller	Double Acting, Double Rod	CJ2ZW
Direct Mount	Double Acting, Single Rod	CJ2R
Direct Mount	Single Acting, Spring Return/Extend	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2RK

Auto Switch

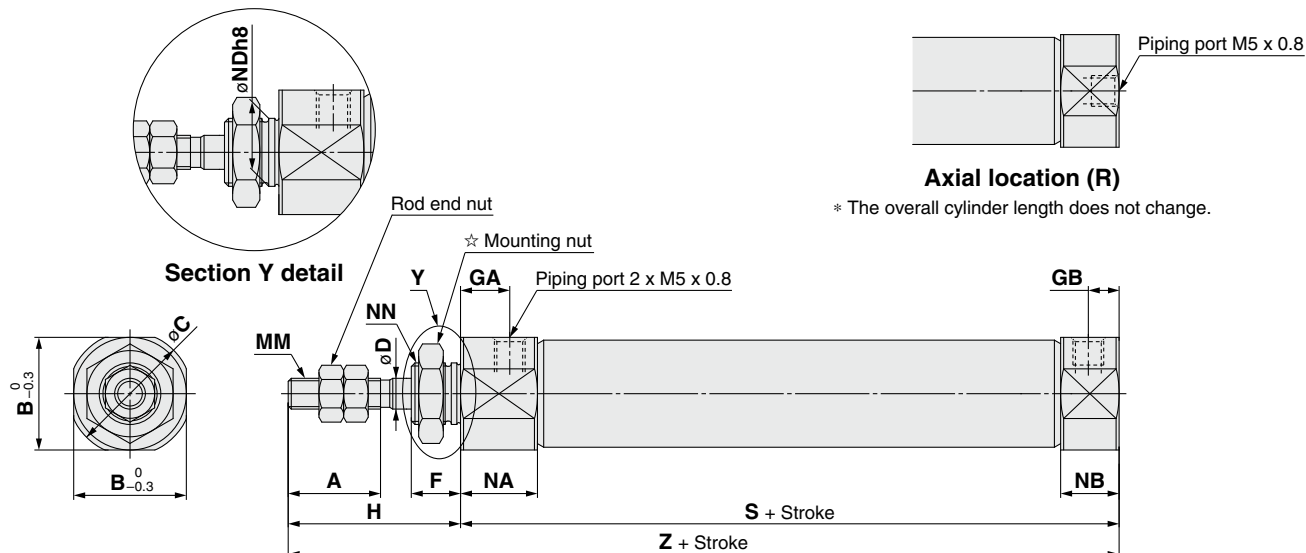
Made to Order

# Series CJ2

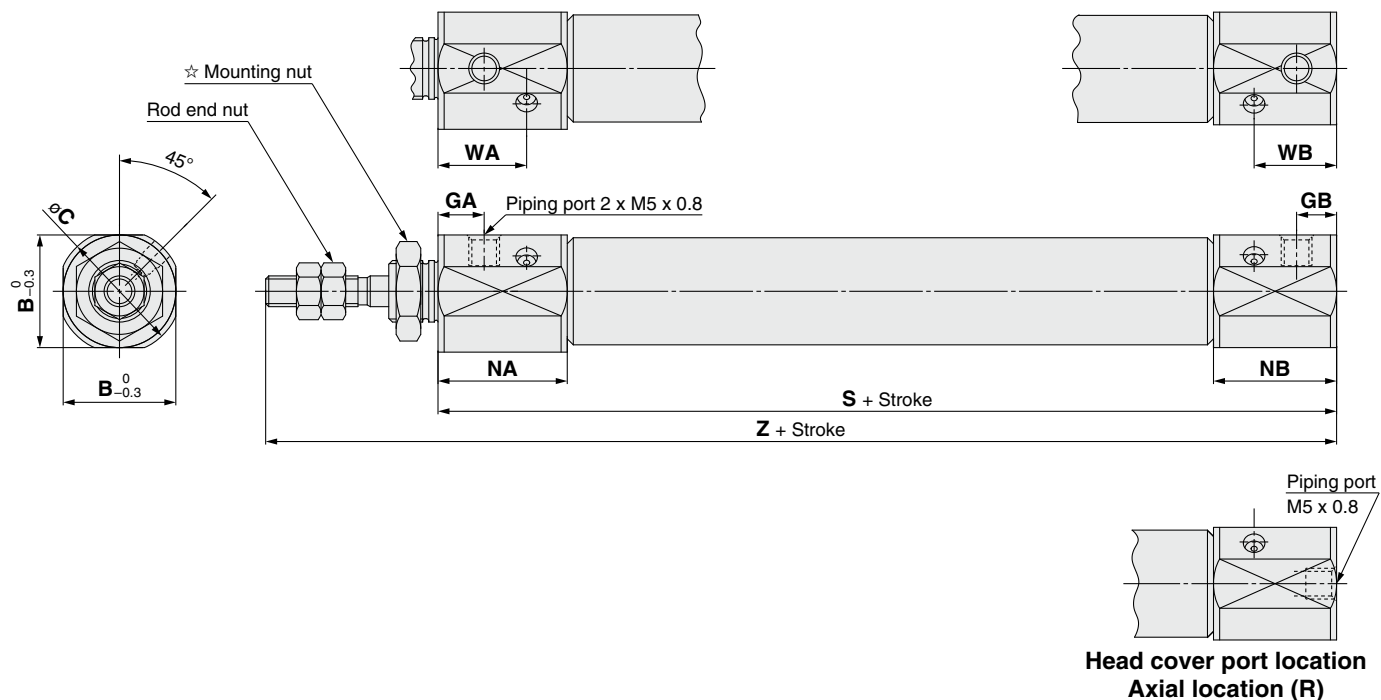
## Dimensions

### Basic (B)

CJ2B Bore size – Stroke Head cover port location Z



With air cushion: CJ2B Bore size – Stroke A Head cover port location Z



☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	NDh8	NN	S	Z
10	15	12	14	4	8	8	5	28	M4 x 0.7	12.5	9.5	8 <sup>0</sup> <sub>-0.022</sub>	M8 x 1.0	46	74
16	15	18.3	20	5	8	8	5	28	M5 x 0.8	12.5	9.5	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	47	75

With Air Cushion/Dimensions other than the table below are the same as the table above. (mm)

Bore size	B	C	GA	GB	NA	NB	WA	WB	S	Z
10	15	17	7.5	6.5	21	20	14.4	13.4	65	93
16	18.3	20	7.5	6.5	21	20	14.4	13.4	66	94

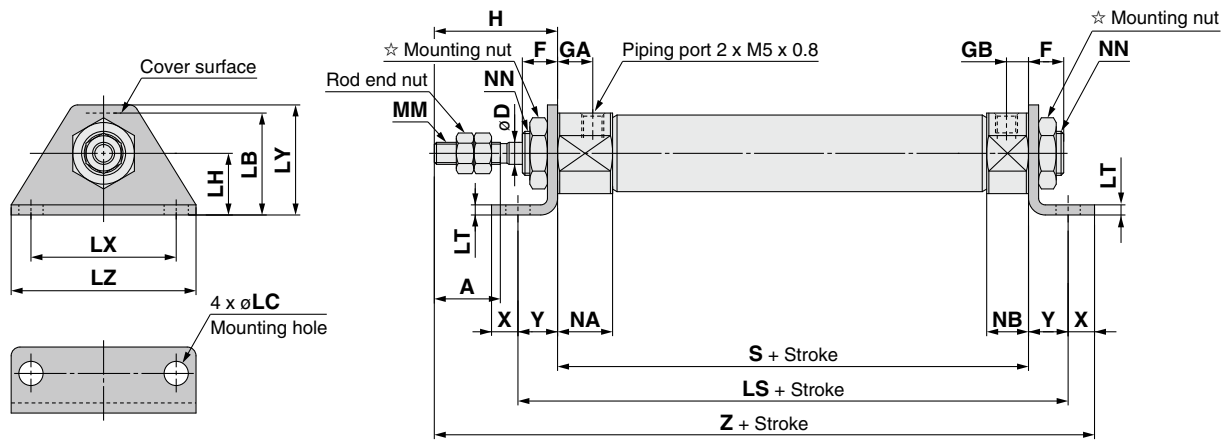


# Series CJ2

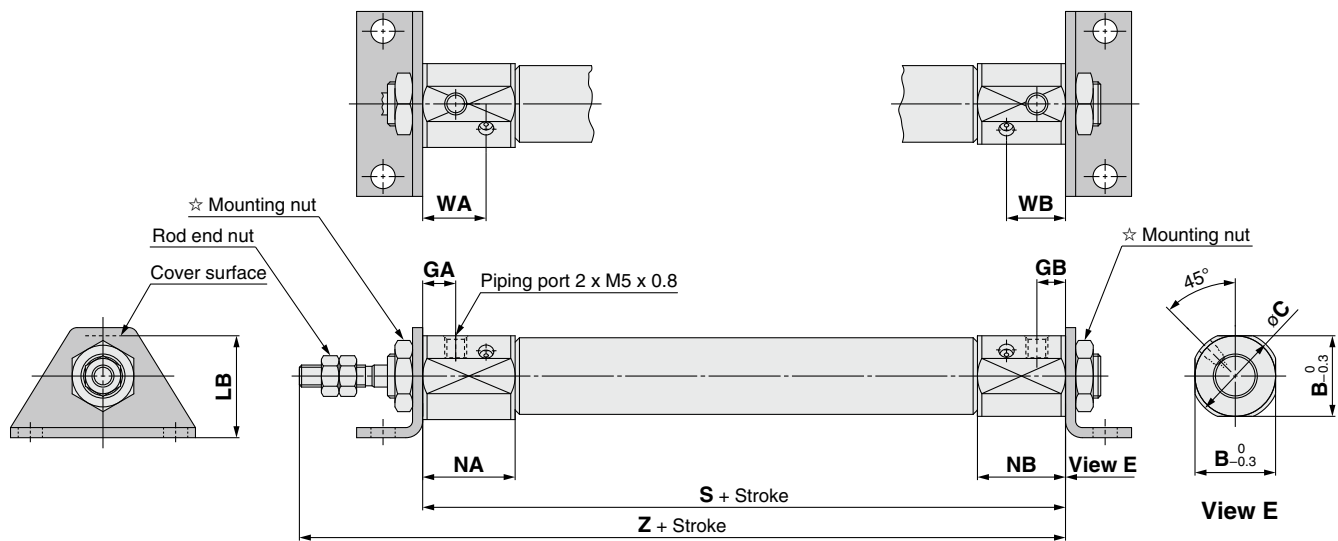
## Dimensions

### Double foot (M)

CJ2M Bore size – Stroke Z



With air cushion: CJ2M Bore size – Stroke AZ



☆ For details of the mounting nut, refer to page 12.

Bore size	A	D	F	GA	GB	H	LB	LC	LH	LS	LT	LX	LY	LZ	MM	NA	NB	NN	S	X	Y	Z
10	15	4	8	8	5	28	15	4.5	9	60	1.6	24	16.5	32	M4 x 0.7	12.5	9.5	M8 x 1.0	46	5	7	86
16	15	5	8	8	5	28	23	5.5	14	65	2.3	33	25	42	M5 x 0.8	12.5	9.5	M10 x 1.0	47	6	9	90

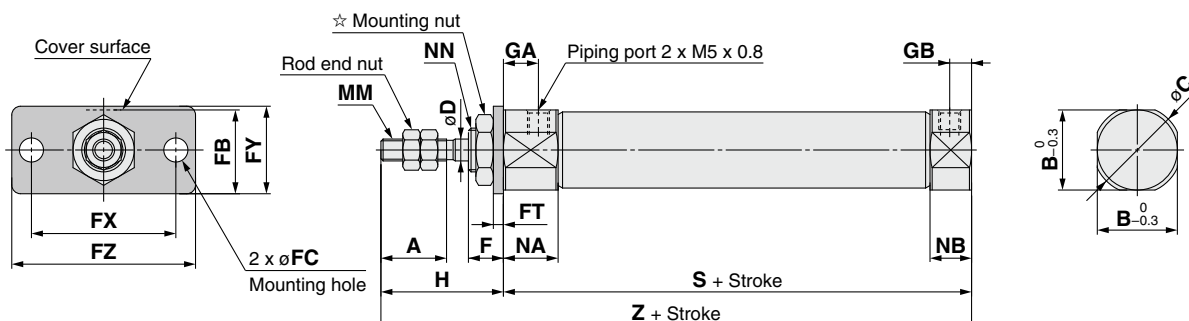
With Air Cushion/Dimensions other than the table below are the same as the table above. (mm)

Bore size	B	C	GA	GB	LB	NA	NB	WA	WB	S	Z
10	15	17	7.5	6.5	16.5	21	20	14.4	13.4	65	93
16	18.3	20	7.5	6.5	23	21	20	14.4	13.4	66	94

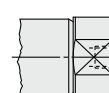
## Dimensions

### Rod flange (F)

**CJ2F** Bore size – Stroke Head cover port location **Z**



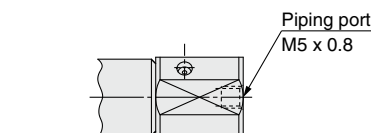
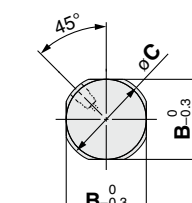
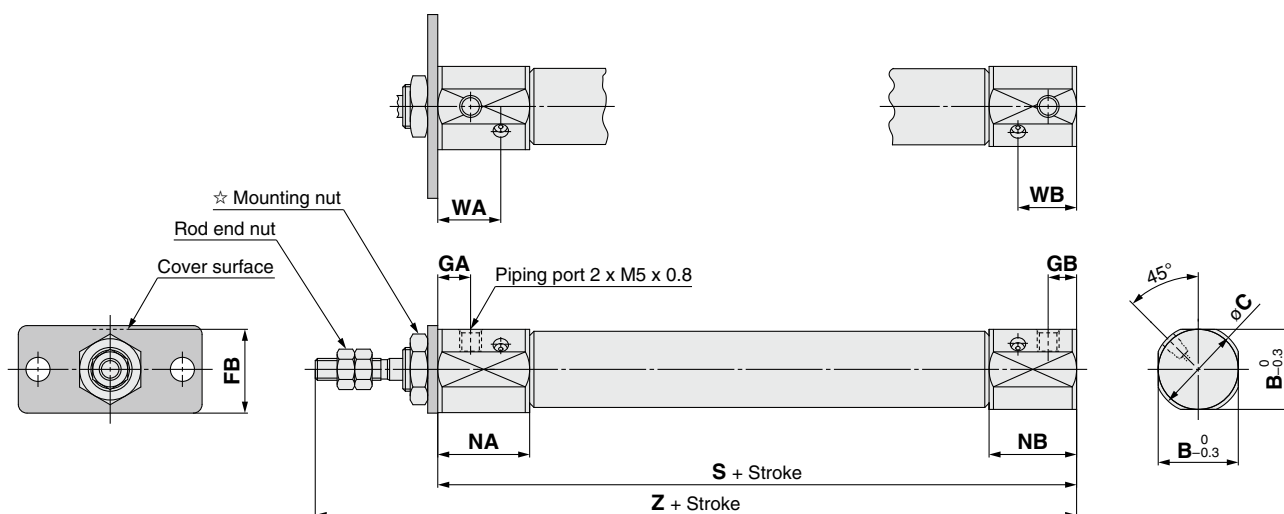
Piping port M5 x 0.8



### Head cover port location Axial location (R)

\* The overall cylinder length does not change.

**With air cushion: CJ2F** Bore size – Stroke **A** Head cover port location **Z**



### Head cover port location Axial location (R)

\* The overall cylinder length does not change.

☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	GB	H	MM	NA	NB	NN	S	Z
10	15	12	14	4	8	13	4.5	1.6	24	14	32	8	5	28	M4 x 0.7	12.5	9.5	M8 x 1.0	46	74
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	8	5	28	M5 x 0.8	12.5	9.5	M10 x 1.0	47	75

**With Air Cushion**/Dimensions other than the table below are the same as the table above. (mm)

Bore size	B	C	FB	GA	GB	NA	NB	WA	WB	S	Z
10	15	17	14.5	7.5	6.5	21	20	14.4	13.4	65	93
16	18.3	20	19	7.5	6.5	21	20	14.4	13.4	66	94

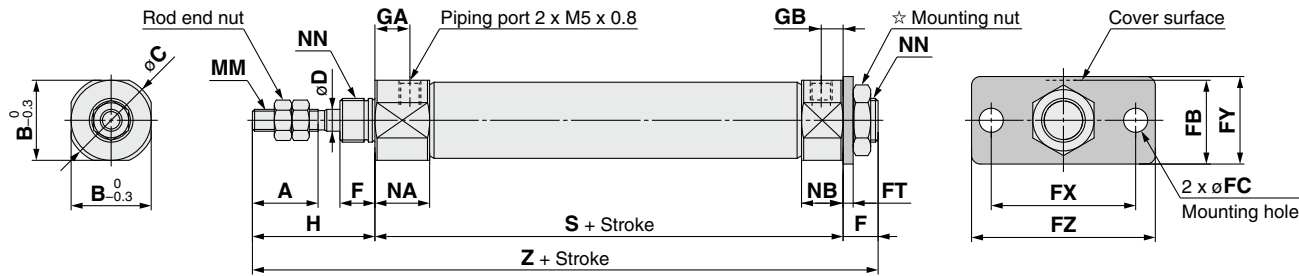


# Series CJ2

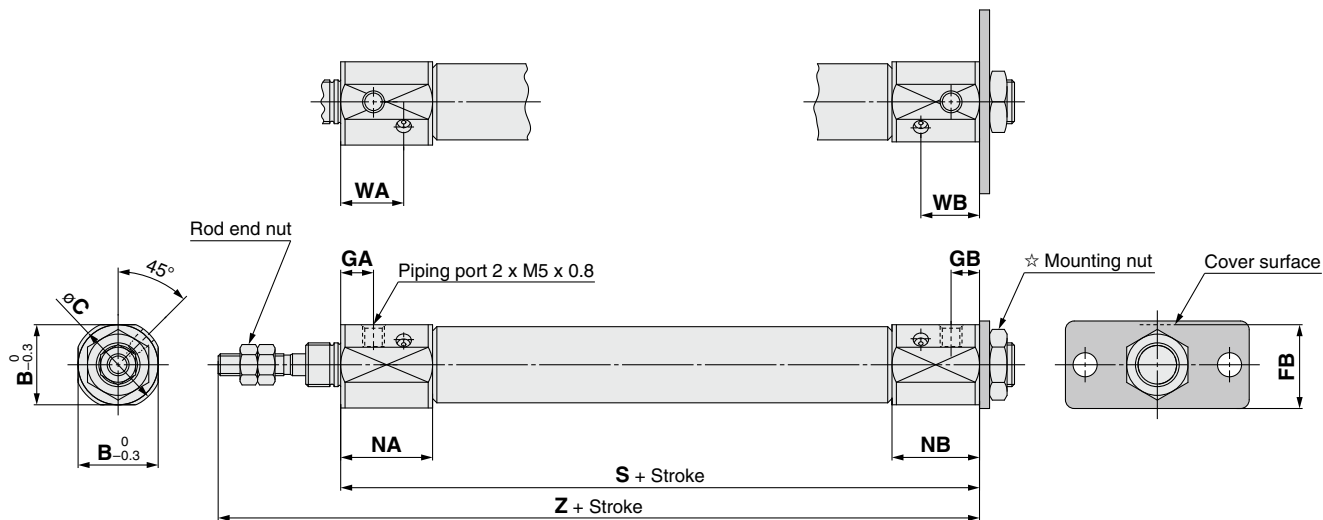
## Dimensions

### Head flange (G)

CJ2G Bore size – Stroke Z



With air cushion: CJ2G Bore size – Stroke AZ



☆ For details of the mounting nut, refer to page 12.

																				(mm)
Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	GB	H	MM	NA	NB	NN	S	Z
10	15	12	14	4	8	13	4.5	1.6	24	14	32	8	5	28	M4 x 0.7	12.5	9.5	M8 x 1.0	46	82
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	8	5	28	M5 x 0.8	12.5	9.5	M10 x 1.0	47	83

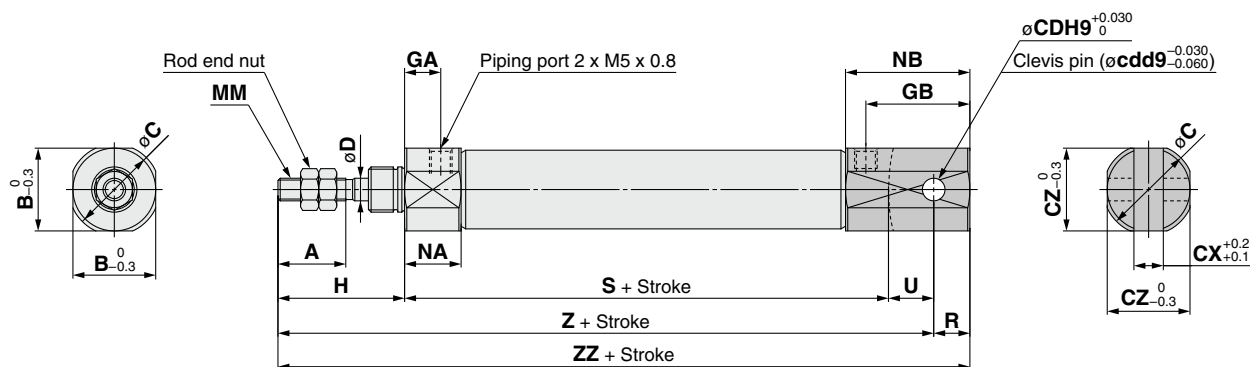
With Air Cushion/Dimensions other than the table below are the same as the table above. (mm)

Bore size	B	C	FB	GA	GB	NA	NB	WA	WB	S	Z
10	15	17	14.5	7.5	6.5	21	20	14.4	13.4	65	93
16	18.3	20	19	7.5	6.5	21	20	14.4	13.4	66	94

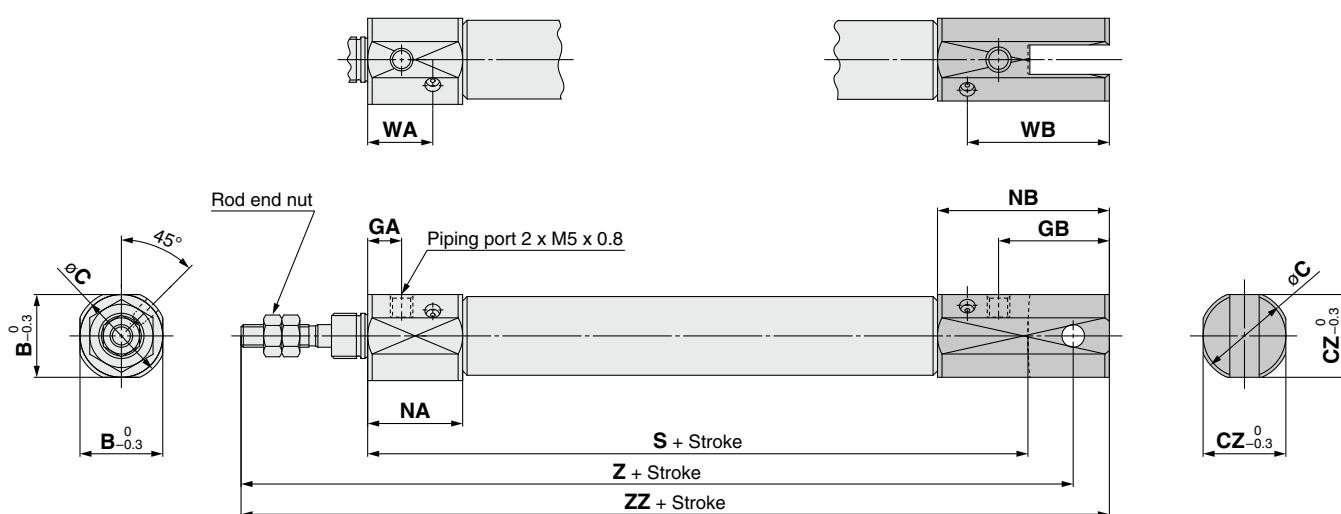
## Dimensions

### Double clevis (D)

CJ2D Bore size – Stroke Z



With air cushion: CJ2D Bore size – Stroke AZ



\* A clevis pin and retaining rings are included.

Bore size	A	B	C	CD (cd)	CX	CZ	D	GA	GB	H	MM	NA	NB	R	S	U	Z	ZZ
10	15	12	14	3.3	3.2	12	4	8	18	28	M4 x 0.7	12.5	22.5	5	46	8	82	87
16	15	18.3	20	5	6.5	18.3	5	8	23	28	M5 x 0.8	12.5	27.5	8	47	10	85	93

With Air Cushion/Dimensions other than the table below are the same as the table above. (mm)

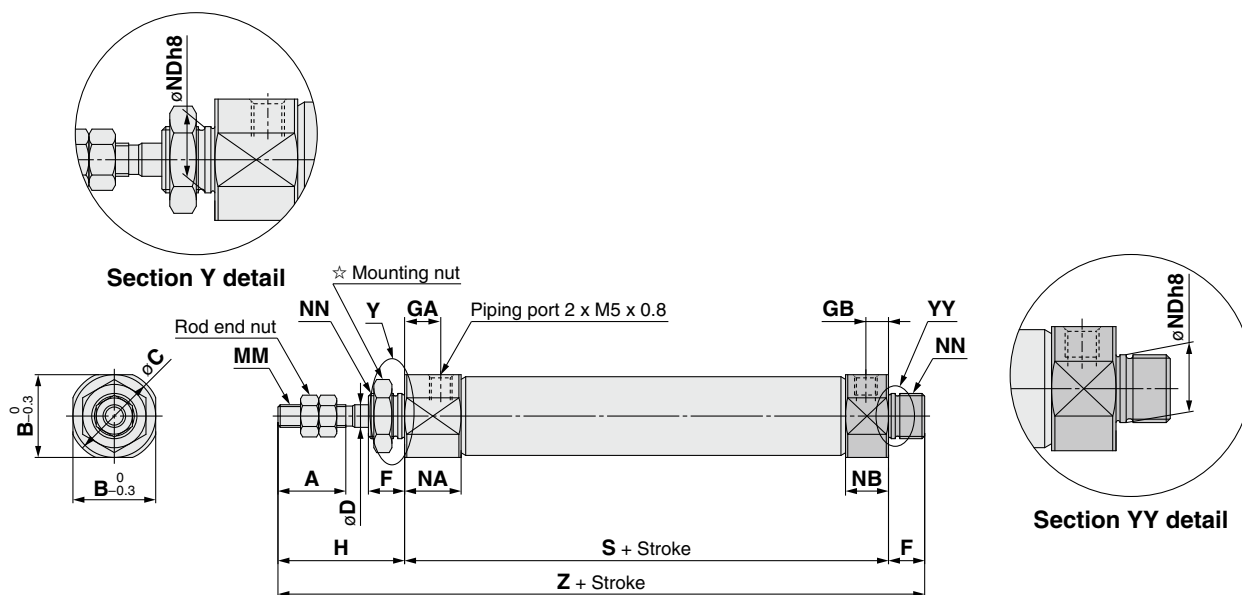
Bore size	B	C	CZ	GA	GB	NA	NB	WA	WB	S	Z	ZZ
10	15	17	15	7.5	19.5	21	33	14.4	26.4	65	101	106
16	18.3	20	18.3	7.5	24.5	21	38	14.4	31.4	66	104	112

# Series CJ2

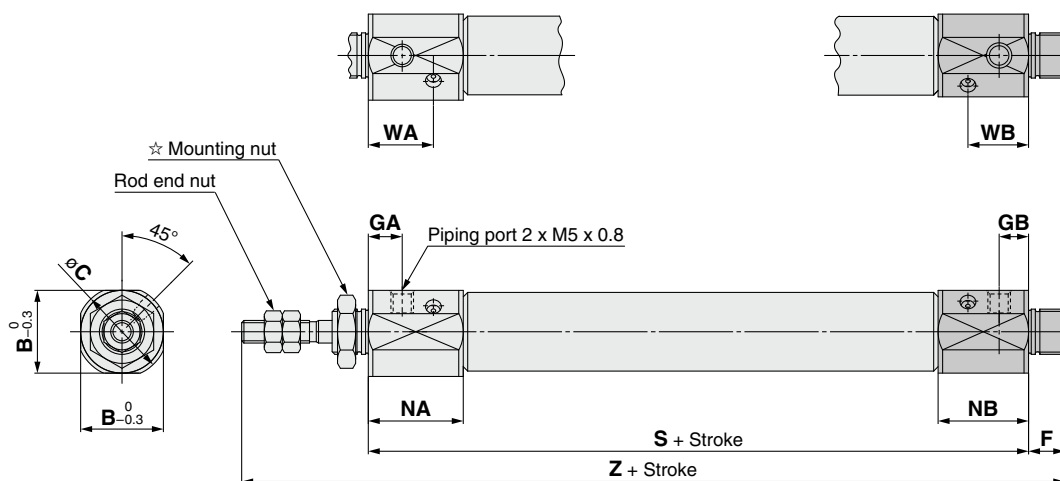
## Dimensions

### Double-side bossed (E)

CJ2E Bore size – Stroke Z



With air cushion: CJ2E Bore size – Stroke AZ



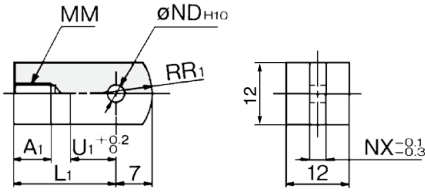
☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	NDh8	NN	S	Z
10	15	12	14	4	8	8	5	28	M4 x 0.7	12.5	9.5	8 <sub>-0.022</sub> <sup>0</sup>	M8 x 1.0	46	82
16	15	18.3	20	5	8	8	5	28	M5 x 0.8	12.5	9.5	10 <sub>-0.022</sub> <sup>0</sup>	M10 x 1.0	47	83

With Air Cushion/Dimensions other than the table below are the same as the table above. (mm)

Bore size	B	C	GA	GB	NA	NB	WA	WB	S	Z
10	15	17	7.5	6.5	21	20	14.4	13.4	65	101
16	18.3	20	7.5	6.5	21	20	14.4	13.4	66	102

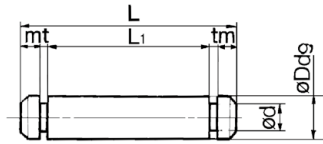
## Single Knuckle Joint



Material: Rolled steel

Part no.	Applicable bore size	A <sub>1</sub>	L <sub>1</sub>	MM	ND <sub>H10</sub>	NX	R <sub>1</sub>	U <sub>1</sub>
I-J010C	10	8	21	M4 x 0.7	3.3 <sup>+0.048</sup> <sub>0</sub>	3.1	8	9
I-J016C	16	8	25	M5 x 0.8	5 <sup>+0.048</sup> <sub>0</sub>	6.4	12	14

## Clevis Pin

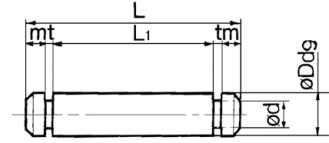


Material: Stainless steel

Part no.	Applicable bore size	Dd <sub>9</sub>	d	L	L <sub>1</sub>	m	t	Included retaining ring
CD-J010	10	3.3 <sup>-0.030</sup> <sub>-0.060</sub>	3	15.2	12.2	1.2	0.3	Type C 3.2
CD-Z015	16	5 <sup>-0.030</sup> <sub>-0.060</sub>	4.8	22.7	18.3	1.5	0.7	Type C 5
CD-JA010*	10	3.3 <sup>-0.030</sup> <sub>-0.060</sub>	3	18.2	15.2	1.2	0.3	Type C 3.2

\* For ø10 double clevis type, with air cushion and built-in speed controller.  
\* Retaining rings are included with a clevis pin.

## Knuckle Pin

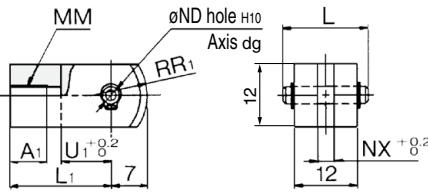


Material: Stainless steel

Part no.	Applicable bore size	Dd <sub>9</sub>	d	L	L <sub>1</sub>	m	t	Included retaining ring
CD-J010	10	3.3 <sup>-0.030</sup> <sub>-0.060</sub>	3	15.2	12.2	1.2	0.3	Type C 3.2
IY-J015	16	5 <sup>-0.030</sup> <sub>-0.060</sub>	4.8	16.6	12.2	1.5	0.7	Type C 5

\* For size ø10, a clevis pin is diverted.  
\* Retaining rings are included with a knuckle pin.

## Double Knuckle Joint



Material: Rolled steel

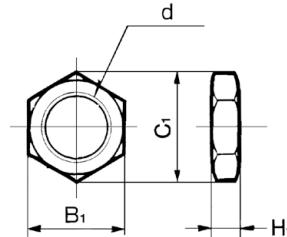
Part no.	Applicable bore size	A <sub>1</sub>	L	L <sub>1</sub>	MM
Y-J010C	10	8	15.2	21	M4 x 0.7
Y-J016C	16	11	16.6	21	M5 x 0.8

Part no.	ND <sub>9</sub>	ND <sub>H10</sub>	NX	R <sub>1</sub>	U <sub>1</sub>
Y-J010C	3.3 <sup>-0.030</sup> <sub>-0.060</sub>	3.3 <sup>+0.048</sup> <sub>0</sub>	3.2	8	10
Y-J016C	5 <sup>-0.030</sup> <sub>-0.060</sub>	5 <sup>+0.048</sup> <sub>0</sub>	6.5	12	10

\* A knuckle pin and retaining rings are included.

## Mounting Nut

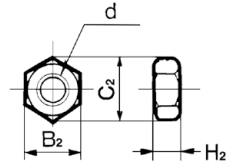


Material: Carbon steel

Part no.	Applicable bore size	B <sub>1</sub>	C <sub>1</sub>	d	H <sub>1</sub>
SNJ-010C	10	11	12.7	M8 x 1.0	4
SNJ-016C	16	14	16.2	M10 x 1.0	4
SNKJ-016C*	16	17	19.6	M12 x 1.0	4

\* For ø16 non-rotating type. (Use SNJ-016C for ø10 non-rotating type.)

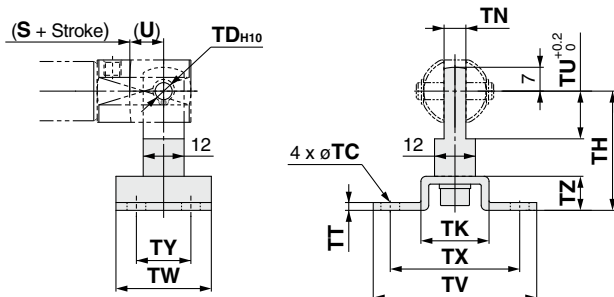
## Rod End Nut



Material: Carbon steel

Part no.	Applicable bore size	B <sub>2</sub>	C <sub>2</sub>	d	H <sub>2</sub>
NTJ-010C	10	7	8.1	M4 x 0.7	3.2
NTJ-015C	16	8	9.2	M5 x 0.8	4

## T-bracket

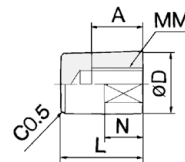


Part no.	Applicable bore size	TC	TD <sub>H10</sub>	TH	TK	TN	TT	TU	TV	TW	TX	TY	TZ
CJ-T010C	10	4.5	3.3 <sup>+0.048</sup> <sub>0</sub>	29	18	3.1	2	9	40	22	32	12	8
CJ-T016C	16	5.5	5 <sup>+0.048</sup> <sub>0</sub>	35	20	6.4	2.3	14	48	28	38	16	10

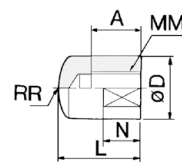
\* A T-bracket includes a T-bracket base, single knuckle joint, hexagon socket head bolt and spring washer.  
\* For dimensions of (U) and (S + Stroke), refer to the double clevis drawing on page 10.

## Rod End Cap

Flat type/CJ-CF□□□



Round type/CJ-CR□□□



Material: Polyacetal

Part no.		Applicable bore size	A	D	L	MM	N	R	W
Flat type	Round type								
CJ-CF010	CJ-CR010	10	8	10	13	M4 x 0.7	6	10	8
CJ-CF016	CJ-CR016	16	10	12	15	M5 x 0.8	7	12	10

# Air Cylinder: Standard Type Double Acting, Double Rod Series **CJ2W** ø10, ø16

RoHS



## How to Order

**CJ2W B 16 - 60 A Z -**

**With auto switch** **CDJ2W L 16 - 60 A Z - M9BW - B -**

**Built-in magnet**

**Mounting**

<b>B</b>	Basic
<b>L</b>	Foot
<b>F</b>	Flange

\* Mounting bracket is shipped together with the product, but not assembled.

**Bore size**

<b>10</b>	10 mm
<b>16</b>	16 mm

**Standard stroke**

Bore size (mm)	Standard stroke
<b>10</b>	15, 30, 45, 60, 75, 100, 125, 150
<b>16</b>	15, 30, 45, 60, 75, 100, 125, 150, 175, 200

\* Manufacture of intermediate strokes in 1 mm intervals is possible. (Spacers are not used.)  
Produced upon receipt of order.

**Cushion**

<b>Nil</b>	Rubber bumper
<b>A</b>	Air cushion

**Auto switch mounting type**

<b>A</b>	Rail mounting
<b>B</b>	Band mounting

**Number of auto switches**

<b>Nil</b>	2 pcs.
<b>S</b>	1 pc.
<b>n</b>	"n" pcs.

\* For rail mounting, screws and nuts for 2 auto switches come with the rail.  
\* Refer to page 84 for auto switch mounting brackets.

**Auto switch**

<b>Nil</b>	Without auto switch
------------	---------------------

\* For applicable auto switches, refer to the table below.

**Made to Order**  
Refer to page 14 for details.

## Applicable Auto Switches/Refer to the WEB catalog or Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load			
					DC	AC	Band mounting		Rail mounting		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)					
							Perpendicular	In-line	Perpendicular	In-line										
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC		
		3-wire (PNP)		M9PV			M9P	M9PV	M9P	●	●	●	○	—	○					
	Connector	2-wire		12 V			M9BV	M9B	M9BV	M9B	●	●	●	○	—	○	—			
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)			5 V, 12 V	—	H7C	J79C	—	●	—	●	●	●	—		—	—
				3-wire (PNP)			5 V, 12 V	M9NWV	M9NW	M9NWV	M9NW	●	●	●	○	—	○		IC circuit	
				2-wire			12 V	M9PWV	M9PW	M9PWV	M9PW	●	●	●	○	—	○		—	
				3-wire (NPN)			5 V, 12 V	M9BWV	M9BW	M9BWV	M9BW	●	●	●	○	—	○		—	
				3-wire (PNP)			5 V, 12 V	M9NAV**	M9NA**	M9NAV**	M9NA**	○	○	●	○	—	○		IC circuit	
				2-wire			12 V	M9PAV**	M9PA**	M9PAV**	M9PA**	○	○	●	○	—	○		—	
	With diagnostic output (2-color indication)	4-wire (NPN)		5 V, 12 V			—	H7NF	—	F79F	●	—	●	○	—	○	IC circuit			
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	24 V	12 V	5 V	—	A96V	A96	A96V	A96	●	—	●	—	—	—	IC circuit	Relay, PLC
							—	200 V	—	—	A72	A72H	●	—	●	—	—	—	—	
							100 V	A93V	A93	A93V	A93	●	—	●	●	—	—	—		
							100 V or less	A90V	A90	A90V	A90	●	—	●	—	—	—	IC circuit		
	Diagnostic indication (2-color indication)	Connector	No	2-wire			—	—	C73C	A73C	—	●	—	●	●	●	—	—	—	
							24 V or less	—	C80C	A80C	—	●	—	●	●	●	—	—	IC circuit	
							—	—	—	A79W	—	●	—	●	—	—	—	—		
							—	—	—	—	—	●	—	●	—	—	—	—		

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Please contact SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW  
1 m..... M (Example) M9NWM  
3 m..... L (Example) M9NWL  
5 m..... Z (Example) M9NWZ  
None..... N (Example) H7CN

\* Since there are other applicable auto switches than listed above, refer to page 85 for details.

\* For details about auto switches with pre-wired connector, refer to the WEB catalog or Best Pneumatics No. 2.

\* Solid state auto switches marked with "○" are produced upon receipt of order.

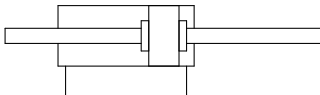
\* The D-A9□□/M9□□□/A7□□/A80□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only the auto switch mounting brackets are assembled before shipment.)



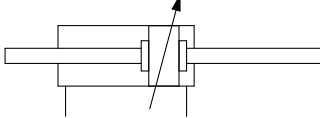


## Symbol

Double acting, Double rod, Rubber bumper



Air cushion



**Made to Order**  
(For details, refer to pages 87 to 95.)

Symbol	Specifications
-XA□	Change of rod end shape
-XB6	Heat resistant cylinder (−10 to 150°C) * Not available with switch & with air cushion
-XB7	Cold resistant cylinder (−40 to 70°C) * Not available with switch & with air cushion
-XC22	Fluororubber seal * Not available with air cushion
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease

Refer to pages 78 to 85 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

## ⚠ Precautions

Refer to page 96 before handling.

## Specifications

Bore size (mm)		10	16
<b>Action</b>		Double acting, Double rod	
<b>Fluid</b>		Air	
<b>Proof pressure</b>		1 MPa	
<b>Maximum operating pressure</b>		0.7 MPa	
<b>Minimum operating pressure</b>	Rubber bumper	0.1 MPa	
	Air cushion	0.1 MPa	
<b>Ambient and fluid temperature</b>		Without auto switch: −10°C to 70°C With auto switch: −10°C to 60°C (No freezing)	
<b>Cushion</b>		Rubber bumper/Air cushion	
<b>Lubrication</b>		Not required (Non-lube)	
<b>Piston speed</b>	Rubber bumper	50 to 750 mm/s	
	Air cushion	50 to 1000 mm/s	
<b>Allowable kinetic energy</b>	Rubber bumper	0.035 J	0.090 J
	Air cushion (Effective cushion length)	0.07 J (9.4 mm)	0.18 J (9.4 mm)
<b>Stroke length tolerance</b>		+1.0 0	

## Mounting and Accessories

For details, refer to page 12.

●...Mounted on the product. ○...Please order separately.

Mounting		Basic	Foot	Flange
Standard	Mounting nut	●	●	●
	Rod end nut	●	●	●
Option	Single knuckle joint	○	○	○
	Double knuckle joint*	○	○	○
	Rod end cap (Flat/Round type)	○	○	○

\* A pin and retaining rings are shipped together with double knuckle joint.

## Mounting Brackets/Part No.

Mounting bracket	Bore size (mm)	
	10	16
Foot	CJ-L010C	CJ-L016C
Flange	CJ-F010C	CJ-F016C

## Weights

Bore size (mm)		Rubber bumper		Air cushion	
		10	16	10	16
Basic weight (When the stroke is zero)	Basic	29	56	36	61
	Additional weight per 15 mm of stroke	4.5	7.5	4.5	7.5
Mounting bracket weight	Foot	16	50	16	50
	Flange	5	13	5	13
Accessories	Single knuckle joint	17	23	17	23
	Double knuckle joint (including knuckle pin)	25	21	25	21
	Rod end cap (Flat type)	1	2	1	2
	Rod end cap (Round type)	1	2	1	2

\* Mounting nut and rod end nut are included in the basic weight.

Calculation:

Example) **CJ2WL10-45Z**

- Basic weight ..... 29 (ø10)
- Additional weight ..... 4.5/15 stroke
- Cylinder stroke ..... 45 stroke
- Mounting bracket weight ... 16 (Foot)

$$29 + 4.5/15 \times 45 + 16 = 58.5 \text{ g}$$

# Series CJ2W

## Clean Series

10-CJ2W Mounting style Bore size – Stroke Z

- Clean Series

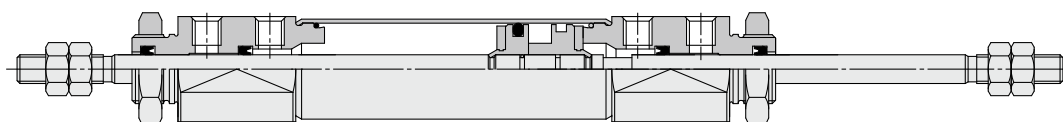
Air cylinder which is applicable for the system which discharges leakage from the rod section directly into the outside of clean room by relief port and making an actuator's rod section having a double seal construction.

### Specifications

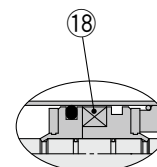
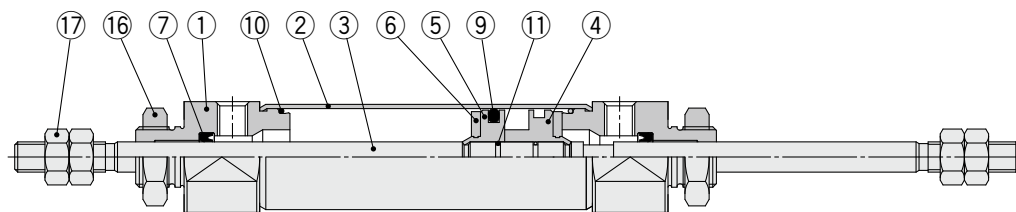
Action	Double acting, Double rod
Bore size (mm)	10, 16
Maximum operating pressure	0.7 MPa
Minimum operating pressure	0.1 MPa
Cushion	Rubber bumper
Standard stroke (mm)	Same as standard type. (Refer to page 13.)
Auto switch	Mountable (Band mounting type)
Mounting	Basic, Foot, Flange

For the detailed specifications, refer to the "Pneumatic Clean Series" (WEB catalog).

## Construction (Not able to disassemble)

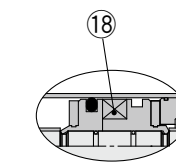
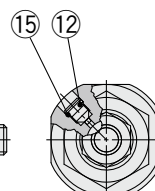
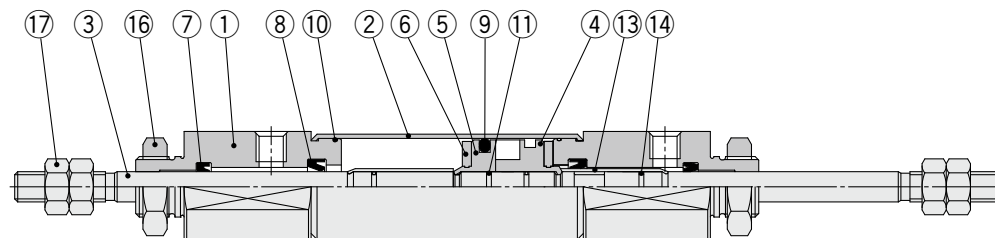


## Construction (Not able to disassemble)



With auto switch

### With air cushion



With auto switch

## Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Anodized
2	Cylinder tube	Stainless steel	
3	Piston rod	Stainless steel	
4	Piston A	Aluminum alloy	
5	Piston B	Aluminum alloy	
6	Bumper	Urethane	
7	Rod seal	NBR	
8	Check seal	NBR	
9	Piston seal	NBR	
10	Tube gasket	NBR	
11	Piston gasket	NBR	

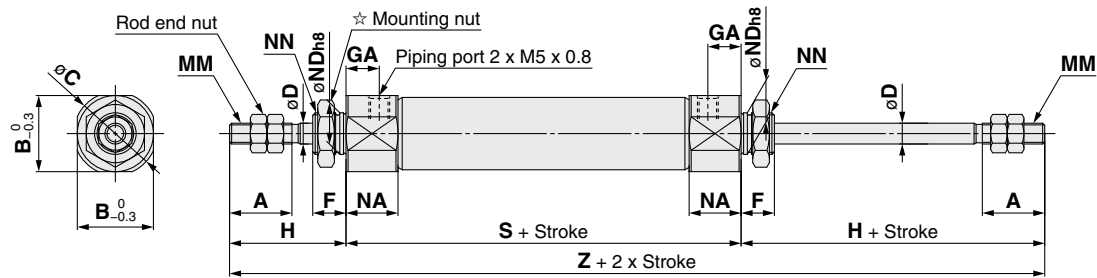
No.	Description	Material	Note
12	Cushion needle	Carbon steel	
13	Cushion ring	Aluminum alloy	
14	Cushion ring gasket	NBR	
15	Needle seal	NBR	
16	Mounting nut	Rolled steel	Zinc chromated
17	Rod end nut	Rolled steel	Zinc chromated
18	Magnet	—	

Standard	Double Acting, Double Rod	CJ2W
	Double Acting, Single Rod	CJ2
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
	Double Acting, Single Rod	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
	Double Acting, Double Rod	CJ2ZW
Direct Mount	Double Acting, Single Rod	CJ2R
	Single Acting, Spring Return/Extend	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
	Single Acting, Spring Return/Extend	CJ2RK
Auto Switch		Auto Switch
Made to Order		Made to Order

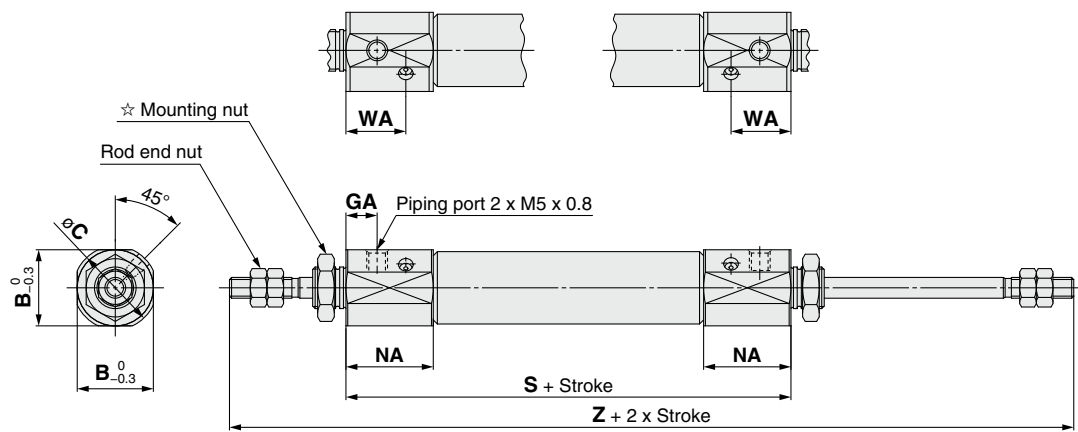
# Series CJ2W

## Basic (B)

CJ2WB Bore size – Stroke Z



With air cushion: CJ2WB Bore size – Stroke AZ



☆ For details of the mounting nut, refer to page 12.

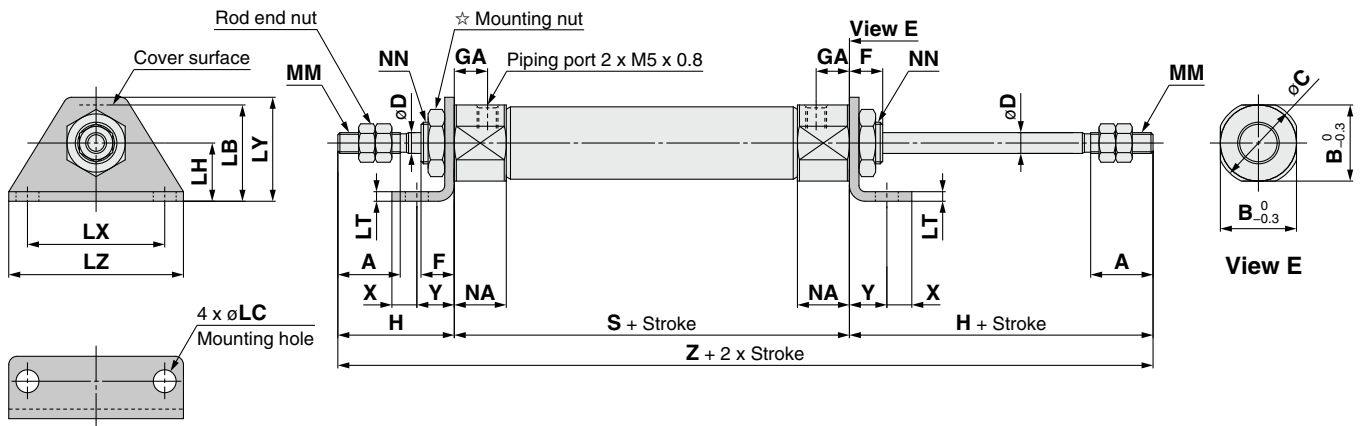
Bore size	A	B	C	D	F	GA	H	MM	NA	ND h8	NN	S	Z
10	15	12	14	4	8	8	28	M4 x 0.7	12.5	8 <sup>0</sup> <sub>-0.022</sub>	M8 x 1.0	49	105
16	15	18.3	20	5	8	8	28	M5 x 0.8	12.5	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	50	106

With Air Cushion/Dimensions other than the table below are the same as the table above.

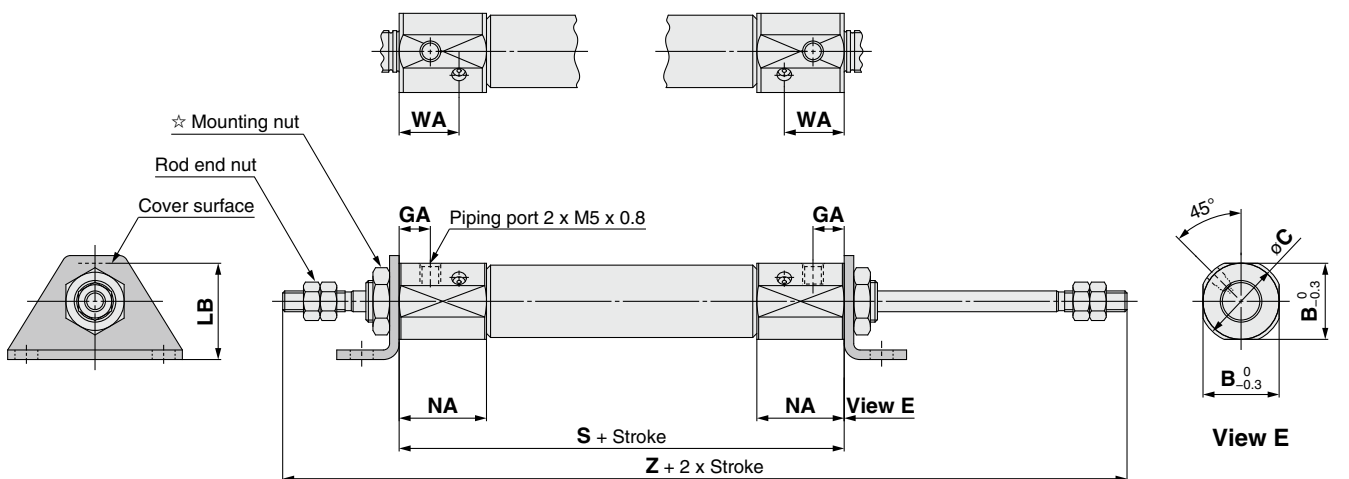
Bore size	B	C	GA	NA	WA	S	Z
10	15	17	7.5	21	14.4	66	122
16	18.3	20	7.5	21	14.4	67	123

## Foot (L)

CJ2WL Bore size – Stroke Z



With air cushion: CJ2WL Bore size – Stroke AZ



☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	GA	H	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NN	S	X	Y	Z
10	15	12	14	4	8	8	28	15	4.5	9	1.6	24	16.5	32	M4 x 0.7	12.5	M8 x 1.0	49	5	7	105
16	15	18.3	20	5	8	8	28	23	5.5	14	2.3	33	25	42	M5 x 0.8	12.5	M10 x 1.0	50	6	9	106

With Air Cushion/Dimensions other than the table below are the same as the table above.

Bore size	B	C	GA	LB	NA	WA	S	Z
10	15	17	7.5	16.5	21	14.4	66	122
16	18.3	20	7.5	23	21	14.4	67	123

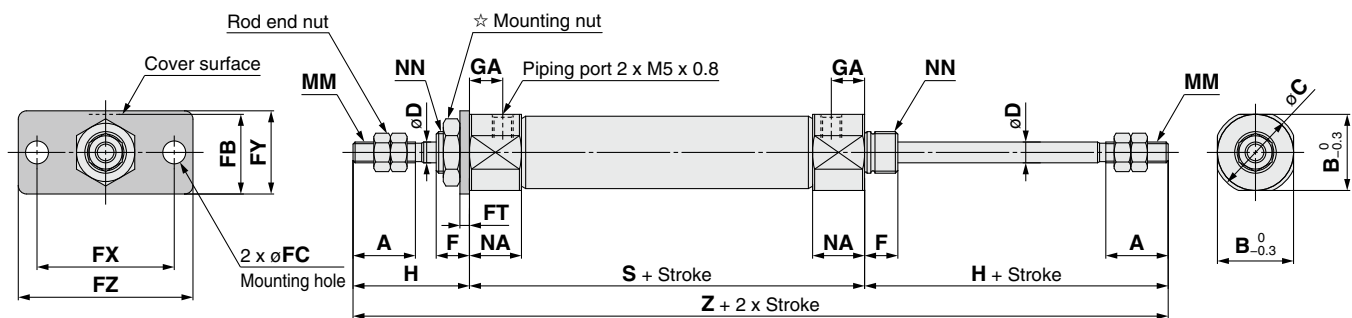
Standard	Double Acting, Single Rod	CJ2
Standard	Double Acting, Double Rod	CJ2W
Standard	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Double Acting, Double Rod	CJ2K
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
Built-in Speed Controller	Double Acting, Double Rod	CJ2ZW
Direct Mount	Double Acting, Single Rod	CJ2R
Direct Mount	Double Acting, Double Rod	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Double Acting, Double Rod	CJ2RK
Direct Mount, Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2RK
Auto Switch		Auto Switch
Made to Order		Made to Order



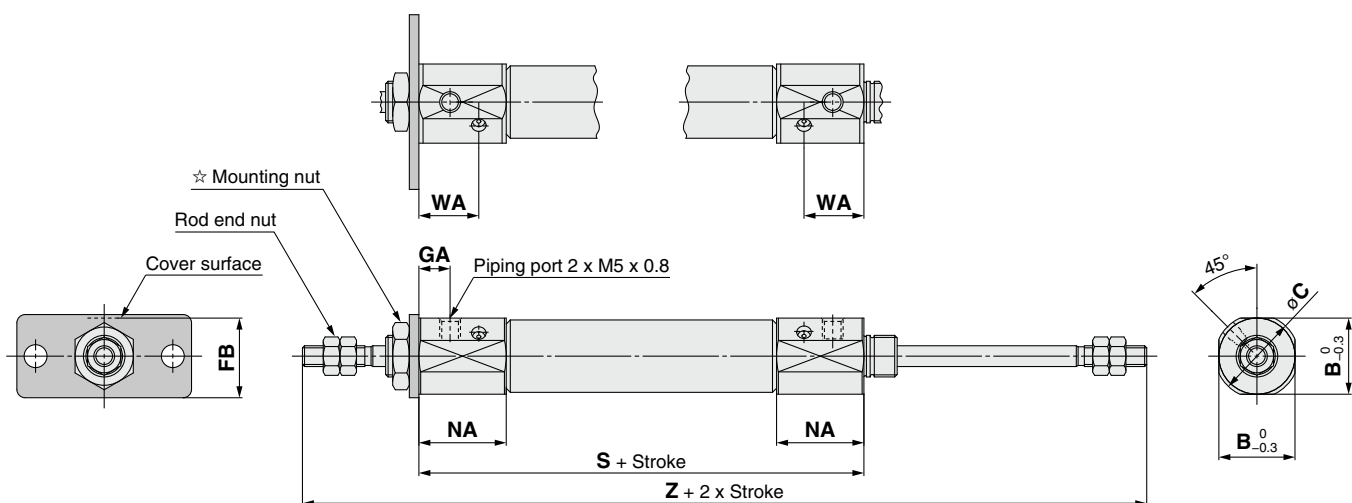
# Series CJ2W

## Flange (F)

CJ2WF Bore size – Stroke Z



With air cushion: CJ2WF Bore size – Stroke AZ



☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	H	MM	NA	NN	S	Z
10	15	12	14	4	8	13	4.5	1.6	24	14	32	8	28	M4 x 0.7	12.5	M8 x 1.0	49	105
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	8	28	M5 x .8	12.5	M10 x 1.0	50	106

With Air Cushion/Dimensions other than the table below are the same as the table above.

Bore size	B	C	GA	FB	NA	WA	S	Z
10	15	17	7.5	14.5	21	14.4	66	122
16	18.3	20	7.5	19	21	14.4	67	123

# Air Cylinder: Standard Type

## Single Acting, Spring Return/Extend

# Series CJ2

ø10, ø16

### How to Order



**Cylinder standard stroke (mm)**  
Refer to "Standard Strokes" on page 21.

#### Action

S	Single acting, Spring return
T	Single acting, Spring extend

**CJ2 L 16 - 45 S Z -**

**With auto switch**

**CDJ2 L 16 - 45 S Z - M9BW - B -**

**With auto switch**  
(Built-in magnet)

#### Mounting

B	Basic
E	Double-side bossed
D	Double clevis
L	Single foot
M	Double foot
F	Rod flange
G	Head flange

\* Mounting bracket is shipped together with the product, but not assembled.

#### Bore size

10	10 mm
16	16 mm

#### Head cover port location

Nil	Perpendicular to axis	
R	Axial	

\* For double clevis, the product is perpendicular to the cylinder axis.  
\* For double-side bossed, the product is perpendicular to the cylinder axis.  
\* Not applicable to single acting, spring extend (T).

#### Auto switch

\* For applicable auto switches, refer to the table below.

**Made to Order**  
Refer to page 21 for details.

#### Auto switch mounting type

A	Rail mounting
B	Band mounting

\* For rail mounting, screws and nuts for 2 auto switches come with the rail.  
\* Refer to page 84 for auto switch mounting brackets.

#### Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

**Applicable Auto Switches**/Refer to the **WEB catalog** or Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load				
					DC	AC	Band mounting		Rail mounting		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)						
							Perpendicular	In-line	Perpendicular	In-line											
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC			
		3-wire (PNP)		M9PV			M9P	M9PV	M9P	●	●	●	○	—	○						
	Connector	2-wire		12 V			M9BV	M9B	M9BV	M9B	●	●	●	○	—	○	—				
	—	H7C		J79C			—	●	—	●	●	●	—	—	—						
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	5 V, 12 V		M9NWV	M9NW	M9NWV	M9NW	●	●	●	○	—	○	○		IC circuit		
				3-wire (PNP)	M9PWV		M9PW	M9PWV	M9PW	●	●	●	○	—	○	○	—				
				2-wire	12 V		M9BWW	M9BW	M9BWW	M9BW	●	●	●	○	—	○	—		—		
				3-wire (NPN)	5 V, 12 V		M9NAV**	M9NA**	M9NAV**	M9NA**	○	○	●	○	—	○	○		IC circuit		
	Water resistant (2-color indication)	Grommet	3-wire (PNP)	5 V, 12 V	M9PAV**	M9PA**	M9PAV**	M9PA**	○	○	●	○	—	○	○	—					
			2-wire	12 V	M9BAV**	M9BA**	M9BAV**	M9BA**	○	○	●	○	—	○	—	—					
With diagnostic output (2-color indication)	Grommet	4-wire (NPN)	5 V, 12 V	—	H7NF	—	F79F	●	—	●	○	—	○	○	IC circuit	—					
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	24 V	5 V	—	A96V	A96	A96V	A96	●	—	●	—	—	—	IC circuit	Relay, PLC	
							—	200 V	—	—	A72	A72H	●	—	●	—	—	—	—		—
		Connector	No	2-wire			12 V	100 V	A93V	A93	A93V	A93	●	—	●	●	—	—	—		—
								100 V or less	A90V	A90	A90V	A90	●	—	●	—	●	●	—		—
	Grommet	Yes	2-wire	24 V	24 V or less	—	C80C	A80C	—	—	●	—	●	●	●	—	—	IC circuit	—		
					—	—	—	A79W	—	—	●	—	●	—	—	—	—	—	—		

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Please contact SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW  
1 m..... M (Example) M9NWM  
3 m..... L (Example) M9NWL  
5 m..... Z (Example) M9NWZ  
None..... N (Example) H7CN

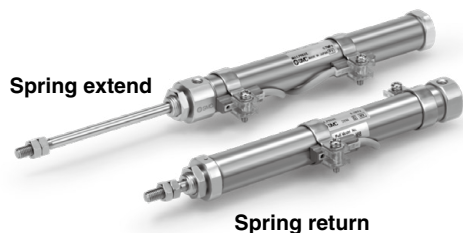
\* Since there are other applicable auto switches than listed, refer to page 85 for details.  
\* For details about auto switches with pre-wired connector, refer to the **WEB catalog** or Best Pneumatics No. 2.

\* Solid state auto switches marked with "○" are produced upon receipt of order.

\* The D-A9□□/M9□□□/A7□□/A80□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)

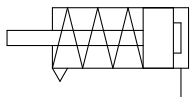
Standard	Double Acting, Double Rod	CJ2W
Standard	Double Acting, Single Rod	CJ2
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
Non-rotating Rod	Double Acting, Single Rod	CJ2Z
Built-in Speed Controller	Double Acting, Double Rod	CJ2ZW
Built-in Speed Controller	Double Acting, Single Rod	CJ2R
Direct Mount	Single Acting, Spring Return/Extend	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2RK
Auto Switch		
Made to Order		

# Series CJ2

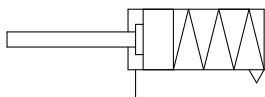


## Symbol

Single acting, Spring return, Rubber bumper



Single acting, Spring extend, Rubber bumper



## Made to Order

(For details, refer to pages 87 to 95.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC22	Fluororubber seal
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease

Refer to pages 78 to 85 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

## Precautions

Refer to page 96 before handling.

## Specifications

Bore size (mm)		10	16
Action		Single acting, Spring return/Single acting, Spring extend	
Fluid		Air	
Proof pressure		1 MPa	
Maximum operating pressure		0.7 MPa	
Minimum operating pressure	Spring return	0.15 MPa	
	Spring extend	0.15 MPa	
Ambient and fluid temperature		Without auto switch: -10°C to 70°C, With auto switch: -10°C to 60°C*	
Cushion		Rubber bumper	
Lubrication		Not required (Non-lube)	
Stroke length tolerance		+1.0 0	
Piston speed		50 to 750 mm/s	
Allowable kinetic energy		0.035 J	0.090 J

\* No freezing

## Standard Strokes

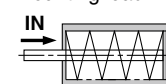
Bore size	Standard stroke (mm)
10	15, 30, 45, 60
16	15, 30, 45, 60, 75, 100, 125, 150

\* Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

## Spring Reaction Force

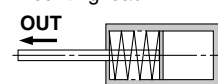
Bore size (mm)	Spring reaction force (N)	
	Primary	Secondary
10	3.53	6.86
16	6.86	14.2

Spring with primary mounting load



When the spring is set in the cylinder

Spring with secondary mounting load



When the spring is contracted by applying air

## Mounting Brackets/Part No.

Mounting bracket	Bore size (mm)	
	10	16
Foot	CJ-L010C	CJ-L016C
Flange	CJ-F010C	CJ-F016C
T-bracket*	CJ-T010C	CJ-T016C

\* T-bracket is used with double clevis (D).

## Mounting and Accessories

●...Mounted on the product. ○...Please order separately.

	Mounting	Basic	Axial foot	Rod flange	Double clevis*
	Standard				
Option	Mounting nut	●	●	●	—
	Rod end nut	●	●	●	●
	Clevis pin	—	—	—	●
	Single knuckle joint	○	○	○	○
Option	Double knuckle joint*	○	○	○	○
	T-bracket	—	—	—	○

\* A pin and retaining rings are shipped together with double clevis and double knuckle joint. For the attached bracket weight, refer to page 22.

## Theoretical Output

Refer to the "Single acting, Spring return cylinder" in Theoretical Output 1 of Technical data 3 in Best Pneumatics No. 2. In the case of the spring extend type, the force at OUT side will be the ending force of the spring return, and that at the IN side will be the amount of the IN side force of the double acting type cylinder from which the beginning force of the spring return has been subtracted.

## Weights

### Spring Return

(g)

Bore size (mm)		10				16			
Mounting		Basic	Axial piping	Double clevis (including clevis pin)	Head-side bossed	Basic	Axial piping	Double clevis (including clevis pin)	Head-side bossed
Basic weight	15 stroke	28	28	29	28	62	62	69	64
	30 stroke	35	35	35	35	77	77	84	79
	45 stroke	44	44	45	45	95	95	102	97
	60 stroke	54	54	55	54	113	113	119	115
	75 stroke					134	134	141	136
	100 stroke					167	167	174	169
	125 stroke					204	204	212	206
	150 stroke					227	227	234	229
Mounting bracket weight	Single foot	8				25			
	Double foot	16				50			
	Rod flange	5				13			
	Head flange	5				13			
Accessories	Single knuckle joint	17				23			
	Double knuckle joint (including knuckle pin)	25				21			
	Rod end cap (Flat type)	1				2			
	Rod end cap (Round type)	1				2			
	T-bracket	32				50			

\* Mounting nut and rod end nut are included in the basic weight.

Note) Mounting nut is not attached to the double clevis, so the mounting nut weight is already subtracted.

Calculation:

Example) **CJ2L10-45SZ**

- Basic weight ..... 44 (ø10-45 stroke)
- Mounting bracket weight ... 8 (Single foot)

$$44 + 8 = 52 \text{ g}$$

### Spring Extend

(g)

Bore size (mm)		10				16			
Mounting		Basic	Axial piping	Double clevis (including clevis pin)	Head-side bossed	Basic	Axial piping	Double clevis (including clevis pin)	Head-side bossed
Basic weight	15 stroke	28	28	30	29	63	63	71	67
	30 stroke	34	34	36	35	77	77	85	80
	45 stroke	42	42	44	43	93	93	100	96
	60 stroke	51	51	52	51	109	109	116	112
	75 stroke					129	129	137	133
	100 stroke					159	159	166	162
	125 stroke					193	193	201	196
	150 stroke					213	213	221	217
Mounting bracket weight	Single foot	8				25			
	Double foot	16				50			
	Rod flange	5				13			
	Head flange	5				13			
Accessories	Single knuckle joint	17				23			
	Double knuckle joint (including knuckle pin)	25				21			
	Rod end cap (Flat type)	1				2			
	Rod end cap (Round type)	1				2			
	T-bracket	32				50			

\* Mounting nut and rod end nut are included in the basic weight.

Note) Mounting nut is not attached to the double clevis, so the mounting nut weight is already subtracted.

Calculation:

Example) **CJ2L10-45TZ**

- Basic weight ..... 42 (ø10-45 stroke)
- Mounting bracket weight ... 8 (Single foot)

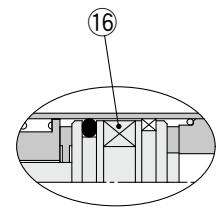
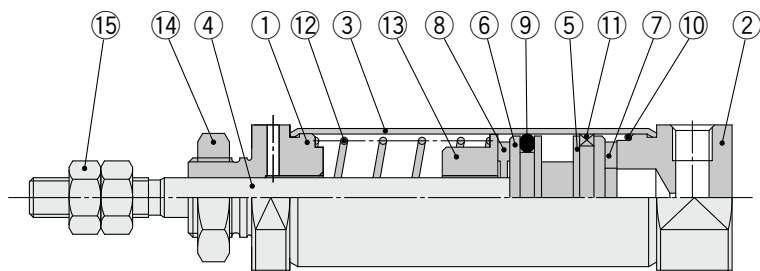
$$42 + 8 = 50 \text{ g}$$

Standard	Double Acting, Double Rod	<b>CJ2W</b>	Double Acting, Single Rod	<b>CJ2</b>
Non-rotating Rod	Single Acting, Spring Return/Extend	<b>CJ2</b>	Double Acting, Single Rod	<b>CJ2K</b>
Built-in Speed Controller	Double Acting, Double Rod	<b>CJ2ZW</b>	Double Acting, Single Rod	<b>CJ2Z</b>
Direct Mount	Double Acting, Single Rod	<b>CJ2R</b>	Double Acting, Single Rod	<b>CJ2R</b>
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	<b>CJ2RK</b>	Double Acting, Single Rod	<b>CJ2RK</b>
Auto Switch				<b>Auto Switch</b>
Made to Order				<b>Made to Order</b>

# Series CJ2

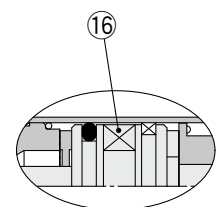
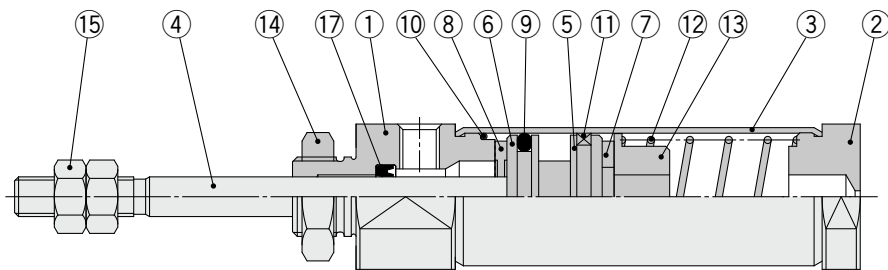
## Construction (Not able to disassemble)

Single acting, Spring return



CDJ2B10/16-□SZ-B

Single acting, Spring extend



CDJ2B10/16-□TZ-B

### Component Parts

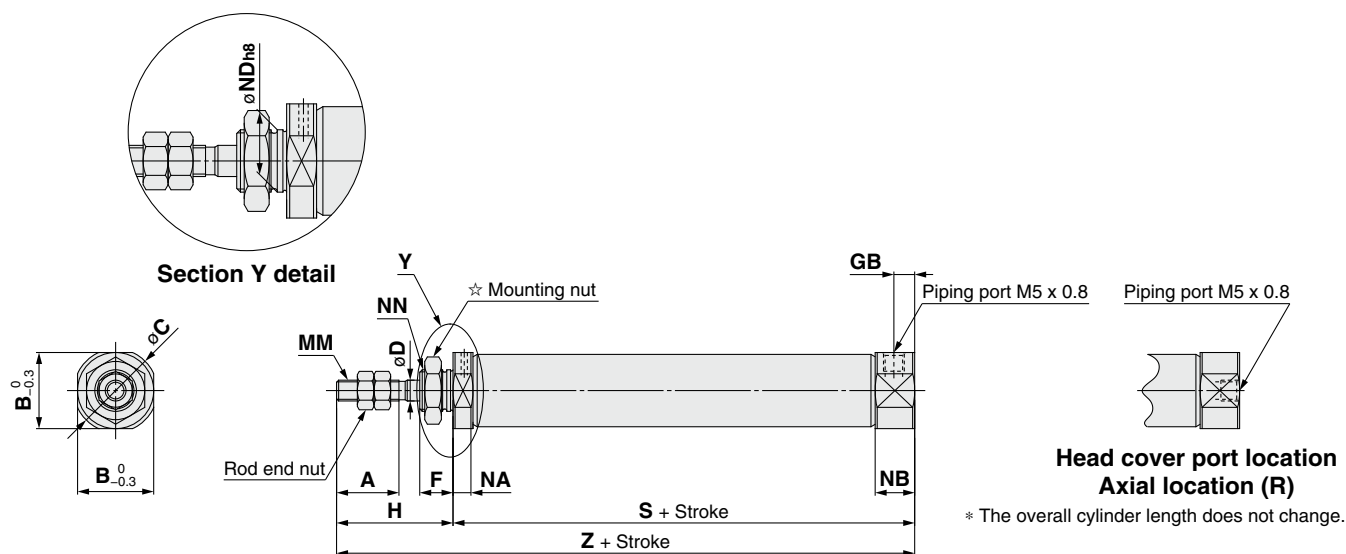
No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Clear hard anodized
2	Head cover	Aluminum alloy	Clear hard anodized
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminum alloy	
6	Piston B	Aluminum alloy	
7	Bumper A	Urethane	
8	Bumper B	Urethane	
9	Piston seal	NBR	

No.	Description	Material	Note
10	Tube gasket	NBR	
11	Wear ring	Resin	
12	Return spring	Piano wire	Zinc chromated
13	Spring seat	Aluminum alloy	
14	Mounting nut	Rolled steel	Zinc chromated
15	Rod end nut	Rolled steel	Zinc chromated
16	Magnet	—	
17	Rod seal	NBR	



## Single Acting, Spring Return: Basic (B)

**CJ2B** Bore size – Stroke S Head cover port location Z



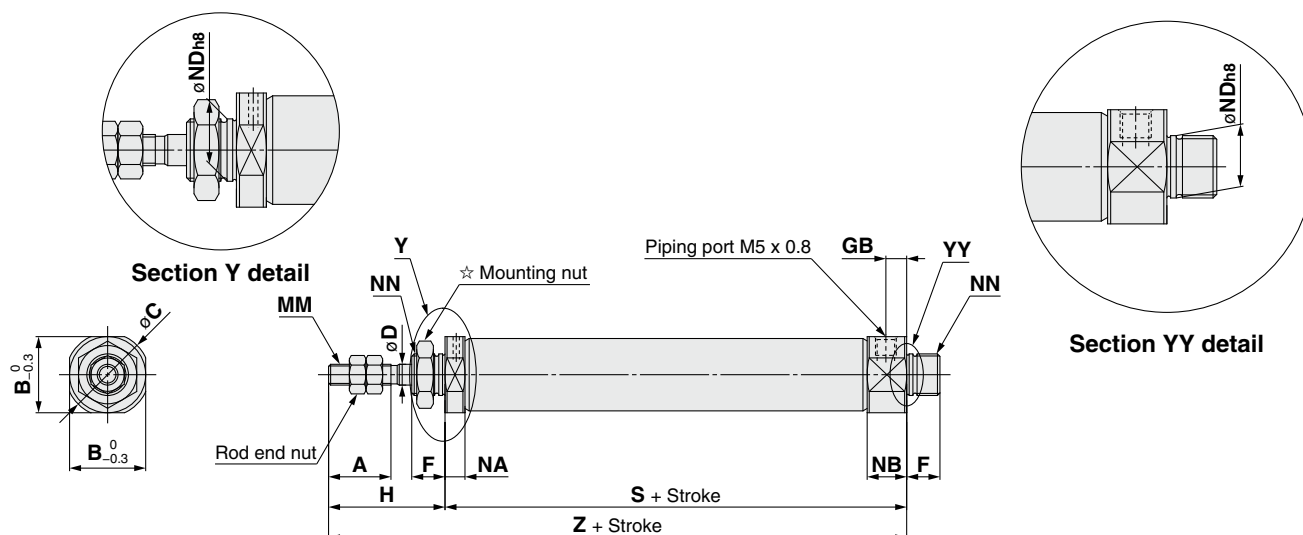
☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	GB	H	MM	NA	NB	ND h8	NN	S								Z							
													5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	15	12	14	4	8	5	28	M4 x 0.7	4.8	9.5	8 <sup>0</sup> <sub>-0.022</sub>	M8 x 1.0	45.5	53	65	77	—	—	—	—	73.5	81	93	105	—	—	—	—
16	15	18.3	20	5	8	5	28	M5 x 0.8	4.8	9.5	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	45.5	54	66	78	84	108	126	138	73.5	82	94	106	112	136	154	166

\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Return: Double-side Bossed (E)

**CJ2E** Bore size – Stroke SZ



☆ For details of the mounting nut, refer to page 12.

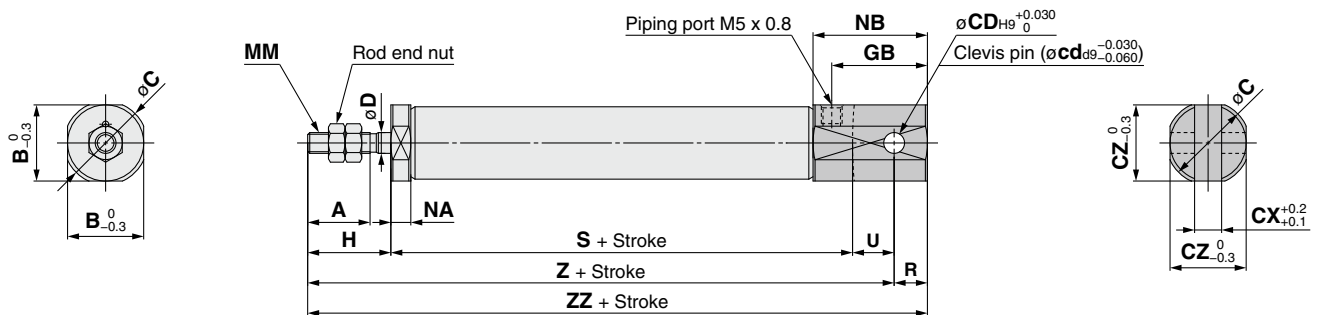
Bore size	A	B	C	D	F	GB	H	MM	NA	NB	ND h8	NN	S								Z							
													5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	15	12	14	4	8	5	28	M4 x 0.7	4.8	9.5	8 <sup>0</sup> <sub>-0.022</sub>	M8 x 1.0	45.5	53	65	77	—	—	—	—	73.5	81	93	105	—	—	—	—
16	15	18.3	20	5	8	5	28	M5 x 0.8	4.8	9.5	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	45.5	54	66	78	84	108	126	138	73.5	82	94	106	112	136	154	166

\* The minimum stroke of the built-in magnet type is 10 st.

# Series CJ2

## Single Acting, Spring Return: Double Clevis (D)

CJ2D Bore size – Stroke SZ



Bore size	A	B	C	CD (cd)	CX	CZ	D	GB	H	MM	NA	NB	R	U	S							
															5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	15	12	14	3.3	3.2	12	4	18	20	M4 x 0.7	4.8	22.5	5	8	45.5	53	65	77	—	—	—	—
16	15	18.3	20	5	6.5	18.3	5	23	20	M5 x 0.8	4.8	27.5	8	10	45.5	54	66	78	84	108	126	138

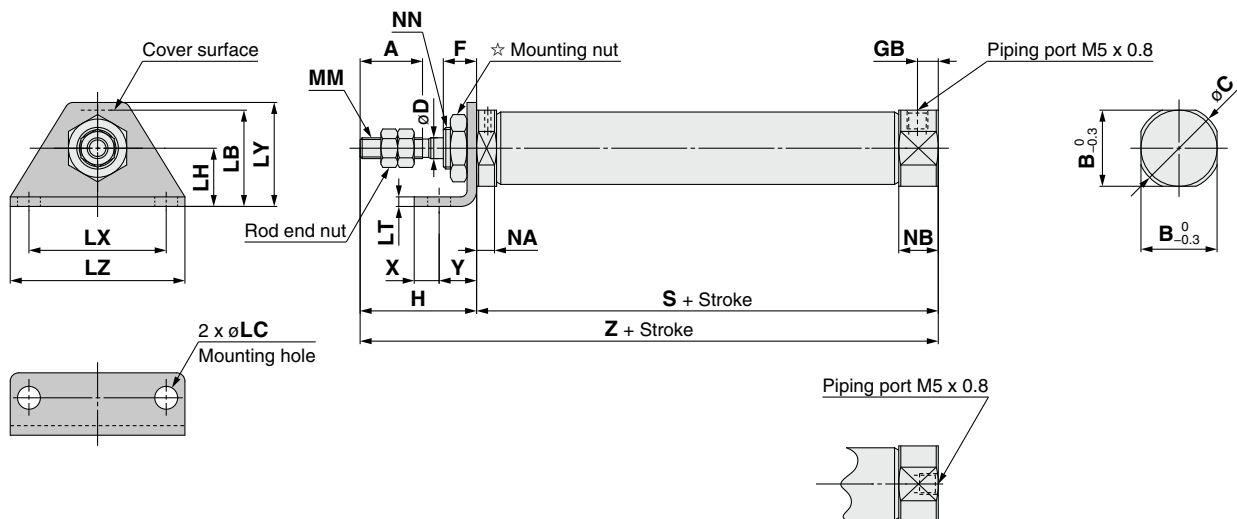
Bore size	Z								ZZ							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	73.5	81	93	105	—	—	—	—	78.5	86	98	110	—	—	—	—
16	75.5	84	96	108	114	138	156	168	83.5	92	104	116	122	146	164	176

\* The minimum stroke of the built-in magnet type is 10 st.

\* A clevis pin and retaining rings are included.

## Single Acting, Spring Return: Single Foot (L)

CJ2L Bore size – Stroke S Head cover port location Z



Head cover port location  
Axial location (R)

\* The overall cylinder length does not change.

☆ For details of the mounting nut, refer to page 12.

☆ For details of the mounting nut, refer to page 12.

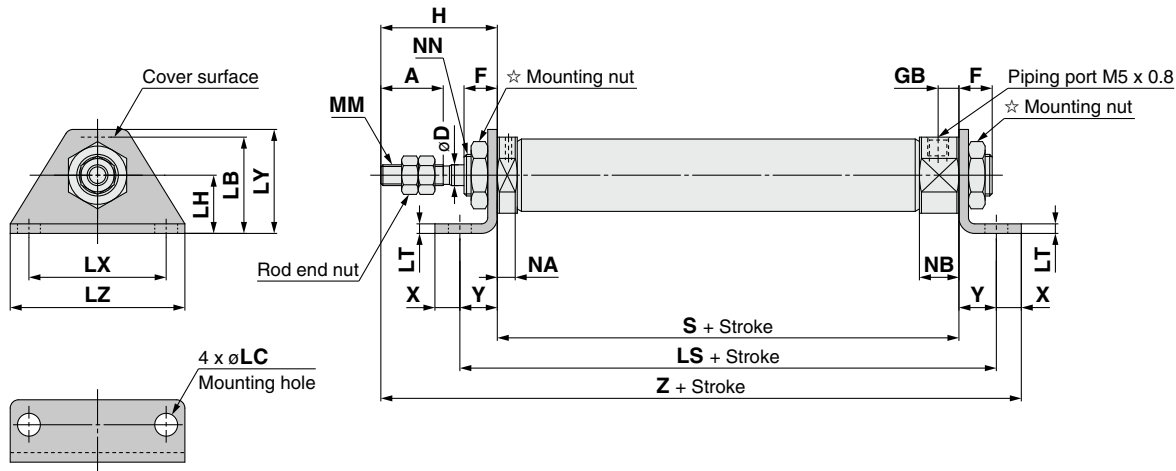
(mm)

Bore size	A	B	C	D	F	GB	H	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN	S								X	Y	Z																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Return: Double Foot (M)

**CJ2M** Bore size – Stroke **SZ**



☆ For details of the mounting nut, refer to page 12.

Bore size	A	D	F	GB	H	LB	LC	LH	LS								LT	LX	LY	LZ	MM	NA	NB	NN
									5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st								
10	15	4	8	5	28	15	4.5	9	59.5	67	79	91	—	—	—	—	1.6	24	16.5	32	M4 x 0.7	4.8	9.5	M8 x 1.0
16	15	5	8	5	28	23	5.5	14	63.5	72	84	96	102	126	144	156	2.3	33	25	42	M5 x 0.8	4.8	9.5	M10 x 1.0

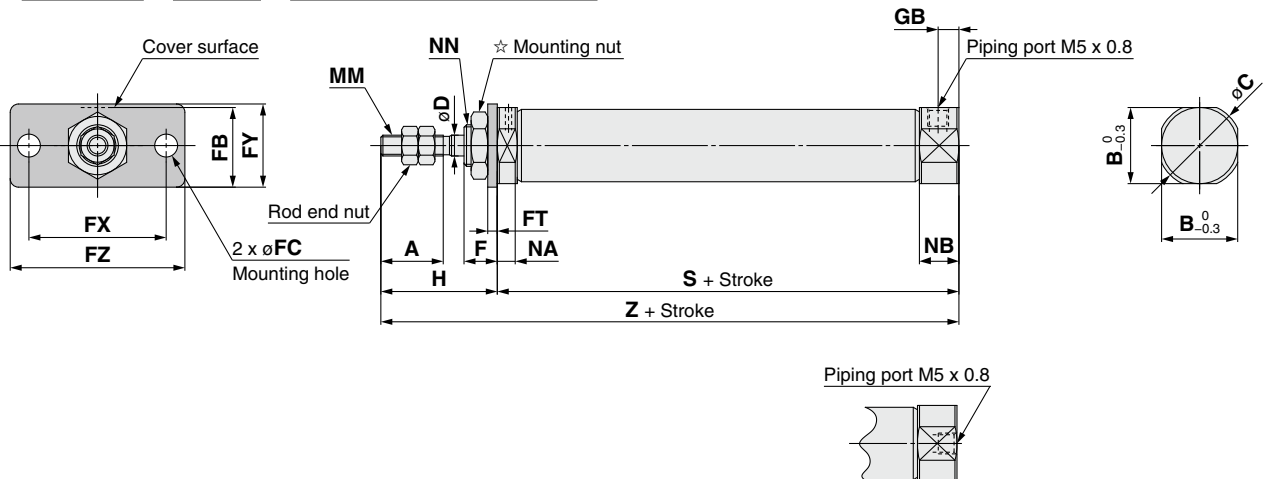
  

Bore size	S								X	Y	Z							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st			5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	45.5	53	65	77	—	—	—	—	5	7	85.5	93	105	117	—	—	—	—
16	45.5	54	66	78	84	108	126	138	6	9	88.5	97	109	121	127	151	169	181

\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Return: Rod Flange (F)

**CJ2F** Bore size – Stroke **S** Head cover port location **Z**



**Head cover port location  
Axial location (R)**

\* The overall cylinder length does not change.

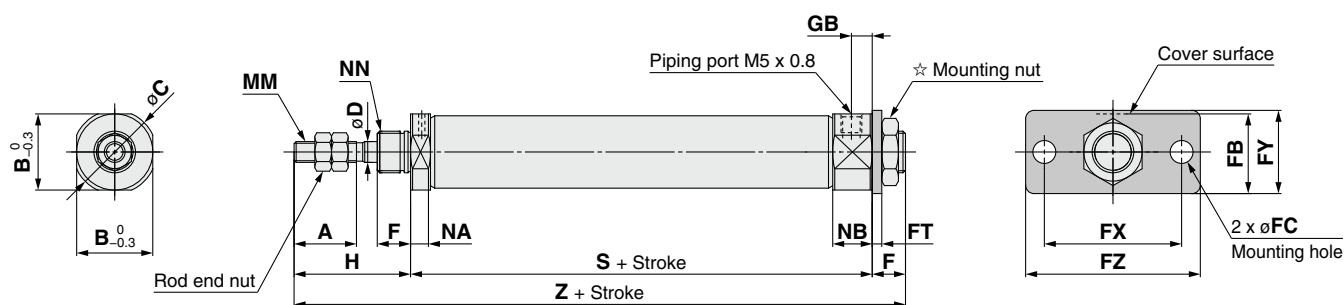
☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GB	H	MM	NA	NB	NN	S								Z							
																		5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	15	12	14	4	8	13	4.5	1.6	24	14	32	5	28	M4 x 0.7	4.8	9.5	M8 x 1.0	45.5	53	65	77	—	—	—	—	73.5	81	93	105	—	—	—	—
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	5	28	M5 x 0.8	4.8	9.5	M10 x 1.0	45.5	54	66	78	84	108	126	138	73.5	82	94	106	112	136	154	166

\* The minimum stroke of the built-in magnet type is 10 st.

### Single Acting, Spring Return: Head Flange (G)

**CJ2G** **Bore size** – **Stroke** **SZ**



☆ For details of the mounting nut, refer to page 12.

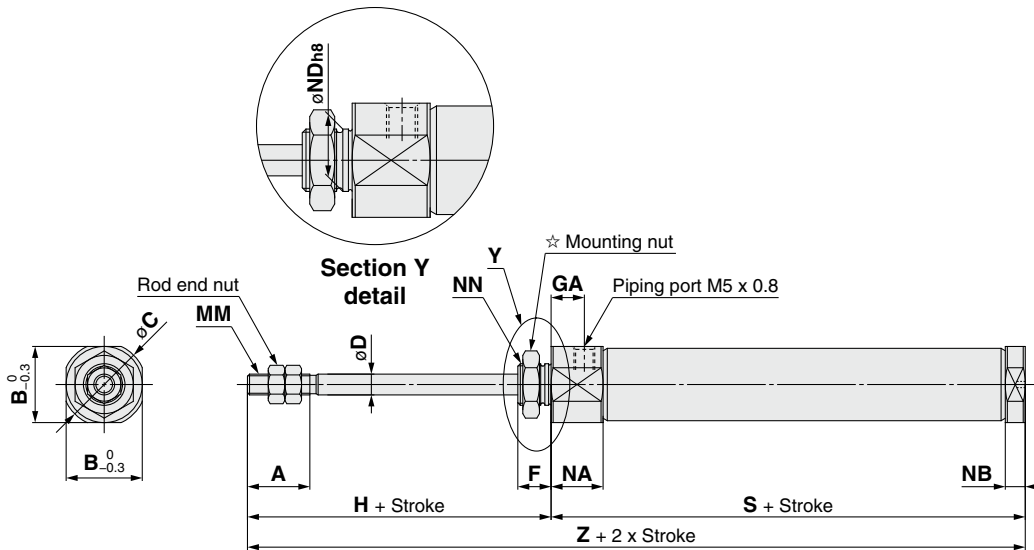
(mm)

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GB	H	MM	NANB	NN	S								Z																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Extend: Basic (B)

**CJ2B** Bore size – Stroke TZ



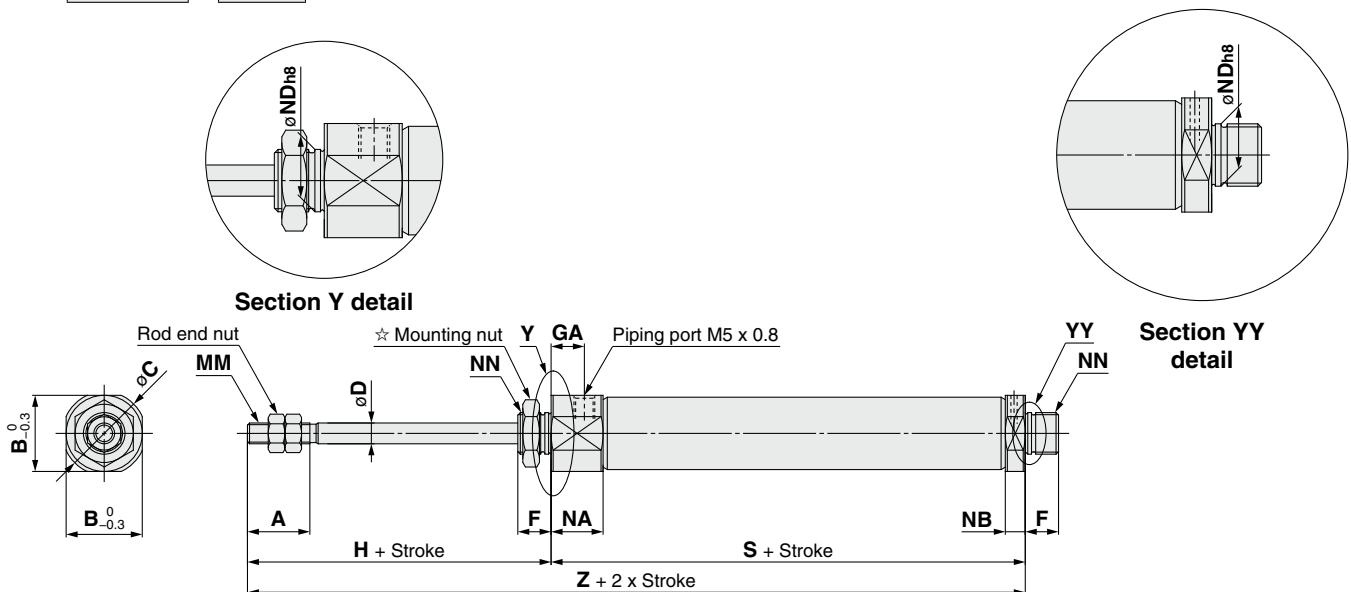
☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	GA	H	MM	NA	NB	ND h8	NN	S								Z							
													5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	15	12	14	4	8	8	28	M4 x 0.7	12.5	4.8	8 <sup>0</sup> <sub>-0.022</sub>	M8 x 1.0	48.5	56	68	80	—	—	—	—	76.5	84	96	108	—	—	—	—
16	15	18.3	20	5	8	8	28	M5 x 0.8	12.5	4.8	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	48.5	57	69	81	87	111	129	141	76.5	85	97	109	115	139	157	169

\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Extend: Double-side Bossed (E)

**CJ2E** Bore size – Stroke TZ



☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	GA	H	MM	NA	NB	ND h8	NN	S								Z							
													5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	15	12	14	4	8	8	28	M4 x 0.7	12.5	4.8	8 <sup>0</sup> <sub>-0.022</sub>	M8 x 1.0	48.5	56	68	80	—	—	—	—	76.5	84	96	108	—	—	—	—
16	15	18.3	20	5	8	8	28	M5 x 0.8	12.5	4.8	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	48.5	57	69	81	87	111	129	141	76.5	85	97	109	115	139	157	169

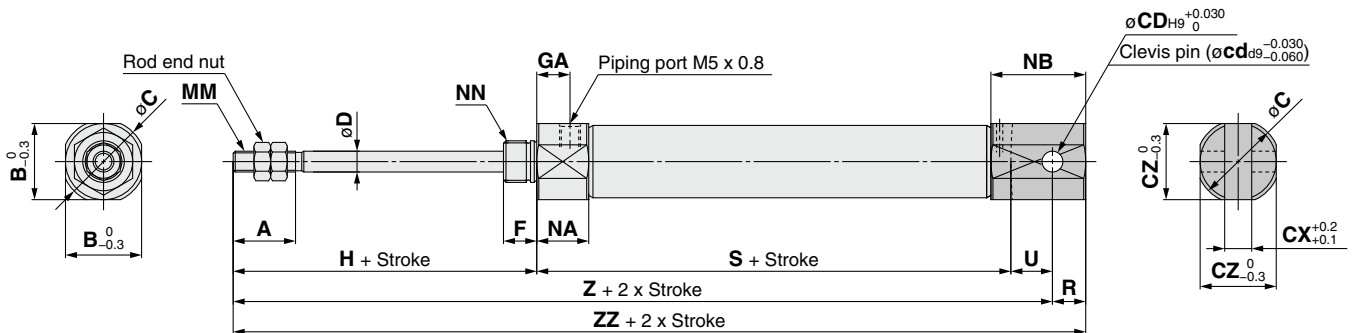
\* The minimum stroke of the built-in magnet type is 10 st.

Standard	Double Acting, Single Rod	CJ2
Standard	Double Acting, Double Rod	CJ2W
Standard	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
Built-in Speed Controller	Double Acting, Double Rod	CJ2ZW
Direct Mount	Double Acting, Single Rod	CJ2R
Direct Mount	Single Acting, Spring Return/Extend	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2RK
Auto Switch		
Made to Order		

# Series CJ2

## Single Acting, Spring Extend: Double Clevis (D)

CJ2D Bore size – Stroke TZ



\* A clevis pin and retaining rings are included.

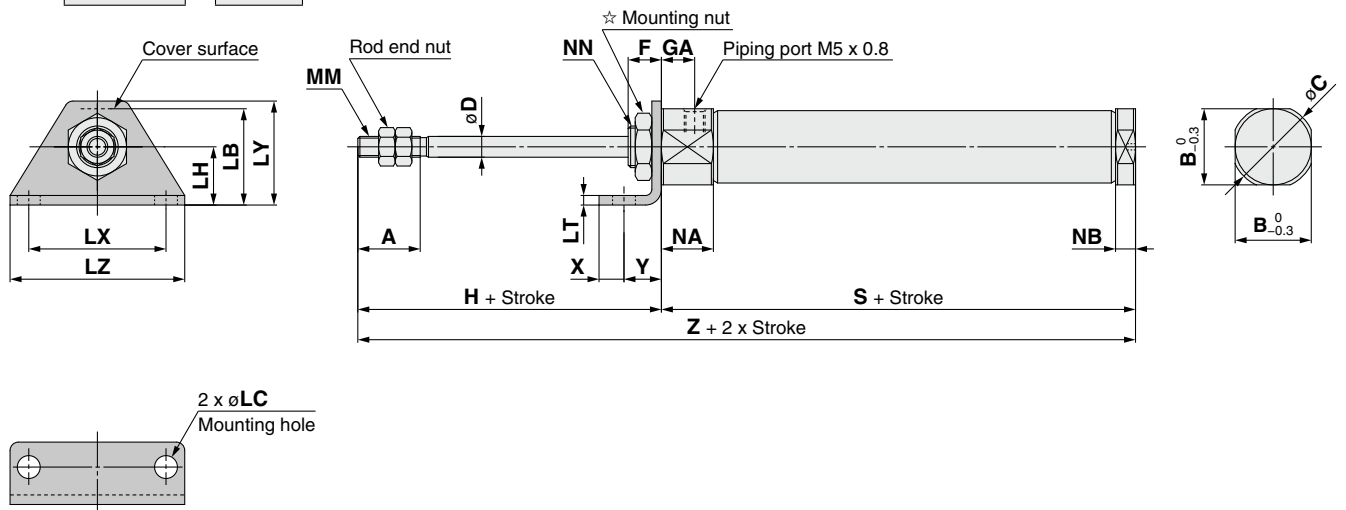
Bore size	A	B	C	CD (cd)	CX	CZ	D	GA	H	MM	NA	NB	R	U	S							
															5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	15	12	14	3.3	3.2	12	4	8	28	M4 x 0.7	12.5	17.8	5	8	48.5	56	68	80	—	—	—	—
16	15	18.3	20	5	6.5	18.3	5	8	28	M5 x 0.8	12.5	22.8	8	10	48.5	57	69	81	87	111	129	141

Bore size	Z								ZZ							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	84.5	92	104	116	—	—	—	—	89.5	97	109	121	—	—	—	—
16	86.5	95	107	119	125	149	167	179	94.5	103	115	127	133	157	175	187

\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Extend: Single Foot (L)

CJ2L Bore size – Stroke TZ



☆ For details of the mounting nut, refer to page 12.

☆ For details of the mounting nut, refer to page 12.

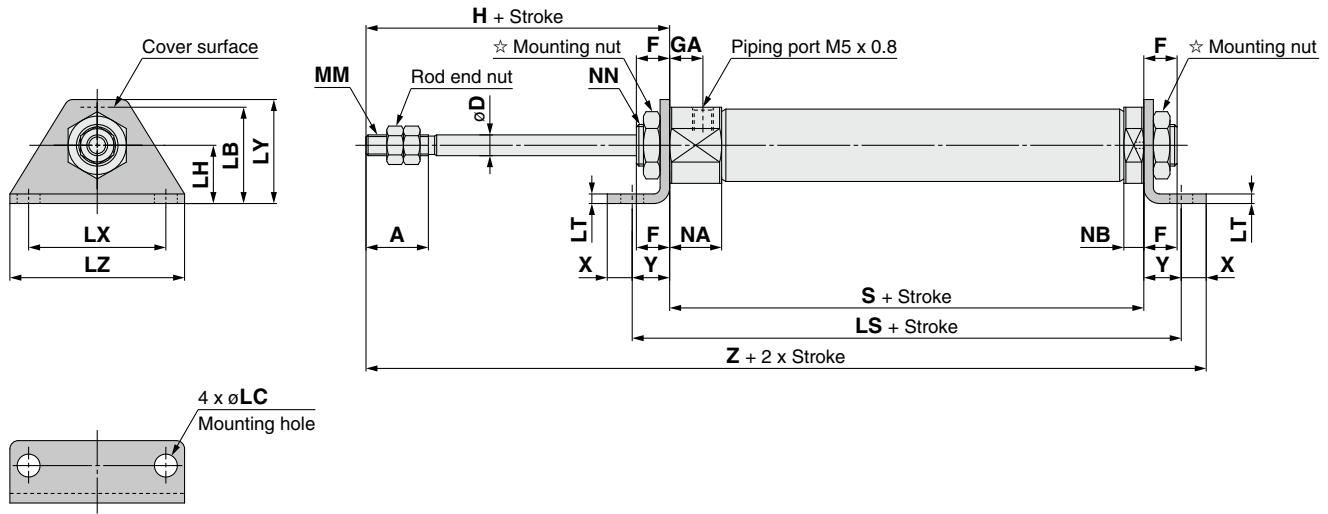
(mm)

Bore size	A	B	C	D	F	GA	H	LB	LC	LH	LT	LX	LY	LZ	MM	NAN	NB	NN	S								X	Y	Z							
																			5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st			5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	15	12	14	4	8	8	28	15	4.5	9	1.6	24	16.5	32	M4 x 0.7	12.5	4.8	M8 x 1.0	48.5	56	68	80	—	—	—	—	5	7	76.5	84	96	108	—	—	—	—
16	15	18.3	20	5	8	8	28	23	5.5	14	2.3	33	25	42	M5 x 0.8	12.5	4.8	M10 x 1.0	48.5	57	69	81	87	111	129	141	6	9	76.5	85	97	109	115	139	157	169

\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Extend: Double Foot (M)

**CJ2M** Bore size – Stroke TZ



☆ For details of the mounting nut, refer to page 12.

Bore size	A	D	F	GB	H	LB	LC	LH	LS								LT	LX	LY	LZ	MM	NA	NB	NN
									5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st								
10	15	4	8	5	28	15	4.5	9	62.5	70	82	94	—	—	—	—	1.6	24	16.5	32	M4 x 0.7	12.5	4.8	M8 x 1.0
16	15	5	8	5	28	23	5.5	14	66.5	75	87	99	105	129	147	159	2.3	33	25	42	M5 x 0.8	12.5	4.8	M10 x 1.0

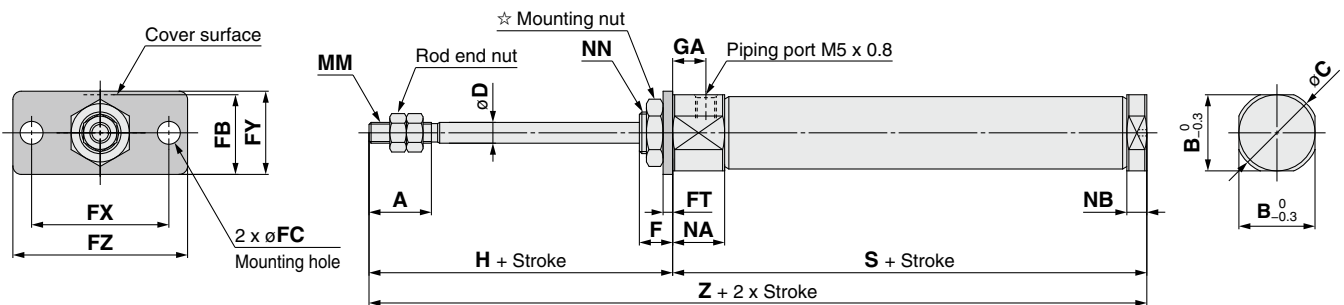
  

Bore size	S								X	Y	Z							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st			5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	48.5	56	68	80	—	—	—	—	5	7	88.5	96	108	120	—	—	—	—
16	48.5	57	69	81	87	111	129	141	6	9	91.5	100	112	124	130	154	172	184

\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Extend: Rod Flange (F)

**CJ2F** Bore size – Stroke TZ



☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	H	MM	NA	NB	NN	S								Z							
																		5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	15	12	14	4	8	13	4.5	1.6	24	14	32	8	28	M4 x 0.7	12.5	4.8	M8 x 1.0	48.5	56	68	80	—	—	—	—	76.5	84	96	108	—	—	—	—
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	8	28	M5 x 0.8	12.5	4.8	M10 x 1.0	48.5	57	69	81	87	111	129	141	76.5	85	97	109	115	139	157	169

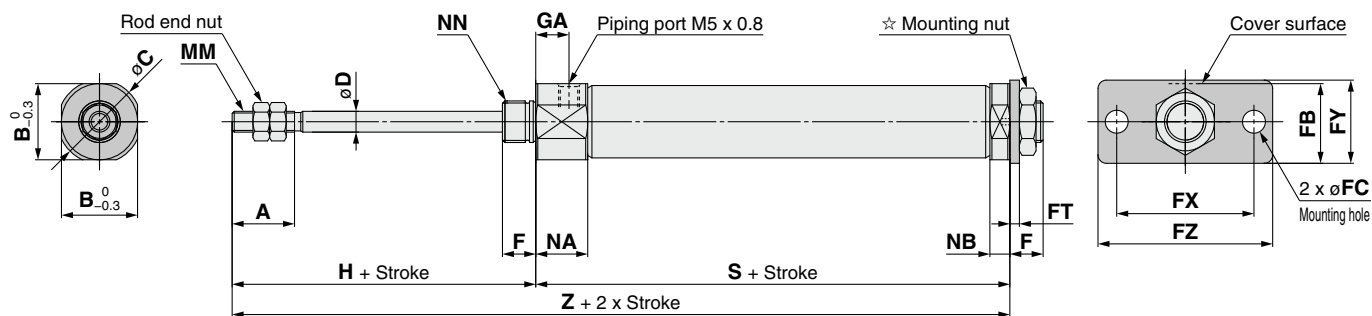
\* The minimum stroke of the built-in magnet type is 10 st.



## Series CJ2

### Single Acting, Spring Extend: Head Flange (G)

**CJ2G** Bore size – Stroke **TZ**



☆ For details of the mounting nut, refer to page 12.

☆ For details of the mounting nut, refer to page 12.

(mm)

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	H	MM	NA	NB	NN	S								Z							
																		5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	15	12	14	4	8	13	4.5	1.6	24	14	32	8	28	M4 x 0.7	12.5	4.8	M8 x 1.0	48.5	56	68	80	—	—	—	—	76.5	84	96	108	—	—	—	—
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	8	28	M5 x 0.8	12.5	4.8	M10 x 1.0	48.5	57	69	81	87	111	129	141	76.5	85	97	109	115	139	157	169

\* The minimum stroke of the built-in magnet type is 10 st.

# Air Cylinder: Non-rotating Rod Type Double Acting, Single Rod

## Series CJ2K

ø10, ø16

### How to Order



**Ordering Example:** CJ2K L 16 - 60 [ ] Z - [ ]

**With auto switch:** CDJ2K L 16 - 60 [ ] Z - M9BW [ ] - B - [ ]

**Bore size**

10	10 mm
16	16 mm

**Cylinder standard stroke (mm)**  
Refer to "Standard Strokes" on page 33.

**Mounting**

B	Basic
E	Double-side bossed
D	Double clevis
L	Single foot
M	Double foot
F	Rod flange
G	Head flange

\* Mounting bracket is shipped together with the product, but not assembled.

**Head cover port location**

Nil	Perpendicular to axis	
R	Axial	

\* For double clevis, the product is perpendicular to the cylinder axis.  
\* For double-side bossed, the product is perpendicular to the cylinder axis.

**Auto switch**

\* For applicable auto switches, refer to the table below.

**Auto switch mounting type**

A	Rail mounting
B	Band mounting

\* For rail mounting, screws and nuts for 2 auto switches come with the rail.  
\* Refer to page 84 for auto switch mounting brackets.

**Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

\* If a built-in magnet cylinder without an auto switch is required, refer to the model of built-in magnet cylinder.

**Made to Order**  
Refer to page 33 for details.

**Applicable Auto Switches**/Refer to the **WEB catalog** or Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load			
					DC	AC	Band mounting		Rail mounting		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)					
							Perpendicular	In-line	Perpendicular	In-line										
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC		
		3-wire (PNP)		M9PV			M9P	M9PV	M9P	●	●	●	○	—	○					
	Connector	2-wire		12 V	M9BV		M9B	M9BV	M9B	●	●	●	○	—	○	—				
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	5 V, 12 V		M9NVV	M9NW	M9NVV	M9NW	●	●	●	○	—	○	IC circuit			
				3-wire (PNP)			M9PWV	M9PW	M9PWV	M9PW	●	●	●	○	—	○				
				2-wire	12 V		M9BWW	M9BW	M9BWW	M9BW	●	●	●	○	—	○	—			
				3-wire (NPN)	5 V, 12 V		M9NAV**	M9NA**	M9NAV**	M9NA**	○	○	●	○	—	○	IC circuit			
				3-wire (PNP)			M9PAV**	M9PA**	M9PAV**	M9PA**	○	○	●	○	—	○				
			2-wire	12 V	M9BAV**	M9BA**	M9BAV**	M9BA**	○	○	●	○	—	○	—					
	With diagnostic output (2-color indication)	4-wire (NPN)	5 V, 12 V	—	H7NF	—	F79F	●	—	●	○	—	○	IC circuit						
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	A96V	A96	●	—	●	—	—	—	IC circuit	Relay, PLC	
						—	200 V	—	—	A72	A72H	●	—	●	—	—	—	—		
		Connector		No	2-wire	24 V	12 V	100 V	A93V	A93	A93V	A93	●	—	●	●	—	—		—
								100 V or less	A90V	A90	A90V	A90	●	—	●	—	—	—		—
	No	—		—				C73C	A73C	—	●	—	●	●	●	—	—	—		
		24 V or less		—				C80C	A80C	—	●	—	●	●	●	—	—	IC circuit		
	Diagnostic indication (2-color indication)	Grommet		Yes	—	—	—	A79W	—	—	—	●	—	●	—	—	—	—		

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Please contact SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW  
1 m..... M (Example) M9NWM  
3 m..... L (Example) M9NWL  
5 m..... Z (Example) M9NWZ  
None..... N (Example) H7CN

\* Since there are other applicable auto switches than listed, refer to page 85 for details.  
\* For details about auto switches with pre-wired connector, refer to the **WEB catalog** or Best Pneumatics No. 2.

\* Solid state auto switches marked with "○" are produced upon receipt of order.

\* The D-A9□□/M9□□□/A7□□/A80□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)

Standard	Double Acting, Double Rod	CJ2W
Standard	Double Acting, Single Rod	CJ2
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
Built-in Speed Controller	Double Acting, Double Rod	CJ2ZW
Direct Mount	Double Acting, Single Rod	CJ2R
Direct Mount	Single Acting, Spring Return/Extend	CJ2R
Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2RK
Auto Switch		
Made to Order		

# Series CJ2K

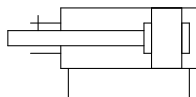
**A cylinder which rod does not rotate because of the hexagonal rod shape.**

**Non-rotating accuracy**  
 $\phi 10: \pm 1.5^\circ$ ,  $\phi 16: \pm 1^\circ$   
**Can operate without lubrication.**



## Symbol

Double acting, Single rod, Rubber bumper



**Made to Order**  
 (For details, refer to pages 87 to 95.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC3	Special port location
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC10	Dual stroke cylinder/Double rod type
-XC22	Fluororubber seal
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease

## ⚠ Precautions

Refer to page 96 before handling.

## Specifications

Bore size (mm)	10	16
Action	Double acting, Single rod	
Fluid	Air	
Proof pressure	1 MPa	
Maximum operating pressure	0.7 MPa	
Minimum operating pressure	0.06 MPa	
Ambient and fluid temperature	Without auto switch: $-10^\circ\text{C}$ to $70^\circ\text{C}$ , With auto switch: $-10^\circ\text{C}$ to $60^\circ\text{C}^*$	
Cushion	Rubber bumper	
Lubrication	Not required (Non-lube)	
Stroke length tolerance	$+1.0$ $0$	
Rod non-rotating accuracy	$\pm 1.5^\circ$	$\pm 1^\circ$
Piston speed	50 to 750 mm/s	
Allowable kinetic energy	0.035 J	0.090 J

\* No freezing

## Standard Strokes

Bore size (mm)	Standard stroke (mm)
10	15, 30, 45, 60, 75, 100, 125, 150
16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200

\* Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

## Mounting and Accessories

For details, refer to page 12.

●...Mounted on the product. ○...Please order separately.

Mounting		Basic	Foot	Flange	Double* clevis	Double clevis (including T-bracket)
Standard	Mounting nut	●	●	●	—	—
	Rod end nut	●	●	●	●	●
	Clevis pin	—	—	—	●	●
Option	Single knuckle joint	○	○	○	○	○
	Double knuckle joint*	○	○	○	○	○
	Rod end cap (Flat/Round type)	○	○	○	○	○
	T-bracket	—	—	—	○	●

\* A pin and retaining rings are shipped together with double clevis and double knuckle joint.

## Mounting Brackets/Part No.

Mounting bracket	Bore size (mm)	
	10	16
Foot	CJ-L016C	CJK-L016C
Flange	CJ-F016C	CJK-F016C
T-bracket*	CJ-T010C	CJ-T016C

\* T-bracket is used with double clevis (D).

Refer to pages 78 to 85 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

## Weights

(g)			
	Bore size (mm)	10	16
Basic weight (When the stroke is zero)	Basic	25	47
	Axial piping	25	47
	Double clevis (including clevis pin)	27	55
	Head-side bossed	29	50
Additional weight per 15 mm of stroke		4	7
Mounting bracket weight	Single foot	8	25
	Double foot	16	50
	Rod flange	5	13
	Head flange	5	13
Accessories	Single knuckle joint	17	23
	Double knuckle joint (including knuckle pin)	25	21
	Rod end cap (Flat type)	1	2
	Rod end cap (Round type)	1	2
	T-bracket	32	50

\* Mounting nut and rod end nut are included in the basic weight.

Note) Mounting nut is not included in the basic weight for the double clevis.

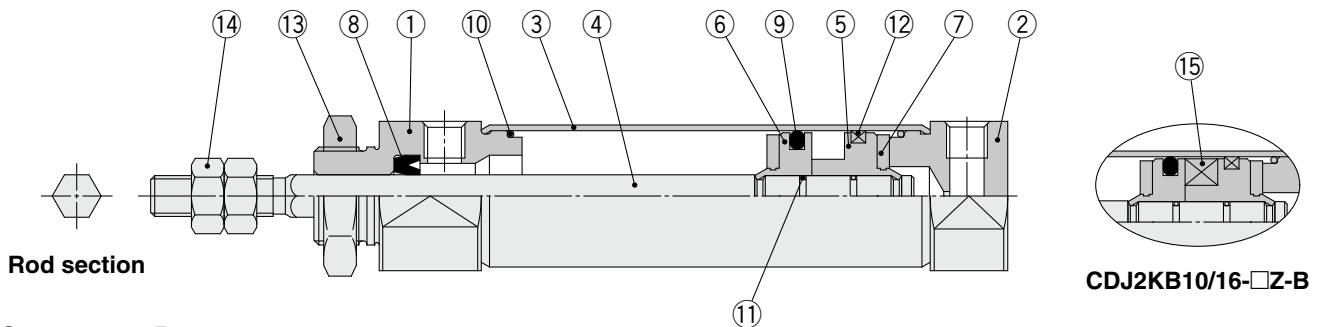
Calculation:

Example) **CJ2KL10-45Z**

- Basic weight ..... 25 (ø10)
- Additional weight ..... 4/15 stroke
- Cylinder stroke ..... 45 stroke
- Mounting bracket weight ... 8 (Single foot)

$$25 + 4/15 \times 45 + 8 = 45 \text{ g}$$

## Construction (Not able to disassemble)



### Component Parts

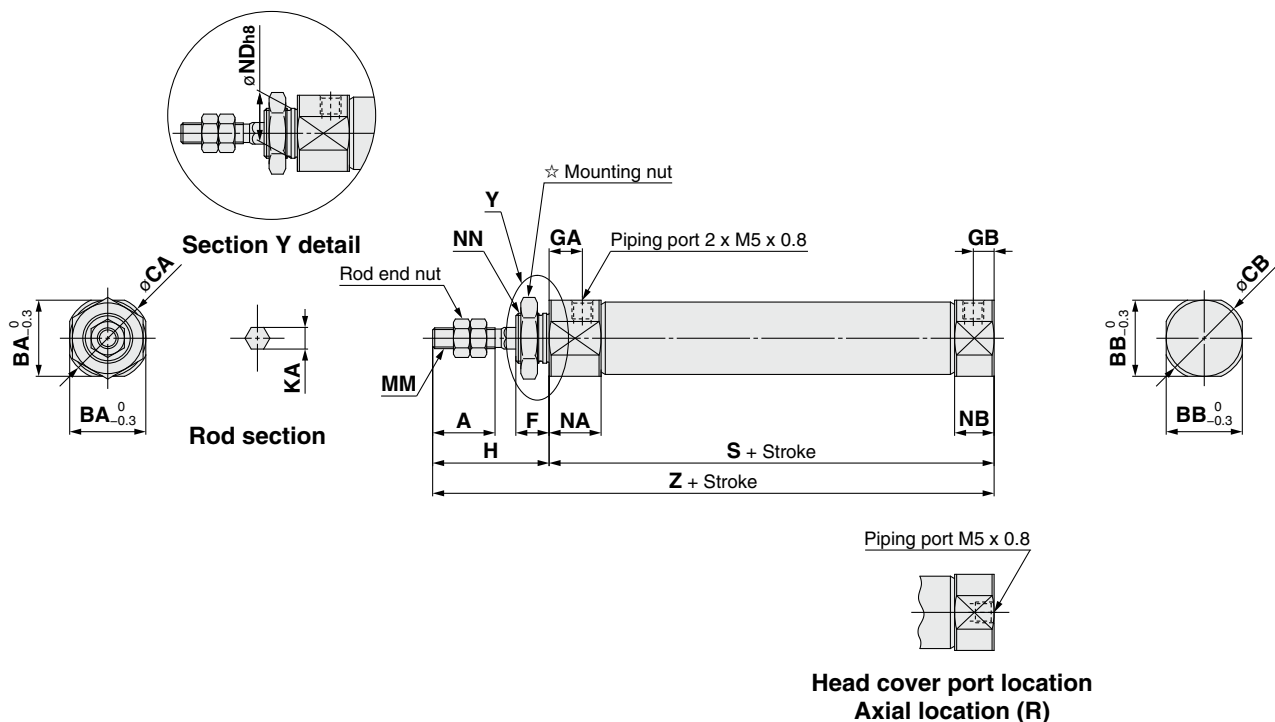
No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Clear hard anodized
2	Head cover	Aluminum alloy	Clear hard anodized
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminum alloy	
6	Piston B	Aluminum alloy	
7	Bumper	Urethane	
8	Rod seal	NBR	

No.	Description	Material	Note
9	Piston seal	NBR	
10	Tube gasket	NBR	
11	Piston gasket	NBR	
12	Wear ring	Resin	
13	Mounting nut	Rolled steel	Zinc chromated
14	Rod end nut	Rolled steel	Zinc chromated
15	Magnet	—	

# Series CJ2K

## Basic (B)

CJ2KB Bore size – Stroke Head cover port location Z



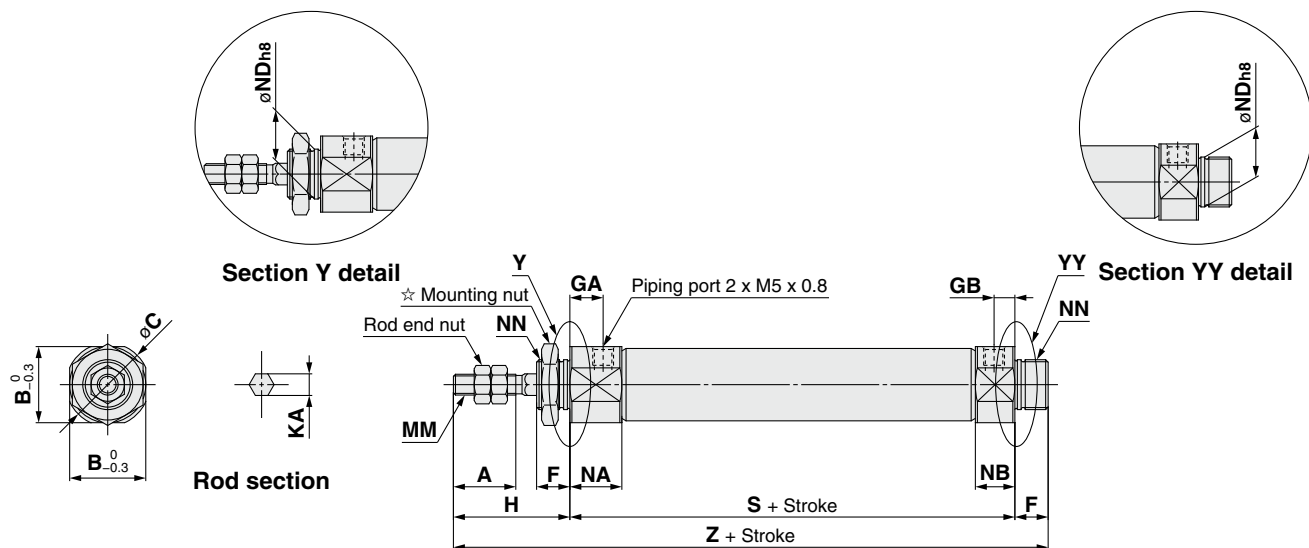
\* The overall cylinder length does not change.

☆ Refer to page 12 for details of the mounting nut. (SNJ-016B for  $\phi 10$ , SNKJ-016B for  $\phi 16$ )

Bore size	A	BA	BB	CA	CB	F	GA	GB	H	KA	MM	NA	NB	NDh8	NN	S	Z
10	15	15	12	17	14	8	8	5	28	4.2	M4 x 0.7	12.5	9.5	10 <sub>-0.022</sub>	M10 x 1.0	46	74
16	15	18.3	18.3	20	20	8	8	5	28	5.2	M5 x 0.8	12.5	9.5	12 <sub>-0.027</sub>	M12 x 1.0	47	75

## Double-side Bossed (E)

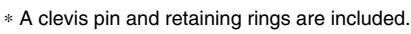
CJ2KE Bore size – Stroke Z



☆ Refer to page 12 for details of the mounting nut. (SNJ-016B for  $\phi 10$ , SNKJ-016B for  $\phi 16$ )

Bore size	A	B	C	F	GA	GB	H	KA	MM	NA	NB	NDh8	NN	S	Z
10	15	15	17	8	8	5	28	4.2	M4 x 0.7	12.5	9.5	10 <sub>-0.022</sub>	M10 x 1.0	46	82
16	15	18.3	20	8	8	5	28	5.2	M5 x 0.8	12.5	9.5	12 <sub>-0.027</sub>	M12 x 1.0	47	83

**CJ2KD Bore size – Stroke Z**



Bore size	A	BA	BB	CA	CB	CD(cd)	CX	GA	GB	H	KA	MM	NA	NB	R	S	U	Z	ZZ
<b>10</b>	15	15	12	17	14	3.3	3.2	8	18	28	4.2	M4 x 0.7	12.5	22.5	5	46	8	82	87
<b>16</b>	15	18.3	18.3	20	20	5	6.5	8	23	28	5.2	M5 x 0.8	12.5	27.5	8	47	10	85	93

**CJ2KL** Bore size – Stroke Head cover port location **Z**



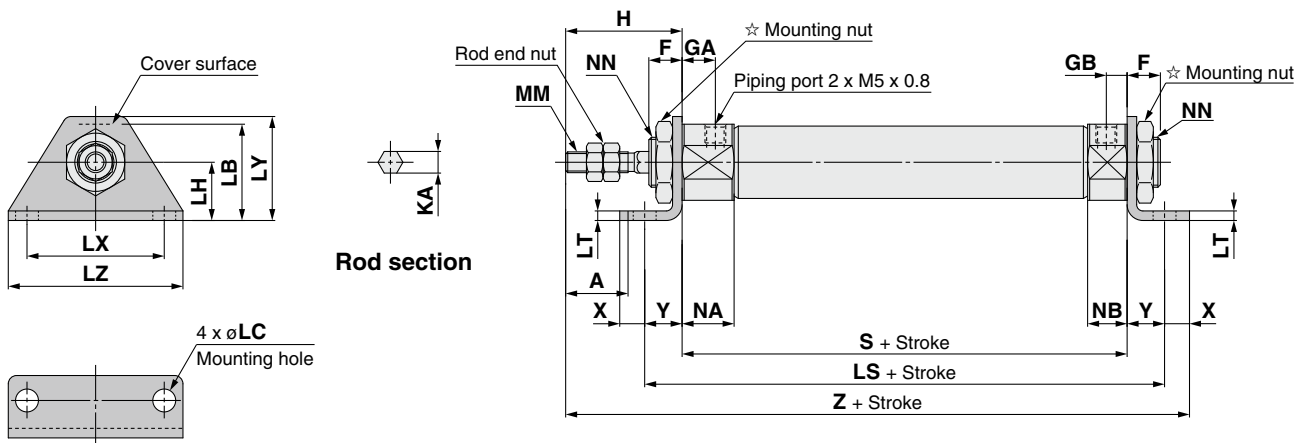
\* The overall cylinder length does not change.

Bore size	A	BA	BB	CA	CB	F	GA	GB	H	KA	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN	S	X	Y	Z
<b>10</b>	15	15	12	17	14	8	8	5	28	4.2	21.5	5.5	14	2.3	33	25	42	M4 x 0.7	12.5	9.5	M10 x 1.0	46	6	9	74
<b>16</b>	15	18.3	18.3	20	20	8	8	5	28	5.2	23	5.5	14	2.3	33	25	42	M5 x 0.8	12.5	9.5	M12 x 1.0	47	6	9	75

# Series CJ2K

## Double Foot (M)

CJ2KM Bore size – Stroke Z

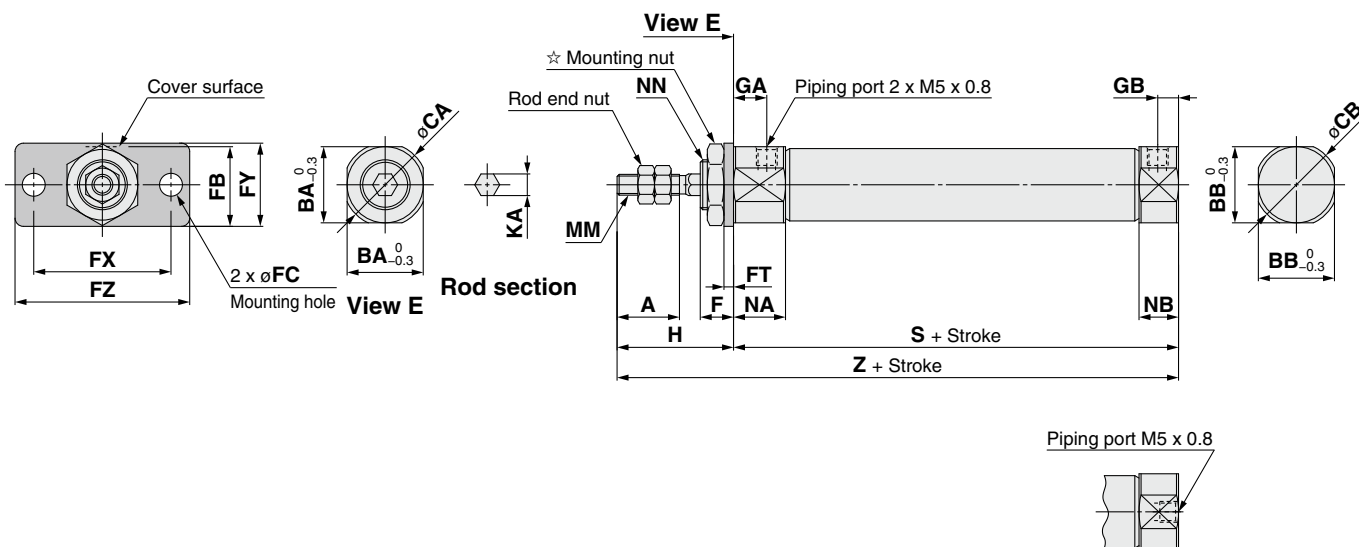


☆ Refer to page 12 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16)

Bore size	A	F	GA	GB	H	KA	LB	LC	LH	LS	LT	LX	LY	LZ	MM	NA	NB	NN	S	X	Y	Z
10	15	8	8	5	28	4.2	21.5	5.5	14	64	2.3	33	25	42	M4 x 0.7	12.5	9.5	M10 x 1.0	46	6	9	74
16	15	8	8	5	28	5.2	23	5.5	14	65	2.3	33	25	42	M5 x 0.8	12.5	9.5	M12 x 1.0	47	6	9	75

## Rod Flange (F)

CJ2KF Bore size – Stroke Head cover port location Z



### Head cover port location Axial location (R)

\* The overall cylinder length does not change.

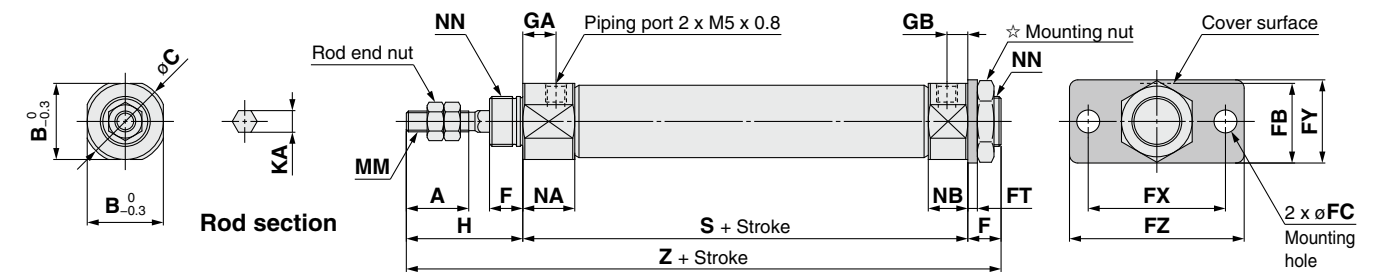
☆ Refer to page 12 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16)

Bore size	A	BA	BB	CA	CB	F	FB	FC	FT	FX	FY	FZ	GA	GB	H	KA	MM	NA	NB	NN	S	Z
10	15	15	12	17	14	8	17.5	5.5	2.3	33	20	42	8	5	28	4.2	M4 x 0.7	12.5	9.5	M10 x 1.0	46	74
16	15	18.3	18.3	20	20	8	19	5.5	2.3	33	20	42	8	5	28	5.2	M5 x 0.8	12.5	9.5	M12 x 1.0	47	75



Head Flange (G)

CJ2KG Bore size – Stroke Z



☆ Refer to page 12 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16)

Bore size	A	B	C	F	FB	FC	FT	FX	FY	FZ	GA	GB	H	KA	MM	NA	NB	NN	S	Z
10	15	15	17	8	17.5	5.5	2.3	33	20	42	8	5	28	4.2	M4 x 0.7	12.5	9.5	M10 x 1.0	46	82
16	15	18.3	20	8	19	5.5	2.3	33	20	42	8	5	28	5.2	M5 x 0.8	12.5	9.5	M12 x 1.0	47	83

Standard	Double Acting, Single Rod	CJ2
Standard	Double Acting, Double Rod	CJ2W
Standard	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
Built-in Speed Controller	Double Acting, Double Rod	CJ2ZW
Direct Mount	Double Acting, Single Rod	CJ2R
Direct Mount	Single Acting, Spring Return/Extend	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2RK

Auto Switch

Made to Order

# Air Cylinder: Non-rotating Rod Type Single Acting, Spring Return/Extend

## Series CJ2K

ø10, ø16

### How to Order



**Cylinder standard stroke (mm)**  
Refer to "Standard Strokes" on page 40.

**Action**

S	Single acting, Spring return
T	Single acting, Spring extend

**Made to Order**  
Refer to page 40 for details.

**With auto switch**

**With auto switch (Built-in magnet)**

**Mounting**

B	Basic
E	Double-side bossed
D	Double clevis
L	Single foot
M	Double foot
F	Rod flange
G	Head flange

\* Mounting bracket is shipped together with the product, but not assembled.

**Bore size**

10	10 mm
16	16 mm

**Auto switch**  
\* For applicable auto switches, refer to the table below.

★ If a built-in magnet cylinder without an auto switch is required, refer to the model of built-in magnet cylinder.

**Head cover port location**

Nil	Perpendicular to axis	
R	Axial	

\* For double clevis, the product is perpendicular to the cylinder axis.  
\* For double-side bossed, the product is perpendicular to the cylinder axis.  
\* Not applicable to single acting, spring extend (T).

**Auto switch mounting type**

A	Rail mounting
B	Band mounting

\* For rail mounting, screws and nuts for 2 auto switches come with the rail.  
\* Refer to page 84 for auto switch mounting brackets.

**Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

### Applicable Auto Switches/Refer to the WEB catalog or Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load				
					DC	AC	Band mounting		Rail mounting		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)						
							Perpendicular	In-line	Perpendicular	In-line											
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC			
		3-wire (PNP)		M9PV			M9P	M9PV	M9P	●	●	●	○	—	○						
	Connector	2-wire		12 V	M9BV		M9B	M9BV	M9B	●	●	●	○	—	○	—					
	Diagnostic indication (2-color indication)	Grommet		—	H7C		J79C	—	●	—	●	●	●	—	—	—					
				3-wire (NPN)	M9NWV		M9NW	M9NWV	M9NW	●	●	●	○	—	○	IC circuit					
				3-wire (PNP)	M9PWV		M9PW	M9PWV	M9PW	●	●	●	○	—	○						
				2-wire	M9BWW		M9BW	M9BWW	M9BW	●	●	●	○	—	○	—					
	Water resistant (2-color indication)	Grommet		3-wire (NPN)	M9NAV**		M9NA**	M9NAV**	M9NA**	○	○	●	○	—	○	IC circuit					
				3-wire (PNP)	M9PAV**		M9PA**	M9PAV**	M9PA**	○	○	●	○	—	○						
	With diagnostic output (2-color indication)	Grommet		2-wire	12 V		M9BAV**	M9BA**	M9BAV**	M9BA**	○	○	●	○	—	○	—				
4-wire (NPN)			5 V, 12 V	—	H7NF	—	F79F	●	—	●	○	—	○	IC circuit							
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	A96V	A96	●	—	●	—	—	—	IC circuit	Relay, PLC		
						—	200 V	—	—	A72	A72H	●	—	●	—	—	—	—			
		Connector		No	2-wire	24 V	12 V	100 V	A93V	A93	A93V	A93	●	—	●	●	—	—		—	
								100 V or less	A90V	A90	A90V	A90	●	—	●	—	—	—		—	IC circuit
								—	—	C73C	A73C	—	●	—	●	●	●	—		—	—
	Diagnostic indication (2-color indication)	Grommet		Yes	2-wire	24 V or less	—	—	C80C	A80C	—	—	●	—	●	●	—	—		IC circuit	
							—	—	—	A79W	—	—	●	—	●	—	—	—		—	

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Please contact SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW  
1 m..... M (Example) M9NWM  
3 m..... L (Example) M9NWL  
5 m..... Z (Example) M9NWZ  
None..... N (Example) H7CN

\* Since there are other applicable auto switches than listed, refer to page 85 for details.

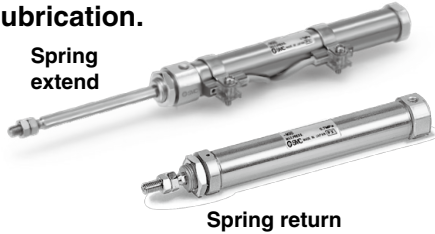
\* For details about auto switches with pre-wired connector, refer to the WEB catalog or Best Pneumatics No. 2.

\* Solid state auto switches marked with "○" are produced upon receipt of order.

\* The D-A9□□/M9□□□/A7□□/A80□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)

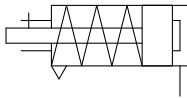
**A cylinder which rod does not rotate because of the hexagonal rod shape.**

**Non-rotating accuracy**  
 $\phi 10: \pm 1.5^\circ$ ,  $\phi 16: \pm 1^\circ$   
**Can operate without lubrication.**

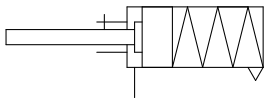


### Symbol

Single acting, Spring return, Rubber bumper



Single acting, Spring extend, Rubber bumper



**Made to Order**  
 (For details, refer to pages 87 to 95.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease

Refer to pages 78 to 85 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

## ⚠ Precautions

**Refer to page 96 before handling.**

## Specifications

Bore size (mm)	10	16
Action	Single acting, Spring return/Single acting, Spring extend	
Fluid	Air	
Proof pressure	1 MPa	
Maximum operating pressure	0.7 MPa	
Minimum operating pressure	0.15 MPa	
Ambient and fluid temperature	Without auto switch: $-10^\circ\text{C}$ to $70^\circ\text{C}$ , With auto switch: $-10^\circ\text{C}$ to $60^\circ\text{C}^*$	
Cushion	Rubber bumper (standard equipment)	
Lubrication	Not required (Non-lube)	
Stroke length tolerance	$+1.0$ 0	
Rod non-rotating accuracy	$\pm 1.5^\circ$	$\pm 1^\circ$
Piston speed	50 to 750 mm/s	
Allowable kinetic energy	0.035 J	0.090 J

\* No freezing

## Standard Strokes

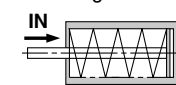
Bore size	Standard stroke (mm)
10	15, 30, 45, 60
16	15, 30, 45, 60, 75, 100, 125, 150

\* Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

## Spring Reaction Force

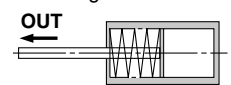
Bore size (mm)	Spring reaction force (N)	
	Primary	Secondary
10	3.53	6.86
16	6.86	14.2

Spring with primary mounting load



When the spring is set in the cylinder

Spring with secondary mounting load



When the spring is contracted by applying air

## Mounting and Accessories

●...Mounted on the product. ○...Please order separately.

Mounting		Basic	Foot	Flange	Double* clevis	Double clevis (including T-bracket)
Standard	Mounting nut	●	●	●	—	—
	Rod end nut	●	●	●	●	●
	Clevis pin	—	—	—	●	●
Option	Single knuckle joint	○	○	○	○	○
	Double knuckle joint*	○	○	○	○	○
	Rod end cap (Flat/Round type)	○	○	○	○	○
	T-bracket	—	—	—	○	●

\* A pin and retaining rings are shipped together with double clevis and double knuckle joint.

## Mounting Brackets/Part No.

Mounting bracket	Bore size (mm)	
	10	16
Foot	CJ-L016C	CJK-L016C
Flange	CJ-F016C	CJK-F016C
T-bracket*	CJ-T010C	CJ-T016C

\* T-bracket is used with double clevis (D).

## Weights

### Spring Return

(g)

Bore size (mm)		10				16			
Mounting		Basic	Axial piping	Double clevis (including clevis pin)	Head-side bossed	Basic	Axial piping	Double clevis (including clevis pin)	Head-side bossed
Basic weight	15 stroke	30	30	30	31	64	64	70	66
	30 stroke	38	38	38	39	79	79	86	81
	45 stroke	48	48	48	49	97	97	104	99
	60 stroke	58	58	58	59	116	116	122	118
	75 stroke					138	138	144	140
	100 stroke					171	171	178	173
	125 stroke					209	209	215	211
	150 stroke					232	232	238	234
Mounting bracket weight	Single foot	8				25			
	Double foot	16				50			
	Rod flange	5				13			
	Head flange	5				13			
Accessories	Single knuckle joint	17				23			
	Double knuckle joint (including knuckle pin)	25				21			
	Rod end cap (Flat type)	1				2			
	Rod end cap (Round type)	1				2			
	T-bracket	32				50			

\* Mounting nut and rod end nut are included in the basic weight.

Note) Mounting nut is not included in the basic weight for the double clevis.

Calculation:

Example) **CJ2KL10-45SZ**

- Basic weight ..... 48 (ø10)
- Cylinder stroke ..... 45 stroke
- Mounting bracket weight ... 8 (Single foot)

$$48 + 8 = 56 \text{ g}$$

### Spring Extend

(g)

Bore size (mm)		10				16			
Mounting		Basic	Axial piping	Double clevis (including clevis pin)	Head-side bossed	Basic	Axial piping	Double clevis (including clevis pin)	Head-side bossed
Basic weight	15 stroke	29	29	31	31	64	64	72	69
	30 stroke	35	35	37	38	79	79	86	83
	45 stroke	44	44	46	46	95	95	103	99
	60 stroke	52	52	54	55	111	111	119	115
	75 stroke					133	133	140	137
	100 stroke					163	163	170	167
	125 stroke					198	198	206	202
	150 stroke					219	219	227	223
Mounting bracket weight	Single foot	8				25			
	Double foot	16				50			
	Rod flange	5				13			
	Head flange	5				13			
Accessories	Single knuckle joint	17				23			
	Double knuckle joint (including knuckle pin)	25				21			
	Rod end cap (Flat type)	1				2			
	Rod end cap (Round type)	1				2			
	T-bracket	32				50			

\* Mounting nut and rod end nut are included in the basic weight.

Note) Mounting nut is not included in the basic weight for the double clevis.

Calculation:

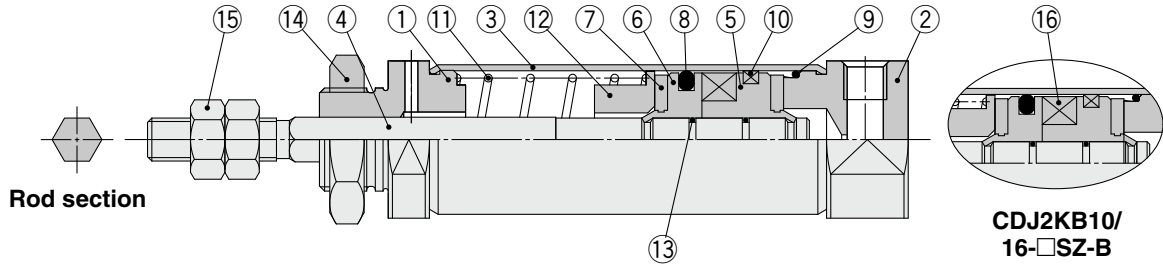
Example) **CJ2KL10-45TZ**

- Basic weight ..... 44 (ø10)
- Cylinder stroke ..... 45 stroke
- Mounting bracket weight ... 8 (Single foot)

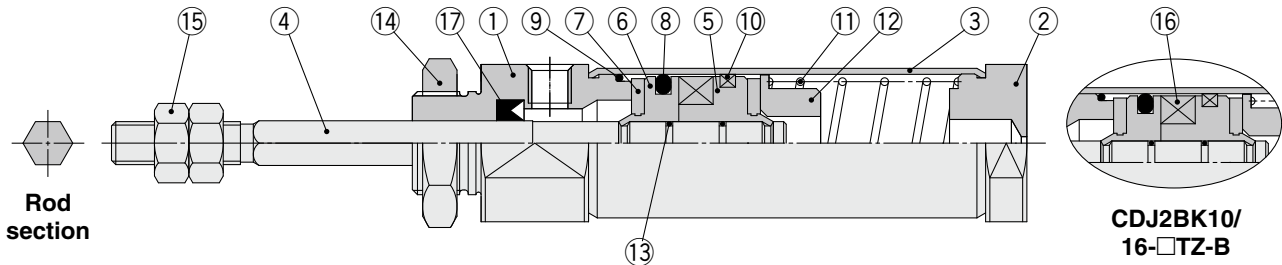
$$44 + 8 = 52 \text{ g}$$

## Construction (Not able to disassemble)

### Single acting, Spring return



### Single acting, Spring extend



## Component Parts

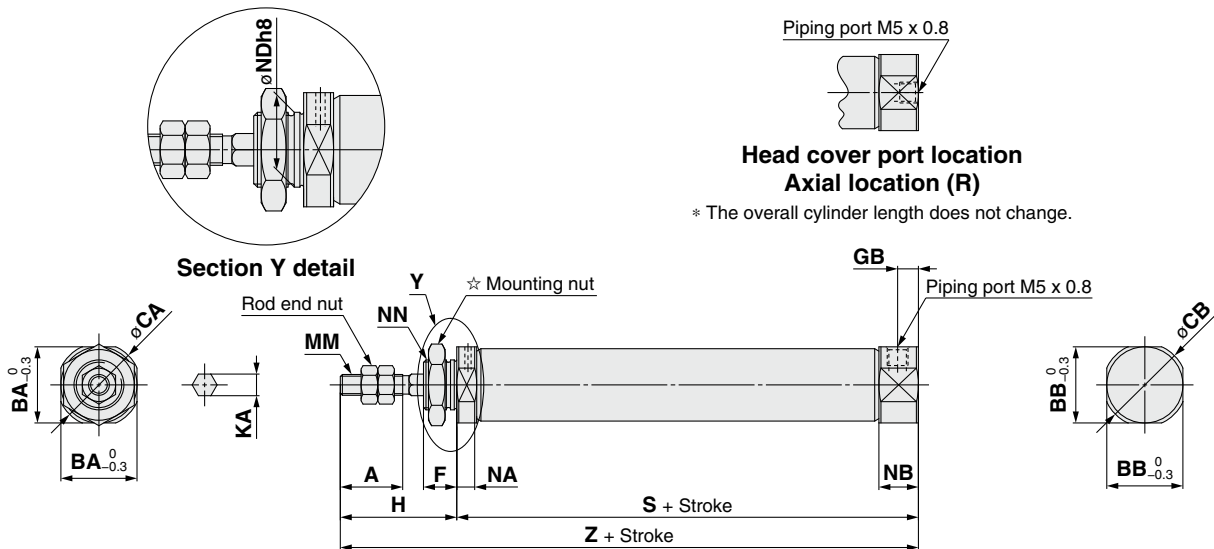
No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Clear hard anodized
2	Head cover	Aluminum alloy	Clear hard anodized
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminum alloy	
6	Piston B	Aluminum alloy	
7	Bumper	Urethane	
8	Piston seal	NBR	
9	Tube gasket	NBR	

No.	Description	Material	Note
10	Wear ring	Resin	
11	Return spring	Piano wire	Zinc chromated
12	Spring seat	Aluminum alloy	
13	Piston gasket	NBR	
14	Mounting nut	Rolled steel	Zinc chromated
15	Rod end nut	Rolled steel	Zinc chromated
16	Magnet	—	
17	Rod seal	NBR	

Standard	Double Acting, Double Rod	CJ2W
Standard	Double Acting, Single Rod	CJ2
Non-rotating Rod	Double Acting, Double Rod	CJ2K
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	Double Acting, Double Rod	CJ2ZW
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
Direct Mount	Double Acting, Double Rod	CJ2R
Direct Mount	Double Acting, Single Rod	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Double Rod	CJ2RK
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2RK
Auto Switch		Auto Switch
Made to Order		Made to Order

## Single Acting, Spring Return: Basic (B)

CJ2KB Bore size – Stroke S Head cover port location Z



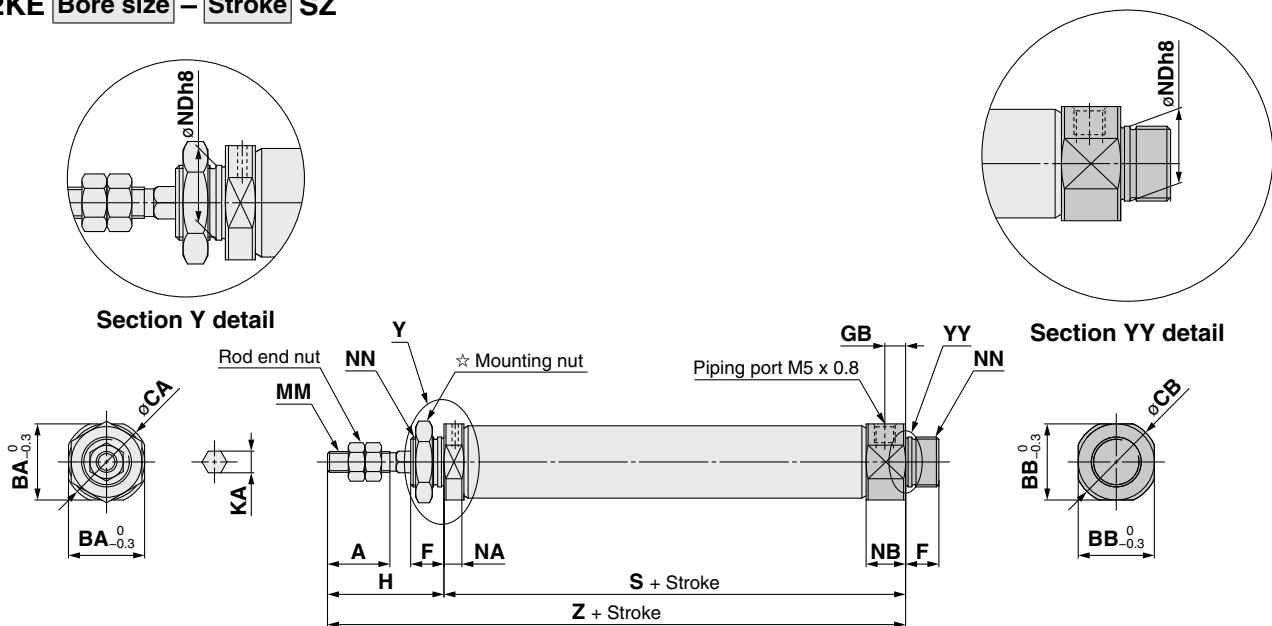
☆ For details of the mounting nut, refer to page 12.

Bore size	A	BA	BB	CA	CB	F	GB	H	KA	MM	NA	NB	NDh8	NN	S								Z																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
															5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Return: Double-side Bossed (E)

CJ2KE Bore size – Stroke SZ



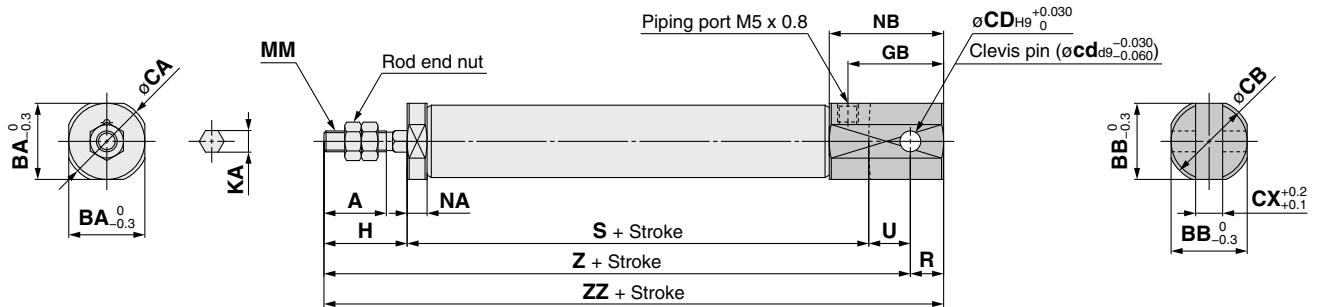
☆ For details of the mounting nut, refer to page 12.

Bore size	A	BA	BB	CA	CB	F	GB	H	KA	MM	NA	NB	NDh8	NN	S								Z							
															5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	15	15	15	17	17	8	5	28	4.2	M4 x 0.7	4.8	9.5	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	45.5	53	65	77	—	—	—	—	73.5	81	93	105	—	—	—	—
16	15	18.3	18.3	20	20	8	5	28	5.2	M5 x 0.8	4.8	9.5	12 <sup>0</sup> <sub>-0.027</sub>	M12 x 1.0	45.5	54	66	78	84	108	126	138	73.5	82	94	106	112	136	154	166

\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Return: Double Clevis (D)

CJ2KD Bore size – Stroke SZ



\* A clevis pin and retaining rings are included.

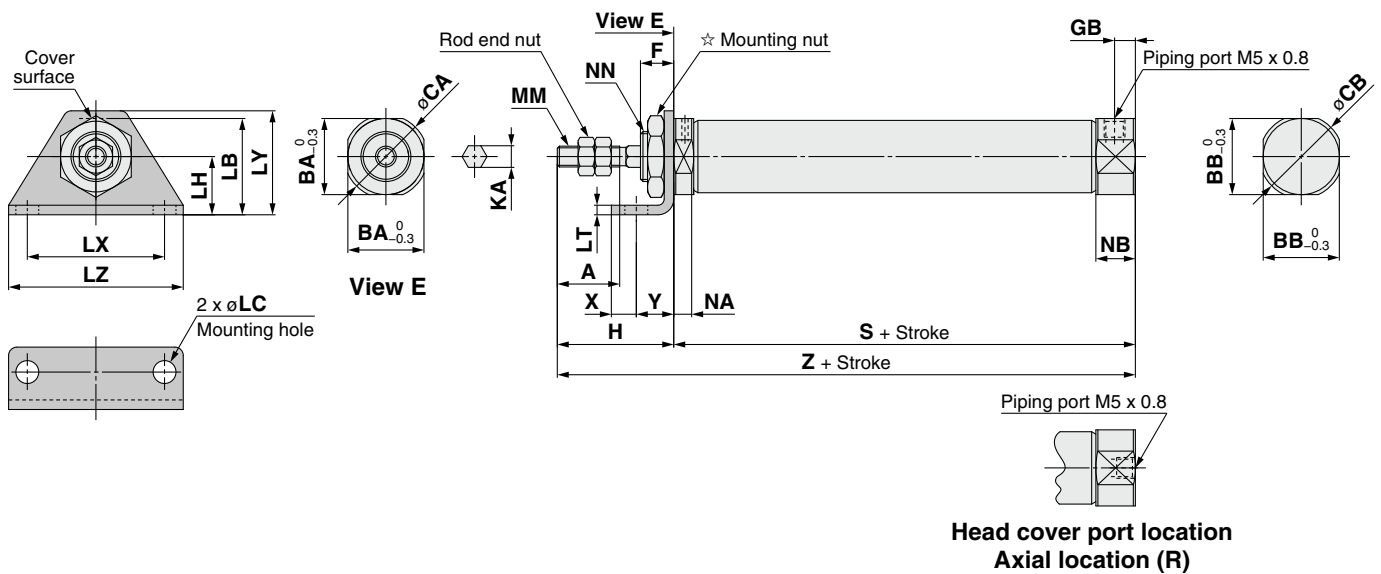
Bore size	A	BA	BB	CA	CB	CD (cd)	CX	GB	H	KA	MM	NA	NB	R	U	S							
																5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	15	12	12	14	14	3.3	3.2	18	20	4.2	M4 x 0.7	4.8	22.5	5	8	45.5	53	65	77	—	—	—	—
16	15	18.3	18.3	20	20	5	6.5	23	20	5.2	M5 x 0.8	4.8	27.5	8	10	45.5	54	66	78	84	108	126	138

Bore size	Z								ZZ							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	73.5	81	93	105	—	—	—	—	78.5	86	98	110	—	—	—	—
16	75.5	84	96	108	114	138	156	168	83.5	92	104	116	122	146	164	176

\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Return: Single Foot (L)

CJ2KL Bore size – Stroke S Head cover port location Z



☆ For details of the mounting nut, refer to page 12.

Bore size	A	BA	BB	CA	CB	F	GB	H	KA	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NDh8	NN
10	15	15	12	17	14	8	5	28	4.2	21.5	5.5	14	2.3	33	25	42	M4 x 0.7	4.8	9.5	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0
16	15	18.3	18.3	20	20	8	5	28	5.2	23	5.5	14	2.3	33	25	42	M5 x 0.8	4.8	9.5	12 <sup>0</sup> <sub>-0.027</sub>	M12 x 1.0

Bore size	S								X	Y	Z							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st			5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	45.5	53	65	77	—	—	—	—	5	7	73.5	81	93	105	—	—	—	—
16	45.5	54	66	78	84	108	126	138	6	9	73.5	82	94	106	112	136	154	166

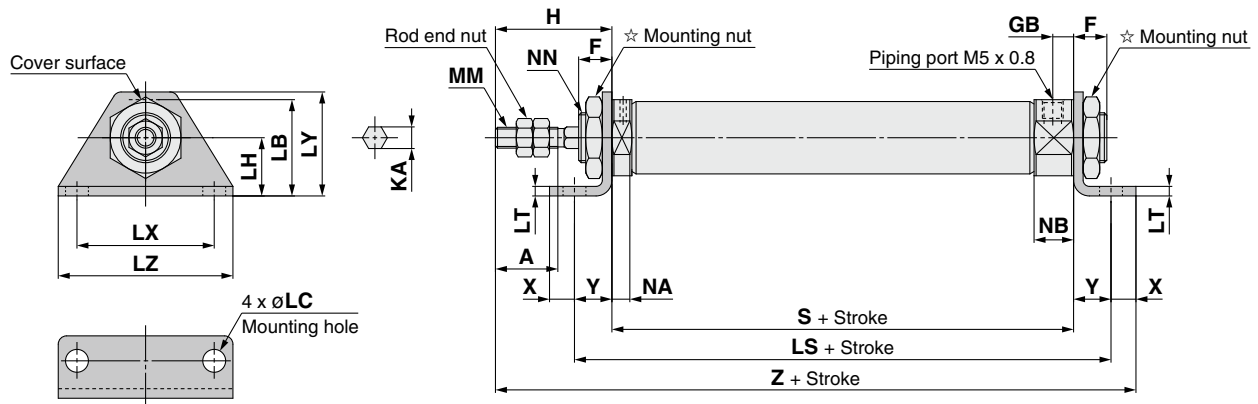
\* The minimum stroke of the built-in magnet type is 10 st.



# Series CJ2K

## Single Acting, Spring Return: Double Foot (M)

CJ2KM Bore size – Stroke SZ



☆ For details of the mounting nut, refer to page 12.

Bore size	A	F	GB	H	LB	LC	LH	LS								LT	LX	LY	LZ	KA	MM	NA	NB	NN
								5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st									
10	15	8	5	28	21.5	5.5	14	59.5	67	79	91	—	—	—	—	2.3	33	25	42	4.2	M4 x 0.7	4.8	9.5	M10 x 1.0
16	15	8	5	28	23	5.5	14	63.5	72	84	96	102	126	144	156	2.3	33	25	42	5.2	M5 x 0.8	4.8	9.5	M12 x 1.0

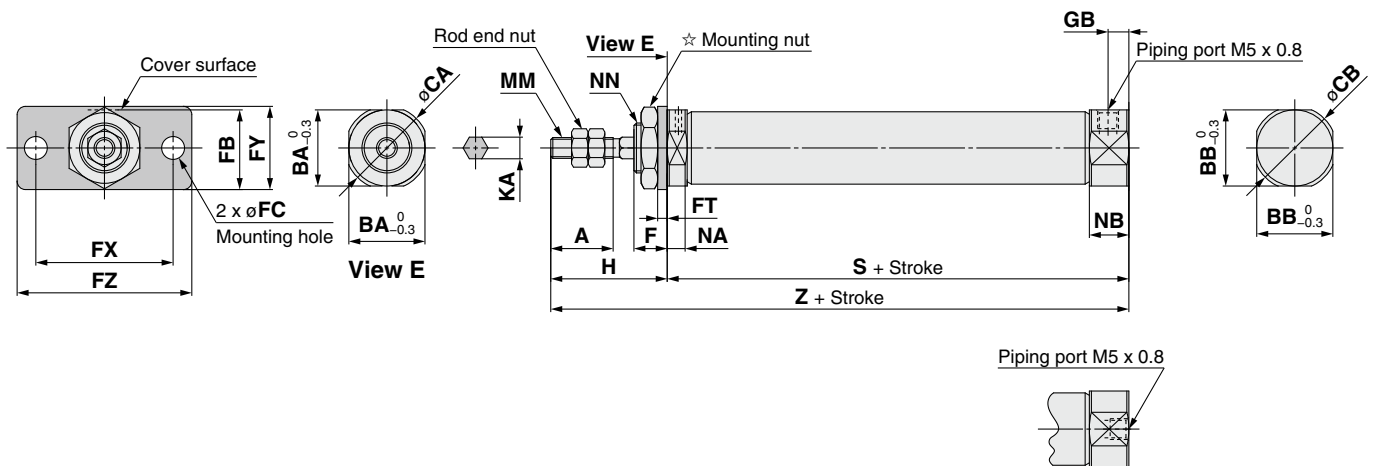
  

Bore size	S								X	Y	Z							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st			5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	45.5	53	65	77	—	—	—	—	5	7	85.5	93	105	117	—	—	—	—
16	45.5	54	66	78	84	108	126	138	6	9	88.5	97	109	121	127	151	169	181

\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Return: Rod Flange (F)

CJ2KF Bore size – Stroke S Head cover port location Z



### Head cover port location Axial location (R)

\* The overall cylinder length does not change.

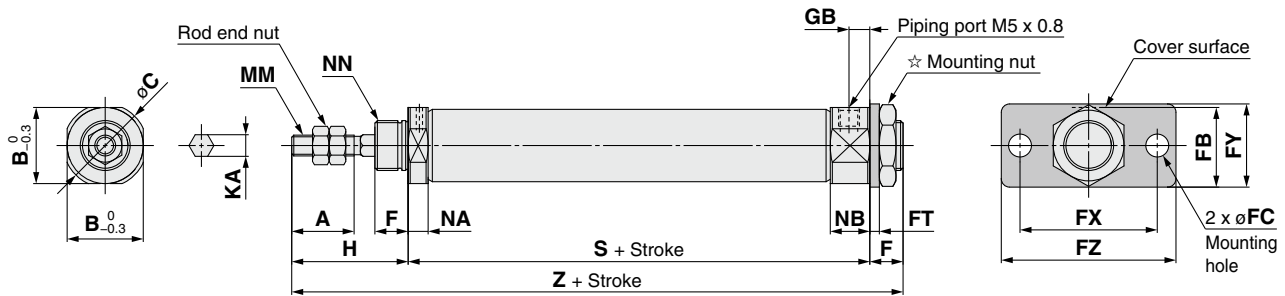
☆ For details of the mounting nut, refer to page 12.

Bore size	A	BA	BB	CA	CB	F	FB	FC	FT	FX	FY	FZ	GB	H	KA	MM	NA	NB	NDh8	NN	S								Z							
																					5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	15	15	12	17	14	8	17.5	5.5	2.3	33	20	42	5	28	4.2	M4 x 0.7	4.8	9.5	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	45.5	53	65	77	—	—	—	—	73.5	81	93	105	—	—	—	—
16	15	18.3	18.3	20	20	8	19	5.5	2.3	33	20	42	5	28	5.2	M5 x 0.8	4.8	9.5	12 <sup>0</sup> <sub>-0.027</sub>	M12 x 1.0	45.5	54	66	78	84	108	126	138	73.5	82	94	106	112	136	154	166

\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Return: Head Flange (G)

CJ2KG Bore size – Stroke SZ



☆ For details of the mounting nut, refer to page 12.

(mm)																		
Bore size	A	B	C	F	FB	FC	FT	FX	FY	FZ	GB	H	KA	MM	NA	NB	NDh8	NN
10	15	15	17	8	17.5	5.5	2.3	33	20	42	5	28	4.2	M4 x 0.7	4.8	9.5	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0
16	15	18.3	20	8	19	5.5	2.3	33	20	42	5	28	5.2	M5 x 0.8	4.8	9.5	12 <sup>0</sup> <sub>-0.027</sub>	M12 x 1.0

Bore size	S								Z							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	45.5	53	65	77	—	—	—	—	81.5	89	101	113	—	—	—	—
16	45.5	54	66	78	84	108	126	138	81.5	90	102	114	120	144	162	174

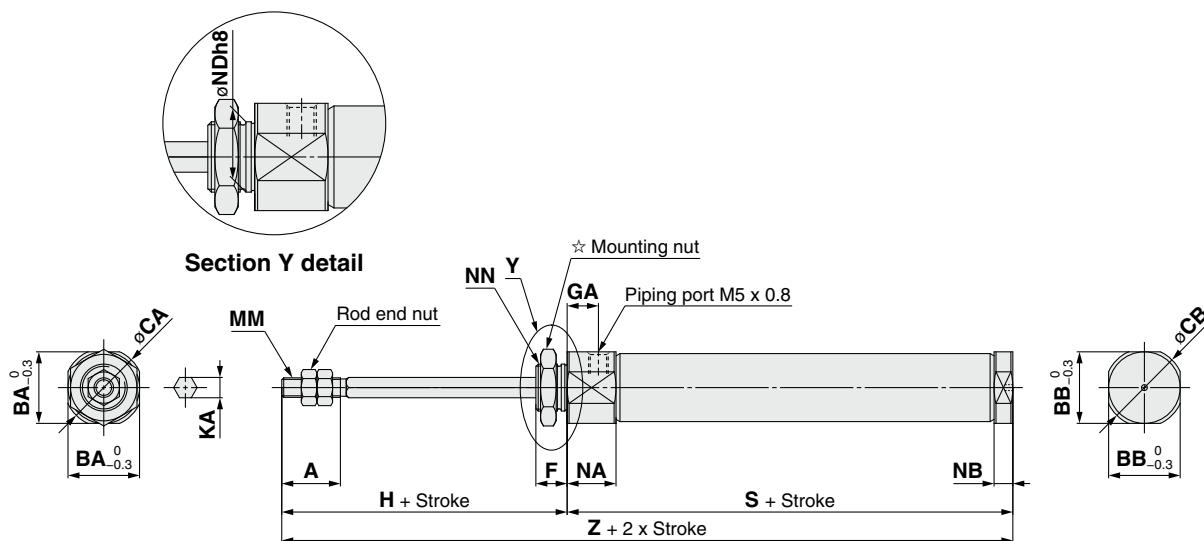
\* The minimum stroke of the built-in magnet type is 10 st.

Standard	Double Acting, Single Rod	CJ2
Standard	Double Acting, Double Rod	CJ2W
Standard	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
Built-in Speed Controller	Double Acting, Double Rod	CJ2ZW
Direct Mount	Double Acting, Single Rod	CJ2R
Direct Mount	Single Acting, Spring Return/Extend	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2RK
Auto Switch		Auto Switch
Made to Order		Made to Order

# Series CJ2K

## Single Acting, Spring Extend: Basic (B)

CJ2KB Bore size – Stroke TZ



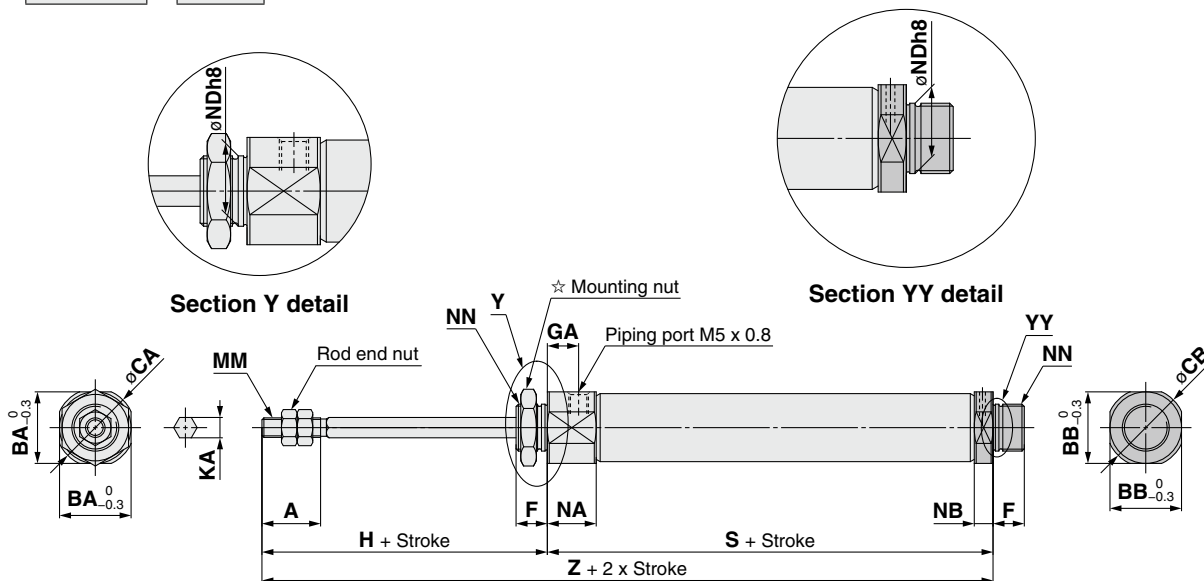
☆ For details of the mounting nut, refer to page 12.

Bore size	A	BA	BB	CA	CB	F	GA	H	KA	MM	NA	NB	NDh8	NN	S								Z											
															5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st				
10	15	15	12	17	14	8	8	28	4.2	M4 x 0.7	12.5	4.8	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	48.5	56	68	80	—	—	—	—	76.5	84	96	108	—	—	—	—	—	—	—	
16	15	18.3	18.3	20	20	8	8	28	5.2	M5 x 0.8	12.5	4.8	12 <sup>0</sup> <sub>-0.027</sub>	M12 x 1.0	48.5	57	69	81	87	111	129	141	76.5	85	97	109	115	139	157	169	—	—	—	—

\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Extend: Double-side Bossed (E)

CJ2KE Bore size – Stroke TZ



☆ For details of the mounting nut, refer to page 12.

Bore size	A	BA	BB	CA	CB	F	GA	H	KA	MM	NA	NB	NDh8	NN	S								Z											
															5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st				
10	15	15	15	17	17	8	8	28	4.2	M4 x 0.7	12.5	4.8	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	48.5	56	68	80	—	—	—	—	76.5	84	96	108	—	—	—	—	—	—	—	
16	15	18.3	18.3	20	20	8	8	28	5.2	M5 x 0.8	12.5	4.8	12 <sup>0</sup> <sub>-0.027</sub>	M12 x 1.0	48.5	57	69	81	87	111	129	141	76.5	85	97	109	115	139	157	169	—	—	—	—

\* The minimum stroke of the built-in magnet type is 10 st.

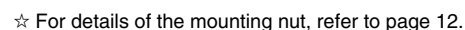
**CJ2KD** **Bore size** – **Stroke** **TZ**



Bore size	Z								ZZ							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
<b>10</b>	84.5	92	104	116	—	—	—	—	89.5	97	109	121	—	—	—	—
<b>16</b>	86.5	95	107	119	125	149	167	179	94.5	103	115	127	133	157	175	187

\* The minimum stroke of the built-in magnet type is 10 st.

**CJ2KL Bore size – Stroke TZ**

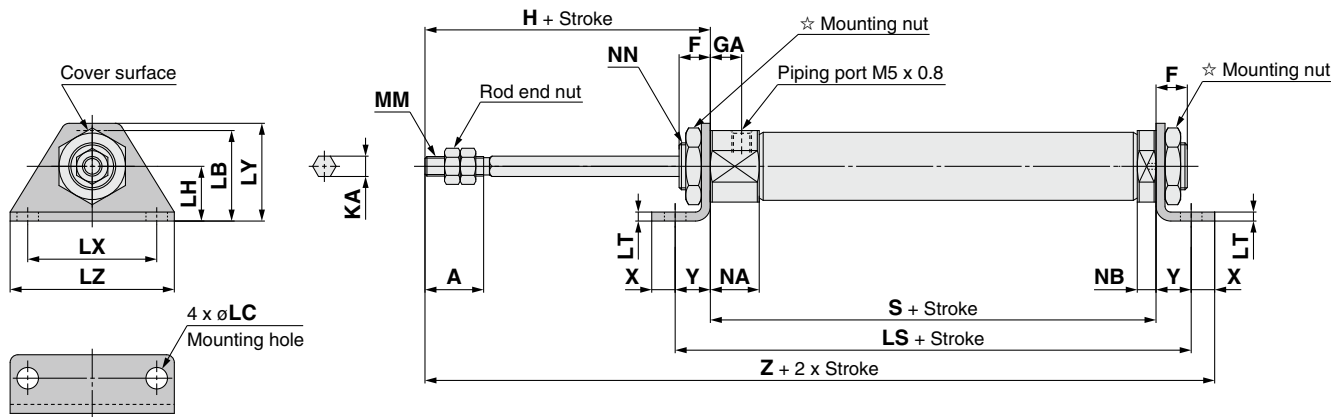


\* The minimum stroke of the built-in magnet type is 10 st.

# Series CJ2K

## Single Acting, Spring Extend: Double Foot (M)

CJ2KM Bore size – Stroke TZ



☆ For details of the mounting nut, refer to page 12.

Bore size	A	F	GA	H	KA	LB	LC	LH	LS								LT	LX	LY	LZ	MM	NA	NB	NN
									5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st								
10	15	8	8	28	4.2	21.5	5.5	14	62.5	70	82	94	—	—	—	—	2.3	33	25	42	M4 x 0.7	12.5	4.8	M10 x 1.0
16	15	8	8	28	5.2	23	5.5	14	66.5	75	87	99	105	129	147	159	2.3	33	25	42	M5 x 0.8	12.5	4.8	M12 x 1.0

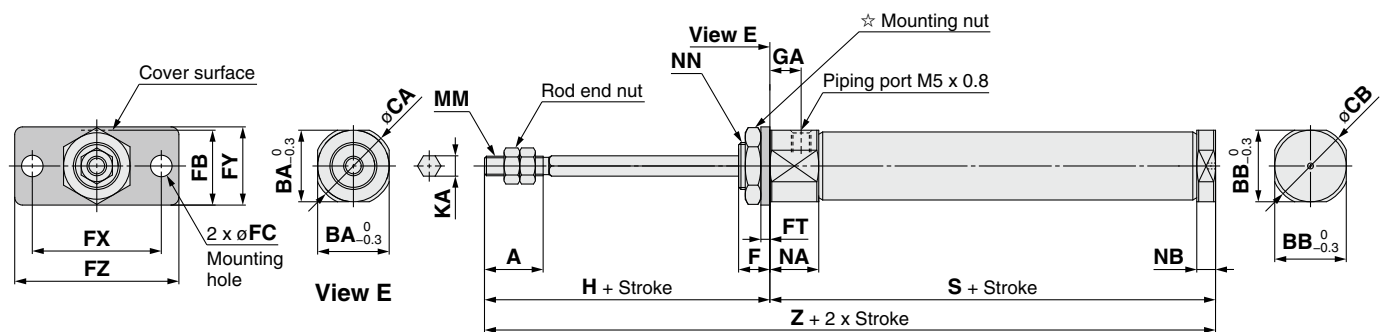
  

Bore size	S								X	Y	Z							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st			5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	48.5	56	68	80	—	—	—	—	5	7	88.5	96	108	120	—	—	—	—
16	48.5	57	69	81	87	111	129	141	6	9	91.5	100	112	124	130	154	172	184

\* The minimum stroke of the built-in magnet type is 10 st.

## Single Acting, Spring Extend: Rod Flange (F)

CJ2KF Bore size – Stroke TZ



☆ For details of the mounting nut, refer to page 12.

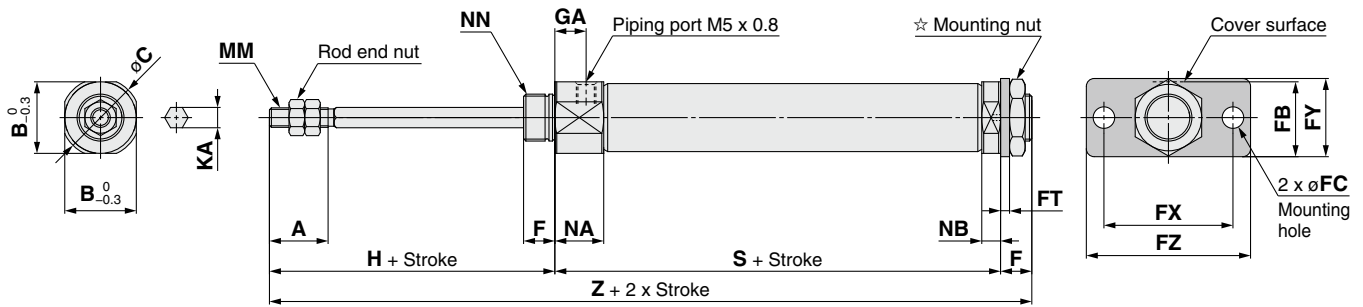
Bore size	A	BA	BB	CA	CB	F	FB	FC	FT	FX	FY	FZ	GA	H	KA	MM	NA	NB	NN
10	15	15	12	17	14	8	17.5	5.5	2.3	33	20	42	8	28	4.2	M4 x 0.7	12.5	4.8	M10 x 1.0
16	15	18.3	18.3	20	20	8	19	5.5	2.3	33	20	42	8	28	5.2	M5 x 0.8	12.5	4.8	M12 x 1.0

Bore size	S								X	Y	Z							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st			5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	48.5	56	68	80	—	—	—	—	5	7	76.5	84	96	108	—	—	—	—
16	48.5	57	69	81	87	111	129	141	6	9	76.5	85	97	109	115	139	157	169

\* The minimum stroke of the built-in magnet type is 10 st.

**CJ2KG** **Bore size** – **Stroke** **TZ**



☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	F	FB	FC	FT	FX	FY	FZ	GA	H	KA	MM	NA	NB	NN
<b>10</b>	15	15	17	8	17.5	5.5	2.3	33	20	42	8	28	4.2	M4 x 0.7	12.5	4.8	M10 x 1.0
<b>16</b>	15	18.3	20	8	19	5.5	2.3	33	20	42	8	28	5.2	M5 x 0.8	12.5	4.8	M12 x 1.0

\* The minimum stroke of the built-in magnet type is 10 st.

# Air Cylinder: Built-in Speed Controller Type Double Acting, Single Rod

## Series CJ2Z

ø10, ø16

### How to Order



**Bore size**

10	10 mm
16	16 mm

**Cylinder standard stroke (mm)**  
Refer to "Standard Strokes" on page 52.

**Modeling:** CJ2Z L 16 - 60 Z -

**With auto switch:** CDJ2Z L 16 - 60 Z - M9BW - B -

**With auto switch (Built-in magnet)**

**Mounting**

B	Basic
E	Double-side bossed
D	Double clevis
L	Single foot
M	Double foot
F	Rod flange
G	Head flange

\* Mounting bracket is shipped together with the product, but not assembled.

**Auto switch**  
\* For applicable auto switches, refer to the table below.

★ If a built-in magnet cylinder without an auto switch is required, refer to the model of built-in magnet cylinder.

**Head cover port location**

Nil	Perpendicular to axis	
R	Axial	

\* For double clevis, the product is perpendicular to the cylinder axis.  
\* For double-side bossed, the product is perpendicular to the cylinder axis.

**Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

**Auto switch mounting type**

A	Rail mounting
B	Band mounting

\* For rail mounting, screws and nuts for 2 auto switches come with the rail.  
\* Refer to page 84 for auto switch mounting brackets.

**Made to Order**  
Refer to page 52 for details.

### Applicable Auto Switches/Refer to the WEB catalog or Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load		
					DC	AC	Band mounting		Rail mounting		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)				
							Perpendicular	In-line	Perpendicular	In-line									
Solid state auto switch	—	Grommet		3-wire (NPN)	5 V, 12 V		M9NV	M9N	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC	
		3-wire (PNP)		M9PV			M9P	M9PV	M9P	●	●	●	○	—	○				
	Connector	2-wire	12 V	M9BV	M9B	M9BV	M9B	●	●	●	○	—	○	—					
	Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (NPN)	24 V	—	M9NVV	M9NW	M9NVV	M9NW	●	●	●	○	—	○	IC circuit		
				3-wire (PNP)			M9PWV	M9PW	M9PWV	M9PW	●	●	●	○	—	○			
				2-wire			M9BWW	M9BW	M9BWW	M9BW	●	●	●	○	—	○	—		
				3-wire (NPN)			M9NAV**	M9NA**	M9NAV**	M9NA**	○	○	●	○	—	○	IC circuit		
	3-wire (PNP)	M9PAV**	M9PA**	M9PAV**			M9PA**	○	○	●	○	—	○						
	2-wire	M9BAV**	M9BA**	M9BAV**			M9BA**	○	○	●	○	—	○	—					
	With diagnostic output (2-color indication)	4-wire (NPN)	5 V, 12 V	—			H7NF	—	F79F	●	—	●	○	—	○	IC circuit			
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)			—	5 V	—	A96V	A96	A96V	A96	●	—	●	—	—	—
				—	200 V	—		—	A72	A72H	●	—	●	—	—	—	—		
		Connector	No	2-wire	24 V	12 V	100 V	A93V	A93	A93V	A93	●	—	●	●	—	—	—	
							100 V or less	A90V	A90	A90V	A90	●	—	●	—	—	—	—	IC circuit
	Grommet	Yes	—	—			—	C73C	A73C	—	●	—	●	●	●	—	—	—	
			—	—			—	C80C	A80C	—	●	—	●	●	●	—	—	IC circuit	
			—	—			—	—	A79W	—	●	—	●	—	—	—	—		
			—	—			—	—	—	—	—	—	—	—	—	—	—	—	

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Please contact SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW  
1 m..... M (Example) M9NWM  
3 m..... L (Example) M9NWL  
5 m..... Z (Example) M9NWZ  
None..... N (Example) H7CN

\* Since there are other applicable auto switches than listed, refer to page 85 for details.  
\* For details about auto switches with pre-wired connector, refer to the WEB catalog or Best Pneumatics No. 2.

\* Solid state auto switches marked with "○" are produced upon receipt of order.

\* The D-A9□□/M9□□□/A7□□/A80□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)

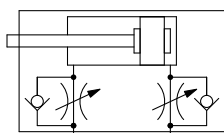


**Space-saving air cylinder with speed controller built-in cylinder cover**



**Symbol**

Double acting, Single rod, Rubber bumper



**Made to Order**  
(For details, refer to pages 87 to 95.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease

**⚠ Precautions**

Refer to page 96 before handling.

**Specifications**

Bore size (mm)	10	16
Action	Double acting, Single rod	
Fluid	Air	
Proof pressure	1 MPa	
Maximum operating pressure	0.7 MPa	
Minimum operating pressure	0.06 MPa	
Ambient and fluid temperature	Without auto switch: -10°C to 70°C, With auto switch: -10°C to 60°C*	
Cushion	Rubber bumper	
Lubrication	Not required (Non-lube)	
Stroke length tolerance	+1.0 0	
Speed controller	Built-in	
Piston speed	50 to 750 mm/s	
Allowable kinetic energy	0.035 J	0.090 J

\* No freezing

**Standard Strokes**

Bore size	Standard stroke (mm)
10	15, 30, 45, 60, 75, 100, 125, 150
16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200

\* Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

**Mounting and Accessories** For details, refer to page 12.

●...Mounted on the product. ○...Please order separately.

Mounting		Basic	Foot	Flange	Double* clevis	Double clevis (including T-bracket)
Standard	Mounting nut	●	●	●	—	—
	Rod end nut	●	●	●	●	●
	Clevis pin	—	—	—	●	●
Option	Single knuckle joint	○	○	○	○	○
	Double knuckle joint*	○	○	○	○	○
	Rod end cap (Flat/Round type)	○	○	○	○	○
	T-bracket	—	—	—	○	●

\* A pin and retaining rings are shipped together with double clevis and double knuckle joint.

**Mounting Brackets/Part No.**

Mounting bracket	Bore size (mm)	
	10	16
Foot	CJ-L010C	CJ-L016C
Flange	CJ-F010C	CJ-F016C
T-bracket*	CJ-T010C	CJ-T016C

\* T-bracket is used with double clevis (D).

Refer to pages 78 to 85 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

# Series CJ2Z

## Weights

		(g)	
Bore size (mm)		10	16
Basic weight (When the stroke is zero)	Basic	36	61
	Axial piping	36	61
	Double clevis (including clevis pin)	40	68
	Head-side bossed	37	63
Additional weight per 15 mm of stroke		4	7
Mounting bracket weight	Single foot	8	25
	Double foot	16	50
	Rod flange	5	13
	Head flange	5	13
Accessories	Single knuckle joint	17	23
	Double knuckle joint (including knuckle pin)	25	21
	Rod end cap (Flat type)	1	2
	Rod end cap (Round type)	1	2
	T-bracket	32	50

\* Mounting nut and rod end nut are included in the basic weight.

Note) Mounting nut is not included in the basic weight for the double clevis.

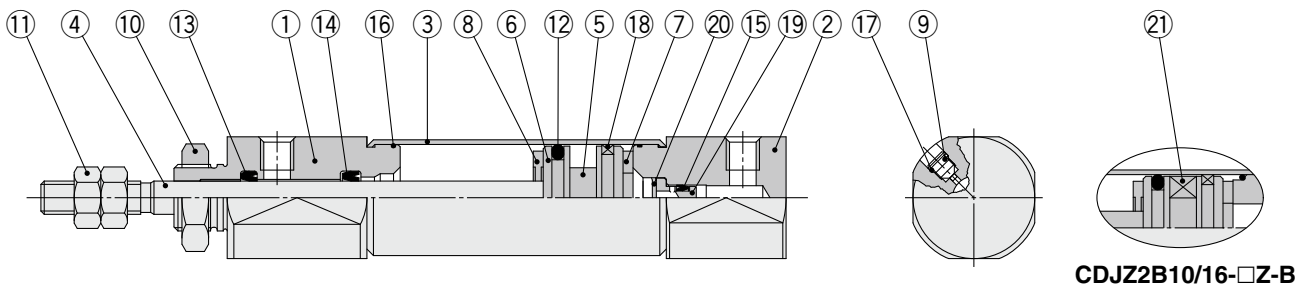
Calculation:

Example) **CJ2ZL10-45Z**

- Basic weight..... 36 (ø10)
- Additional weight..... 4/15 stroke
- Cylinder stroke..... 45 stroke
- Mounting bracket weight... 8 (Single foot)

$$36 + 4/15 \times 45 + 8 = 56 \text{ g}$$

## Construction (Not able to disassemble)



CDJ2ZB10/16-□Z-B

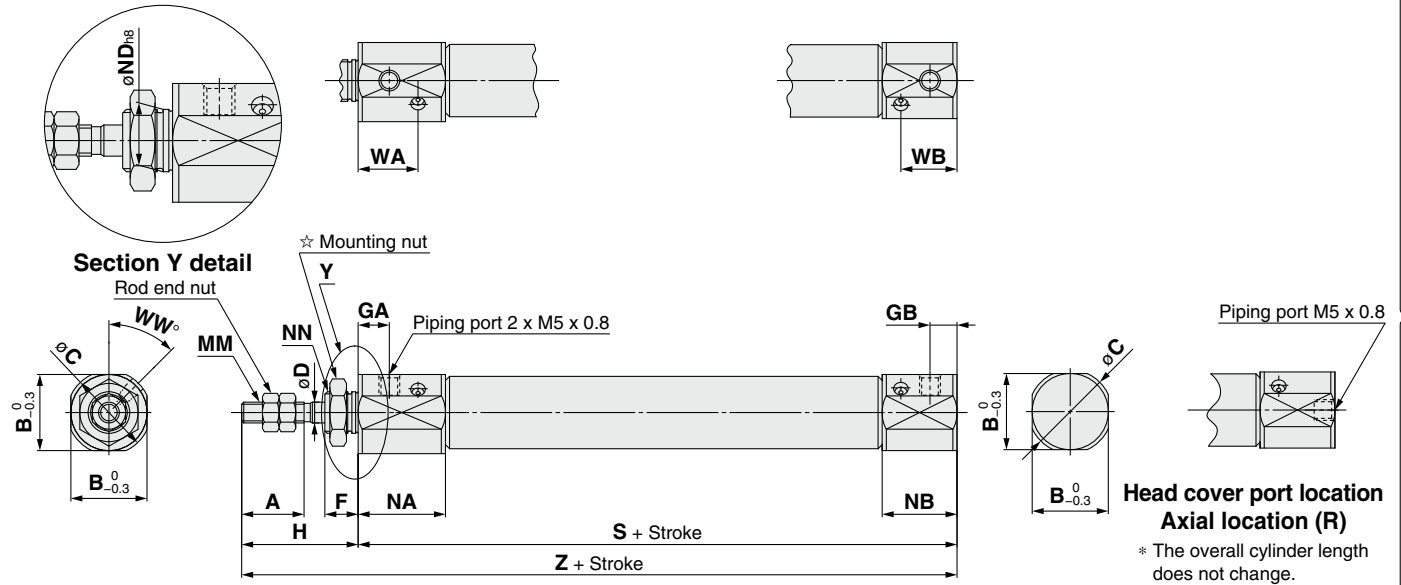
## Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Clear hard anodized
2	Head cover	Aluminum alloy	Clear hard anodized
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminum alloy	
6	Piston B	Aluminum alloy	
7	Bumper A	Urethane	
8	Bumper B	Urethane	
9	Cushion needle	Carbon steel	Electroless nickel plating
10	Mounting nut	Rolled steel	Zinc chromated
11	Rod end nut	Rolled steel	Zinc chromated

No.	Description	Material	Note
12	Piston seal	NBR	
13	Rod seal	NBR	
14	Check seal A	NBR	
15	Check seal B	NBR	
16	Tube gasket	NBR	
17	Needle seal	NBR	
18	Wear ring	Resin	
19	Check seal sleeve	Aluminum alloy	
20	Retaining ring	Carbon tool steel	Phosphate coating
21	Magnet	—	

## Basic (B)

**CJ2ZB** Bore size – Stroke Head cover port location Z

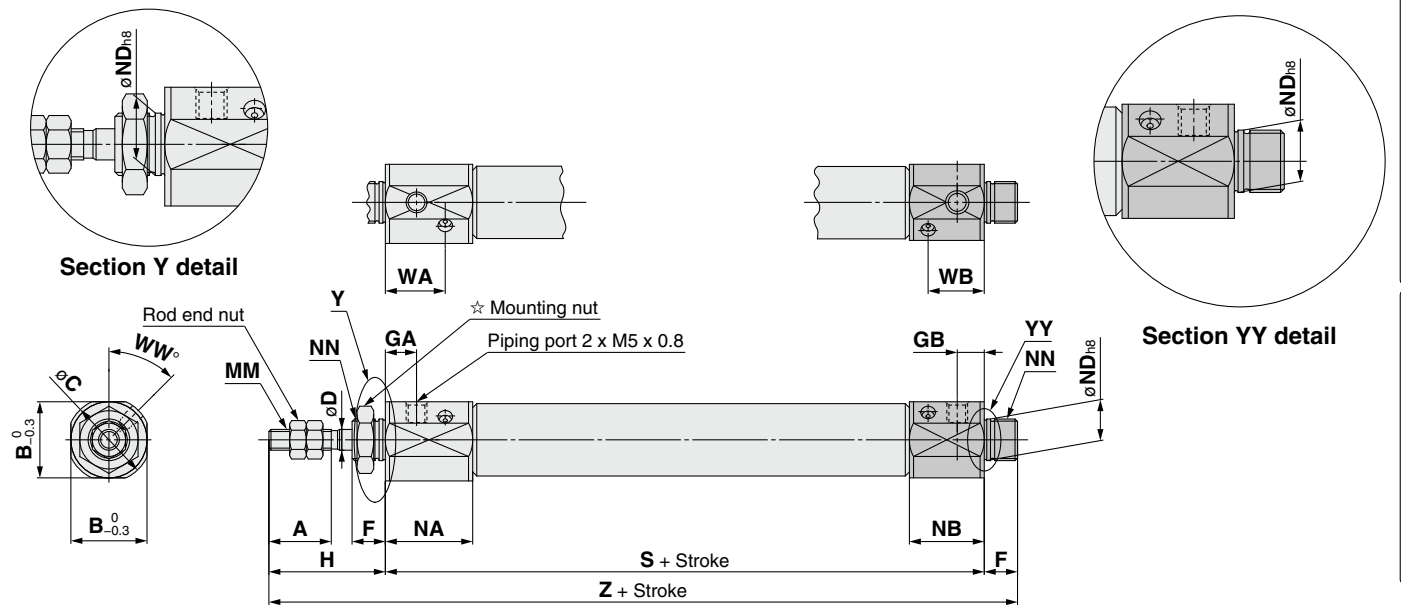


☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	ND <sub>h8</sub>	NN	WA	WB	WW	S	Z
10	15	15	17	4	8	7.5	6.5	28	M4 x 0.7	21	18	8 <sub>-0.022</sub>	M8 x 1.0	14.4	13.5	45	63	91
16	15	18.3	20	5	8	7.5	6.5	28	M5 x 0.8	21	18	10 <sub>-0.022</sub>	M10 x 1.0	14.4	13.5	45	64	92

## Double-side Bossed (E)

**CJ2ZE** Bore size – Stroke Z



☆ For details of the mounting nut, refer to page 12.

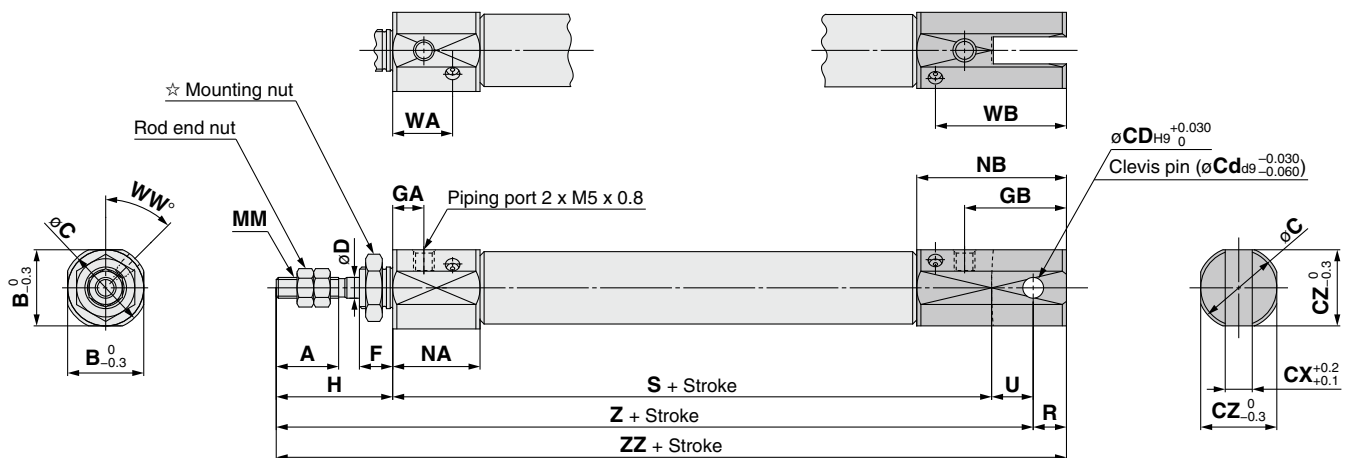
Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	ND <sub>h8</sub>	NN	WA	WB	WW	S	Z
10	15	15	17	4	8	7.5	6.5	28	M4 x 0.7	21	18	8 <sub>-0.022</sub>	M8 x 1.0	14.4	13.5	45	63	99
16	15	18.3	20	5	8	7.5	6.5	28	M5 x 0.8	21	18	10 <sub>-0.022</sub>	M10 x 1.0	14.4	13.5	45	64	100

Standard	Double Acting, Single Rod	CJ2
Standard	Double Acting, Double Rod	CJ2W
Standard	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Double Acting, Double Rod	CJ2K
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
Built-in Speed Controller	Double Acting, Double Rod	CJ2ZW
Direct Mount	Double Acting, Single Rod	CJ2R
Direct Mount	Double Acting, Double Rod	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Double Acting, Double Rod	CJ2RK
Auto Switch	Double Acting, Single Rod	CJ2R
Auto Switch	Double Acting, Double Rod	CJ2R
Auto Switch	Single Acting, Spring Return/Extend	CJ2R

# Series CJ2Z

## Double Clevis (D)

CJ2ZD Bore size – Stroke Z

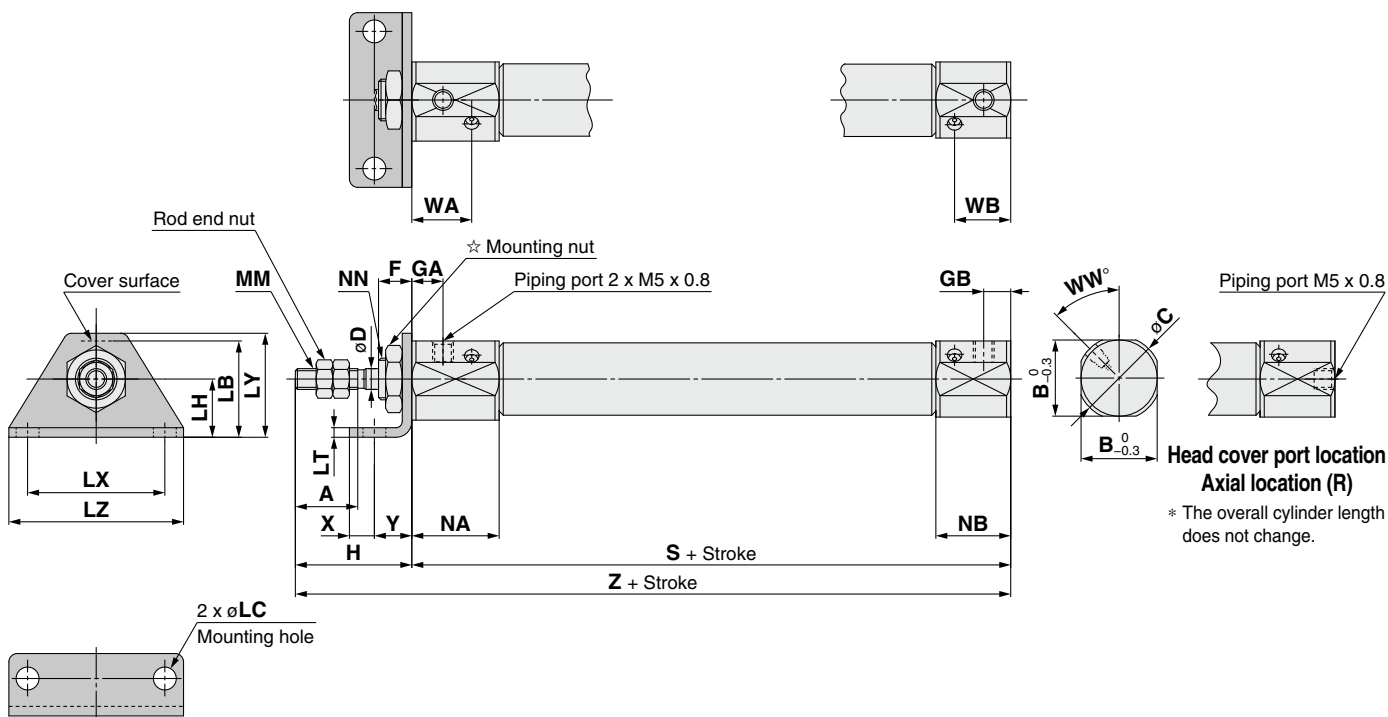


\* A clevis pin and retaining rings are included.

Bore size	A	B	C	CD	CX	CZ	D	GA	GB	H	MM	NA	NB	R	U	WA	WB	WW	S	Z	ZZ
10	15	15	17	3.3	3.2	15	4	7.5	19.5	28	M4 x 0.7	21	31	5	8	14.4	26.5	45	63	99	104
16	15	18.3	20	5	6.5	18.3	5	7.5	24.5	28	M5 x 0.8	21	36	8	10	14.4	31.5	45	64	102	110

## Single Foot (L)

CJ2ZL Bore size – Stroke Head cover port location Z

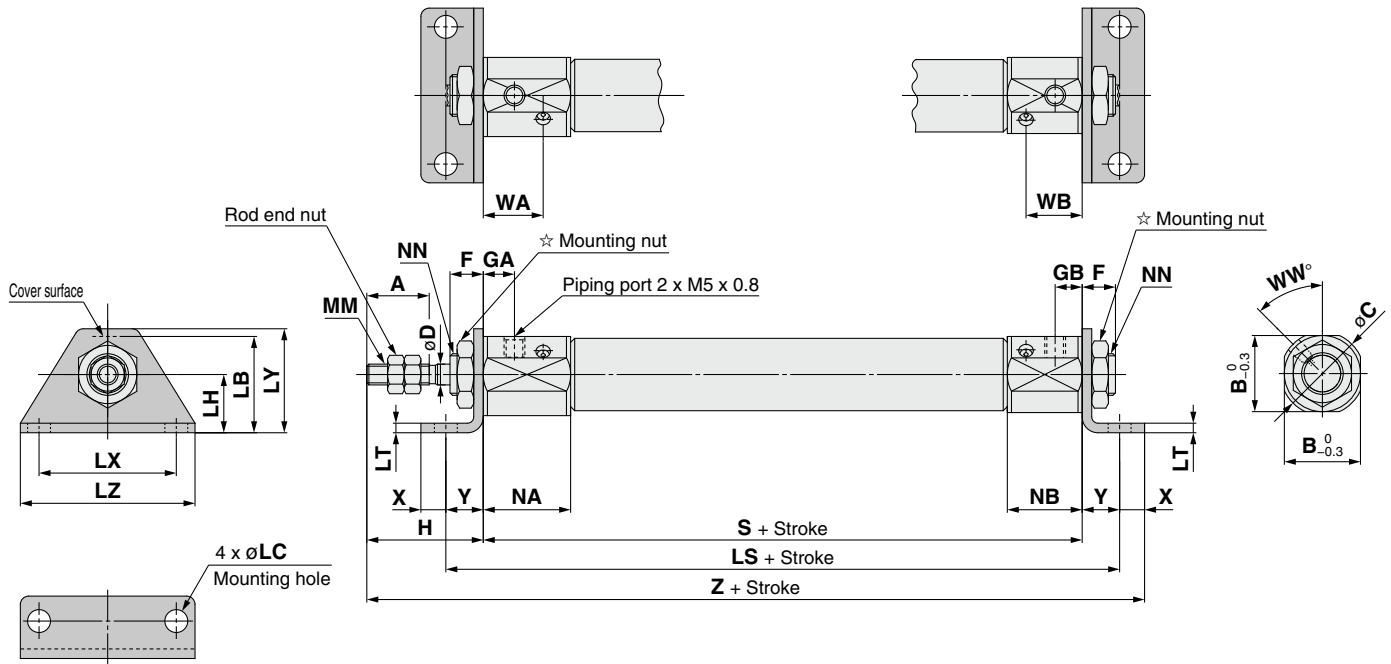


\* For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	GA	GB	H	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN	WA	WB	WW	S	X	Y	Z
10	15	15	17	4	8	7.5	6.5	28	15	4.5	9	1.6	24	16.5	32	M4 x 0.7	21	18	M8 x 1.0	14.4	13.5	45	63	5	7	91
16	15	18.3	20	5	8	7.5	6.5	28	23	5.5	14	2.3	33	25	42	M5 x 0.8	21	18	M10 x 1.0	14.4	13.5	45	64	6	9	92

## Double Foot (M)

**CJ2ZM** Bore size – Stroke Z

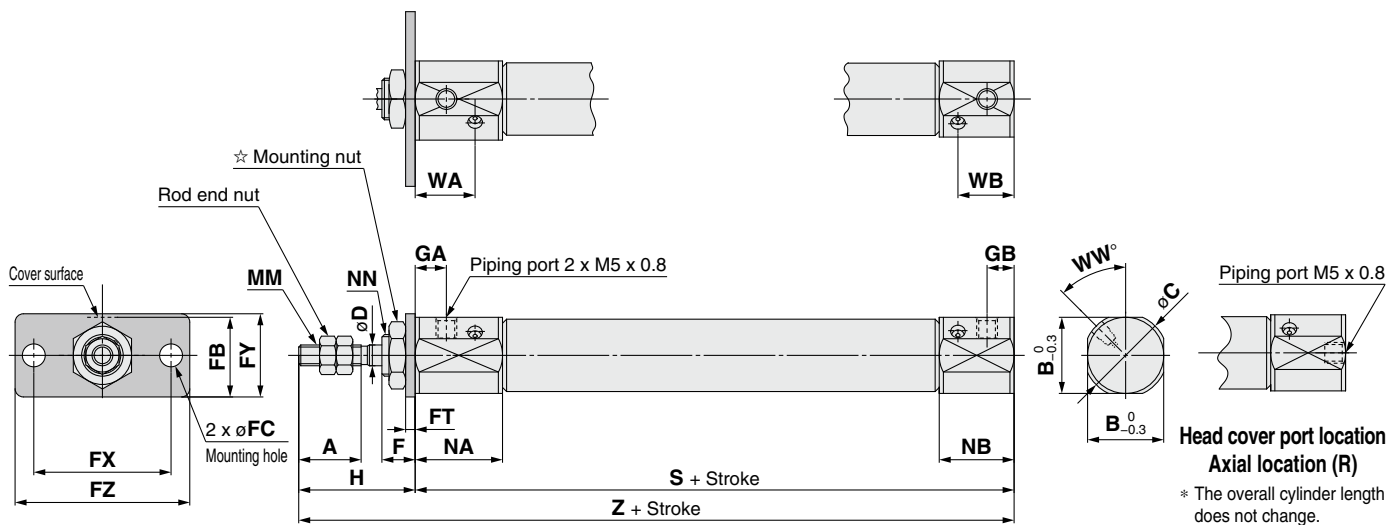


☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	GA	GB	H	LB	LC	LH	LS	LT	LX	LY	LZ	MM	NA	NB	NN	WA	WB	WW	S	X	Y	Z
10	15	15	17	4	8	7.5	6.5	28	15	4.5	9	77	1.6	24	16.5	32	M4 x 0.7	21	18	M8 x 1.0	14.4	13.5	45	63	5	7	103
16	15	18.3	20	5	8	7.5	6.5	28	23	5.5	14	82	2.3	33	25	42	M5 x 0.8	21	18	M10 x 1.0	14.4	13.5	45	64	6	9	107

## Rod Flange (F)

**CJ2ZF** Bore size – Stroke Head cover port location Z



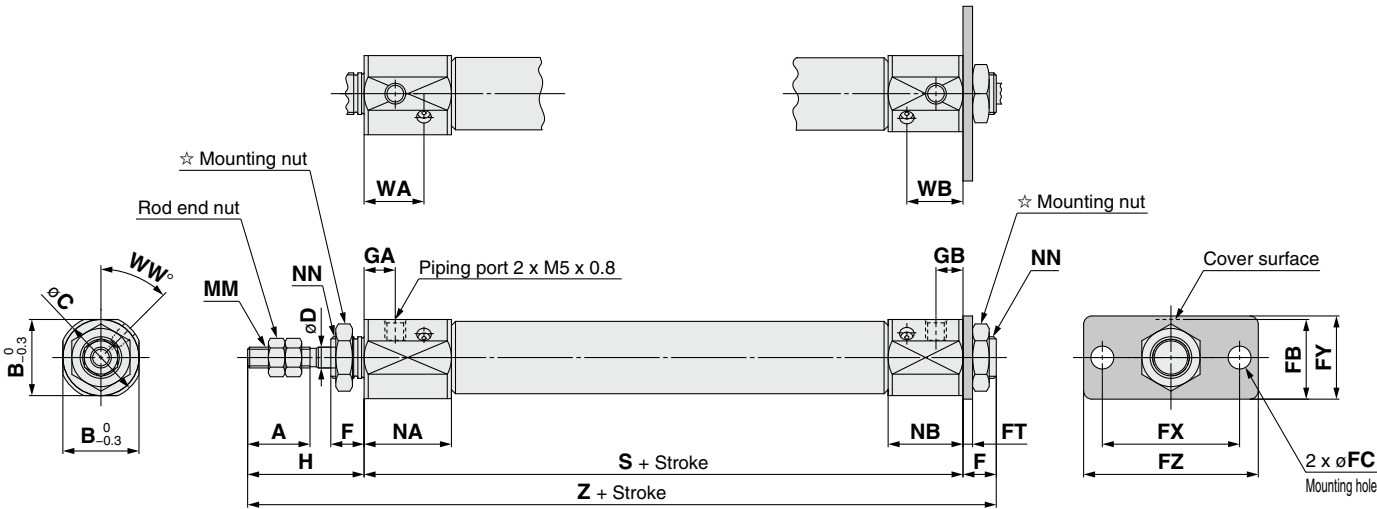
☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	GB	H	MM	NA	NB	NN	WA	WB	WW	S	Z
10	15	15	17	4	8	13	4.5	1.6	24	14	32	7.5	6.5	28	M4 x 0.7	21	18	M8 x 1.0	14.4	13.5	45	63	91
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	7.5	6.5	28	M5 x 0.8	21	18	M10 x 1.0	14.4	13.5	45	64	92

# Series CJ2Z

## Head Flange (G)

CJ2ZG Bore size – Stroke Z



☆ For details of the mounting nut, refer to page 12.

a For details of the mounting nut, refer to page 12.

(mm)																							
Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	GB	H	MM	NA	NB	NN	WA	WB	WW	S	Z
<b>10</b>	15	15	17	4	8	13	4.5	1.6	24	14	32	7.5	6.5	28	M4 x 0.7	21	18	M8 x 1.0	14.4	13.5	45	63	99
<b>16</b>	15	18.3	20	5	8	19	5.5	2.3	33	20	42	7.5	6.5	28	M5 x 0.8	21	18	M10 x 1.0	14.4	13.5	45	64	100

# Air Cylinder: Built-in Speed Controller Type Double Acting, Double Rod

## Series *CJ2ZW*

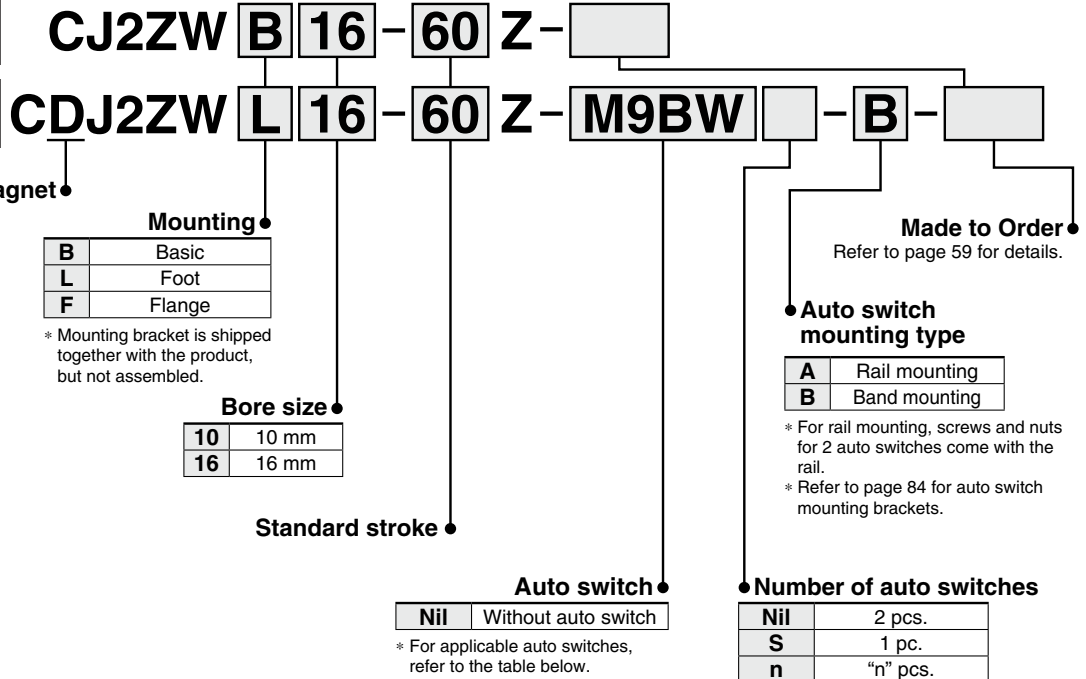
ø10, ø16

RoHS

### How to Order



With auto switch



**Applicable Auto Switches**/Refer to the **WEB catalog** or Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load				
					DC	AC	Band mounting		Rail mounting		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)						
							Perpendicular	In-line	Perpendicular	In-line											
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC			
		3-wire (PNP)		M9PV			M9P	M9PV	M9P	●	●	●	○	—	○						
	Connector	2-wire		12 V	M9BV		M9B	M9BV	M9B	●	●	●	○	—	○	—					
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	5 V, 12 V		M9NWV	M9NW	M9NWV	M9NW	●	●	●	○	—		○		IC circuit		
				3-wire (PNP)			M9PWV	M9PW	M9PWV	M9PW	●	●	●	○	—	○					
				2-wire	12 V		M9BWV	M9BW	M9BWV	M9BW	●	●	●	○	—	○	—				
				3-wire (NPN)	5 V, 12 V		M9NAV**	M9NA**	M9NAV**	M9NA**	○	○	●	○	—	○			IC circuit		
				3-wire (PNP)			M9PAV**	M9PA**	M9PAV**	M9PA**	○	○	●	○	—	○					
				2-wire	12 V		M9BAV**	M9BA**	M9BAV**	M9BA**	○	○	●	○	—	○	—				
	With diagnostic output (2-color indication)	4-wire (NPN)		5 V, 12 V	—		H7NF	—	F79F	●	—	●	○	—	○	IC circuit					
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	A96V	A96	●	—	●	—	—	—	IC circuit	Relay, PLC		
								—	200 V	—	—	A72	A72H	●	—	●	—	—		—	—
		Connector	No	2-wire	24 V	12 V	100 V	A93V	A93	A93V	A93	●	—	●	●	—	—	—			
							100 V or less	A90V	A90	A90V	A90	●	—	●	—	—	—	—		IC circuit	
	Diagnostic indication (2-color indication)	Grommet	Yes	—	—	—	—	—	C73C	A73C	—	●	—	●	●	●	—	—			
								24 V or less	—	C80C	A80C	—	●	—	●	●	●	—		—	IC circuit
								—	—	—	—	A79W	—	●	—	●	—	—		—	—

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Please contact SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW  
1 m..... M (Example) M9NWM  
3 m..... L (Example) M9NWL  
5 m..... Z (Example) M9NWX  
None..... N (Example) H7CN

\* Since there are other applicable auto switches than listed, refer to page 85 for details.

\* For details about auto switches with pre-wired connector, refer to the **WEB catalog** or Best Pneumatics No. 2.

\* Solid state auto switches marked with "O" are produced upon receipt of order.

\* The D-A9□□/M9□□□/A7□□/A80□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)



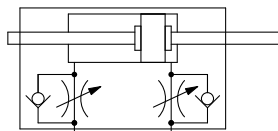
# Series CJ2ZW

## Space-saving air cylinder with speed controller built-in cylinder cover



### Symbol

Double acting, Double rod, Rubber bumper



**Made to Order**  
(For details, refer to pages 87 and 95.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease



## Precautions

Refer to page 96 before handling.

## Specifications

Bore size (mm)	10	16
Action	Double acting, Single rod	
Fluid	Air	
Proof pressure	1 MPa	
Maximum operating pressure	0.7 MPa	
Minimum operating pressure	0.1 MPa	
Ambient and fluid temperature	Without auto switch: -10°C to 70°C, With auto switch: -10°C to 60°C*	
Cushion	Rubber bumper	
Lubrication	Not required (Non-lube)	
Stroke length tolerance	+1.0 0	
Speed controller	Built-in	
Piston speed	50 to 750 mm/s	
Allowable kinetic energy	0.035 J	0.090 J

\* No freezing

## Standard Strokes

Bore size	Standard stroke (mm)
10	15, 30, 45, 60
16	15, 30, 45, 60

\* Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

## Mounting and Accessories

/For details, refer to page 12. ●...Mounted on the product. ○...Please order separately.

Mounting		Basic	Foot	Flange
Standard	Mounting nut	●	●	●
	Rod end nut	●	●	●
Option	Single knuckle joint	○	○	○
	Double knuckle joint*	○	○	○

\* A knuckle pin and retaining rings are shipped together with double knuckle joint.

## Mounting Brackets/Part No.

Mounting bracket	Bore size (mm)	
	10	16
Foot	CJ-L010C	CJ-L016C
Flange	CJ-F010C	CJ-F016C

Refer to pages 78 to 85 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

## Weights

Bore size (mm)		10	16
Basic weight (When the stroke is zero)	Basic	36	61
	Additional weight per 15 mm of stroke	4.5	7.5
Mounting bracket weight	Double foot	16	50
	Head flange	5	13
Accessories	Single knuckle joint	17	23
	Double knuckle joint (including knuckle pin)	25	21
	Rod end cap (Flat type)	1	2
	Rod end cap (Round type)	1	2

\* Mounting nut and rod end nut are included in the basic weight.

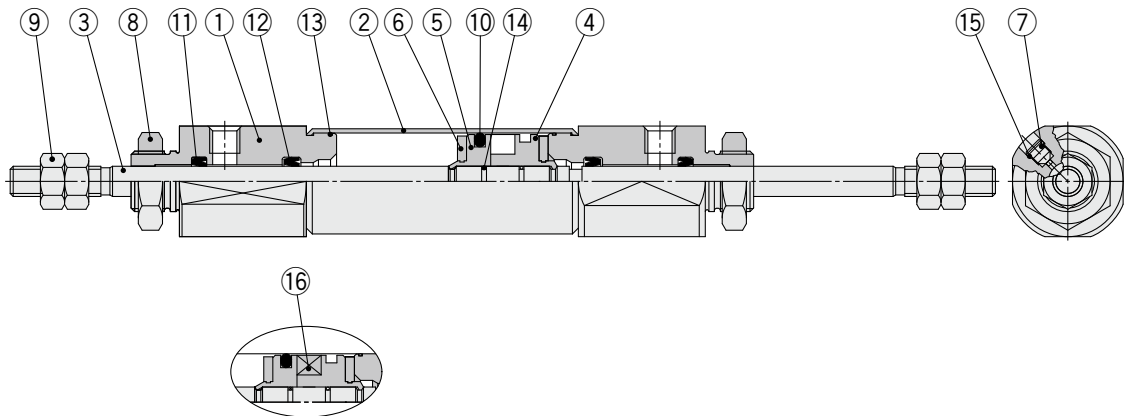
Calculation:

Example) **CJ2ZWL10-45Z**

- Basic weight .....36 (ø10)
- Additional weight .....4.5/15 stroke
- Cylinder stroke.....45 stroke
- Mounting bracket weight...16 (Double foot)

$$36 + 4.5/15 \times 45 + 16 = 65.5 \text{ g}$$

## Construction (Not able to disassemble)



**CDJ2ZWB10/16-□Z-B**

## Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Clear hard anodized
2	Cylinder tube	Stainless steel	
3	Piston rod	Stainless steel	
4	Piston A	Aluminum alloy	
5	Piston B	Aluminum alloy	
6	Bumper	Urethane	
7	Cushion needle	Carbon steel	Electroless nickel plating
8	Mounting nut	Rolled steel	Zinc chromated

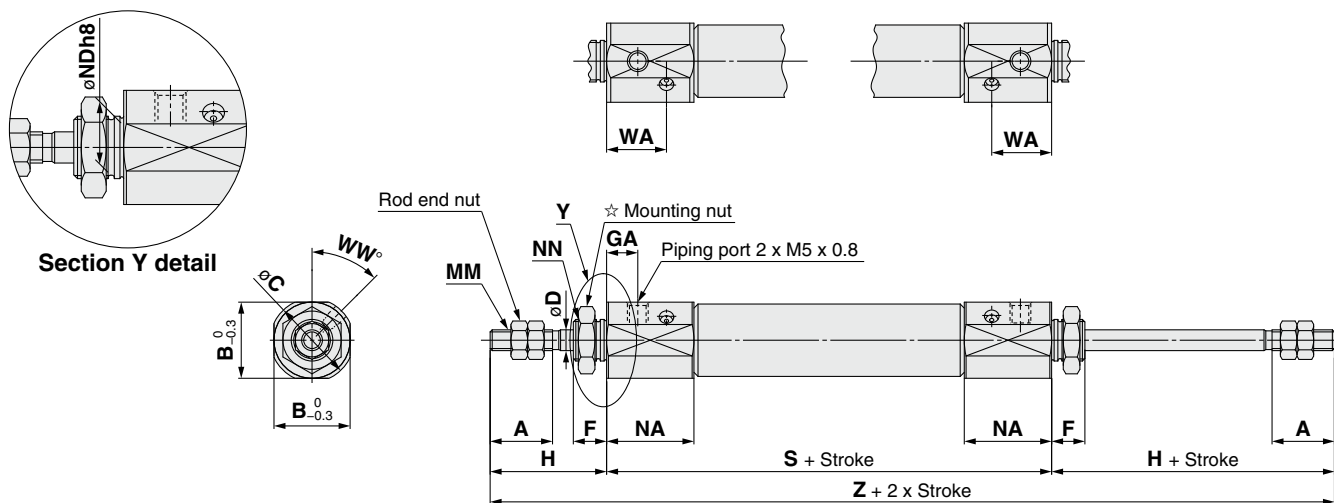
No.	Description	Material	Note
9	Rod end nut	Rolled steel	Zinc chromated
10	Piston seal	NBR	
11	Rod seal	NBR	
12	Check seal	NBR	
13	Tube gasket	NBR	
14	Piston gasket	NBR	
15	Needle seal	NBR	
16	Magnet	—	

Standard	Double Acting, Single Rod	<b>CJ2</b>
	Double Acting, Double Rod	<b>CJ2W</b>
	Single Acting, Spring Return/Extend	<b>CJ2</b>
Non-rotating Rod	Double Acting, Single Rod	<b>CJ2K</b>
	Double Acting, Double Rod	<b>CJ2K</b>
	Single Acting, Spring Return/Extend	<b>CJ2K</b>
Built-in Speed Controller	Double Acting, Single Rod	<b>CJ2Z</b>
	Double Acting, Double Rod	<b>CJ2ZW</b>
Direct Mount	Double Acting, Single Rod	<b>CJ2R</b>
	Double Acting, Double Rod	<b>CJ2R</b>
	Single Acting, Spring Return/Extend	<b>CJ2R</b>
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	<b>CJ2RK</b>
	Double Acting, Double Rod	<b>CJ2RK</b>
	Single Acting, Spring Return/Extend	<b>CJ2RK</b>
Auto Switch		<b>Auto Switch</b>
Made to Order		<b>Made to Order</b>

# Series CJ2ZW

## Basic (B)

CJ2ZWB Bore size – Stroke Z

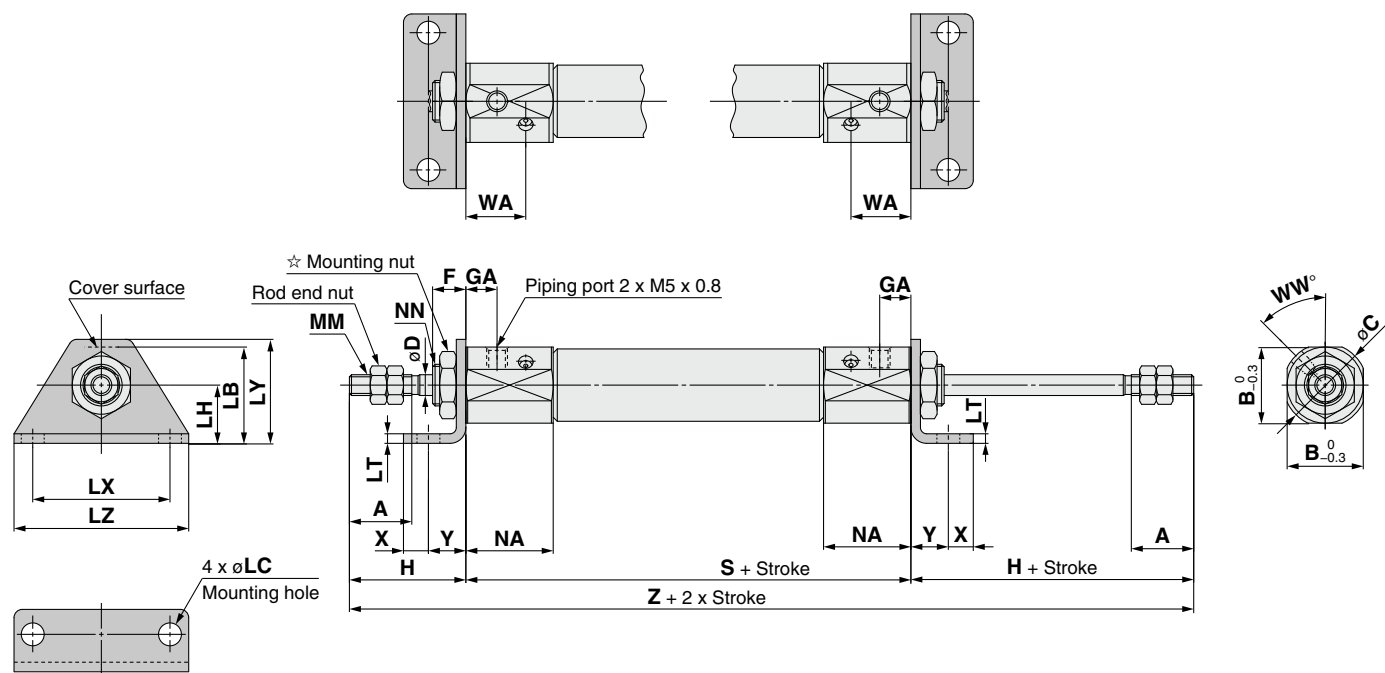


☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	GA	H	MM	NA	NDh8	NN	WA	WW	S	Z
10	15	15	17	4	8	7.5	28	M4 x 0.7	21	8 <sup>0</sup> <sub>-0.022</sub>	M8 x 1.0	14.4	45	66	122
16	15	18.3	20	5	8	7.5	28	M5 x 0.8	21	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	14.4	45	67	123

## Foot (L)

CJ2ZWL Bore size – Stroke Z

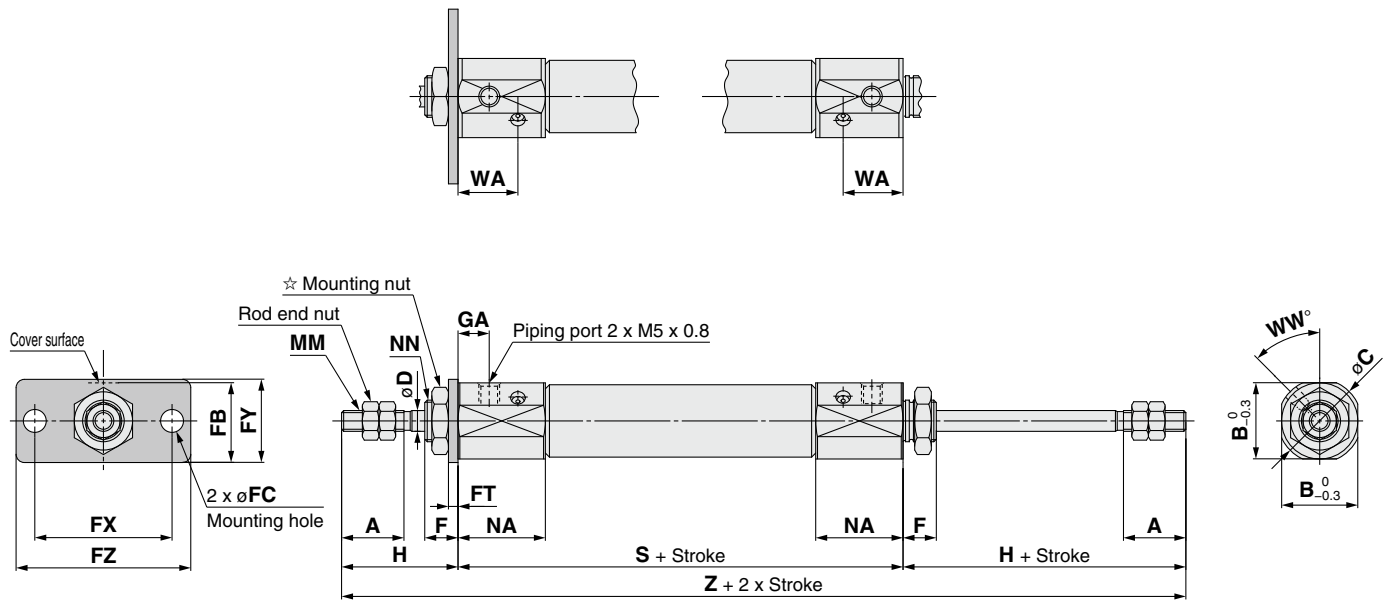


☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	GA	H	LB	LC	LH	LT	LX	LY	LZ	NN	NA	NN	WA	WW	S	X	Y	Z
10	15	15	17	4	8	7.5	28	15	4.5	9	1.6	24	16.5	32	M4 x 0.7	21	M8 x 1.0	14.4	45	66	5	7	122
16	15	18.3	20	5	8	7.5	28	23	5.5	14	2.3	33	25	42	M5 x 0.8	21	M10 x 1.0	14.4	45	67	6	9	123

## Flange (F)

**CJ2ZW** Bore size – Stroke **Z**



☆ For details of the mounting nut, refer to page 12.

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	H	MM	NA	NN	WA	WW	S	Z
10	15	15	17	4	8	13	4.5	1.6	24	14	32	7.5	28	M4 x 0.7	21	M8 x 1.0	14.4	45	66	122
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	7.5	28	M5 x 0.8	21	M10 x 1.0	14.4	45	67	123

Standard	Double Acting, Double Rod	CJ2W	Double Acting, Single Rod	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K	Single Acting, Spring Return/Extend	CJ2K
Speed Controller	Double Acting, Single Rod	CJ2Z	Double Acting, Double Rod	CJ2ZW
Direct Mount	Double Acting, Single Rod	CJ2R	Single Acting, Spring Return/Extend	CJ2RK
Auto Switch	Auto Switch	Auto Switch	Auto Switch	Auto Switch

# Air Cylinder: Direct Mount Type

## Double Acting, Single Rod

# Series CJ2R

ø10, ø16



### How to Order

Cylinder standard stroke (mm)  
Refer to "Standard Strokes" on page 64.

**CJ2RA 16-60 Z-**

With auto switch

**CDJ2RA 16-60 Z-M9BW -B-**

With auto switch  
(Built-in magnet)

Mounting

**A** Bottom mounting style

Bore size

10	10 mm
16	16 mm

Auto switch

\* For applicable auto switches, refer to the table below.

★ If a built-in magnet cylinder without an auto switch is required, refer to the model of built-in magnet cylinder.

Head cover port location

Nil	Perpendicular to axis	
R	Axial	

Made to Order  
Refer to page 64 for details.

Auto switch mounting type

<b>A</b>	Rail mounting
<b>B</b>	Band mounting

\* For rail mounting, screws and nuts for 2 auto switches come with the rail.  
\* Refer to page 84 for auto switch mounting brackets.

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

**Applicable Auto Switches**/Refer to the **WEB catalog** or Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load			
					DC	AC	Band mounting		Rail mounting		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)					
							Perpendicular	In-line	Perpendicular	In-line										
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC		
		3-wire (PNP)		M9PV			M9P	M9PV	M9P	●	●	●	○	—	○					
		Connector		2-wire			12 V	M9BV	M9B	M9BV	M9B	●	●	●	○	—			○	
				—			H7C	J79C	—	●	—	●	●	●	—	—				
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	5 V, 12 V		M9NWV	M9NW	M9NWV	M9NW	●	●	●	○	—	○	○		IC circuit	
				3-wire (PNP)			M9PWV	M9PW	M9PWV	M9PW	●	●	●	○	—	○	○			
				2-wire			12 V	M9BWW	M9BW	M9BWW	M9BW	●	●	●	○	—	○		—	
				3-wire (NPN)			5 V, 12 V	M9NAV**	M9NA**	M9NAV**	M9NA**	○	○	●	○	—	○		○	IC circuit
	3-wire (PNP)	M9PAV**		M9PA**	M9PAV**			M9PA**	○	○	●	○	—	○	—					
	2-wire	12 V		M9BAV**	M9BA**			M9BAV**	M9BA**	○	○	●	○	—	○	—				
	With diagnostic output (2-color indication)	4-wire (NPN)		5 V, 12 V	—			H7NF	—	F79F	●	—	●	○	—	○	IC circuit			
	Reed auto switch	—		Grommet	Yes		3-wire (NPN equivalent)	—	5 V	—	A96V	A96	A96V	A96	●	—	●		—	—
—			200 V			—			—	A72	A72H	●	—	●	—	—	—	—		
Connector			2-wire	24 V		12 V	100 V	A93V	A93	A93V	A93	●	—	●	●	—	—	—	—	
							100 V or less	A90V	A90	A90V	A90	●	—	●	—	—	—	—	IC circuit	
		—					—	C73C	A73C	—	●	—	●	●	●	—	—	—		
		24 V or less					—	C80C	A80C	—	●	—	●	●	●	—	—	IC circuit		
Diagnostic indication (2-color indication)		Grommet	Yes	—		—	—	—	A79W	—	●	—	●	—	—	—	—			

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Please contact SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW  
1 m..... M (Example) M9NWM  
3 m..... L (Example) M9NWL  
5 m..... Z (Example) M9NWZ

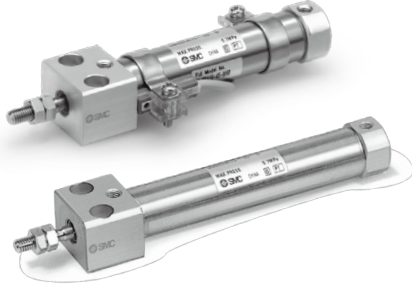
\* Since there are other applicable auto switches than listed, refer to page 85 for details.

\* For details about auto switches with pre-wired connector, refer to the **WEB catalog** or Best Pneumatics No. 2.

\* Solid state auto switches marked with "○" are produced upon receipt of order.

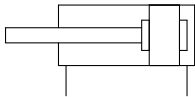
\* The D-A9□□/M9□□□/A7□□/A80□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)

The CJ2R direct mount cylinder can be installed directly through the use of a square rod cover.



### Symbol

Double acting, Single rod, Rubber bumper



**Made to Order**  
(For details, refer to pages 87 to 95.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC22	Fluororubber seal
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease

## ⚠ Precautions

Refer to page 96 before handling.

## Specifications

Bore size (mm)	10	16
Action	Double acting, Single rod	
Fluid	Air	
Proof pressure	1 MPa	
Maximum operating pressure	0.7 MPa	
Minimum operating pressure	0.06 MPa	
Ambient and fluid temperature	Without auto switch: -10°C to 70°C, With auto switch: -10°C to 60°C*	
Cushion	Rubber bumper	
Lubrication	Not required (Non-lube)	
Stroke length tolerance	+1.0 0	
Piston speed	50 to 750 mm/s	
Allowable kinetic energy	0.035 J	0.090 J

\* No freezing

## Standard Strokes

Bore size	Standard stroke (mm)
10	15, 30, 45, 60, 75, 100, 125, 150
16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200

\* Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

## Accessories

/For details, refer to page 12.

Standard	Rod end nut
Option**	Single knuckle joint, Double knuckle joint*, Rod end cap (Flat/Round type)

\* A knuckle pin and retaining rings are shipped together with double knuckle joint.

\*\* Please order separately.

Refer to pages 78 to 85 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

## Weights

Bore size (mm)		10	16
Basic weight (When the stroke is zero)	Basic	36	61
	Axial piping	36	61
Additional weight per 15 mm of stroke		4	7
Accessories	Single knuckle joint	17	23
	Double knuckle joint (including knuckle pin)	25	21
	Rod end cap (Flat type)	1	2
	Rod end cap (Round type)	1	2

\* Mounting nut and rod end nut are included in the basic weight.

Calculation:

Example) **CJ2RA10-45Z**

- Basic weight ..... 36 (ø10)
  - Additional weight ... 4/15 stroke
  - Cylinder stroke ..... 45 stroke
- $36 + 4/15 \times 45 = 48 \text{ g}$

# Series CJ2R

## Clean Series

10-CJ2RA Bore size – Stroke Head cover port location Z

### • Clean Series

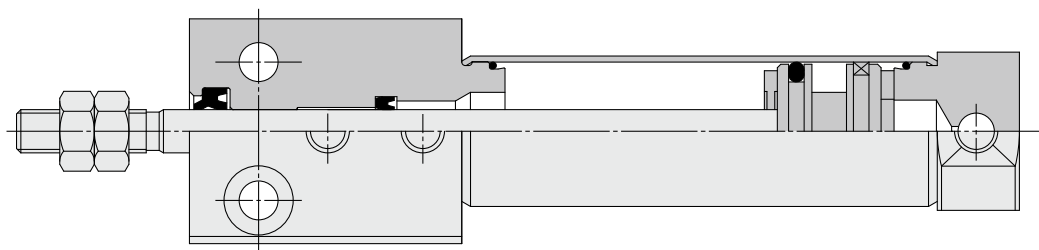
Air cylinder which is applicable for the system which discharges leakage from the rod section directly into the outside of clean room by relief port and making an actuator's rod section having a double seal construction.

## Specifications

Action	Double acting, Single rod
Bore size (mm)	10, 16
Maximum operating pressure	0.7 MPa
Minimum operating pressure	0.08 MPa
Cushion	Rubber bumper
Standard stroke (mm)	Same as standard type. (Refer to page 64.)
Auto switch	Mountable (Band mounting type)
Mounting	Bottom mounting style

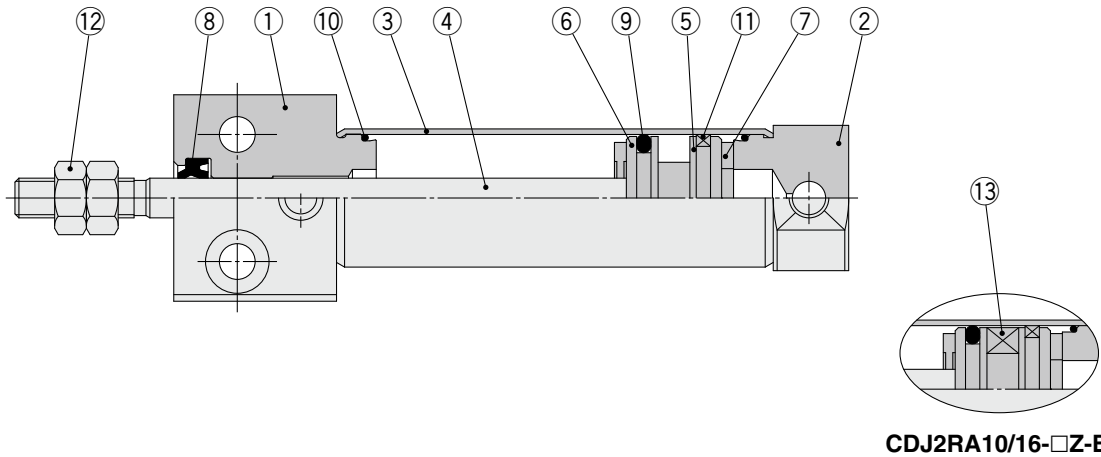
For the detailed specifications, refer to the "Pneumatic Clean Series" (WEB catalog).

## 10-CJ2RA (Clean Series) Construction (Not able to disassemble)





## Construction (Not able to disassemble)



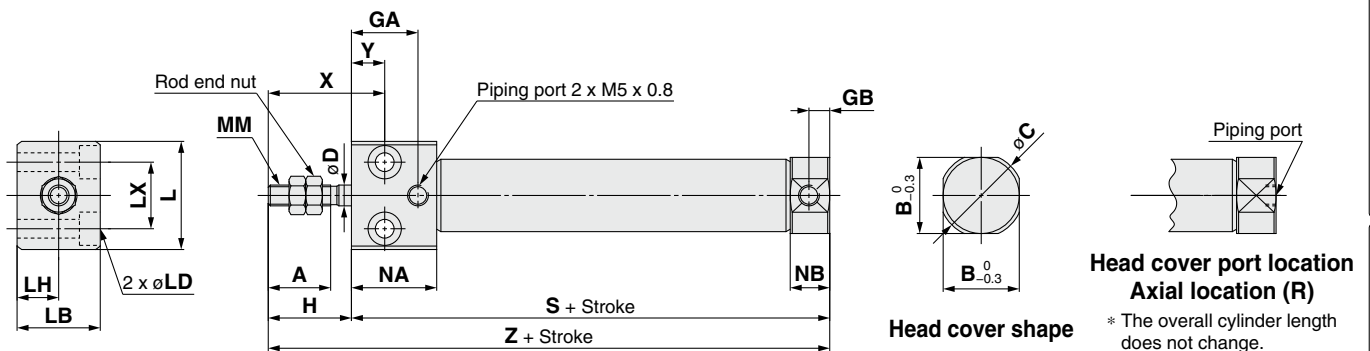
### Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Clear hard anodized
2	Head cover	Aluminum alloy	Clear hard anodized
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminum alloy	
6	Piston B	Aluminum alloy	
7	Bumper	Urethane	

No.	Description	Material	Note
8	Rod seal	NBR	
9	Piston seal	NBR	
10	Tube gasket	NBR	
11	Wear ring	Resin	
12	Rod end nut	Rolled steel	Zinc chromated
13	Magnet	—	

## Bottom Mounting Style

**CJ2RA** Bore size – Stroke Head cover port location **Z**



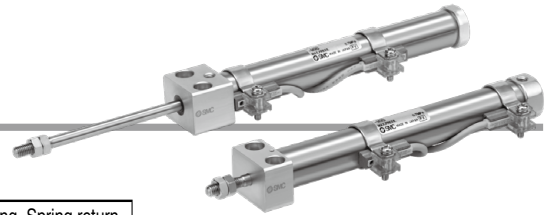
Bore size	A	B	C	D	GA	GB	H	L	LB	LD	LH	LX	MM	NA	NB	X	Y	S	Z
10	15	12	14	4	16	5	20	23	16	ø3.5 through, ø6.5 counterbore depth 4	8	12	M4 x 0.7	20.5	9.5	28	8	54	74
16	15	18.3	20	5	16	5	20	26	20	ø4.5 through, ø8 counterbore depth 5	10	16	M5 x 0.8	20.5	9.5	28	8	55	75

# Air Cylinder: Direct Mount Type

## Single Acting, Spring Return/Extend

### Series *CJ2R*

ø10, ø16



#### How to Order

**Cylinder standard stroke (mm)**  
Refer to "Standard Strokes" on page 68.

**Action**

S	Single acting, Spring return
T	Single acting, Spring extend

**With auto switch** **CDJ2RA** **16** - **45** **S** **Z** - **M9BW** **B** -

**With auto switch**  
(Built-in magnet)

**Mounting**

A	Bottom mounting style
---	-----------------------

**Bore size**

10	10 mm
16	16 mm

**Head cover port location**

Nil	Perpendicular to axis	
R	Axial	

\* Not applicable to single acting, spring extend (T).

**Auto switch**  
\* For applicable auto switches, refer to the table below.  
★ If a built-in magnet cylinder without an auto switch is required, refer to the model of built-in magnet cylinder.

**Made to Order**  
Refer to page 68 for details.

**Auto switch mounting type**

A	Rail mounting
B	Band mounting

\* For rail mounting, screws and nuts for 2 auto switches come with the rail.  
\* Refer to page 84 for auto switch mounting brackets.

**Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

**Applicable Auto Switches**/Refer to the **WEB catalog** or Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load						
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC					
		3-wire (PNP)		M9PV			M9P	M9PV	M9P	●	●	●	○	—	○								
	Connector	2-wire		12 V	M9BV		M9B	M9BV	M9B	●	●	●	○	—	○	—							
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	5 V, 12 V		M9NVV	M9NW	M9NVV	M9NW	●	●	●	○	—	○	IC circuit						
				3-wire (PNP)			M9PWW	M9PW	M9PWW	M9PW	●	●	●	○	—	○							
				2-wire			12 V	M9BWW	M9BW	M9BWW	M9BW	●	●	●	○	—			○	—			
				3-wire (NPN)			M9NAV**	M9NA**	M9NAV**	M9NA**	○	○	●	○	—	○			IC circuit				
	3-wire (PNP)	M9PAV**		M9PA**	M9PAV**		M9PA**	○	○	●	○	—	○										
	2-wire	12 V		M9BAV**	M9BA**		M9BAV**	M9BA**	○	○	●	○	—	○	—								
	With diagnostic output (2-color indication)	4-wire (NPN)		5 V, 12 V	—		H7NF	—	F79F	●	—	●	○	—	○	IC circuit							
	Reed auto switch	—		Grommet	Yes		3-wire (NPN equivalent)	—	5 V	—	A96V	A96	A96V	A96	●	—	●		—	—	—	IC circuit	Relay, PLC
							—		200 V	—	—	A72	A72H	●	—	●	—		—	—	—		
Connector			No	2-wire		24 V	12 V	100 V	A93V	A93	A93V	A93	●	—	●	●	—	—	—				
								100 V or less	A90V	A90	A90V	A90	●	—	●	●	—	—	—	IC circuit			
Yes		—	—		C73C			A73C	—	●	—	●	●	—	—	—	—						
		24 V or less	—		C80C			A80C	—	●	—	●	●	—	—	—	IC circuit						
Diagnostic indication (2-color indication)		Grommet	No	Yes	—	—	—	A79W	—	—	●	—	●	—	—	—	—						

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Please contact SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW  
1 m..... M (Example) M9NWM  
3 m..... L (Example) M9NWL  
5 m..... Z (Example) M9NWZ  
None..... N (Example) H7CN

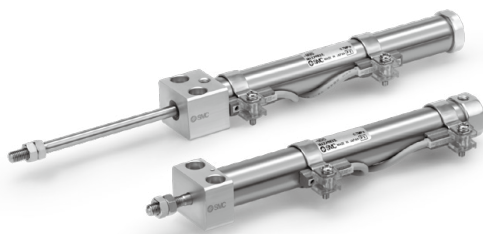
\* Since there are other applicable auto switches than listed, refer to page 85 for details.

\* For details about auto switches with pre-wired connector, refer to the **WEB catalog** or Best Pneumatics No. 2.

\* Solid state auto switches marked with "○" are produced upon receipt of order.

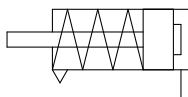
\* The D-A9□□/M9□□□/A7□□/A80□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)

The CJ2R direct mount cylinder can be installed directly through the use of a square rod cover.

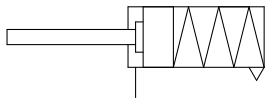


### Symbol

Single acting, Spring return, Rubber bumper



Single acting, Spring extend, Rubber bumper



**Made to Order**  
(For details, refer to pages 87 to 95.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease



## Precautions

Refer to page 96 before handling.

## Specifications

Bore size (mm)	10	16
Action	Single acting, Spring return/Single acting, Spring extend	
Fluid	Air	
Proof pressure	1 MPa	
Maximum operating pressure	0.7 MPa	
Minimum operating pressure	0.15 MPa	
Ambient and fluid temperature	Without auto switch: -10°C to 70°C, With auto switch: -10°C to 60°C*	
Cushion	Rubber bumper	
Lubrication	Not required (Non-lube)	
Stroke length tolerance	+1.0 0	
Piston speed	50 to 750 mm/s	
Allowable kinetic energy	0.035 J	0.090 J

\* No freezing

## Standard Strokes

Bore size	Standard stroke (mm)
10	15, 30, 45, 60
16	15, 30, 45, 60, 75, 100, 125, 150

\* Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

## Accessories

Standard equipment	Rod end nut
Option**	Single knuckle joint, Double knuckle joint*, Rod end cap (Flat type, Round type)

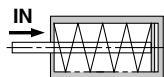
\* A knuckle pin and retaining rings are shipped together with double knuckle joint.

\*\* Please order separately.

## Spring Reaction Force

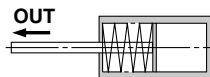
Bore size (mm)	Spring reaction force (N)	
	Primary	Secondary
10	3.53	6.86
16	6.86	14.2

Spring with primary mounting load



When the spring is set in the cylinder

Spring with secondary mounting load



When the spring is contracted by applying air

Refer to pages 78 to 85 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

# Series CJ2R

## Weights

### Spring Return

(g)

Bore size (mm)		10		16	
Mounting		Basic	Axial	Basic	Axial
Basic weight	15 stroke	42	42	81	81
	30 stroke	49	49	97	97
	45 stroke	59	59	114	114
	60 stroke	68	68	132	132
	75 stroke			154	154
	100 stroke			187	187
	125 stroke			224	224
	150 stroke			246	246
Accessories	Single knuckle joint	17		23	
	Double knuckle joint (including knuckle pin)	25		21	
	Rod end cap (Flat type)	1		2	
	Rod end cap (Round type)	1		2	

\* Rod end nut is included in the basic weight.

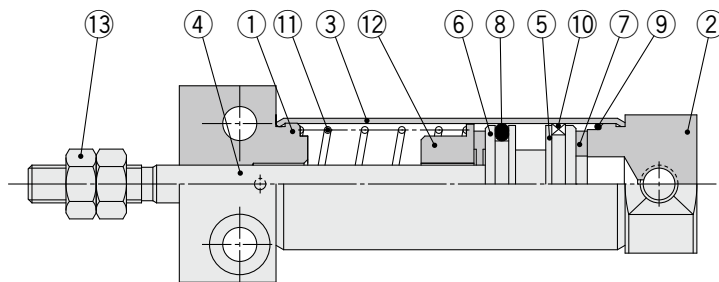
### Spring Extend

(g)

Bore size (mm)		10	16
Mounting		Basic	Basic
Basic weight	15 stroke	41	78
	30 stroke	47	92
	45 stroke	55	108
	60 stroke	64	123
	75 stroke		144
	100 stroke		173
	125 stroke		208
	150 stroke		228
Accessories	Single knuckle joint	17	23
	Double knuckle joint (including knuckle pin)	25	21
	Rod end cap (Flat type)	1	2
	Rod end cap (Round type)	1	2

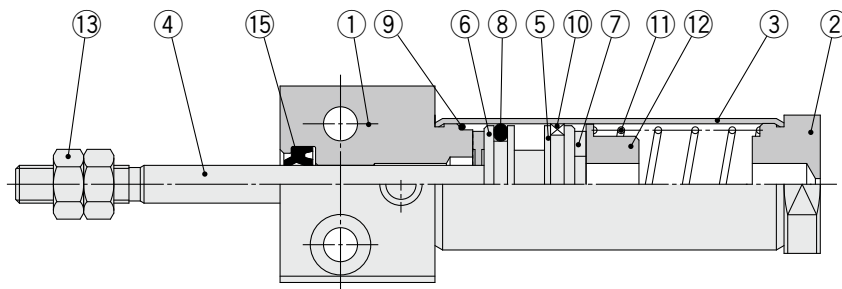
## Construction (Not able to disassemble)

### CJ2RA□-□SZ



CDJ2RA10/16-□SZ-B

### CJ2RA□-□TZ



CDJ2RA10/16-□TZ-B

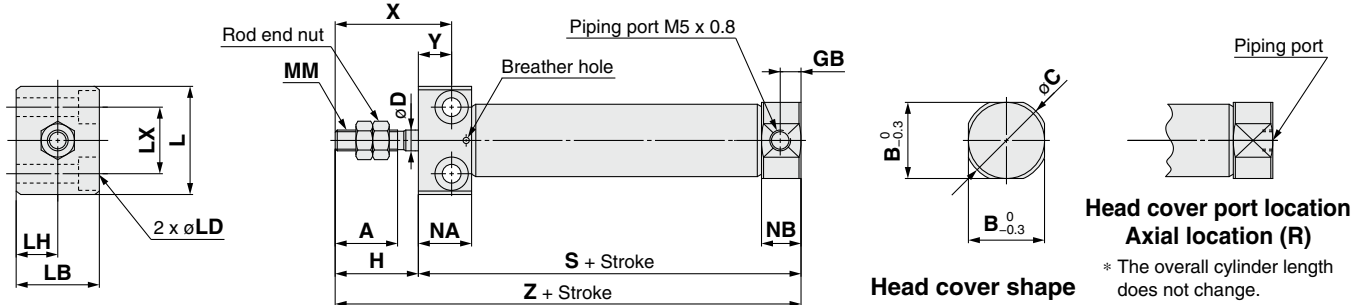
## Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Clear hard anodized
2	Head cover	Aluminum alloy	Clear hard anodized
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminum alloy	
6	Piston B	Aluminum alloy	
7	Bumper	Urethane	
8	Piston seal	NBR	

No.	Description	Material	Note
9	Tube gasket	NBR	
10	Wear ring	Resin	
11	Return spring	Piano wire	Zinc chromated
12	Spring seat	Aluminum alloy	
13	Rod end nut	Rolled steel	Zinc chromated
14	Magnet	—	
15	Rod seal	NBR	

## Single Acting: Bottom Mounting Style

Spring return: CJ2RA Bore size – Stroke S Head cover port location Z



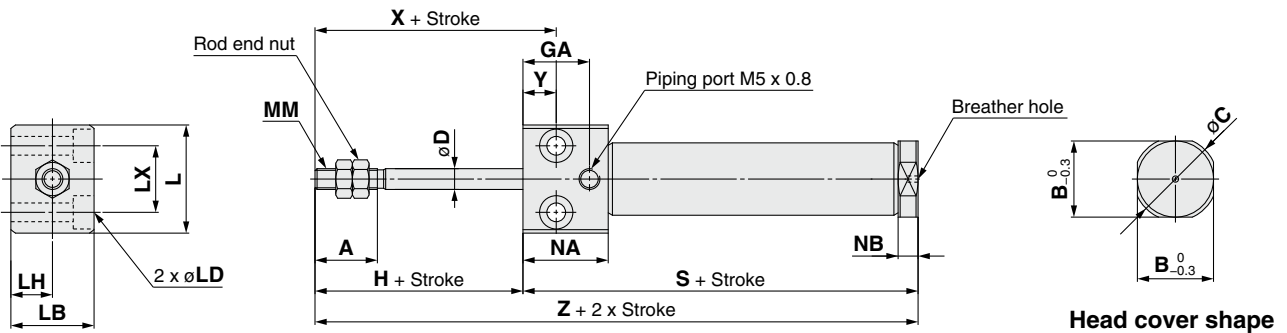
Bore size	A	B	C	D	GB	H	L	LB	LD	LH	LX	MM	NA	NB	X	Y
10	15	12	14	4	5	20	23	16	ø3.5 through, ø6.5 counterbore depth 4	8	12	M4 x 0.7	12.8	9.5	28	8
16	15	18.3	20	5	5	20	26	20	ø4.5 through, ø8 counterbore depth 5	10	16	M5 x 0.8	12.8	9.5	28	8

### Dimensions by Stroke: Spring Return

Bore size	S								Z							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	53.5	61	73	85	—	—	—	—	73.5	81	93	105	—	—	—	—
16	53.5	62	74	86	92	116	134	146	73.5	82	94	106	112	136	154	166

\* The minimum stroke of the built-in magnet type is 10 st.

Spring extend: CJ2RA Bore size – Stroke TZ



Bore size	A	B	C	D	GA	H	L	LB	LD	LH	LX	MM	NA	NB	X	Y
10	15	12	14	4	16	20	23	16	ø3.5 through, ø6.5 counterbore depth 4	8	12	M4 x 0.7	20.5	4.8	28	8
16	15	18.3	20	5	16	20	26	20	ø4.5 through, ø8 counterbore depth 5	10	16	M5 x 0.8	20.5	4.8	28	8

### Dimensions by Stroke: Spring Extend

Bore size	S								Z							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	56.5	64	76	88	—	—	—	—	76.5	84	96	108	—	—	—	—
16	56.5	65	77	89	95	119	137	149	76.5	85	97	109	115	139	157	169

\* The minimum stroke of the built-in magnet type is 10 st.

# Air Cylinder: Direct Mount, Non-rotating Rod Type

## Double Acting, Single Rod

# Series CJ2RK

ø10, ø16



### How to Order

Cylinder standard stroke (mm)●  
Refer to "Standard Strokes" on page 72.

**CJ2RKA 16-60** **Z-**

With auto switch

**CDJ2RKA 16-60** **Z-M9BW** **-B-**

With auto switch  
(Built-in magnet)

Mounting●

**A** Bottom mounting style

Bore size●

<b>10</b>	10 mm
<b>16</b>	16 mm

Auto switch●  
\* For applicable auto switches,  
refer to the table below.

★ If a built-in magnet cylinder without an auto switch is  
required, refer to the model of built-in magnet cylinder.

Head cover port location

Nil	Perpendicular to axis	
R	Axial	

Made to Order●  
Refer to page 72 for details.

Auto switch  
mounting type

**A** Rail mounting  
**B** Band mounting

\* For rail mounting, screws and  
nuts for 2 auto switches come  
with the rail.

\* Refer to page 84 for auto  
switch mounting brackets.

Number of auto switches

Nil	2 pcs.
<b>S</b>	1 pc.
<b>n</b>	"n" pcs.

**Applicable Auto Switches**/Refer to the **WEB catalog** or Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load								
					DC	AC	Band mounting		Rail mounting		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)										
							Perpendicular	In-line	Perpendicular	In-line															
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC							
		3-wire (PNP)		M9PV			M9P	M9PV	M9P	●	●	●	○	—	○										
	Connector	2-wire		12 V	M9BV		M9B	M9BV	M9B	●	●	●	○	—	○	—									
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	5 V, 12 V		M9NWV	M9NW	M9NWV	M9NW	●	●	●	○	—	○	IC circuit								
				3-wire (PNP)			M9PWV	M9PW	M9PWV	M9PW	●	●	●	○	—	○									
				2-wire	12 V		M9BWV	M9BW	M9BWV	M9BW	●	●	●	○	—	○			—						
	Water resistant (2-color indication)			3-wire (NPN)	5 V, 12 V		M9NAV**	M9NA**	M9NAV**	M9NA**	○	○	●	○	—	○	IC circuit								
				3-wire (PNP)			M9PAV**	M9PA**	M9PAV**	M9PA**	○	○	●	○	—	○									
				2-wire	12 V		M9BAV**	M9BA**	M9BAV**	M9BA**	○	○	●	○	—	○			—						
	With diagnostic output (2-color indication)	4-wire (NPN)		5 V, 12 V	—		H7NF	—	F79F	●	—	●	○	—	○	IC circuit									
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	A96V	A96	●	—	●	—	—	—	IC circuit	Relay, PLC						
								—	200 V	—	—	A72	A72H	●	—	●	—	—		—	—				
								Connector	No	2-wire	24 V	12 V	100 V	A93V	A93	A93V	A93	●		—	●	●	—	—	—
													100 V or less	A90V	A90	A90V	A90	●		—	●	—	—	—	—
		—	—	C73C	A73C	—	●						—	●	●	●	—	—		—					
		24 V or less	—	C80C	A80C	—	●						—	●	●	●	—	—		—	IC circuit				
		Diagnostic indication (2-color indication)	Grommet	Yes	—	—	—	—	A79W	—	—	—	—	—	—	—	—								

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Please contact SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW  
1 m..... M (Example) M9NWM  
3 m..... L (Example) M9NWL  
5 m..... Z (Example) M9NWZ  
None..... N (Example) H7CN

\* Since there are other applicable auto switches than listed, refer to page 85 for details.

\* For details about auto switches with pre-wired connector, refer to the **WEB catalog** or Best Pneumatics No. 2.

\* Solid state auto switches marked with "○" are produced upon receipt of order.

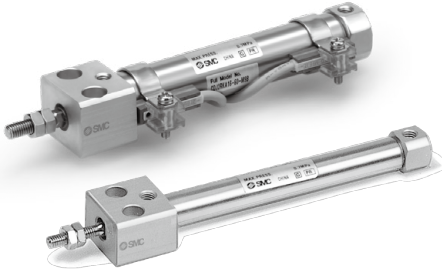
\* The D-A9□□/M9□□□/A7□□/A80□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)



A cylinder which rod does not rotate because of the hexagonal rod shape.

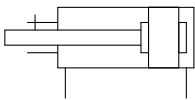
### Non-rotating accuracy

ø10: ±1.5°, ø16: ±1°



### Symbol

Double acting, Single rod, Rubber bumper



### Made to Order

(For details, refer to pages 87 to 95.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease

## ⚠ Precautions

Refer to page 96 before handling.

## Specifications

Bore size (mm)	10	16
Action	Double acting, Single rod	
Fluid	Air	
Proof pressure	1 MPa	
Maximum operating pressure	0.7 MPa	
Minimum operating pressure	0.06 MPa	
Ambient and fluid temperature	Without auto switch: -10°C to 70°C, With auto switch: -10°C to 60°C*	
Cushion	Rubber bumper	
Lubrication	Not required (Non-lube)	
Stroke length tolerance	+1.0 0	
Rod non-rotating accuracy	±1.5°	±1°
Piston speed	50 to 750 mm/s	
Allowable kinetic energy	0.035 J	0.090 J

\* No freezing

## Standard Strokes

Bore size	Standard stroke (mm)
10	15, 30, 45, 60, 75, 100, 125, 150
16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200

\* Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

## Accessories

/For details, refer to page 12.

Standard	Rod end nut
Option**	Single knuckle joint, Double knuckle joint*, Rod end cap (Flat/Round type)

\* A knuckle pin and retaining rings are shipped together with double knuckle joint.

\*\* Please order separately.

Refer to pages 78 to 85 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

## Weights

Bore size (mm)	10	16
Basic weight	36	62
(When the stroke is zero)	36	62
Additional weight per 15 mm of stroke	4	7
Accessories		
Single knuckle joint	17	23
Double knuckle joint (including knuckle pin)	25	21
Rod end cap (Flat type)	1	2
Rod end cap (Round type)	1	2

\* Rod end nut is included in the basic weight.

Calculation:

Example) CJ2RKA10-45Z

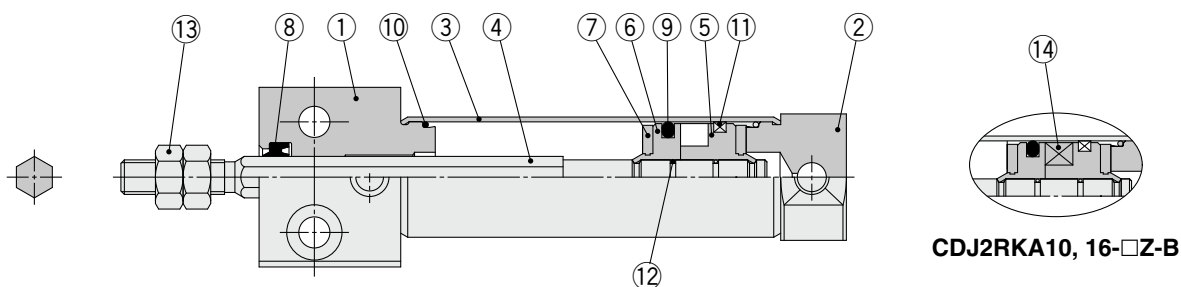
- Basic weight ..... 36 (ø10)
- Additional weight ... 4/15 stroke
- Cylinder stroke ..... 45 stroke

$$36 + 4/15 \times 45 = 48 \text{ g}$$



# Series CJ2RK

## Construction (Not able to disassemble)



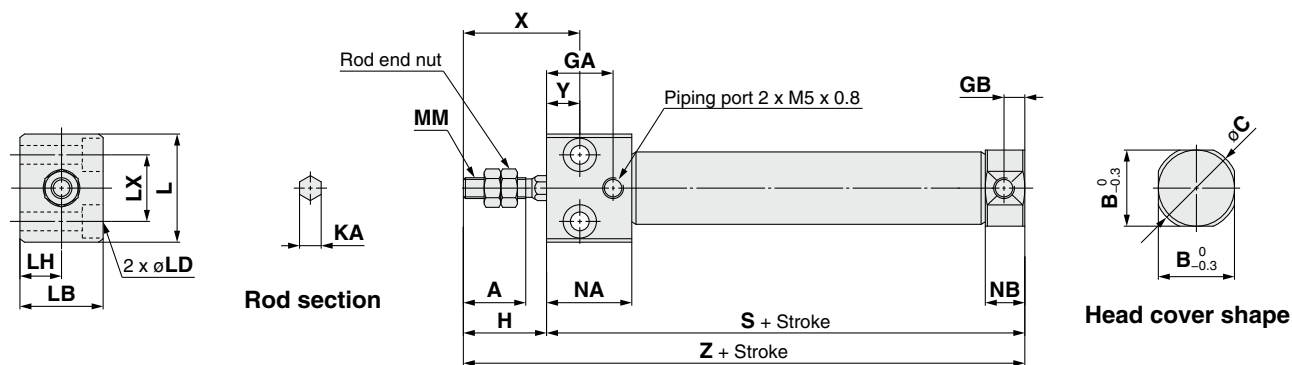
### Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Clear hard anodized
2	Head cover	Aluminum alloy	Clear hard anodized
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminum alloy	
6	Piston B	Aluminum alloy	
7	Bumper	Urethane	

No.	Description	Material	Note
8	Rod seal	NBR	
9	Piston seal	NBR	
10	Tube gasket	NBR	
11	Wear ring	Resin	
12	Piston gasket	NBR	
13	Rod end nut	Rolled steel	Zinc chromated
14	Magnet	—	

## Bottom Mounting Style

**CJ2RKA** Bore size – Stroke Head cover port location **Z**



### Head cover port location Axial location (R)

\* The overall cylinder length does not change.

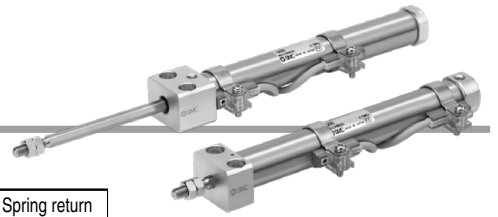
Bore size	A	B	C	GA	GB	H	KA	L	LB	LD	LH	LX	MM	NA	NB	X	Y	S	Z
10	15	12	14	16	5	20	4.2	23	16	ø3.5 through, ø6.5 counterbore depth 4	8	12	M4 x 0.7	20.5	9.5	28	8	54	74
16	15	18.3	20	16	5	20	5.2	26	20	ø4.5 through, ø8 counterbore depth 5	10	16	M5 x 0.8	20.5	9.5	28	8	55	75

(mm)

# Air Cylinder: Direct Mount, Non-rotating Rod Type Single Acting, Spring Return/Extend

## Series **CJ2RK** ø10, ø16

### How to Order



**Cylinder standard stroke (mm)**  
Refer to "Standard Strokes" on page 75.

**Action**

<b>S</b>	Single acting, Spring return
<b>T</b>	Single acting, Spring extend

**With auto switch**  
**CDJ2RKA** 16-45 S Z-M9BW B

**With auto switch**  
(Built-in magnet)

**Mounting**

<b>A</b>	Bottom mounting style
----------	-----------------------

**Bore size**

<b>10</b>	10 mm
<b>16</b>	16 mm

**Auto switch**

\* For applicable auto switches, refer to the table below.

★ If a built-in magnet cylinder without an auto switch is required, refer to the model of built-in magnet cylinder.

**Head cover port location**

<b>Nil</b>	Perpendicular to axis	
<b>R</b>	Axial	

**Number of auto switches**

<b>Nil</b>	2 pcs.
<b>S</b>	1 pc.
<b>n</b>	"n" pcs.

**Made to Order**  
Refer to page 75 for details.

**Auto switch mounting type**

<b>A</b>	Rail mounting
<b>B</b>	Band mounting

\* For rail mounting, screws and nuts for 2 auto switches come with the rail.  
\* Refer to page 84 for auto switch mounting brackets.

### Applicable Auto Switches/Refer to the WEB catalog or Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load						
					DC	AC	Band mounting		Rail mounting		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)								
							Perpendicular	In-line	Perpendicular	In-line													
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC					
		3-wire (PNP)		M9PV			M9P	M9PV	M9P	●	●	●	○	—	○								
		Connector		2-wire			12 V	M9BV	M9B	M9BV	M9B	●	●	●	○	—			○				
		—		H7C			J79C	—	●	—	●	●	●	—	—								
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	24 V		5 V, 12 V	M9NWV	M9NW	M9NWV	M9NW	●	●	●	○	—	○		IC circuit				
				3-wire (PNP)				M9PWV	M9PW	M9PWV	M9PW	●	●	●	○	—	○						
				2-wire				12 V	M9BWW	M9BW	M9BWW	M9BW	●	●	●	○	—			○			
				—				—	—	—	—	—	—	—	—	—	—						
	Water resistant (2-color indication)	Grommet	3-wire (NPN)	5 V, 12 V	M9NAV**	M9NA**	M9NAV**	M9NA**	○	○	●	○	—	○	IC circuit								
			3-wire (PNP)		M9PAV**	M9PA**	M9PAV**	M9PA**	○	○	●	○	—	○									
			2-wire		12 V	M9BAV**	M9BA**	M9BAV**	M9BA**	○	○	●	○	—		○							
			—		—	—	—	—	—	—	—	—	—	—									
With diagnostic output (2-color indication)	—	4-wire (NPN)	5 V, 12 V	—	H7NF	—	F79F	●	—	●	○	—	○	IC circuit									
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	A96V	A96	●	—	●	—	—	—	IC circuit	Relay, PLC				
								—	200 V	—	—	A72	A72H	●	—	●	—	—		—			
		Connector						2-wire	24 V	12 V	100 V	A93V	A93	A93V	A93	●	—	●		●	—	—	—
											100 V or less	A90V	A90	A90V	A90	●	—	●		—	—	—	IC circuit
	Diagnostic indication (2-color indication)	Grommet		—	—	—	C73C				A73C	—	—	●	—	●	●	●		—	—		
				—	—	—	C80C				A80C	—	—	●	—	●	●	—		—	IC circuit		
				—	—	—	—	A79W	—	—	●	—	●	—	—	—							
				—	—	—	—	—	—	—	—	—	—	—	—	—							

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Please contact SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW  
1 m..... M (Example) M9NWM  
3 m..... L (Example) M9NWL  
5 m..... Z (Example) M9NWZ  
None..... N (Example) H7CN

\* Since there are other applicable auto switches than listed, refer to page 85 for details.

\* For details about auto switches with pre-wired connector, refer to the WEB catalog or Best Pneumatics No. 2.

\* Solid state auto switches marked with "○" are produced upon receipt of order.

\* The D-A9□□/M9□□□/A7□□/A80□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)

Standard  
Double Acting, Double Rod  
**CJ2W**  
Double Acting, Single Rod  
**CJ2**

Non-rotating Rod  
Single Acting, Spring Return/Extend  
**CJ2**  
Double Acting, Double Rod  
**CJ2K**  
Double Acting, Single Rod  
**CJ2K**

Built-in Speed Controller  
Double Acting, Double Rod  
**CJ2ZW**  
Double Acting, Single Rod  
**CJ2R**

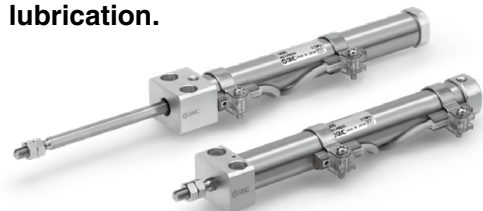
Direct Mount, Non-rotating Rod  
Single Acting, Spring Return/Extend  
**CJ2RK**  
Double Acting, Double Rod  
**CJ2R**  
Double Acting, Single Rod  
**CJ2R**

Auto Switch  
Made to Order

# Series CJ2RK

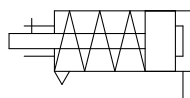
**A cylinder which rod does not rotate because of the hexagonal rod shape.**

**Non-rotating accuracy**  
 $\varnothing 10$ :  $\pm 1.5^\circ$ ,  $\varnothing 16$ :  $\pm 1^\circ$   
**Can operate without lubrication.**

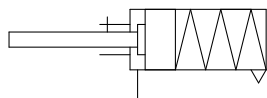


## Symbol

Single acting, Spring return, Rubber bumper



Single acting, Spring extend, Rubber bumper



**Made to Order**  
 (For details, refer to pages 87 to 95.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease

## ⚠ Precautions

**Refer to page 96 before handling.**

## Specifications

Bore size (mm)	10	16
Action	Single acting, Spring return/Single acting, Spring extend	
Fluid	Air	
Proof pressure	1 MPa	
Maximum operating pressure	0.7 MPa	
Minimum operating pressure	0.15 MPa	
Ambient and fluid temperature	Without auto switch: $-10^\circ\text{C}$ to $70^\circ\text{C}$ , With auto switch: $-10^\circ\text{C}$ to $60^\circ\text{C}$ *	
Cushion	Rubber bumper	
Lubrication	Not required (Non-lube)	
Stroke length tolerance	$+1.0$ 0	
Rod non-rotating accuracy	$\pm 1.5^\circ$	$\pm 1^\circ$
Piston speed	50 to 750 mm/s	
Allowable kinetic energy	0.035 J	0.090 J

\* No freezing

## Standard Strokes

Bore size (mm)	Standard stroke (mm)
10	15, 30, 45, 60
16	15, 30, 45, 60, 75, 100, 125, 150

\* Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

## Accessories

For details, refer to page 12.

Standard	Rod end nut
Option**	Single knuckle joint, Double knuckle joint*, Rod end cap (Flat/Round type)

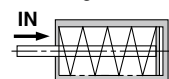
\* A knuckle pin and retaining rings are shipped together with double knuckle joint.

\*\* Please order separately.

## Spring Reaction Force

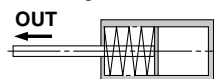
Bore size (mm)	Spring reaction force (N)	
	Primary	Secondary
10	3.53	6.86
16	6.86	14.2

Spring with primary mounting load



When the spring is set in the cylinder

Spring with secondary mounting load



When the spring is contracted by applying air

Refer to pages 78 to 85 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

## Weights

### Spring Return

(g)

Bore size (mm)		10		16	
Mounting		Basic	Axial	Basic	Axial
Basic weight	15 stroke	44	44	83	83
	30 stroke	52	52	99	99
	45 stroke	62	62	117	117
	60 stroke	72	72	135	135
	75 stroke			157	157
	100 stroke			191	191
	125 stroke			228	228
	150 stroke			251	251
Accessories	Single knuckle joint	17		23	
	Double knuckle joint (including knuckle pin)	25		21	
	Rod end cap (Flat type)	1		2	
	Rod end cap (Round type)	1		2	

\* Rod end nut is included in the basic weight.

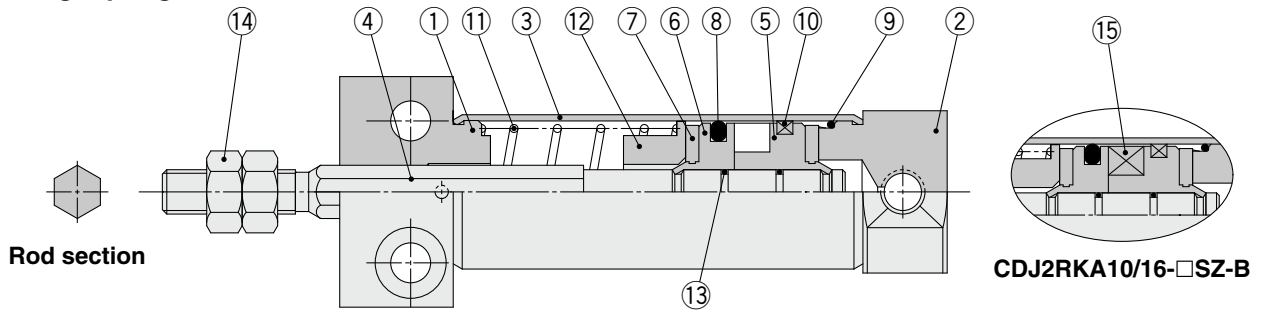
### Spring Extend

(g)

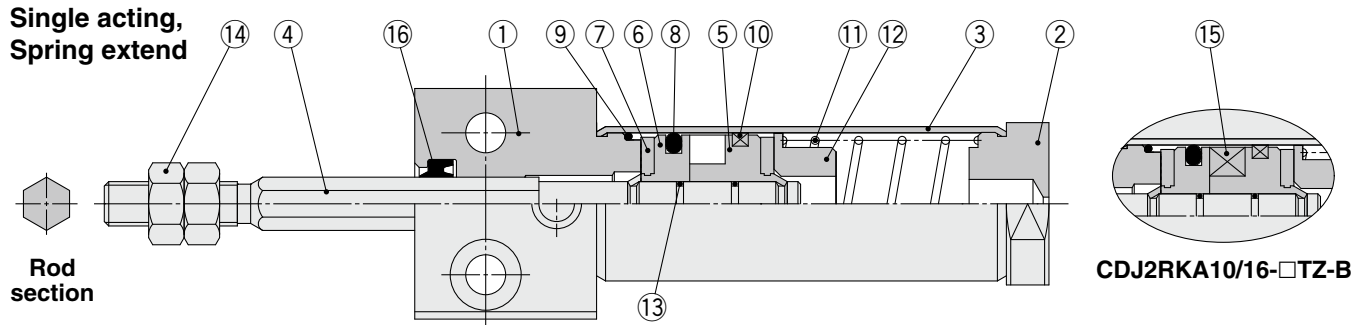
Bore size (mm)		10	16
Mounting		Basic	Basic
Basic weight	15 stroke	42	79
	30 stroke	48	93
	45 stroke	57	110
	60 stroke	66	126
	75 stroke		147
	100 stroke		177
	125 stroke		213
	150 stroke		234
Accessories	Single knuckle joint	17	23
	Double knuckle joint (including knuckle pin)	25	21
	Rod end cap (Flat type)	1	2
	Rod end cap (Round type)	1	2

## Construction (Not able to disassemble)

### Single acting, Spring return



### Single acting, Spring extend



### Component Parts

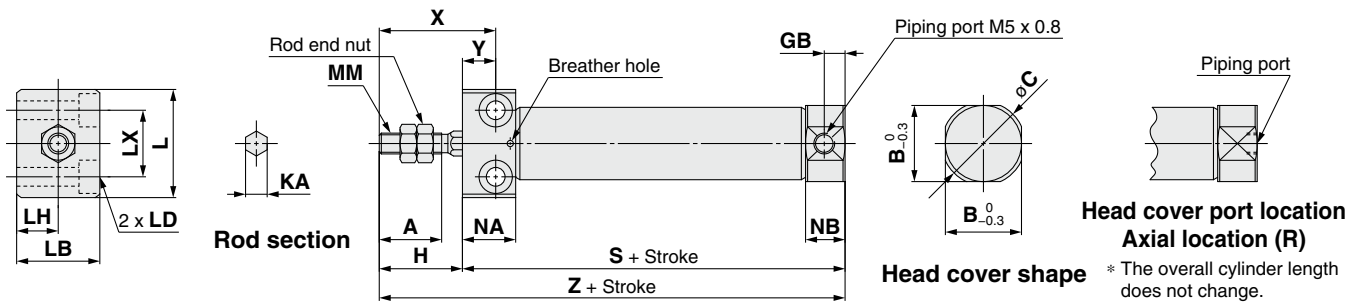
No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Clear hard anodized
2	Head cover	Aluminum alloy	Clear hard anodized
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminum alloy	
6	Piston B	Aluminum alloy	
7	Bumper	Urethane	
8	Piston seal	NBR	

No.	Description	Material	Note
9	Tube gasket	NBR	
10	Wear ring	Resin	
11	Return spring	Piano wire	Zinc chromated
12	Spring seat	Aluminum alloy	
13	Piston gasket	NBR	
14	Rod end nut	Rolled steel	Zinc chromated
15	Magnet	—	
16	Rod seal	NBR	

# Series CJ2RK

## Single Acting: Bottom Mounting Style

Spring return: CJ2RK Bore size – Stroke S Head cover port location Z

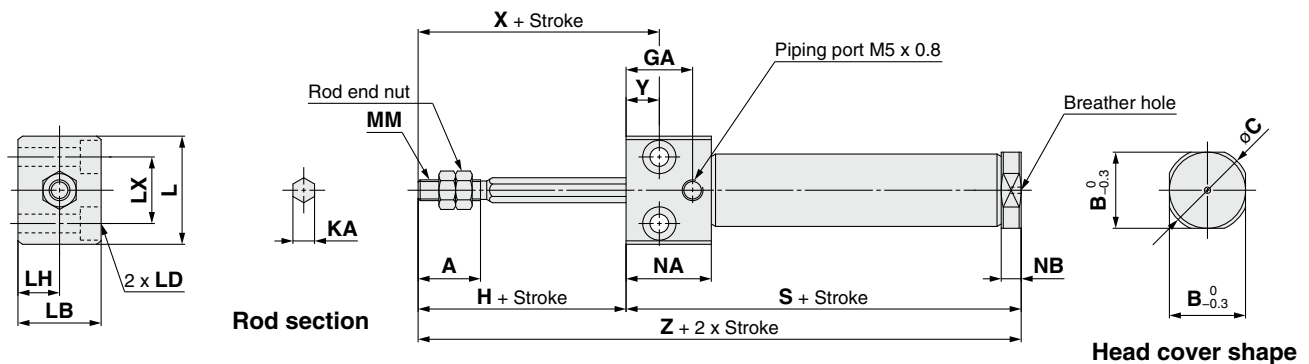


Bore size	A	B	C	GB	H	KA	L	LB	LD	LH	LX	MM	NA	NB	X	Y
10	15	12	14	5	20	4.2	23	16	ø3.5 through, ø6.5 counterbore depth 4	8	12	M4 x 0.7	12.8	9.5	28	8
16	15	18.3	20	5	20	5.2	26	20	ø4.5 through, ø8 counterbore depth 5	10	16	M5 x 0.8	12.8	9.5	28	8

### Dimensions by Stroke: Spring Return

Bore size	S								Z							
	5 to 15	16 to 30	31 to 45	46 to 60	61 to 75	76 to 100	101 to 125	126 to 150	5 to 15	16 to 30	31 to 45	46 to 60	61 to 75	76 to 100	101 to 125	126 to 150
10	53.5	61	73	85	—	—	—	—	73.5	81	93	105	—	—	—	—
16	53.5	62	74	86	92	116	134	146	73.5	82	94	106	112	136	154	166

Spring extend: CJ2RK Bore size – Stroke TZ



Bore size	A	B	C	GA	H	KA	L	LB	LD	LH	LX	MM	NA	NB	X	Y
10	15	12	14	16	20	4.2	23	16	ø3.5 through, ø6.5 counterbore depth 4	8	12	M4 x 0.7	20.5	4.8	28	8
16	15	18.3	20	16	20	5.2	26	20	ø4.5 through, ø8 counterbore depth 5	10	16	M5 x 0.8	20.5	4.8	28	8

### Dimensions by Stroke: Spring Extend (Dimensions not mentioned in the below table are the same as the above table.)

Bore size	S								Z							
	5 to 15	16 to 30	31 to 45	46 to 60	61 to 75	76 to 100	101 to 125	126 to 150	5 to 15	16 to 30	31 to 45	46 to 60	61 to 75	76 to 100	101 to 125	126 to 150
10	56.5	64	76	88	—	—	—	—	76.5	84	96	108	—	—	—	—
16	56.5	65	77	89	95	119	137	149	76.5	85	97	109	115	139	157	169

## Series CJ2

# Auto Switch Mounting

### Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

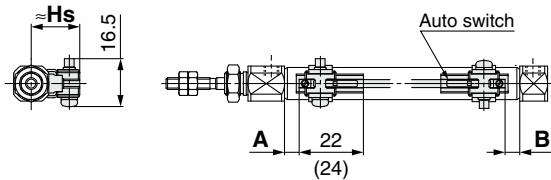
#### Solid state auto switch

##### <Band mounting>

D-M9□

D-M9□W

D-M9□A



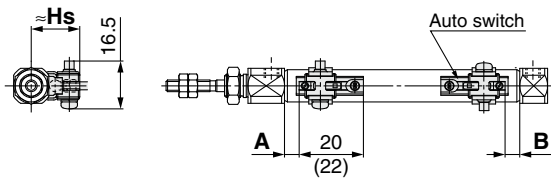
( ): Dimension of the D-M9□A.

A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-M9□V

D-M9□MV

D-M9□AV



( ): Dimension of the D-M9□AV.

A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

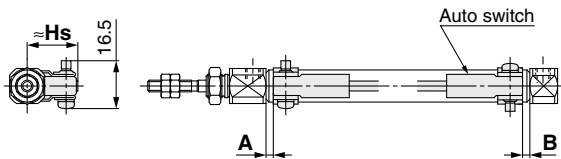
D-H7□

D-H7□W

D-H7BA

D-H7NF

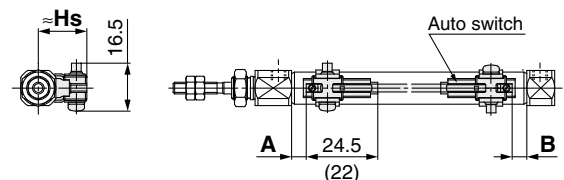
D-H7C



#### Reed auto switch

##### <Band mounting>

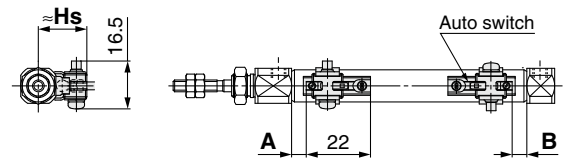
D-A9□



( ): Dimension of the D-A96.

A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

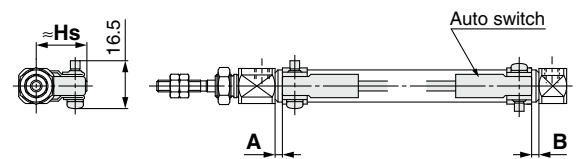
D-A9□V



A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-C7□/C80

D-C73C□/C80C



Standard	Double Acting, Double Rod	CJ2W
Standard	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
Built-in Speed Controller	Double Acting, Double Rod	CJ2ZW
Direct Mount	Double Acting, Single Rod	CJ2R
Direct Mount	Single Acting, Spring Return/Extend	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2RK

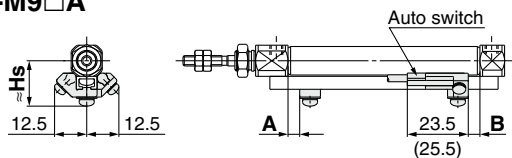
Auto Switch

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## Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

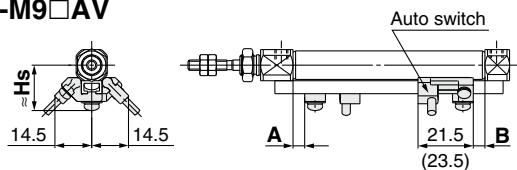
### <Rail mounting>

D-M9□  
D-M9□W  
D-M9□A



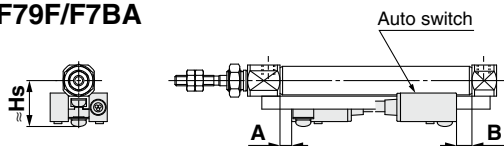
( ): Dimension of the D-M9□A.

D-M9□V  
D-M9□WV  
D-M9□AV

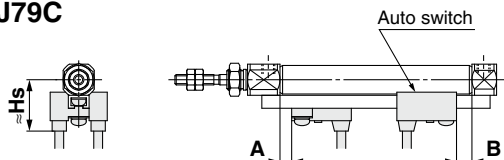


( ): Dimension of the D-M9□AV.

D-F7□/J79  
D-F7□W/J79W  
D-F79F/F7BA

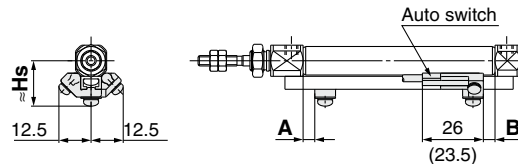


D-F7□V/F7□WV  
D-F7BAV  
D-J79C



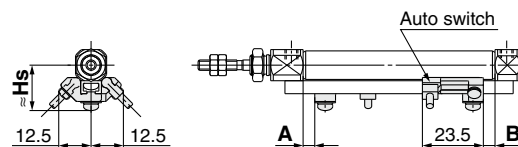
### <Rail mounting>

D-A9□

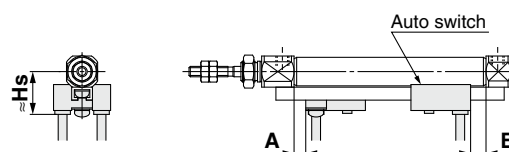


( ): Dimension of the D-A96.

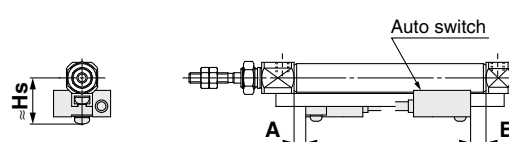
D-A9□V



D-A7□/A80  
D-A73C/A80C  
D-A79W



D-A7□H/A80H



# Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

## Auto Switch Proper Mounting Position

(mm)

Auto switch model	Band mounting							
	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-C7□ D-C80 D-C73C D-C80C		D-H7□ D-H7C D-H7NF D-H7□W D-H7BA	
Bore size	A	B	A	B	A	B	A	B
10	(5) 6	(5) 6	(1) 2	(1) 2	2.5	2.5	1.5	1.5
16	(5.5) 6.5	(5.5) 6.5	(1.5) 2.5	(1.5) 2.5	3	3	2	2

\* The values in ( ) are measured from the end of the auto switch mounting bracket.

Auto switch model	Rail mounting											
	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-A7□ D-A80		D-A7□H/A80H D-A73C/A80C D-F7□/J79 D-F7□W/J79W D-F7□V/F7□WV D-F79F D-J79C D-F7BA D-F7BAV		D-F7NT		D-A79W	
Bore size	A	B	A	B	A	B	A	B	A	B	A	B
10	4.5	4.5	0.5	0.5	3	3	3.5	3.5	8.5	8.5	0.5	0.5
16	5	5	1	1	3.5	3.5	4	4	9	9	1	1

\* Adjust the auto switch after confirming the operating condition in the actual setting.

## Auto Switch Mounting Height

(mm)

Auto switch model	Band mounting					
	D-M9□ D-M9□W D-M9□A D-A9□	D-M9□V D-M9□WV D-M9□AV D-A9□V	D-C7□/C80 D-H7□/H7□W D-H7NF D-H7BA	D-C73C D-C80C	D-H7C	D-A7□ D-A80
Bore size	Hs	Hs	Hs	Hs	Hs	Hs
10	17	18	17	19.5	20	16.5
16	20.5	21	20.5	23	23.5	19.5

Auto switch model	Rail mounting					
	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□ D-A9□V	D-A7□H/A80H D-F7□/J79 D-F7□W/J79W D-F7BA/F79F D-F7NT	D-A73C D-A80C	D-F7□V D-F7□WV D-F7BAV	D-J79C	D-A79W
Bore size	Hs	Hs	Hs	Hs	Hs	Hs
10	17.5	17.5	23.5	20	23	19
16	21	20.5	26.5	23	26	22

Double Acting, Single Rod	CJ2
Double Acting, Double Rod	CJ2W
Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	CJ2K
Single Acting, Spring Return/Extend	CJ2K
Double Acting, Single Rod	CJ2Z
Built-in Speed Controller	CJ2ZW
Double Acting, Double Rod	CJ2ZR
Double Acting, Single Rod	CJ2R
Direct Mount	CJ2R
Single Acting, Spring Return/Extend	CJ2RK
Non-rotating Rod	CJ2RK

Auto Switch

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# Series CJ2

## Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height/Single Acting, Spring Return Type (S)

### Auto Switch Proper Mounting Position: Spring Return Type (S)

- Standard Type (CDJ2□□□-□SZ)
- Non-rotating Rod Type (CDJ2K□□□-□SZ)
- Direct Mount Type (CDJ2R□□□-□SZ)
- Direct Mount, Non-Rotating Rod Type (CDJ2RK□□□-□SZ)

(mm)

Auto switch model		Bore size	A dimensions								B
			10 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	
Band mounting	D-A9□	10	9	16.5	28.5	40.5	—	—	—	—	2
		16	8.5	17	29	41	47	71	89	101	2.5
	D-M9□ D-M9□W	10	13	20.5	32.5	44.5	—	—	—	—	6
		16	12.5	21	33	45	51	75	93	105	6.5
	D-C7□/C80 D-C73C D-C80C	10	9.5	17	29	41	—	—	—	—	2.5
		16	9	17.5	29.5	41.5	47.5	71.5	89.5	101.5	3
	D-H7□/H7C D-H7□W/H7BA D-H7NF	10	8.5	16	28	40	—	—	—	—	1.5
		16	8	16.5	28.5	40.5	46.5	70.5	88.5	100.5	2
Rail mounting	D-A9□ D-A9□V	10	7.5	15	27	39	—	—	—	—	0.5
		16	7	15.5	27.5	39.5	45.5	69.5	87.5	99.5	1
	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	10	11.5	19	31	43	—	—	—	—	4.5
		16	11	19.5	31.5	43.5	49.5	73.5	91.5	103.5	5
	D-A7□/A80	10	10	17.5	29.5	41.5	—	—	—	—	3
		16	9.5	18	30	42	48	72	90	102	3.5
	D-A7□/H/A80H D-A73C/A80C D-F7□/J79 D-F7□W/J79W D-F7□V/F7□WV D-F79F/J79C D-F7BA D-F7BAV	10	10.5	18	30	42	—	—	—	—	3.5
		16	10	18.5	30.5	42.5	48.5	72.5	90.5	102.5	4
	D-F7NT	10	15.5	23	35	47	—	—	—	—	8.5
		16	15	23.5	35.5	47.5	53.5	77.5	95.5	107.5	9
	D-A79W	10	7.5	15	27	39	—	—	—	—	0.5
		16	7	15.5	27.5	39.5	45.5	69.5	87.5	99.5	1

\* In the actual setting, adjust them after confirming the auto switch performance.

# Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height/Single Acting, Spring Extend Type (T)

## Auto Switch Proper Mounting Position: Spring Extend Type (T)

- Standard Type (CDJ2□□□-□TZ)
- Non-rotating Rod Type (CDJ2K□□□-□TZ)
- Direct Mount Type (CDJ2R□□□-□TZ)
- Direct Mount, Non-rotating Rod Type (CDJ2RK□□□-□TZ)

Auto switch model		Bore size	A	B dimensions							
				10 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
Band mounting	D-A9□	10	2	9	16.5	28.5	40.5	—	—	—	—
		16	2.5	8.5	17	29	41	47	71	89	101
	D-M9□ D-M9□W	10	6	13	20.5	32.5	44.5	—	—	—	—
		16	6.5	12.5	21	33	45	51	75	93	105
	D-C7□/C80 D-C73C D-C80C	10	2.5	9.5	17	29	41	—	—	—	—
		16	3	9	17.5	29.5	41.5	47.5	71.5	89.5	101.5
	D-H7□/H7C D-H7□W/H7BA D-H7NF	10	1.5	8.5	16	28	40	—	—	—	—
		16	2	8	16.5	28.5	40.5	46.5	70.5	88.5	100.5
	D-A9□ D-A9□V	10	0.5	7.5	15	27	39	—	—	—	—
		16	1	7	15.5	27.5	39.5	45.5	69.5	87.5	99.5
Rail mounting	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	10	4.5	11.5	19	31	43	—	—	—	—
		16	5	11	19.5	31.5	43.5	49.5	73.5	91.5	103.5
	D-A7□/A80	10	3	10	17.5	29.5	41.5	—	—	—	—
		16	3.5	9.5	18	30	42	48	72	90	102
	D-A7□H/A80H D-A73C/A80C D-F7□/J79 D-F7□W/J79W D-F7□V/F7□WV D-F79F/J79C D-F7BA D-F7BAV	10	3.5	10.5	18	30	42	—	—	—	—
		16	4	10	18.5	30.5	42.5	48.5	72.5	90.5	102.5
	D-F7NT	10	8.5	15.5	23	35	47	—	—	—	—
		16	9	15	23.5	35.5	47.5	53.5	77.5	95.5	107.5
	D-A79W	10	0.5	7.5	15	27	39	—	—	—	—
		16	1	7	15.5	27.5	39.5	45.5	69.5	87.5	99.5

\* In the actual setting, adjust them after confirming the auto switch performance.

Standard	Double Acting, Single Rod	CJ2
Standard	Double Acting, Double Rod	CJ2W
Standard	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Double Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
Built-in Speed Controller	Double Acting, Double Rod	CJ2ZW
Direct Mount	Double Acting, Single Rod	CJ2R
Direct Mount	Single Acting, Spring Return/Extend	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2RK

Auto Switch

Made to Order

## Minimum Stroke for Auto Switch Mounting

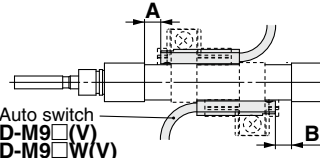
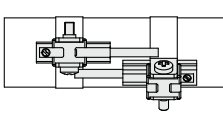
							(mm)
Auto switch mounting	Auto switch model	Number of auto switches					
		With 1 pc.	With 2 pcs.		With n pcs. (n: Number of auto switches)		
			Different surfaces	Same surface	Different surfaces	Same surface	
Band mounting	D-M9□ D-M9□W D-M9□A D-A9□	10	15 Note 1)	45 Note 1)	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	45 + 15 (n - 2) (n = 2, 3, 4, 5...)	
	D-M9□V	5	15 Note 1)	35	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	35 + 25 (n - 2) (n = 2, 3, 4, 5...)	
	D-M9□WV D-M9□AV	10	15 Note 1)	35	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	35 + 25 (n - 2) (n = 2, 3, 4, 5...)	
	D-A9□V	5	10	35	$10 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	35 + 25 (n - 2) (n = 2, 3, 4, 5...)	
	D-C7□ D-C80	10	15	50	$15 + 40 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	50 + 20 (n - 2) (n = 2, 3, 4, 5...)	
	D-H7□/H7□W D-H7BA D-H7NF	10	15	60	$15 + 45 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	60 + 22.5 (n - 2) (n = 2, 3, 4, 5...)	
	D-C73C D-C80C D-H7C	10	15	65	$15 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	50 + 27.5 (n - 2) (n = 2, 3, 4, 5...)	
Rail mounting	D-M9□V	5	—	5	—	10 + 10 (n - 2) (n = 4, 6...) Note 4)	
	D-A9□V	5	—	10	—	10 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-M9□ D-A9□	10	—	10	—	15 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-M9□WV D-M9□AV	10	—	15	—	15 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-M9□W	15	—	15	—	20 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-M9□A	15	—	20	—	20 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-A7□/A80 D-A7□H/A80H D-A73C/A80C	5	—	10	—	15 + 10 (n - 2) (n = 4, 6...) Note 4)	
	D-A7□H D-A80H	5	—	10	—	15 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-A79W	10	—	15	—	10 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-F7□ D-J79	5	—	5	—	15 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-F7□V D-J79C	5	—	5	—	10 + 10 (n - 2) (n = 4, 6...) Note 4)	
	D-F7□W/J79W D-F7BA/F79F/F7NT	10	—	15	—	15 + 20 (n - 2) (n = 4, 6...) Note 4)	
	D-F7□WV D-F7BAV	10	—	15	—	10 + 15 (n - 2) (n = 4, 6...) Note 4)	

Note 3) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.

Note 4) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.

However, the minimum even number is 4. So, 4 is used for the calculation when "n" is 1 to 3.

Note 1) Auto switch mounting

Auto switch model	With 2 auto switches	
	Different surfaces Note 1)	Same surface Note 1)
	 <p>Auto switch D-M9□(V) D-M9□W(V) D-M9□A(V)</p> <p>The proper auto switch mounting position is 5.5 mm inward from the switch holder edge. The above A and B indicate values for band mounting in the table of page 80.</p>	 <p>The auto switch is mounted by slightly displacing it in a direction (cylinder tube circumferential exterior) so that the auto switch and lead wire do not interfere with each other.</p>
D-M9□/M9□W/M9□A	Less than 20 stroke Note 2)	Less than 55 stroke Note 2)
D-A90/A93	—	Less than 50 stroke Note 2)

Note 2) Minimum stroke for auto switch mounting in styles other than those mentioned in Note 1.

## Operating Range

Auto switch model		Bore size (mm)	
		10	16
Band mounting	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	2.5	3
	D-A9□	6	7
	D-C7□/C80/C73C/C80C	7	7
	D-H7□/H7□W D-H7BA/H7NF	4	4
	D-H7C	8	9
Rail mounting	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	3	3.5
	D-A9□/A9□V	6	6.5
	D-A7□/A80/A7H/A80H D-A73C/A80C	8	9
	D-A79W	11	13
	D-F7□/J79/F7□W/J79W D-F7□V/F7□WV/F79F D-J79C/F7BA/F7BAV D-F7NT	5	5

\* Values which include hysteresis are for guideline purposes only, they are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

## Auto Switch Mounting Brackets/Part No.

Auto switch mounting	Auto switch model	Bore size (mm)	
		10	16
Band mounting	D-M9□ D-M9□V D-M9□W D-M9□WV D-A9□ D-A9□V	BJ6-010 (A set of a, b, c, d)	BJ6-016 (A set of a, b, c, d)
	D-M9□A <small>Note 2)</small> D-M9□AV <small>Note 2)</small>	BJ6-010S (A set of a, b, d, e)	BJ6-016S (A set of a, b, d, e)
Band mounting			
Band mounting	D-C7□/C80 D-C73C/C80C D-H7□/H7□W D-H7BA/H7NF	BJ2-010 (A set of band and screw)	BJ2-016 (A set of band and screw)
Note 4) Rail mounting	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A <small>Note 5)</small> D-M9□AV <small>Note 5)</small> D-A9□ D-A9□V	BQ2-012 (S) (A set of a and b)	BQ2-012 (S) (A set of a and b)

Note 1) Since the switch bracket (made from nylon) are affected in an environment where alcohol, chloroform, methylamines, hydrochloric acid or sulfuric acid is splashed over, so it cannot be used. Please contact SMC regarding other chemicals.

Note 2) Avoid the indicator LED for mounting the switch bracket. As the indicator LED is projected from the switch unit, indicator LED may be damaged if the switch bracket is fixed on the indicator LED.

Note 3) When the cylinder is shipped, the auto switch mounting bracket and the auto switch will be included.

Note 4) For D-M9□A(V), order the BQ2-012S, which uses stainless steel mounting screws.

### Band Mounting Brackets Set Part No.

Set part no.	Contents
BJ2-□□□	• Auto switch mounting band (a) • Auto switch mounting screw (b)
BJ4-1	• Switch bracket (White/PBT) (e) • Switch holder (d)
BJ5-1	• Switch bracket (Transparent/Nylon) (c) • Switch holder (d)

### [Stainless Steel Mounting Screw]

The following stainless steel mounting screw kit is available. Use it in accordance with the operating environment. (Since the auto switch mounting bracket is not included, order it separately.)

BBA4: For D-C7/C8/H7 types

Note 5) Refer to the **WEB catalog** or Best Pneumatics No. 2 for details on the BBA4.

When the D-H7BA type auto switch is shipped independently, the BBA4 is attached.

**Other than the applicable auto switches listed in “How to Order”, the following auto switches are mountable.**

Refer to **the WEB catalog** or Best Pneumatics No.2 for the detailed specifications.

Type	Mounting	Model	Electrical entry	Features
Solid state	Band mounting	D-H7A1/H7A2/H7B	Grommet (In-line)	—
		D-H7NW/H7PW/H7BW		Diagnostic indication (2-color indication)
	Rail mounting	D-F79/F7P/J79		—
		D-F79W/F7PW/J79W	Grommet (Perpendicular)	Diagnostic indication (2-color indication)
		D-F7NV/F7PV/F7BV		—
		D-F7NWV/F7BWV		Diagnostic indication (2-color indication)
Reed	Band mounting	D-C73/C76	Grommet (In-line)	—
		D-C80		Without indicator light
	Rail mounting	D-A73H/A76H		—
		D-A80H	Grommet (Perpendicular)	Without indicator light
		D-A73		—
		D-A80		Without indicator light

\* With pre-wired connector is also available for solid state auto switches. For details, refer to **the WEB catalog** or Best Pneumatics No. 2.

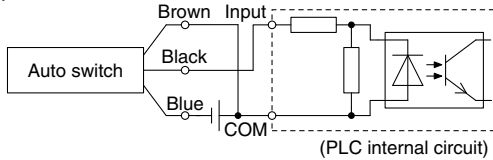
\* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H) are also available. For details, refer to **the WEB catalog** or Best Pneumatics No. 2.

# Prior to Use

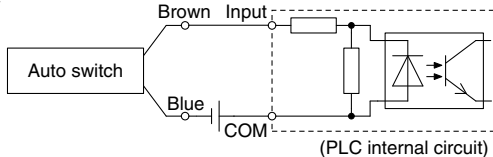
## Auto Switch Connection and Example

### Sink Input Specifications

#### 3-wire, NPN

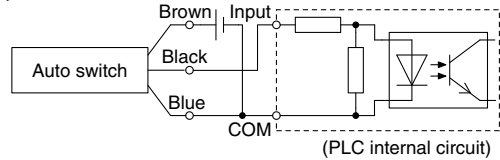


#### 2-wire

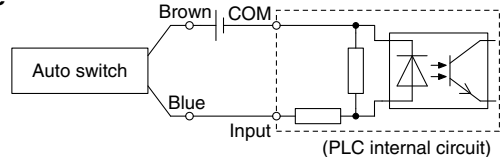


### Source Input Specifications

#### 3-wire, PNP



#### 2-wire

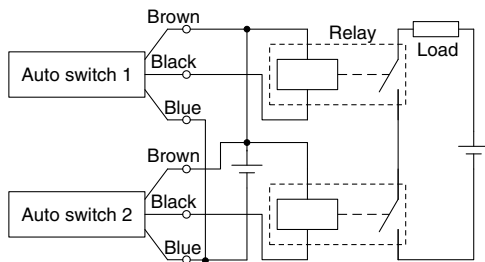


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

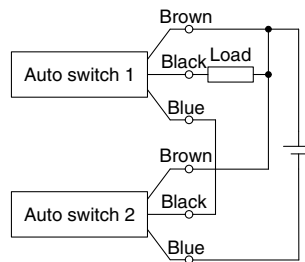
### Example of AND (Series) and OR (Parallel) Connection

\* When using solid state auto switches, ensure the application is set up so the signals for the first 50 ms are invalid.

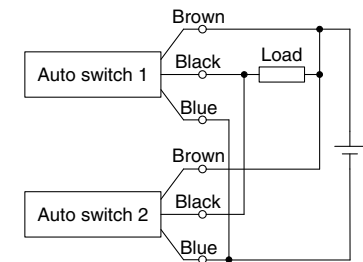
#### 3-wire AND connection for NPN output (Using relays)



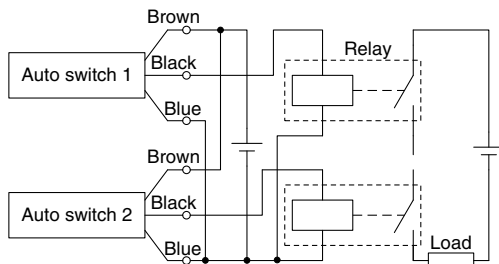
#### (Performed with auto switches only)



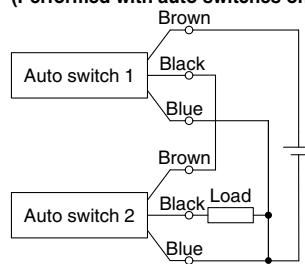
#### 3-wire OR connection for NPN output



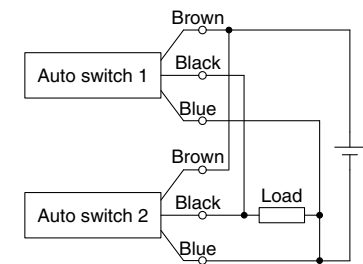
#### 3-wire AND connection for PNP output (Using relays)



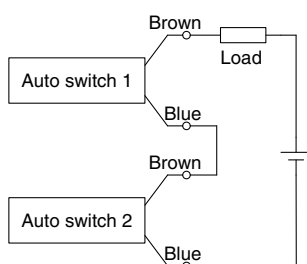
#### (Performed with auto switches only)



#### 3-wire OR connection for PNP output



#### 2-wire AND connection

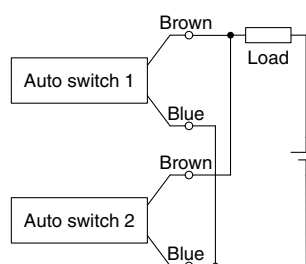


When two auto switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up when both of the auto switches are in the ON state. Auto switches with load voltage less than 20 V cannot be used.

$$\begin{aligned} \text{Load voltage at ON} &= \text{Power supply voltage} - \\ &\quad \text{Residual voltage} \times 2 \text{ pcs.} \\ &= 24 \text{ V} - 4 \text{ V} \times 2 \text{ pcs.} \\ &= 16 \text{ V} \end{aligned}$$

Example: Power supply is 24 VDC  
Internal voltage drop in auto switch is 4 V.

#### 2-wire OR connection



(Solid state)  
When two auto switches are connected in parallel, malfunction may occur because the load voltage will increase when in the OFF state.

(Reed)  
Because there is no current leakage, the load voltage will not increase when turned OFF. However, depending on the number of auto switches in the ON state, the indicator lights may sometimes grow dim or not light up, due to the dispersion and reduction of the current flowing to the auto switches.

$$\begin{aligned} \text{Load voltage at OFF} &= \text{Leakage current} \times 2 \text{ pcs.} \times \\ &\quad \text{Load impedance} \\ &= 1 \text{ mA} \times 2 \text{ pcs.} \times 3 \text{ k}\Omega \\ &= 6 \text{ V} \end{aligned}$$

Example: Load impedance is 3 k $\Omega$ .  
Leakage current from auto switch is 1 mA.

Standard	Double Acting, Single Rod	CJ2
Standard	Double Acting, Double Rod	CJ2W
Standard	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Double Acting, Double Rod	CJ2K
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
Built-in Speed Controller	Double Acting, Double Rod	CJ2ZW
Direct Mount	Double Acting, Single Rod	CJ2R
Direct Mount	Double Acting, Double Rod	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Double Acting, Double Rod	CJ2RK
Auto Switch		
Made to Order		

## Simple Specials

The following special specifications can be ordered as a simplified Made-to-Order.

There is a specification sheet available on paper and CD-ROM. Please contact your SMC sales representatives if necessary.

Symbol	Specifications	CJ2 (Standard type)				CJ2K (Non-rotating rod type)		
		Double acting		Single acting		Double acting	Single acting	
		Single rod	Double rod	Single rod (spring return)	Single rod (spring extend)	Single rod	Single rod (spring return)	Single rod (spring extend)
-XA1 to 30	Change of rod end shape	●	●	●	●	●	●	●

## Made to Order

Symbol	Specifications	CJ2 (Standard type)				CJ2K (Non-rotating rod type)		
		Double acting		Single acting		Double acting	Single acting	
		Single rod	Double rod	Single rod (spring return)	Single rod (spring extend)	Single rod	Single rod (spring return)	Single rod (spring extend)
-XB6	Heat resistant cylinder (−10 to 150°C)	●	●					
-XB7	Cold resistant cylinder (−40 to 70°C)	●	●					
-XB9	Low speed cylinder (10 to 50 mm/s)	●						
-XC3	Special port position	●				●		
-XC8	Adjustable stroke cylinder/Adjustable extension type	●						
-XC9	Adjustable stroke cylinder/Adjustable retraction type	●				●		
-XC10	Dual stroke cylinder/Double rod type	●				●		
-XC11	Dual stroke cylinder/Single rod type	●						
-XC22	Fluororubber seal	●	●	●	●	●		
-XC51	With hose nipple	●	●	●	●	●	●	●
-XC85	Grease for food processing equipment	●	●	●	●	●	●	●
-X446	PTFE grease	●	●	●	●	●	●	●

<div><div>CJ2Z</div><div>(Built-in speed controller type)</div><div>Double acting</div><div><div>Single rod</div><div>Double rod</div></div></div> <div><div></div><div></div></div>	<div><div>CJ2R</div><div>(Direct mount type)</div><div><div>Double acting</div><div>Single acting</div></div><div><div>Single rod</div><div>Single rod (spring return)</div><div>Single rod (spring extend)</div></div></div> <div><div></div><div></div><div></div></div>	<div><div>CJ2RK</div><div>(Direct mount, Non-rotating rod type)</div><div><div>Double acting</div><div>Single acting</div></div><div><div>Single rod</div><div>Single rod (spring return)</div><div>Single rod (spring extend)</div></div></div> <div><div></div><div></div><div></div></div>	<div>Page</div> <div>Page 89</div>
<div><div>CJ2Z</div><div>(Built-in speed controller type)</div><div>Double acting</div><div><div>Single rod</div><div>Double rod</div></div></div> <div><div></div><div></div></div>	<div><div>CJ2R</div><div>(Direct mount type)</div><div><div>Double acting</div><div>Single acting</div></div><div><div>Single rod</div><div>Single rod (spring return)</div><div>Single rod (spring extend)</div></div></div> <div><div></div><div></div><div></div></div>	<div><div>CJ2RK</div><div>(Direct mount, Non-rotating rod type)</div><div><div>Double acting</div><div>Single acting</div></div><div><div>Single rod</div><div>Single rod (spring return)</div><div>Single rod (spring extend)</div></div></div> <div><div></div><div></div><div></div></div>	<div>Page</div> <div>Page 90</div> <div>Page 90</div> <div>Page 90</div> <div>Page 91</div> <div>Page 91</div> <div>Page 92</div> <div>Page 92</div> <div>Page 93</div> <div>Page 94</div> <div>Page 94</div> <div>Page 95</div> <div>Page 95</div>

Direct Mount, Non-rotating Rod	Direct Mount	Built-in Speed Controller	Non-rotating Rod	Standard
Single Acting, Spring Return/Extend <b>CJ2RK</b>	Single Acting, Spring Return/Extend <b>CJ2R</b>	Double Acting, Double Rod <b>CJ2ZW</b>	Single Acting, Spring Return/Extend <b>CJ2K</b>	Double Acting, Double Rod <b>CJ2W</b>
Double Acting, Single Rod <b>CJ2RK</b>	Double Acting, Single Rod <b>CJ2R</b>	Double Acting, Single Rod <b>CJ2Z</b>	Double Acting, Single Rod <b>CJ2K</b>	Single Acting, Spring Return/Extend <b>CJ2</b>
Double Acting, Single Rod <b>CJ2RK</b>	Double Acting, Single Rod <b>CJ2R</b>	Double Acting, Single Rod <b>CJ2Z</b>	Double Acting, Single Rod <b>CJ2K</b>	Double Acting, Single Rod <b>CJ2</b>



# Series CJ2 Simple Specials

These changes are dealt with Simple Specials System.

For details, refer to the Simple Specials System in the WEB catalog.  
<http://www.smcworld.com>

## 1 Change of Rod End Shape

Symbol

-XA0, 1, 10, 11

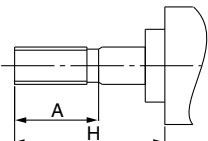
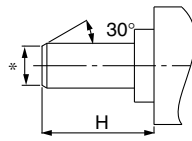
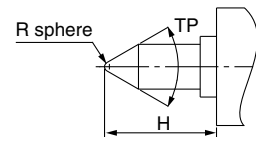
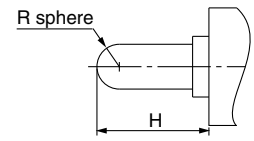
### Applicable Series

Series			Action	Symbol for change of rod end shape	Note
CJ2-Z	Standard type	CJ2	Double acting, Single rod	XA0, 1, 10, 11	Available with air cushion
			Single acting (Spring return/extend)	XA0, 1, 10, 11	
	Non-rotating rod type	CJ2W	Double acting, Double rod	XA0, 1, 10, 11	Available with air cushion
		CJ2K	Double acting, Single rod	XA0, 1, 10, 11	
			Single acting (Spring return/extend)	XA0, 1, 10, 11	
	Built-in speed controller type	CJ2Z	Double acting, Single rod	XA0, 1, 10, 11	
		CJ2ZW	Double acting, Double rod	XA0, 1, 10, 11	
	Direct mount type	CJ2RA	Double acting, Single rod	XA0, 1, 10, 11	
			Single acting (Spring return/extend)	XA0, 1, 10, 11	
	Direct mount, Non-rotating rod type	CJ2RK	Double acting, Single rod	XA0, 1, 10, 11	
			Single acting (Spring return/extend)	XA0, 1, 10, 11	

### Precautions

- SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
- Standard dimensions marked with "\*" will be as follows to the rod diameter (D). Enter any special dimension you desire.

- $D \leq 6 \rightarrow D - 1 \text{ mm}$ ,  $6 < D \leq 25 \rightarrow D - 2 \text{ mm}$ ,  $D > 25 \rightarrow D - 4 \text{ mm}$
- In the case of double rod type and single acting retraction type, enter the dimensions when the rod is retracted.

Symbol: A0	Symbol: A1	Symbol: A10	Symbol: A11
			

# Series CJ2

## Made to Order

Please contact SMC for detailed dimensions, specifications and lead times.



### 1 Heat Resistant Cylinder (−10 to 150°C)

Symbol  
**-XB6**

Air cylinder which changed the seal material and grease, so that it could be used even at higher temperature up to 150 from −10°C.

#### Applicable Series

Series	Description	Model	Action	Note
CJ2-Z	Standard type	CJ2	Double acting, Single rod	Except with air cushion and auto switch
		CJ2W	Double acting, Double rod	Except with air cushion and auto switch

- Note 1) Operate without lubrication from a pneumatic system lubricator.  
 Note 2) Please contact SMC for details on the maintenance intervals for this cylinder, which differ from those of the standard cylinder.  
 Note 3) In principle, it is impossible to make built-in magnet type and the one with auto switch. But, as for the one with auto switch, and the heat resistant cylinder with heat resistant auto switch, please contact SMC.  
 Note 4) Piston speed is ranged from 50 to 500 mm/s.

#### How to Order

Standard model no. **- XB6**

Heat resistant cylinder

#### Specifications

Ambient temperature range	−10°C to 150°C
Seals materials	Fluororubber
Grease	Heat resistant grease
Specifications other than above and external dimensions	Same as standard type

#### Warning Precautions

Be aware that smoking cigarettes etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

### 2 Cold Resistant Cylinder (−40 to 70°C)

Symbol  
**-XB7**

Air cylinder which changed the seal material and grease, so that it could be used even at lower temperature down to −40°C.

#### Applicable Series

Series	Description	Model	Action	Note
CJ2-Z	Standard type	CJ2	Double acting, Single rod	Except with air cushion and auto switch
		CJ2W	Double acting, Double rod	Except with air cushion and auto switch

- Note 1) Operate without lubrication from a pneumatic system lubricator.  
 Note 2) Use dry air which is suitable for heatless air dryer, etc. not to cause the moisture to be frozen.  
 Note 3) Please contact SMC for details on the maintenance intervals for this cylinder, which differ from those of the standard cylinder.  
 Note 4) Mounting auto switch is impossible.  
 Note 5) Piston speed is ranged from 50 to 500 mm/s.

#### How to Order

Standard model no. **- XB7**

Cold resistant cylinder

#### Specifications

Ambient temperature range	−40°C to 70°C
Seals material	Low nitrile rubber
Grease	Cold resistant grease
Auto switch	Not mountable
Dimensions	Same as standard type
Additional specifications	Same as standard type

#### Warning Precautions

Be aware that smoking cigarettes etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

### 3 Low Speed Cylinder (10 to 50 mm/s)

Symbol  
**-XB9**

Even if driving at lower speeds 10 to 50 mm/s, there would be no stick-slip phenomenon and it can run smoothly.

#### Applicable Series

Series	Description	Model	Action	Note
CJ2-Z	Standard type	CJ2	Double acting, Single rod	Except with air cushion

#### How to Order

Standard model no. **- XB9**

Low speed cylinder

#### Specifications

Piston speed	10 to 50 mm/s
Dimensions	Same as standard type
Additional specifications	Same as standard type

Note) Operate without lubrication from a pneumatic system lubricator.

#### Warning Precautions

Be aware that smoking cigarettes etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

Standard	Double Acting, Single Rod	CJ2
	Double Acting, Double Rod	CJ2W
	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
	Double Acting, Double Rod	CJ2W
	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
	Double Acting, Double Rod	CJ2ZW
Direct Mount	Double Acting, Single Rod	CJ2R
	Double Acting, Double Rod	CJ2R
	Single Acting, Spring Return/Extend	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
	Double Acting, Double Rod	CJ2RK
	Single Acting, Spring Return/Extend	CJ2RK
Auto Switch		
Made to Order		

## 4 Special Port Location

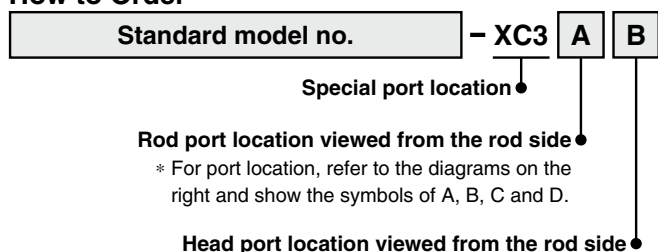
Symbol  
**-XC3**

Compared with the standard type, a cylinder which changes the connection port location of rod/head cover.

### Applicable Series

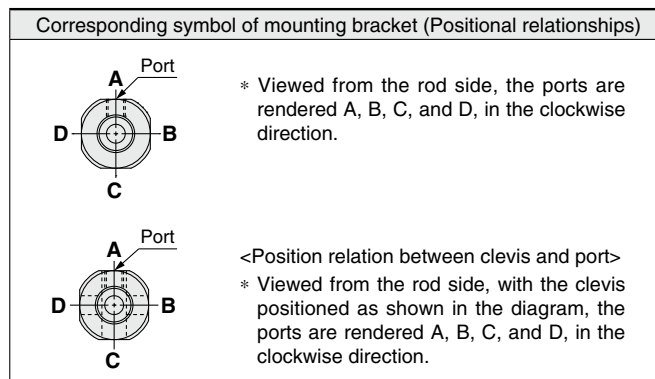
Series	Description	Model	Action	Note
<b>CJ2-Z</b>	Standard type	CJ2	Double acting, Single rod	Except with rail mounting type auto switches, with air cushion
	Non-rotating rod type	CJ2K	Double acting, Single rod	Except with rail mounting type auto switches

### How to Order



### Specifications: Same as standard type

#### Port Location



## 5 Adjustable Stroke Cylinder/Adjustable Extension Type

Symbol  
**-XC8**

It adjusts the extending stroke by the stroke adjustable mechanism equipped in the head side. (After the stroke is adjusted, with cushion on both sides is altered to single-sided, with cushion.)

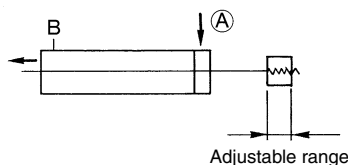
### Applicable Series

Series	Description	Model	Action	Note
<b>CJ2-Z</b>	Standard type	CJ2	Double acting, Single rod	Except with air cushion

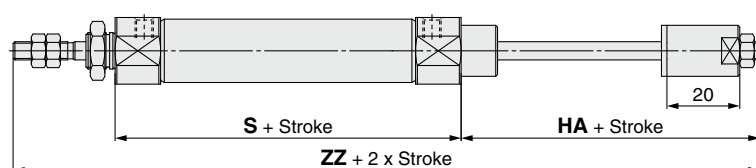
### How to Order



### Symbol



### Dimensions (Dimensions other than below are the same as standard type.)



Bore size	Applicable stroke	HA	S	ZZ
<b>10</b>	15 to 150	37	49	114
<b>16</b>	15 to 200	37	50	115

\* Dimensions except mentioned above are the same as standard type.

### Specifications

Stroke adjustment symbol	—
Stroke adjustment range (mm)	0 to 15
Additional specifications	Same as standard type

### Warning Precautions

- When the cylinder is operating, if something gets caught between the stopper bracket for adjusting the stroke and the cylinder body, it could cause bodily injury or damage the peripheral equipment. Therefore, take preventive measures as necessary, such as installing a protective cover.
- To adjust the stroke, make sure to secure the wrench flats of the stopper bracket by a wrench etc. before loosening the lock nut. If the lock nut is loosened without securing the stopper bracket, be aware that the area that joins the load to the piston rod or the area in which the piston rod is joined with the load side and the stopper bracket side could loosen first. It may cause an accident or malfunction.

## 6 Adjustable Stroke Cylinder/Adjustable Retraction Type

Symbol  
**-XC9**

The retracting stroke of the cylinder can be adjusted by the adjusting bolt.

### Applicable Series

Series	Description	Model	Action	Note
<b>CJ2-Z</b>	Standard type	CJ2	Double acting, Single rod	
	Non-rotating rod type	CJ2K	Double acting, Single rod	
	Direct mount type	CJ2R	Double acting, Single rod	
	Direct mount, Non-rotating rod type	CJ2RK	Double acting, Single rod	

### How to Order

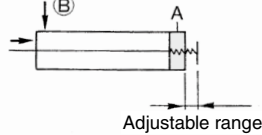
**CJ2** **Mounting style** **Bore size** - **Stroke** **Z** - **XC9**

\* Except clevis type

Adjustable stroke cylinder/  
Adjustable retraction type



Symbol



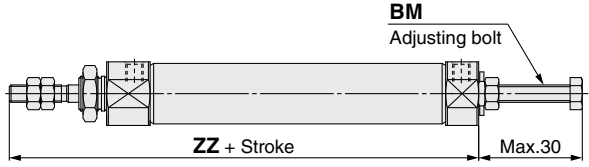
### Specifications

Stroke adjustment symbol	—
Stroke adjustment range (mm)	0 to 15
Additional specifications	Same as standard type

### Caution Precautions

- When air is supplied to the cylinder, if the stroke adjusting bolt is loosened in excess of the allowable stroke adjustment amount, be aware that the stroke adjusting bolt could fly out or air could be discharged, which could injure personnel or damage the peripheral equipment.
- Adjust the stroke when the cylinder is not pressurized. If it is adjusted in the pressurized state, the seal of the adjustment section could become deformed, leading to air leakage.

### Dimensions (Dimensions other than below are the same as standard type.)



Bore size	BM	ZZ
10	M5 x 0.8	74
16	M5 x 0.8	75

\* Dimensions except mentioned above are the same as standard type.

## 7 Dual Stroke Cylinder/Double Rod Type

Symbol  
**-XC10**

Two cylinders are constructed as one cylinder in a back-to-back configuration allowing the cylinder stroke to be controlled in three steps.

### Applicable Series

Series	Description	Model	Action	Note
<b>CJ2-Z</b>	Standard type	CJ2	Double acting, Single rod	Except with air cushion
	Non-rotating rod type	CJ2K	Double acting, Single rod	

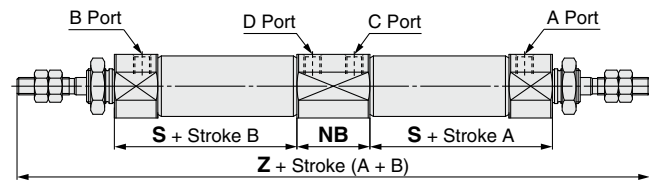
### How to Order

**CJ2** **Mounting style** **Bore size** - **Stroke A** + **Stroke B** **Z** - **XC10**

Dual stroke cylinder



### Dimensions (Dimensions other than below are the same as standard type.)

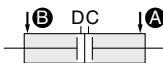


Bore size	NB	S	Z
10	21	36.5	150
16	21	37.5	152

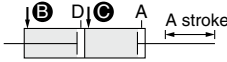
### Specifications

Maximum manufacturable stroke (mm)	300 (Maximum 150 on one side)
Additional specifications	Same as standard type

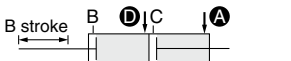
### Function



When air pressure is supplied to ports **A** and **B**, both A and B strokes retract.



When air pressure is supplied to ports **B** and **C**, A out strokes.



When air pressure is supplied to ports **A** and **D**, B out strokes.



When air pressure is supplied to ports **C** and **D**, both strokes A and B out strokes.

Standard  
Double Acting, Double Rod  
**CJ2W**  
Double Acting, Single Rod  
**CJ2**  
Single Acting, Spring Return/Extend  
**CJ2**  
Non-rotating Rod  
Double Acting, Single Rod  
**CJ2K**  
Single Acting, Spring Return/Extend  
**CJ2K**  
Built-in Speed Controller  
Double Acting, Single Rod  
**CJ2Z**  
Double Acting, Double Rod  
**CJ2ZW**  
Direct Mount  
Double Acting, Single Rod  
**CJ2R**  
Single Acting, Spring Return/Extend  
**CJ2R**  
Direct Mount, Non-rotating Rod  
Double Acting, Single Rod  
**CJ2RK**  
Single Acting, Spring Return/Extend  
**CJ2RK**  
Auto Switch  
Made to Order

## 8 Dual Stroke Cylinder/Single Rod Type

Symbol  
**-XC11**

Two cylinders can be integrated by connecting them in line, and the cylinder stroke can be controlled in two stages in both directions.

### Applicable Series

Series	Description	Model	Action	Note
CJ2-Z	Standard type	CJ2	Double acting, Single rod	Except with air cushion

### Specifications: Same as standard type

\* Please contact SMC for each manufacturable stroke length.

### How to Order

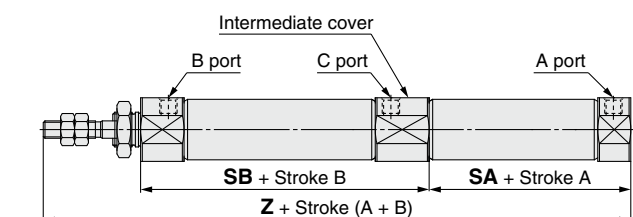
CJ2 Mounting style Bore size - Stroke A + Stroke B - A Z - XC11  
Dual stroke cylinder/Single rod



### Caution Precautions

1. Do not supply air until the cylinder is fixed.
2. If air is supplied without securing the cylinder, the cylinder could lurch, posing the risk of bodily injury or damage to the peripheral equipment.

### Dimensions (Dimensions other than below are the same as standard type.)



Bore size	SA	SB	Z
10	31.5	53	112.5
16	33	53	114

\* Dimensions except mentioned above are the same as standard type.

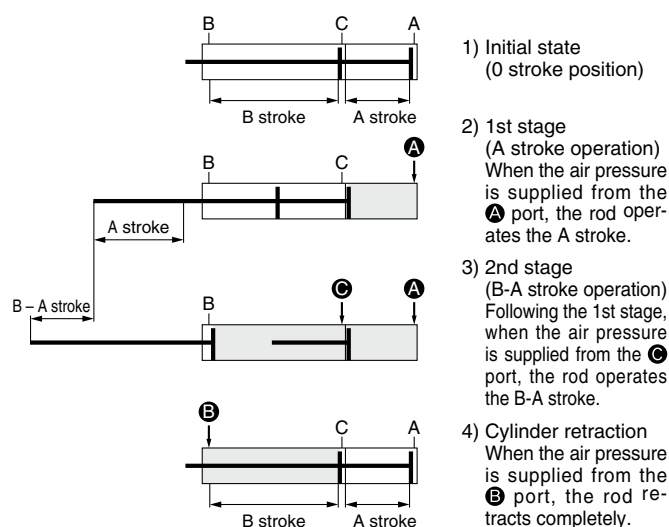
Note 1) When mounting an auto switch at the extended piston rod A side, the following auto switches interfere with the intermediate cover. In this case, please mount on the stroke B side. Please be aware that the auto switch defects and temporarily turns ON/OFF when passing the intermediate position of the B stroke.

Solid state auto switch: D-H7□, D-H7C, D-H7□W, D-H7NF, D-H7BA

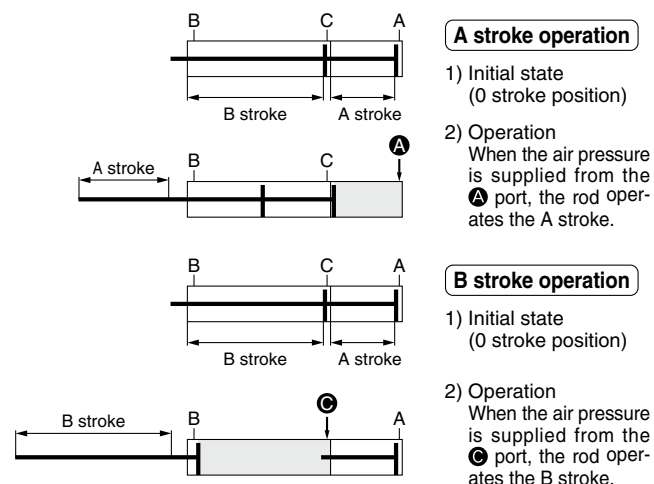
Reed auto switch: D-C7□, D-C80, D-C73C, D-C80C, D-A80, D-A9□, D-A9□V, D-A79W, D-A73

Note 2) The maximum manufacturable stroke of this cylinder is 150 mm for both A and B.

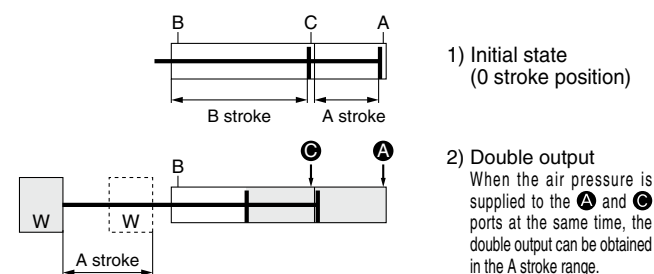
### Functional description of dual stroke cylinder



### A stroke or B stroke operation can be made individually.



### Double output is possible.



## 9 Fluororubber Seal

Symbol  
**-XC22**

### Applicable Series

Series	Description	Model	Action	Note
<b>CJ2-Z</b>	Standard type	CJ2	Double acting, Single rod	Except with air cushion
			Single acting (Spring return/extend)	
		CJ2W	Double acting, Double rod	Except with air cushion
	Non-rotating rod type	CJ2K	Double acting, Single rod	
	Direct mount type	CJ2R	Double acting, Single rod	

### How to Order

Standard model no.	- XC22
	Fluororubber seal

### Specifications

Seal material	Fluororubber
Ambient temperature range	With auto switch <sup>Note 1)</sup> : -10°C to 60°C Without auto switch : -10°C to 70°C (No freezing)
Specifications other than above and external dimensions	Same as standard type

Note 1) Please contact SMC, as the type of chemical and the operating temperature may not allow the use of this product.

Note 2) Cylinders with auto switches can also be produced; however, auto switch related parts (auto switch units, mounting brackets, built-in magnets) are the same as standard products.

Before using these, please contact SMC regarding their suitability for the operating environment.

## 10 With Hose Nipple

Symbol  
**-XC51**

The one with hose nipple attached in order to save time for assembly at the time of shipment.

### Applicable Series

Series	Description	Model	Action
<b>CJ2-Z</b>	Standard type	CJ2	Double acting, Single rod
		CJ2W	Double acting, Double rod
	Non-rotating rod type	CJ2K	Double acting, Single rod
		CJ2Z	Single acting (Spring return/extend)
	Built-in speed controller type	CJ2Z	Double acting, Single rod
		CJ2ZW	Double acting, Double rod
	Direct mount type	CJ2R	Double acting, Single rod
		CJ2RK	Single acting (Spring return/extend)
	Direct mount, Non-rotating rod type	CJ2RK	Double acting, Single rod
			Single acting (Spring return/extend)

### How to Order

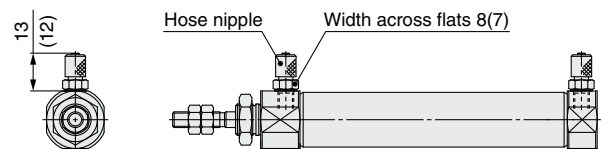
Standard model no.	- XC51	H4
	With hose nipple	
	Hose nipple type	
H4	ø4/2.5 with restriction	
H6	ø6/4 with restriction	
MH4	ø4/2.5 without restriction	
MH6	ø6/4 without restriction	

### Specifications: Same as standard type

### Applicable Hose Nipple Type

Symbol	Applicable bore size (mm)	Function	Hose nipple part no.
H4	ø4/2.5	With a fixed orifice (ø0.8)	CJ-5H-4
H6	ø6/4		CJ-5H-6
MH4	ø4/2.5	Without fixed orifice	M-5H-4
MH6	ø6/4		M-5H-6

### Dimensions (Dimensions other than below are the same as standard type.)



\* The above figure shows the ø6/4 hose nipple mounting dimensions. The dimensions in ( ) show those for the ø4/2.5 hose nipple.

Standard  
Double Acting, Single Rod  
**CJ2**  
Double Acting, Double Rod  
**CJ2W**  
Single Acting, Spring Return/Extend  
**CJ2**  
Non-rotating Rod  
Double Acting, Single Rod  
**CJ2K**  
Single Acting, Spring Return/Extend  
**CJ2K**  
Built-in Speed Controller  
Double Acting, Single Rod  
**CJ2Z**  
Double Acting, Double Rod  
**CJ2ZW**  
Direct Mount  
Double Acting, Single Rod  
**CJ2R**  
Single Acting, Spring Return/Extend  
**CJ2R**  
Direct Mount, Non-rotating Rod  
Double Acting, Single Rod  
**CJ2RK**  
Single Acting, Spring Return/Extend  
**CJ2RK**  
Auto Switch  
Made to Order



## 11 Grease for Food Processing Equipment

Symbol  
**-XC85**

Food grade grease (certified by NSF-H1) is used as lubricant.

### Applicable Series

Series	Description	Model	Action
CJ2-Z	Standard type	CJ2	Double acting, Single rod
			Single acting (Spring return/extend)
		CJ2W	Double acting, Double rod
	Non-rotating rod type	CJ2K	Double acting, Single rod
			Single acting (Spring return/extend)
	Built-in speed controller type	CJ2Z	Double acting, Single rod
		CJ2ZW	Double acting, Double rod
	Direct mount type	CJ2R	Double acting, Single rod
			Single acting (Spring return/extend)
	Direct mount, Non-rotating rod type	CJ2RK	Double acting, Single rod
			Single acting (Spring return/extend)

### How to Order

Standard model no. **- XC85**  
Grease for food processing equipment

### Warning Precautions

Be aware that smoking cigarettes etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

#### Not installable zone

Food zone.....An environment where food which will be sold as merchandize, directly touches the cylinder's components.

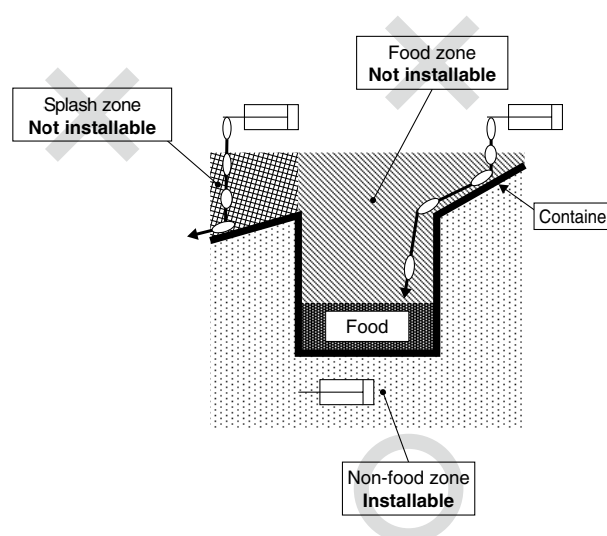
Splash zone.....An environment where food which will not be sold as merchandize, directly touches the cylinder's components.

#### Installable zone

Non-food zone.....An environment where there is no contact with food.

### Specifications

Ambient temperature range	-10°C to 70°C
Seal material	Nitrile rubber
Grease	Grease for food
Auto switch	Mountable
Dimensions	Same as standard type
Specifications other than above	Same as standard type



Note 1) Avoid using this product in the food zone.  
(Refer to the figure above.)

Note 2) When the product is used in an area of liquid splash, or a water resistant function is required for the product, please consult with SMC.

Note 3) Operate without lubrication from a pneumatic system lubricator.

Note 4) Use the following grease pack for the maintenance work.

**GR-H-010** (Grease: 10 g)

Note 5) Please contact SMC for details on the maintenance intervals for this cylinder, which differ from those of the standard cylinder.

## 12 PTFE Grease

Symbol  
**-X446**

### Applicable Series

Series	Description	Model	Action
CJ2-Z	Standard type	CJ2	Double acting, Single rod
			Single acting (Spring return/extend)
		CJ2W	Double acting, Double rod
	Non-rotating rod type	CJ2K	Double acting, Single rod
			Single acting (Spring return/extend)
	Built-in speed controller type	CJ2Z	Double acting, Single rod
		CJ2ZW	Double acting, Double rod
	Direct mount type	CJ2R	Double acting, Single rod
			Single acting (Spring return/extend)
	Direct mount, Non-rotating rod type	CJ2RK	Double acting, Single rod
			Single acting (Spring return/extend)

### How to Order

Standard model no. **- X446**  
PTFE grease

### Specifications: Same as standard type

### Dimensions: Same as standard type

\* When grease is necessary for maintenance, grease pack is available, please order it separately.

**GR-F-005** (Grease: 5 g)



## Specific Product Precautions

Be sure to read before handling. Refer to back cover for Safety Instructions. For Actuator and Auto Switch Precautions, refer to “Handling Precaution for SMC Products” and the Operation Manual on SMC website, <http://www.smcworld.com>

### Mounting

#### Warning

1. Use within the specified cylinder speed and kinetic energy ranges.

Otherwise, cylinder and seal damage may occur.

2. Do not apply excessive lateral load to the piston rod.

Easy checking method

Minimum operating pressure after the cylinder is mounted to the equipment (MPa) = Minimum operating pressure of cylinder (MPa) + {Load weight (kg) x Friction coefficient of guide/Sectional area of cylinder (mm<sup>2</sup>)}

If smooth operation is confirmed within the above value, the load on the cylinder is the resistance of the thrust only and it can be judged as having no lateral load.

#### Caution

1. During installation, secure the rod cover and tighten by applying an appropriate tightening force to the retaining nut or to the rod cover body.

If the head cover is secured or the head cover is tightened, the cover could rotate, leading to the deviation.

2. Tighten the retaining screws to an appropriate tightening torque within the range given below.

ø10: 5.9 to 6.4 N·m, ø16: 10.8 to 11.8 N·m

3. To remove and install the retaining ring for the knuckle pin or the clevis pin, use an appropriate pair of pliers (tool for installing a type C retaining ring). In particular, use a pair of ultra-mini pliers for removing and installing the retaining ring on the ø10 cylinder.

4. In the case of auto switch rail mounting type, do not remove the rail that is mounted. Because retaining screws extend into the cylinder, this could lead to an air leak.

5. Please contact SMC when the stroke exceeds 100 mm for the axial foot mounting style.

#### <Precautions on the single acting cylinder>

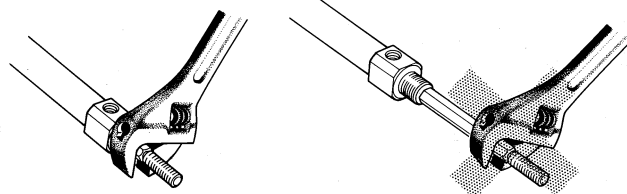
- 1) Do not operate it in such a way that a load would be applied during the retraction of the piston rod of the spring return style, or during the extension of the piston rod of the spring extend style. The spring that is built into the cylinder provides only enough force to retract the piston rod. Thus, if a load is applied, the piston rod will not be able to retract to the end of the stroke.
- 2) A breather hole is provided in the cover surface. Make sure not to block this hole during installation, as this could lead to a malfunction.

#### <Precautions on the non-rotating cylinder>

- 1) Tighten the retaining screws to an appropriate tightening torque within the range given below.  
ø10: 10.8 to 11.8 N·m, ø16: 20 to 21 N·m
- 2) Do not operate it in such a way that rotational torque would be applied to the piston rod. If rotational torque is applied, the non-rotating guide will become deformed, thus affecting the non-rotating accuracy.

Allowable rotational torque (N·m)	ø10	ø16
	0.02	0.04




- 3) To screw a bracket onto the threaded portion at the tip of the piston rod, make sure to retract the piston rod entirely, and place a wrench over the flat portion of the rod that protrudes. To tighten, take precautions to prevent the tightening torque from being applied to the non-rotating guide.





## Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)\*1), and other safety regulations.

-  **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
-  **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
-  **Danger :** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

- \*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.  
ISO 4413: Hydraulic fluid power – General rules relating to systems.  
IEC 60204-1: Safety of machinery – Electrical equipment of machines.  
(Part 1: General requirements)  
ISO 10218-1: Manipulating industrial robots – Safety.  
etc.

### Warning

- 1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**  
Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
- 2. Only personnel with appropriate training should operate machinery and equipment.**  
The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.
- 3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**
  1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
  2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
  3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.
- 4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
  1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
  2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
  3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
  4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

### Caution

- 1. The product is provided for use in manufacturing industries.**  
The product herein described is basically provided for peaceful use in manufacturing industries.  
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.  
If anything is unclear, contact your nearest sales branch.

## Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

### Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.\*2)  
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.  
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.  
  
\*2) **Vacuum pads are excluded from this 1 year warranty.**  
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.  
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

### Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

#### Revision history

- Edition B** \* Standard type (Double rod, Single acting), Non-rotating rod type, Direct mount type, Direct mount, Non-rotating rod type, Made to Order: Heat resistant cylinder (-XB6), Dual stroke cylinder (-XC10, 11) etc. are added.  
\* Number of pages from 20 to 104.

RW

## Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

# Smooth Cylinder

## Double Acting, Single Rod

# Series CJ2Y

ø10, ø16

### How to Order

**Bore size**

10	10 mm
16	16 mm

**Cylinder standard stroke (mm)**

ø10	15, 30, 45, 60, 75, 100, 125, 150
ø16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200

\* Intermediate stroke other than above is manufactured upon receipt of order.

**Mounting**

<b>B</b>	Basic	<b>L</b>	Single foot
<b>E</b>	Double-side bossed	<b>M</b>	Double foot
<b>D</b>	Double clevis	<b>F</b>	Rod flange
		<b>G</b>	Head flange

\* Foot bracket and flange bracket are shipped together with the product, but not assembled.

**Made to Order**  
Refer to page 3 for details.

**With auto switch**

**With auto switch (Built-in magnet)**

**Head cover port location**

<b>Nil</b>	Perpendicular to axis
<b>R</b>	Axial

**Auto switch**

<b>Nil</b>	Without auto switch
------------	---------------------

\* For applicable auto switches, refer to the table below.

**Number of auto switches**

<b>Nil</b>	2 pcs.
<b>S</b>	1 pc.
<b>n</b>	"n" pcs.

**Auto switch mounting type**

<b>A</b>	Rail mounting
<b>B</b>	Band mounting

\* For rail mounting, screws and nuts for 2 auto switches come with the rail.  
\* Refer to page 13 for auto switch mounting brackets.

**Ordering Example 1:** CJ2Y L 16 - 60 Z -

**Ordering Example 2:** CDJ2Y L 16 - 60 Z - M9BW - B -

### Applicable Auto Switches/Refer to the WEB catalog or Best Pneumatics No. 3 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load				
					DC	AC	Band mounting		Rail mounting		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)						
							Perpendicular	In-line	Perpendicular	In-line											
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC		
		3-wire (PNP)		M9PV				M9P	M9PV	M9P	●	●	●	○	—	○					
		Connector		2-wire				12 V	M9BV	M9B	M9BV	M9B	●	●	●	○	—			○	
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)				5 V, 12 V	M9NWV	M9NW	M9NWV	M9NW	●	●	●	○	—	○		○	IC circuit
				3-wire (PNP)				M9PWV	M9PW	M9PWV	M9PW	●	●	●	○	—	○				
				2-wire				12 V	M9BWV	M9BW	M9BWV	M9BW	●	●	●	○	—	○			
	Water resistant (2-color indication)	Grommet		3-wire (NPN)				5 V, 12 V	M9NAV**	M9NA**	M9NAV**	M9NA**	○	○	●	○	—	○		○	IC circuit
				3-wire (PNP)				M9PAV**	M9PA**	M9PAV**	M9PA**	○	○	●	○	—	○				
				2-wire				12 V	M9BAV**	M9BA**	M9BAV**	M9BA**	○	○	●	○	—	○			
	With diagnostic output (2-color indication)			4-wire (NPN)	5 V, 12 V	—	H7NF	—	F79F	●	—	●	○	—	○	○	IC circuit				
	Reed auto switch	—		Grommet	Yes	3-wire (NPN equivalent)	24 V	5 V	—	A96V	A96	A96V	A96	●	—	●	—	—		—	IC circuit
—			200 V					—	—	A72	A72H	●	—	●	—	—	—				
2-wire			12 V			100 V		A93V	A93	A93V	A93	●	—	●	●	—	—	—			
						100 V or less		A90V	A90	A90V	A90	●	—	●	—	—	—	—	IC circuit		
				Connector	No	—		—	C73C	A73C	—	●	—	●	●	●	—	—			
						24 V or less		—	C80C	A80C	—	●	—	●	●	●	—	—	IC circuit		
Diagnostic indication (2-color indication)			Grommet	Yes	—	—		—	—	A79W	—	●	—	●	—	—	—	—			

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Please consult with SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NW  
1 m ..... M (Example) M9NWM  
3 m ..... L (Example) M9NWL  
5 m ..... Z (Example) M9NWZ  
None ..... N (Example) H7CN

\* Since there are other applicable auto switches than listed above, refer to page 14 for details.

\* For details about auto switches with pre-wired connector, refer to the WEB catalog or Best Pneumatics No. 3.

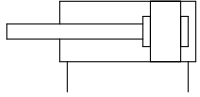
\* Solid state auto switches marked with "○" are produced upon receipt of order.

\* The D-A9□□/M9□□□/A7□□/A80□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only the auto switch mounting brackets are assembled before shipment.)



## Symbol

Rubber bumper



**Made to Order**

(For details, refer to pages 174 to 191.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC3	Special port location
-XC9	Adjustable stroke cylinder/Adjustable retraction type

## Mounting Brackets/Part No.

Mounting bracket	Bore size (mm)	
	10	16
Foot	CJ-L010C	CJ-L016C
Flange	CJ-F010C	CJ-F016C
T-bracket*	CJ-T010C	CJ-T016C

\* A T-bracket is used with double clevis (D).

## ⚠ Precautions

**Be sure to read before handling. Refer to back cover for Safety Instructions. For Actuator and Auto Switch Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, <http://www.smcworld.com>**

### Mounting

### ⚠ Caution

- During installation, secure the rod cover and tighten by applying an appropriate tightening force to the retaining nut or to the rod cover body. If the head cover is secured or the head cover is tightened, the cover could rotate, leading to the deviation.
- Tighten the retaining screws to an appropriate tightening torque within the range given below. Apply a Loctite® (no. 242 Blue) for mounting thread.

Bore size (mm)	Proper tightening torque for mounting thread (N·m) (Tightening torque for mounting nut)
10	3.0 to 3.2
16	5.4 to 5.9

- To remove and install the retaining ring for the knuckle pin or the clevis pin, use an appropriate pair of pliers (tool for installing a type C retaining ring). Especially with ø10, use ultra thin pliers.
- In the case of auto switch rail mounting type, do not remove the rail that is mounted. Because retaining screws extend into the cylinder, this could lead to an air leak.

## Specifications

Bore size (mm)		10	16
Action		Double acting, Single rod	
Fluid		Air	
Proof pressure		1.05 MPa	
Maximum operating pressure		0.7 MPa	
Ambient and fluid temperature		Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing)	
Cushion		Rubber bumper (Standard equipment)	
Lubrication		Not required (Non-lube)	
Stroke length tolerance		+1.0 0	
Piston speed		5 to 500 mm/s	
Allowable kinetic energy	ø10	0.035 J	
	ø16	0.090 J	

## Minimum Operating Pressure

Unit: MPa

Bore size (mm)	10	16
Minimum operating pressure	0.03	

## Standard Strokes

Bore size (mm)	Standard stroke (mm)
10	15, 30, 45, 60, 75, 100, 125, 150
16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200

\* Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

## Mounting and Accessories/For details, refer to page 8.

●---Mounted on the product. ○---Please order these separately.

Mounting		Basic	Foot	Flange	Double* clevis
Standard	Mounting nut	●	●	●	—
	Rod end nut	●	●	●	●
	Clevis pin	—	—	—	●
Option	Single knuckle joint	○	○	○	○
	Double knuckle joint*	○	○	○	○
	Rod end cap (Flat/Round type)	○	○	○	○
	T-bracket	—	—	—	○

\* A pin and retaining rings are included with double clevis and/or double knuckle joint.

## Weights

Bore size (mm)		10	16
Basic weight (When the stroke is zero)	Basic	22	46
	Axial piping	22	46
	Double clevis (including clevis pin)	24	54
	Head-side bossed	23	48
Additional weight per 15 mm of stroke		4	7
Mounting bracket weight	Single foot	8	25
	Double foot	16	50
	Rod flange	5	13
	Head flange	5	13
Accessories	Single knuckle joint	17	23
	Double knuckle joint (including knuckle pin)	25	21
	Rod end cap (Flat type)	1	2
	Rod end cap (Round type)	1	2
	T-bracket	32	50

\* Mounting nut and rod end nut are included in the basic weight.  
Note) Mounting nut is not included in the basic weight for the double clevis.

Calculation: Example) **CJ2YL10-45Z**

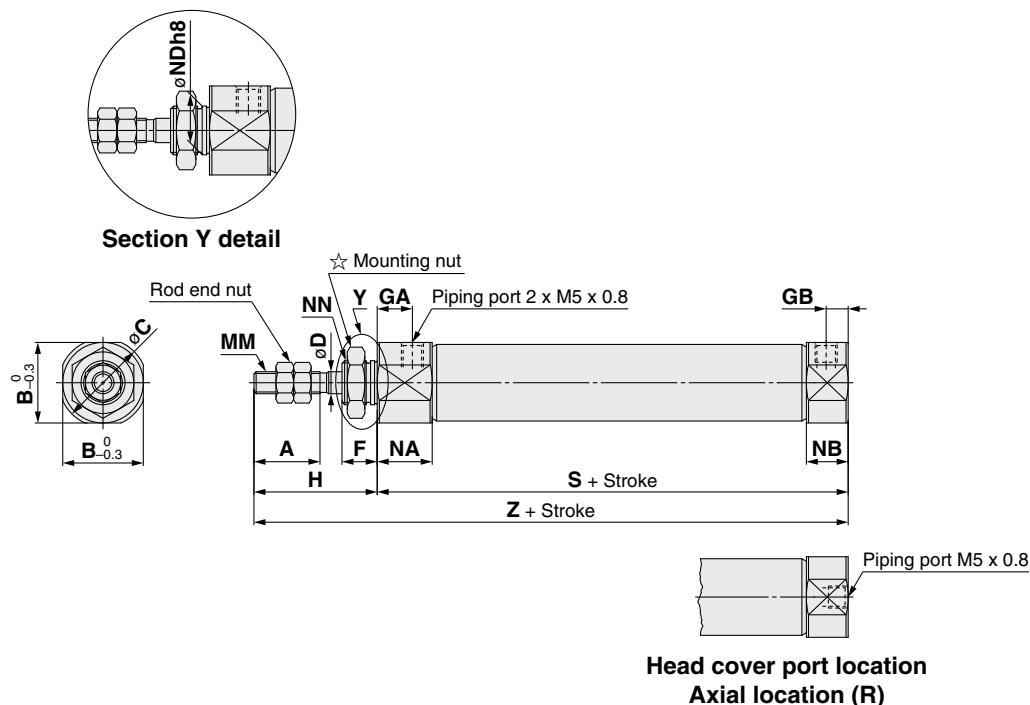
- Basic weight..... 22 (ø10)
- Additional weight..... 4/15 stroke
- Cylinder stroke..... 45 stroke
- Mounting bracket weight..... 8 (Axial foot)  
22 + 4/15 × 45 + 8 = **42 g**

# Series CJ2Y

## Dimensions

### Basic (B)

CJ2YB Bore size – Stroke Head cover port location Z

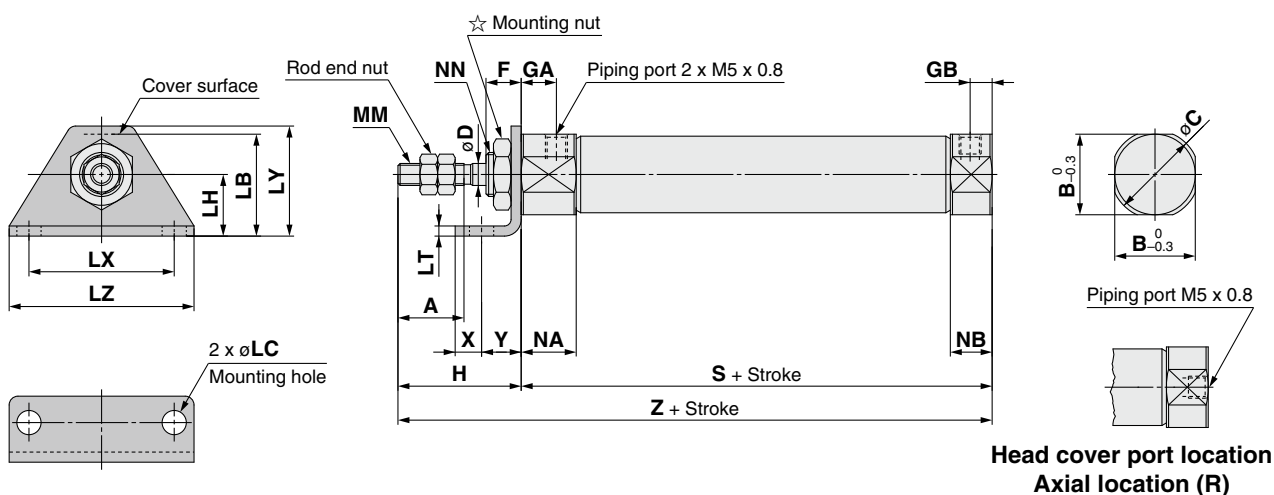


☆ Refer to page 8 for details of the mounting nut.

Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	NDh8	NN	S	Z
10	15	12	14	4	8	8	5	28	M4 x 0.7	12.5	9.5	8 <sup>0</sup> <sub>-0.022</sub>	M8 x 1.0	46	74
16	15	18.3	20	5	8	8	5	28	M5 x 0.8	12.5	9.5	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	47	75

### Single foot (L)

CJ2YL Bore size – Stroke Head cover port location Z



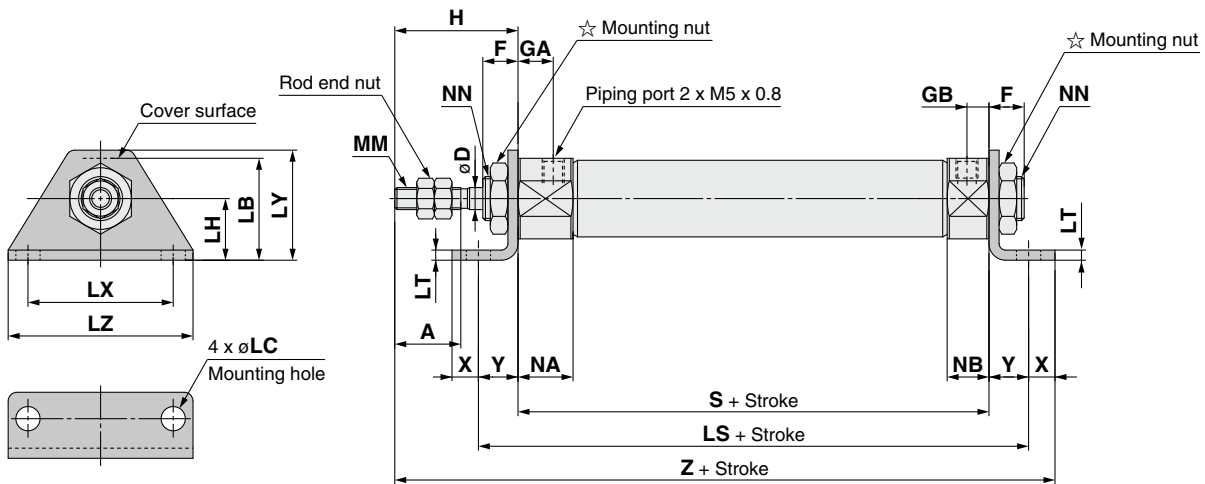
☆ Refer to page 8 for details of the mounting nut.

Bore size	A	B	C	D	F	GA	GB	H	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN	S	X	Y	Z
10	15	12	14	4	8	8	5	28	15	4.5	9	1.6	24	16.5	32	M4 x 0.7	12.5	9.5	M8 x 1.0	46	5	7	74
16	15	18.3	20	5	8	8	5	28	23	5.5	14	2.3	33	25	42	M5 x 0.8	12.5	9.5	M10 x 1.0	47	6	9	75

## Dimensions

### Double foot (M)

CJ2YM Bore size – Stroke Z

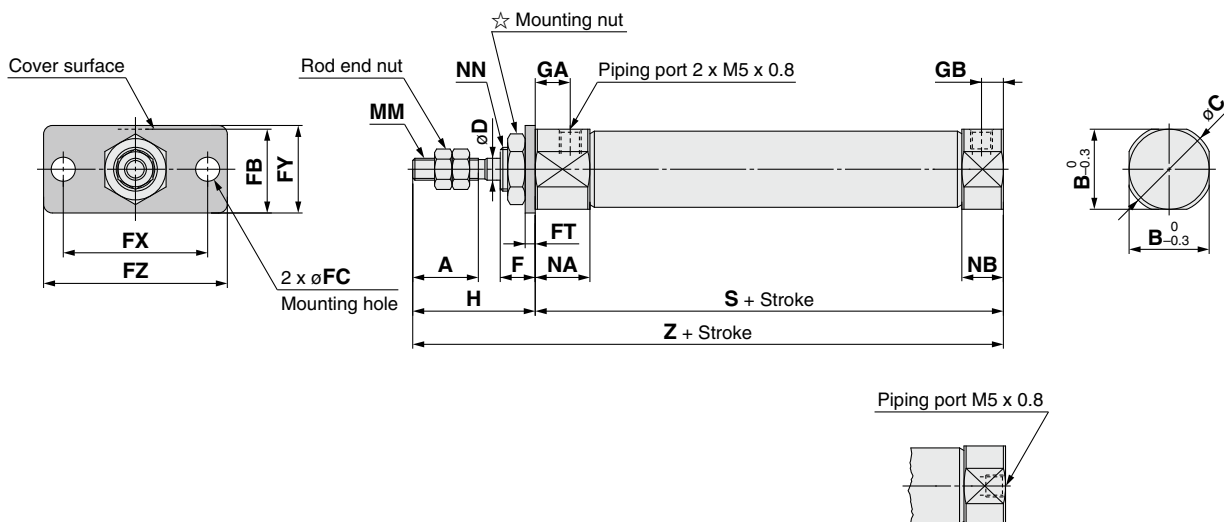


☆ Refer to page 8 for details of the mounting nut.

Bore size	A	D	F	GA	GB	H	LB	LC	LH	LS	LT	LX	LY	LZ	MM	NA	NB	NN	S	X	Y	Z
10	15	4	8	8	5	28	15	4.5	9	60	1.6	24	16.5	32	M4 x 0.7	12.5	9.5	M8 x 1.0	46	5	7	86
16	15	5	8	8	5	28	23	5.5	14	65	2.3	33	25	42	M5 x 0.8	12.5	9.5	M10 x 1.0	47	6	9	90

### Rod flange (F)

CJ2YF Bore size – Stroke Head cover port location Z



### Head cover port location Axial location (R)

\* The overall cylinder length does not change.

☆ Refer to page 8 for details of the mounting nut.

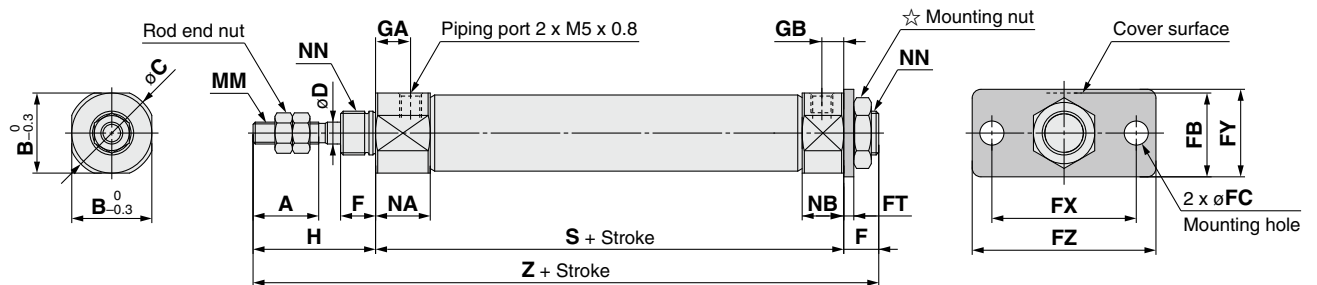
Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	GB	H	MM	NA	NB	NN	S	Z
10	15	12	14	4	8	13	4.5	1.6	24	14	32	8	5	28	M4 x 0.7	12.5	9.5	M8 x 1.0	46	74
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	8	5	28	M5 x 0.8	12.5	9.5	M10 x 1.0	47	75

# Series CJ2Y

## Dimensions

### Head flange (G)

CJ2YG Bore size – Stroke Z

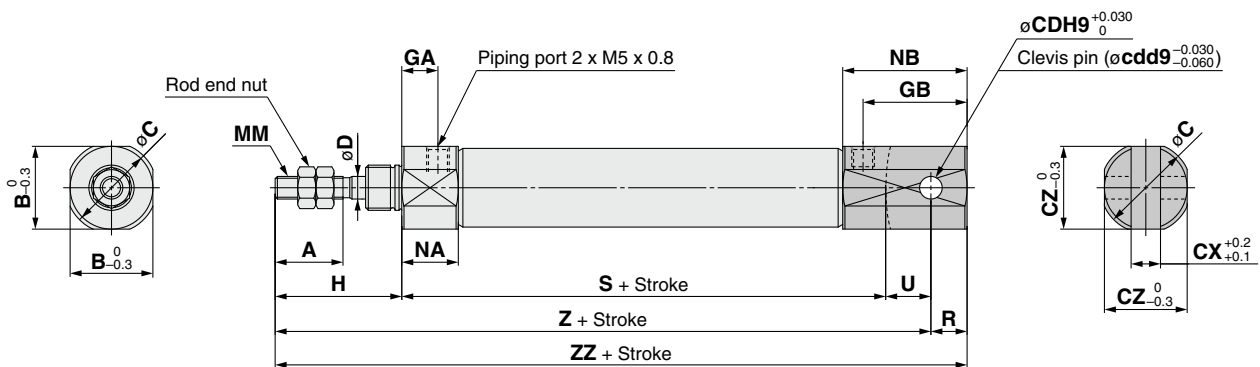


☆ Refer to page 8 for details of the mounting nut.

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	GB	H	MM	NA	NB	NN	S	Z
10	15	12	14	4	8	13	4.5	1.6	24	14	32	8	5	28	M4 x 0.7	12.5	9.5	M8 x 1.0	46	82
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	8	5	28	M5 x 0.8	12.5	9.5	M10 x 1.0	47	83

### Double clevis (D)

CJ2YD Bore size – Stroke Z



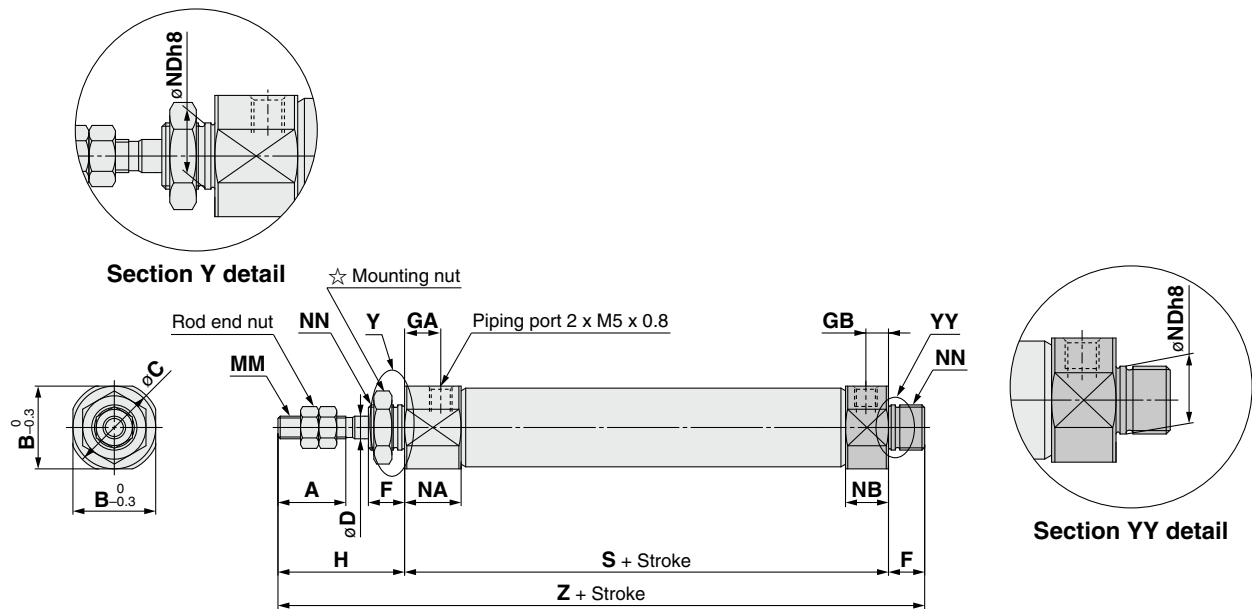
\* A clevis pin and retaining rings are included.

Bore size	A	B	C	CD (cd)	CX	CZ	D	GA	GB	H	MM	NA	NB	R	S	U	Z	ZZ
10	15	12	14	3.3	3.2	12	4	8	18	28	M4 x 0.7	12.5	22.5	5	46	8	82	87
16	15	18.3	20	5	6.5	18.3	5	8	23	28	M5 x 0.8	12.5	27.5	8	47	10	85	93

Dimensions

Double-side bossed (E)

CJ2YE Bore size – Stroke Z



☆ Refer to page 8 for details of the mounting nut.

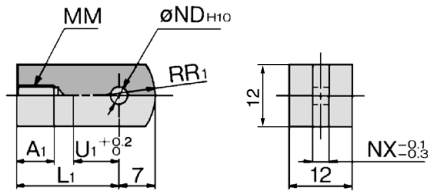
Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	NDh8	NN	S	Z
10	15	12	14	4	8	8	5	28	M4 x 0.7	12.5	9.5	8 <sup>0</sup> <sub>-0.022</sub>	M8 x 1.0	46	82
16	15	18.3	20	5	8	8	5	28	M5 x 0.8	12.5	9.5	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	47	83



# Series CJ2Y

# Dimensions of Accessories

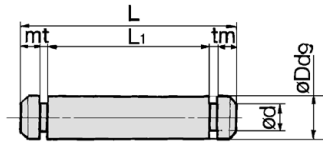
## Single Knuckle Joint



Material: Rolled steel

Part no.	Applicable bore size	A <sub>1</sub>	L <sub>1</sub>	MM	ND <sub>H10</sub>	NX	R <sub>1</sub>	U <sub>1</sub>
I-J010C	10	8	21	M4 x 0.7	3.3 <sup>+0.048</sup> <sub>0</sub>	3.1	8	9
I-J016C	16	8	25	M5 x 0.8	5 <sup>+0.048</sup> <sub>0</sub>	6.4	12	14

## Clevis Pin

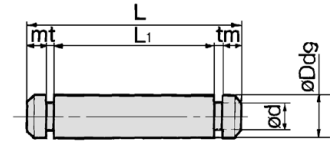


Material: Stainless steel

Part no.	Applicable bore size	Dd9	d	L	L <sub>1</sub>	m	t	Included retaining ring
CD-J010	10	3.3 <sup>-0.030</sup> <sub>-0.060</sub>	3	15.2	12.2	1.2	0.3	Type C 3.2
CD-Z015	16	5 <sup>-0.030</sup> <sub>-0.060</sub>	4.8	22.7	18.3	1.5	0.7	Type C 5

\* Retaining rings are included with a clevis pin.

## Knuckle Pin



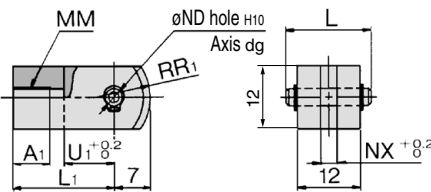
Material: Stainless steel

Part no.	Applicable bore size	Dd9	d	L	L <sub>1</sub>	m	t	Included retaining ring
CD-J010	10	3.3 <sup>-0.030</sup> <sub>-0.060</sub>	3	15.2	12.2	1.2	0.3	Type C 3.2
IY-J015	16	5 <sup>-0.030</sup> <sub>-0.060</sub>	4.8	16.6	12.2	1.5	0.7	Type C 5

\* For size ø10, a clevis pin is diverted.

\* Retaining rings are included with a knuckle pin.

## Double Knuckle Joint



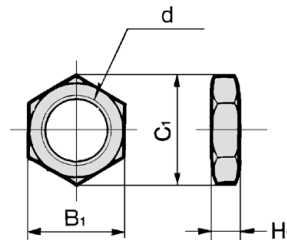
Material: Rolled steel

Part no.	Applicable bore size	A <sub>1</sub>	L	L <sub>1</sub>	MM
Y-J010C	10	8	15.2	21	M4 x 0.7
Y-J016C	16	11	16.6	21	M5 x 0.8

Part no.	ND <sub>d9</sub>	ND <sub>H10</sub>	NX	R <sub>1</sub>	U <sub>1</sub>
Y-J010C	3.3 <sup>-0.030</sup> <sub>-0.060</sub>	3.3 <sup>+0.048</sup> <sub>0</sub>	3.2	8	10
Y-J016C	5 <sup>-0.030</sup> <sub>-0.060</sub>	5 <sup>+0.048</sup> <sub>0</sub>	6.5	12	10

\* A knuckle pin and retaining rings are included.

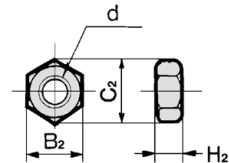
## Mounting Nut



Material: Carbon steel

Part no.	Applicable bore size	B <sub>1</sub>	C <sub>1</sub>	d	H <sub>1</sub>
SNJ-010C	10	11	12.7	M8 x 1.0	4
SNJ-016C	16	14	16.2	M10 x 1.0	4

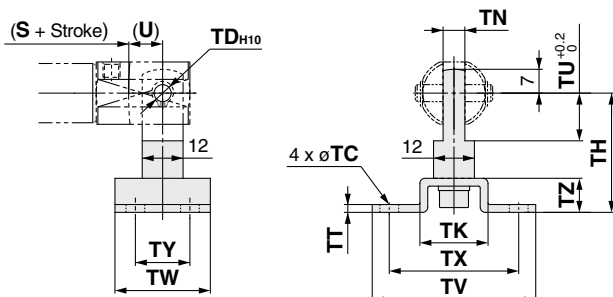
## Rod End Nut



Material: Carbon steel

Part no.	Applicable bore size	B <sub>2</sub>	C <sub>2</sub>	d	H <sub>2</sub>
NTJ-010C	10	7	8.1	M4 x 0.7	3.2
NTJ-015C	16	8	9.2	M5 x 0.8	4

## T-bracket



Part no.	Applicable bore size	TC	TD <sub>H10</sub>	TH	TK	TN	TT	TU	TV	TW	TX	TY	TZ
CJ-T010C	10	4.5	3.3 <sup>+0.048</sup> <sub>0</sub>	29	18	3.1	2	9	40	22	32	12	8
CJ-T016C	16	5.5	5 <sup>+0.048</sup> <sub>0</sub>	35	20	6.4	2.3	14	48	28	38	16	10

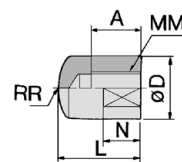
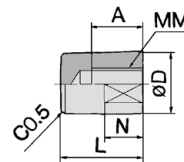
\* A T-bracket includes a T-bracket base, single knuckle joint, hexagon socket head bolt and spring washer.

\* For dimensions of (U) and (S + Stroke), refer to the double clevis drawing on page 6.

## Rod End Cap

Flat type/CJ-CF□□□

Round type/CJ-CR□□□



Material: Polyacetal

Part no.		Applicable bore size	A	D	L	MM	N	R	W
Flat type	Round type								
CJ-CF010	CJ-CR010	10	8	10	13	M4 x 0.7	6	10	8
CJ-CF016	CJ-CR016	16	10	12	15	M5 x 0.8	7	12	10



# Series CJ2Y

## Auto Switch Mounting

### Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

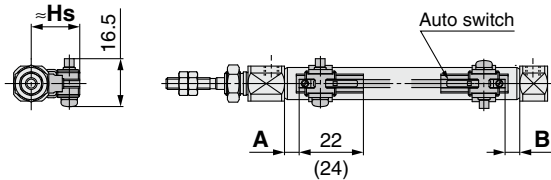
#### Solid state auto switch

##### <Band mounting>

D-M9□

D-M9□W

D-M9□A



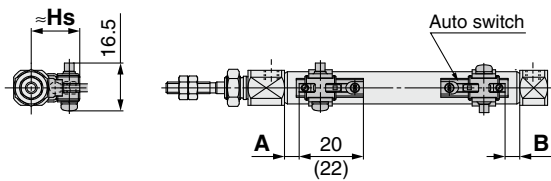
( ): Dimension of the D-M9□A

A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-M9□V

D-M9□MV

D-M9□AV



( ): Dimension of the D-M9□AV

A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

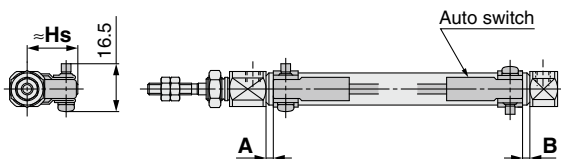
D-H7□

D-H7□W

D-H7BA

D-H7NF

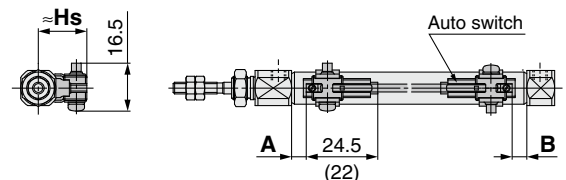
D-H7C



#### Reed auto switch

##### <Band mounting>

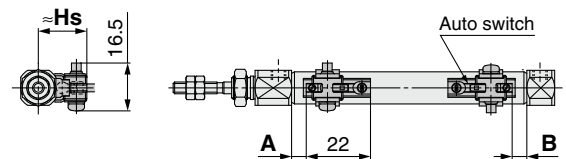
D-A9□



( ): Dimension of the D-A9□

A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

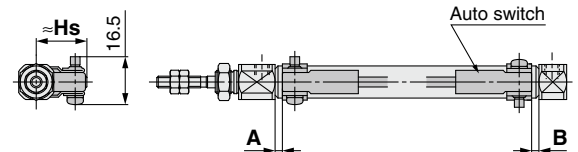
D-A9□V



A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-C7□/C80

D-C73C□/C80C

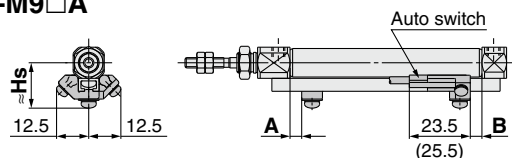


CJ2Y-Z	Smooth Cylinders
CM2Y-Z	
CG1Y-Z	
MBY-Z	
CA2Y-Z	
CS2Y	
CQSY	
CQ2Y-Z	
CJ2X-Z	Low Speed Cylinders
CM2X-Z	
CQSX	
CQ2X	
CUX	
Auto Switch	
Made to Order	

## Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

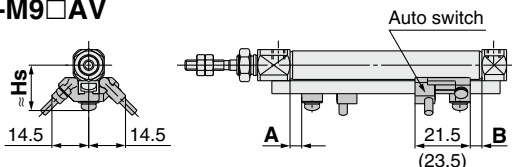
### <Rail mounting>

D-M9□  
D-M9□W  
D-M9□A



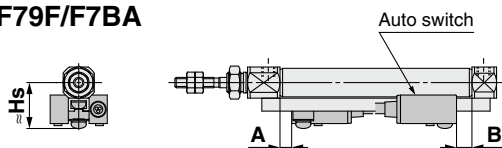
( ): Dimension of the D-M9□A

D-M9□V  
D-M9□WV  
D-M9□AV

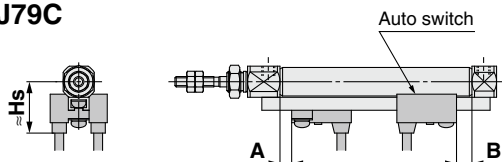


( ): Dimension of the D-M9□AV

D-F7□/J79  
D-F7□W/J79W  
D-F79F/F7BA

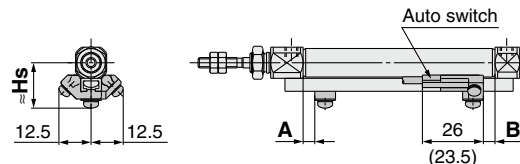


D-F7□V/F7□WV  
D-F7BAV  
D-J79C



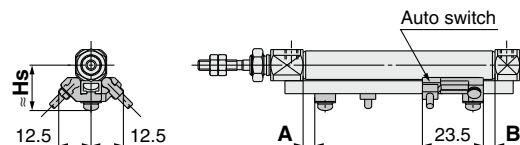
### <Rail mounting>

D-A9□

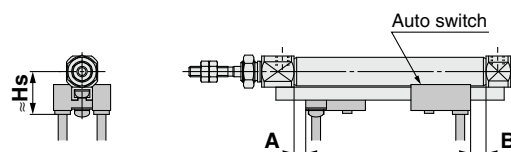


( ): Dimension of the D-A96

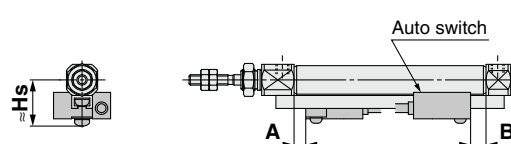
D-A9□V



D-A7□/A80  
D-A73C/A80C  
D-A79W



D-A7□H/A80H



## Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

### Auto Switch Proper Mounting Position

(mm)

Auto switch model	Band mounting							
	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-C7□ D-C80 D-C73C D-C80C		D-H7□ D-H7C D-H7NF D-H7□W D-H7BA	
Bore size	A	B	A	B	A	B	A	B
10	(5) 6	(5) 6	(1) 2	(1) 2	2.5	2.5	1.5	1.5
16	(5.5) 6.5	(5.5) 6.5	(1.5) 2.5	(1.5) 2.5	3	3	2	2

\* The values in ( ) are measured from the end of the auto switch mounting bracket.

Auto switch model	Rail mounting											
	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-A7□ D-A80		D-A7□H/A80H D-A73C/A80C D-F7□/J79 D-F7□W/J79W D-F7□V/F7□WV D-F79F D-J79C D-F7BA D-F7BAV		D-F7NT		D-A79W	
Bore size	A	B	A	B	A	B	A	B	A	B	A	B
10	4.5	4.5	0.5	0.5	3	3	3.5	3.5	8.5	8.5	0.5	0.5
16	5	5	1	1	3.5	3.5	4	4	9	9	1	1

\* Adjust the auto switch after confirming the operating condition in the actual setting.

### Auto Switch Mounting Height

(mm)

Auto switch model	Band mounting					
	D-M9□ D-M9□W D-M9□A D-A9□	D-M9□V D-M9□WV D-M9□AV D-A9□V	D-C7□/C80 D-H7□/H7□W D-H7NF D-H7BA	D-C73C D-C80C	D-H7C	D-A7□ D-A80
Bore size	Hs	Hs	Hs	Hs	Hs	Hs
10	17	18	17	19.5	20	16.5
16	20.5	21	20.5	23	23.5	19.5

Auto switch model	Rail mounting					
	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□ D-A9□V	D-A7□H/A80H D-F7□/J79 D-F7□W/J79W D-F7BA/F79F D-F7NT	D-A73C D-A80C	D-F7□V D-F7□WV D-F7BAV	D-J79C	D-A79W
Bore size	Hs	Hs	Hs	Hs	Hs	Hs
10	17.5	17.5	23.5	20	23	19
16	21	20.5	26.5	23	26	22

## Minimum Stroke for Auto Switch Mounting

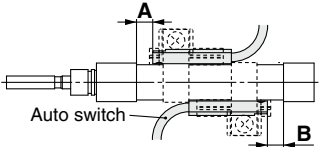
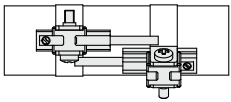
							(mm)
Auto switch mounting	Auto switch model	Number of auto switches					
		With 1 pc.	With 2 pcs.		With n pcs. (n: Number of auto switches)		
			Different surfaces	Same surface	Different surfaces	Same surface	
Band mounting	D-M9□ D-M9□W D-M9□A D-A9□	10	15 Note 1)	45 Note 1)	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	45 + 15 (n - 2) (n = 2, 3, 4, 5...)	
	D-M9□V	5	15 Note 1)	35	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	35 + 25 (n - 2) (n = 2, 3, 4, 5...)	
	D-M9□WV D-M9□AV	10	15 Note 1)	35	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	35 + 25 (n - 2) (n = 2, 3, 4, 5...)	
	D-A9□V	5	10	35	$10 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	35 + 25 (n - 2) (n = 2, 3, 4, 5...)	
	D-C7□ D-C80	10	15	50	$15 + 40 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	50 + 20 (n - 2) (n = 2, 3, 4, 5...)	
	D-H7□/H7□W D-H7BA D-H7NF	10	15	60	$15 + 45 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	60 + 22.5 (n - 2) (n = 2, 3, 4, 5...)	
	D-C73C D-C80C D-H7C	10	15	65	$15 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	50 + 27.5 (n - 2) (n = 2, 3, 4, 5...)	
Rail mounting	D-M9□V	5	—	5	—	10 + 10 (n - 2) (n = 4, 6...) Note 4)	
	D-A9□V	5	—	10	—	10 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-M9□ D-A9□	10	—	10	—	15 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-M9□WV D-M9□AV	10	—	15	—	15 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-M9□W	15	—	15	—	20 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-M9□A	15	—	20	—	20 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-A7□/A80 D-A7□H/A80H D-A73C/A80C	5	—	10	—	15 + 10 (n - 2) (n = 4, 6...) Note 4)	
	D-A7□H D-A80H	5	—	10	—	15 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-A79W	10	—	15	—	10 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-F7□ D-J79	5	—	5	—	15 + 15 (n - 2) (n = 4, 6...) Note 4)	
	D-F7□V D-J79C	5	—	5	—	10 + 10 (n - 2) (n = 4, 6...) Note 4)	
	D-F7□W/J79W D-F7BA/F79F/F7NT	10	—	15	—	15 + 20 (n - 2) (n = 4, 6...) Note 4)	
	D-F7□WV D-F7BAV	10	—	15	—	10 + 15 (n - 2) (n = 4, 6...) Note 4)	

Note 3) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.

Note 4) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.

However, the minimum even number is 4. So, 4 is used for the calculation when "n" is 1 to 3.

Note 1) Auto switch mounting

Auto switch model	With 2 auto switches	
	Different surfaces Note 1)	Same surface Note 1)
	 <p>The proper auto switch mounting position is 5.5 mm inward from the switch holder edge. The above A and B indicate values for band mounting in the table of page 11.</p>	 <p>The auto switch is mounted by slightly displacing it in a direction (cylinder tube circumferential exterior) so that the auto switch and lead wire do not interfere with each other.</p>
D-M9□/M/9□W/M/9□A	Less than 20 stroke Note 2)	Less than 55 stroke Note 2)
D-A90/A93	—	Less than 50 stroke Note 2)

Note 2) Minimum stroke for auto switch mounting in styles other than those mentioned in Note 1.

## Operating Range

Auto switch model		Bore size (mm)	
		10	16
Band mounting	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	2.5	3
	D-A9□	6	7
	D-C7□/C80/C73C/C80C	7	7
	D-H7□/H7□W D-H7BA/H7NF	4	4
	D-H7C	8	9
Rail mounting	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	3	3.5
	D-A9□/A9□V	6	6.5
	D-A7□/A80/A7H/A80H D-A73C/A80C	8	9
	D-A79W	11	13
	D-F7□/J79/F7□W/J79W D-F7□V/F7□WV/F79F D-J79C/F7BA/F7BAV D-F7NT	5	5

\* Values which include hysteresis are for guideline purposes only, they are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

## Auto Switch Mounting Brackets/Part No.

Auto switch mounting	Auto switch model	Bore size (mm)	
		10	16
Auto switch mounting	D-M9□ D-M9□V D-M9□W D-M9□WV D-A9□ D-A9□V	BJ6-010 (A set of a, b, c, d)	BJ6-016 (A set of a, b, c, d)
	D-M9□A <small>Note 2)</small> D-M9□AV <small>Note 2)</small>	BJ6-010S (A set of a, b, d, e)	BJ6-016S (A set of a, b, d, e)
Band mounting			
Band mounting	D-C7□/C80 D-C73C/C80C D-H7□/H7□W D-H7BA/H7NF	BJ2-010 (A set of band and screw)	BJ2-016 (A set of band and screw)
Note 4) Rail mounting	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A <small>Note 5)</small> D-M9□AV <small>Note 5)</small> D-A9□ D-A9□V	BQ2-012(S) (A set of a and b)	BQ2-012(S) (A set of a and b)

Note 1) Since the switch bracket (made from nylon) are affected in an environment where alcohol, chloroform, methylamines, hydrochloric acid or sulfuric acid is splashed over, so it cannot be used. Please contact SMC regarding other chemicals.

Note 2) Avoid the indicator LED for mounting the switch bracket. As the indicator LED is projected from the switch unit, indicator LED may be damaged if the switch bracket is fixed on the indicator LED.

Note 3) When the cylinder is shipped, the auto switch mounting bracket and the auto switch will be included.

Note 4) For the D-M9□A(V), order the BQ2-012S, which uses stainless steel mounting screws.

### Band Mounting Brackets Set Part No.

Set part no.	Contents
BJ2-□□□	<ul style="list-style-type: none"> <li>• Auto switch mounting band (a)</li> <li>• Auto switch mounting screw (b)</li> </ul>
BJ4-1	<ul style="list-style-type: none"> <li>• Switch bracket (White/PBT) (e)</li> <li>• Switch holder (d)</li> </ul>
BJ5-1	<ul style="list-style-type: none"> <li>• Switch bracket (Transparent/Nylon) (c)</li> <li>• Switch holder (d)</li> </ul>

### [Stainless Steel Mounting Screw]

The following stainless steel mounting screw kit is available. Use it in accordance with the operating environment. (Since the auto switch mounting bracket is not included, order it separately.)

BBA4: For D-C7/C8/H7 types

Note 5) Refer to the **WEB catalog** or Best Pneumatics No. 3 for details on the BBA4.

When the D-H7BA type auto switch is shipped independently, the BBA4 is attached.

**Other than the applicable auto switches listed in “How to Order”, the following auto switches are mountable.**

Refer to **the WEB catalog** or Best Pneumatics No.3 for the detailed specifications.

Type	Mounting	Model	Electrical entry	Features
Solid state	Band mounting	D-H7A1/H7A2/H7B	Grommet (In-line)	—
		D-H7NW/H7PW/H7BW		Diagnostic indication (2-color indication)
	Rail mounting	D-F79/F7P/J79		—
		D-F79W/F7PW/J79W	Grommet (Perpendicular)	Diagnostic indication (2-color indication)
		D-F7NV/F7PV/F7BV		—
		D-F7NWV/F7BWV		Diagnostic indication (2-color indication)
Reed	Band mounting	D-C73/C76	Grommet (In-line)	—
		D-C80		Without indicator light
	Rail mounting	D-A73H/A76H		—
		D-A80H	Grommet (Perpendicular)	Without indicator light
		D-A73		—
		D-A80		Without indicator light

\* With pre-wired connector is also available for solid state auto switches. For details, refer to **the WEB catalog** or Best Pneumatics No. 3.

\* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H) are also available. For details, refer to **the WEB catalog** or Best Pneumatics No. 3.

# Low Speed Cylinder: Double Acting, Single Rod

## Series CJ2X

### ø10, ø16

### How to Order

Mounting	Bore size	Cylinder standard stroke (mm)
<b>B</b> Basic	<b>10</b> 10 mm	<b>ø10</b> 15, 30, 45, 60, 75, 100, 125, 150
<b>E</b> Double-side bossed	<b>16</b> 16 mm	<b>ø16</b> 15, 30, 45, 60, 75, 100, 125, 150, 175, 200
<b>D</b> Double clevis		
<b>L</b> Single foot		
<b>M</b> Double foot		
<b>F</b> Rod flange		
<b>G</b> Head flange		

\* Foot bracket and flange bracket are shipped together with the product, but not assembled.

\* Intermediate stroke other than above is manufactured upon receipt of order.

**CJ2X L 16 - 60 Z**

With auto switch

**CDJ2X L 16 - 60 Z - M9BW - B**

With auto switch (Built-in magnet)

Low speed cylinder

Head cover port location	Nil	Perpendicular to axis
<b>R</b>	Axial	

\* For double clevis, the product is perpendicular to the cylinder axis.  
\* For double-side bossed, the product is perpendicular to the cylinder axis.

Auto switch

<b>Nil</b>	Without auto switch
------------	---------------------

\* For applicable auto switches, refer to the table below.

Number of auto switches

<b>Nil</b>	2 pcs.
<b>S</b>	1 pc.
<b>n</b>	"n" pcs.

Auto switch mounting type

<b>A</b>	Rail mounting
<b>B</b>	Band mounting

\* For rail mounting, screws and nuts for 2 auto switches come with the rail.

\* Refer to page 121 for auto switch mounting brackets.

Applicable Auto Switches/Refer to the **WEB catalog** or Best Pneumatics No. 3 for further information on auto switches.

Type	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load							
					DC	AC	Band mounting		Rail mounting		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)									
							Perpendicular	In-line	Perpendicular	In-line														
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC					
		3-wire (PNP)		M9PV				M9P	M9PV	M9P	●	●	●	○	—	○								
		Connector		2-wire				M9BV	M9B	M9BV	M9B	●	●	●	○	—	○							
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)				24 V	5 V, 12 V	—	M9NVW	M9NW	M9NVW	M9NW	●	●	●	○		—	○	IC circuit		
				3-wire (PNP)							M9PW	M9PW	M9PW	M9PW	●	●	●	○		—	○			
				2-wire							M9BWW	M9BWW	M9BWW	M9BWW	●	●	●	○		—	○			
				3-wire (NPN)							M9NAV**	M9NA**	M9NAV**	M9NA**	○	○	●	○		—	○			
	Water resistant (2-color indication)	Grommet		3-wire (PNP)				24 V	5 V, 12 V	—	M9PAV**	M9PA**	M9PAV**	M9PA**	○	○	●	○		—	○	IC circuit		
				2-wire							M9BAV**	M9BA**	M9BAV**	M9BA**	○	○	●	○		—	○			
				With diagnostic output (2-color indication)							4-wire (NPN)	5 V, 12 V	—	H7NF	—	F79F	●	—		●	○		—	○
Reed auto switch			—	Grommet	Yes	3-wire (NPN equivalent)	—				5 V	—	A96V	A96	A96V	A96	●	—	●	—	—		IC circuit	—
	24 V	12 V						—	200 V	—			—	A72	A72H	●	—	●	—	—	—			
								100 V	A93V	A93			A93V	A93	●	—	●	●	—	—				
								100 V or less	A90V	A90			A90V	A90	●	—	●	—	—	—				
								—	—	C73C			A73C	—	●	—	●	●	—	—				
								24 V or less	—	C80C			A80C	—	●	—	●	●	—	—				
Diagnostic indication (2-color indication)	Grommet	Yes	—	—	—	—	A79W	—	—	—	●	—	●	—	—	—								

\*\* Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Please consult with SMC regarding water resistant types with the above model numbers.

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NV  
1 m ..... M (Example) M9NM  
3 m ..... L (Example) M9NL  
5 m ..... Z (Example) M9NZ  
None ..... N (Example) H7CN

\* Since there are other applicable auto switches than listed above, refer to page 122 for details.

\* For details about auto switches with pre-wired connector, refer to the **WEB catalog** or Best Pneumatics No. 3.

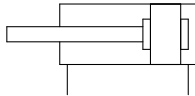
\* Solid state auto switches marked with "O" are produced upon receipt of order.

\* The D-A9□/M9□□/A7□□/A80□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only the auto switch mounting brackets are assembled before shipment.)



### Symbol

Double acting, Single rod, Rubber bumper



### Mounting Brackets/Part No.

Mounting bracket	Bore size (mm)	
	10	16
Foot	CJ-L010C	CJ-L016C
Flange	CJ-F010C	CJ-F016C
T-bracket*	CJ-T010C	CJ-T016C

\* A T-bracket is used with double clevis (D).

### ⚠️ Precautions

Be sure to read before handling. Refer to back cover for Safety Instructions. For Actuator and Auto Switch Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, <http://www.smcworld.com>

### Mounting

#### ⚠️ Caution

- During installation, secure the rod cover and tighten by applying an appropriate tightening force to the retaining nut or to the rod cover body.  
If the head cover is secured or the head cover is tightened, the cover could rotate, leading to the deviation.
- Tighten the retaining screws to an appropriate tightening torque within the range given below. Apply a Loctite® (no. 242 Blue) for mounting thread.

Bore size (mm)	Proper tightening torque for mounting thread (Tightening torque for mounting nut)
10	2.21 to 2.36 lbf-ft (3.0 to 3.2 N-m)
16	3.98 to 4.35 lbf-ft (5.4 to 5.9 N-m)

- To remove and install the retaining ring for the knuckle pin or the clevis pin, use an appropriate pair of pliers (tool for installing a type C retaining ring).  
Especially with ø10, use ultra thin pliers.
- In the case of auto switch rail mounting type, do not remove the rail that is mounted. Because retaining screws extend into the cylinder, this could lead to an air leak.

### Specifications

Bore size (mm)		10	16
Action		Double acting, Single rod	
Fluid		Air	
Proof pressure		152 psi (1.05 MPa)	
Maximum operating pressure		102 psi (0.7 MPa)	
Ambient and fluid temperature		Without auto switch: 14 to 158°F (–10 to 70°C) (No freezing) With auto switch: 14 to 140°F (–10°C to 60°C)	
Cushion		Rubber bumper (Standard equipment)	
Lubrication		Not required (Non-lube)	
Stroke length tolerance		+1.0 0	
Piston speed		1 to 300 mm/s	
Allowable kinetic energy	ø10	0.026 lbf-ft (0.035 J)	
	ø16	0.066 lbf-ft (0.090 J)	

### Minimum Operating Pressure

Bore size (mm)	10	16
Minimum operating pressure	87 psi (0.06 MPa)	

### Standard Strokes

Bore size (mm)	Standard stroke (mm)
10	15, 30, 45, 60, 75, 100, 125, 150
16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200

\* Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

### Mounting and Accessories/For details, refer to page 116.

● Mounted on the product. ○ Please order these separately.

Mounting		Basic	Foot	Flange	Double* clevis
Option	Mounting nut	●	●	●	—
	Rod end nut	●	●	●	●
	Clevis pin	—	—	—	●
	Single knuckle joint	○	○	○	○
	Double knuckle joint*	○	○	○	○
	Rod end cap (Flat/Round type)	○	○	○	○
T-bracket		—	—	—	○

\* A pin and retaining rings are included with double clevis and/or double knuckle joint.

### Weights

Bore size (mm)		10	16
Basic weight (When the stroke is zero)	Basic	22	46
	Axial piping	22	46
	Double clevis (including clevis pin)	24	54
	Head-side bossed	23	48
Additional weight per 15 mm of stroke		4	7
Mounting bracket weight	Single foot	8	25
	Double foot	16	50
	Rod flange	5	13
	Head flange	5	13
Accessories	Single knuckle joint	17	23
	Double knuckle joint (including knuckle pin)	25	21
	Rod end cap (Flat type)	1	2
	Rod end cap (Round type)	1	2
	T-bracket	32	50

\* Mounting nut and rod end nut are included in the basic weight.  
Note) Mounting nut is not included in the basic weight for the double clevis.

Calculation: Example) **CJ2XL10-45Z**

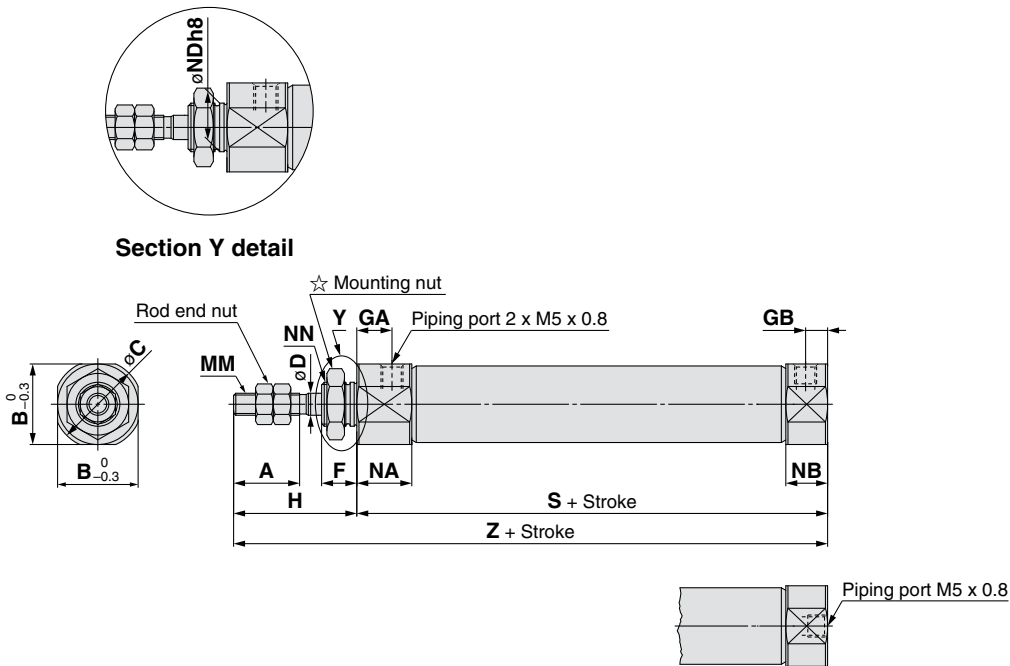
● Basic weight.....22 (ø10)  
● Additional weight.....4/15 stroke  
● Cylinder stroke.....45 stroke  
● Mounting bracket weight.....8 (Axial foot)  
22 + 4/15 × 45 + 8 = **42 g**



Dimensions

Basic (B)

CJ2XB Bore size – Stroke Head cover port location Z



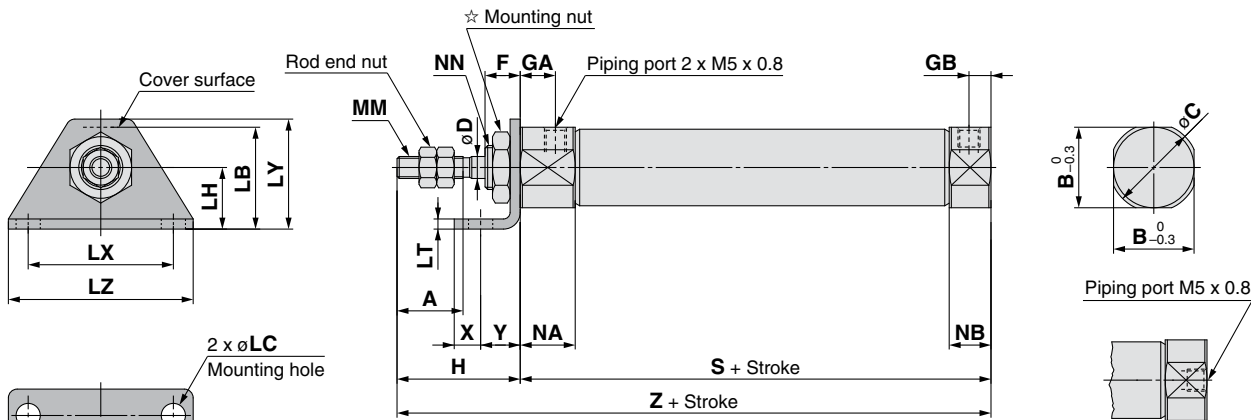
☆ Refer to page 116 for details of the mounting nut.

\* The overall cylinder length does not change.

Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	NDh8	NN	S	Z
10	15	12	14	4	8	8	5	28	M4 x 0.7	12.5	9.5	8 <sup>0</sup> <sub>-0.022</sub>	M8 x 1.0	46	74
16	15	18.3	20	5	8	8	5	28	M5 x 0.8	12.5	9.5	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	47	75

Single foot (L)

CJ2XL Bore size – Stroke Head cover port location Z



☆ Refer to page 116 for details of the mounting nut.

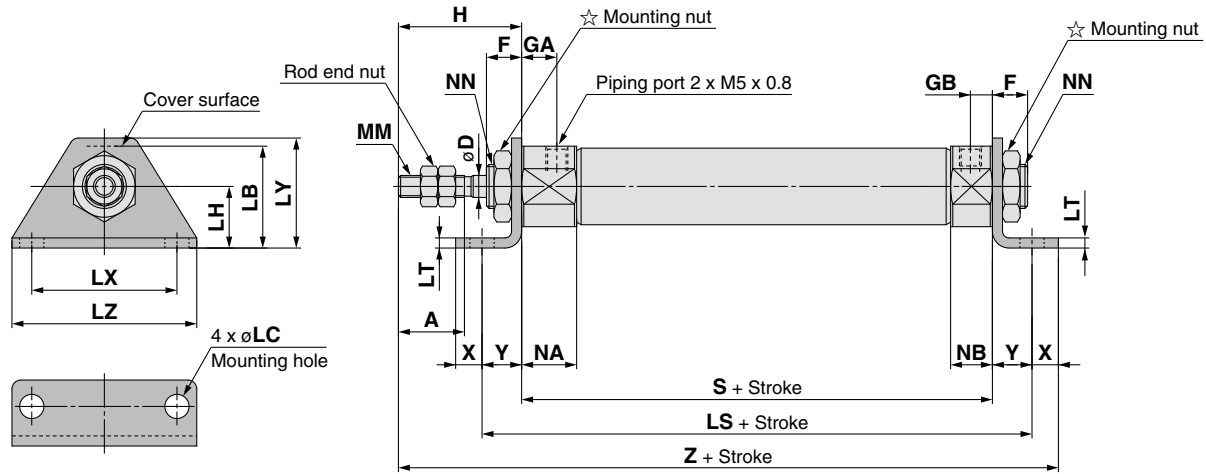
\* The overall cylinder length does not change.

Bore size	A	B	C	D	F	GA	GB	H	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN	S	X	Y	Z
10	15	12	14	4	8	8	5	28	15	4.5	9	1.6	24	16.5	32	M4 x 0.7	12.5	9.5	M8 x 1.0	46	5	7	74
16	15	18.3	20	5	8	8	5	28	23	5.5	14	2.3	33	25	42	M5 x 0.8	12.5	9.5	M10 x 1.0	47	6	9	75

## Dimensions

### Double foot (M)

CJ2XM Bore size – Stroke Z

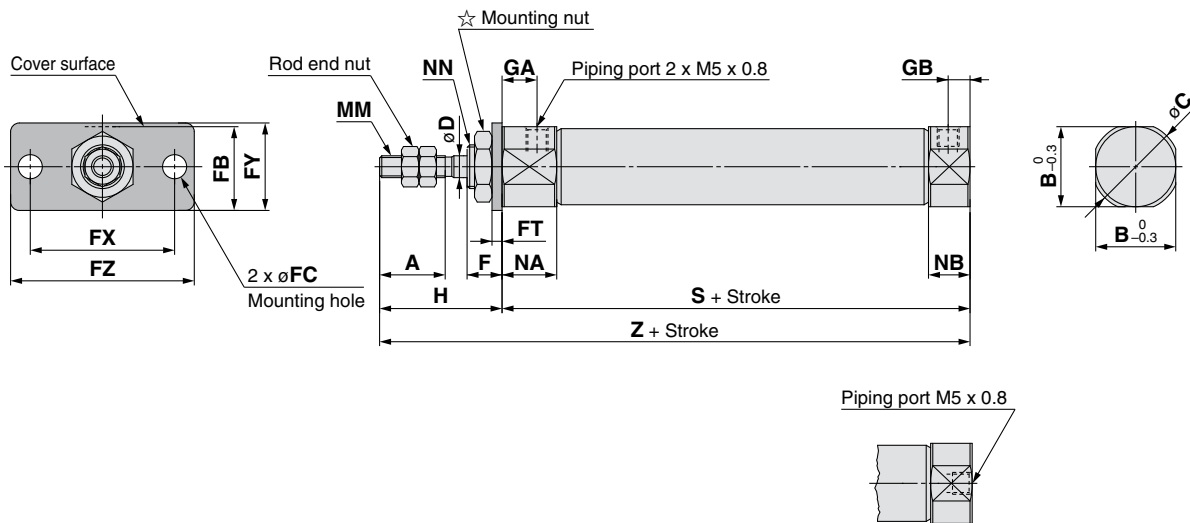


☆ Refer to page 116 for details of the mounting nut.

Bore size	A	D	F	GA	GB	H	LB	LC	LH	LS	LT	LX	LY	LZ	MM	NA	NB	NN	S	X	Y	Z
10	15	4	8	8	5	28	15	4.5	9	60	1.6	24	16.5	32	M4 x 0.7	12.5	9.5	M8 x 1.0	46	5	7	86
16	15	5	8	8	5	28	23	5.5	14	65	2.3	33	25	42	M5 x 0.8	12.5	9.5	M10 x 1.0	47	6	9	90

### Rod flange (F)

CJ2XF Bore size – Stroke Head cover port location Z



#### Head cover port location Axial location (R)

☆ Refer to page 116 for details of the mounting nut.

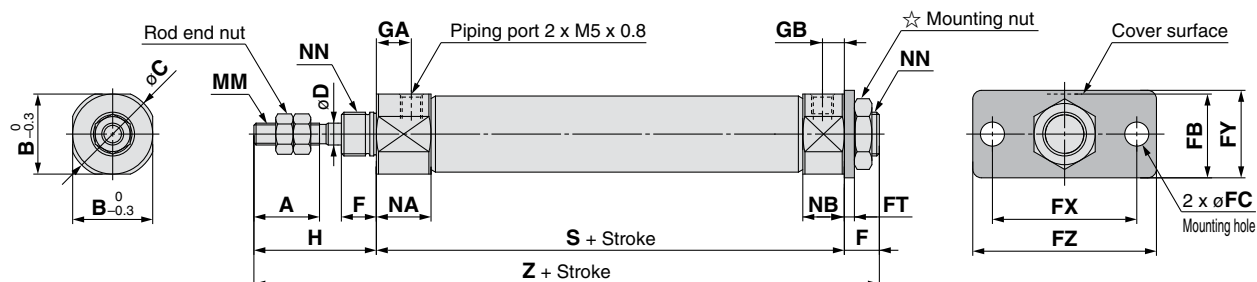
\* The overall cylinder length does not change.

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	GB	H	MM	NA	NB	NN	S	Z
10	15	12	14	4	8	13	4.5	1.6	24	14	32	8	5	28	M4 x 0.7	12.5	9.5	M8 x 1.0	46	74
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	8	5	28	M5 x 0.8	12.5	9.5	M10 x 1.0	47	75

## Dimensions

### Head flange (G)

**CJ2XG** Bore size – Stroke **Z**

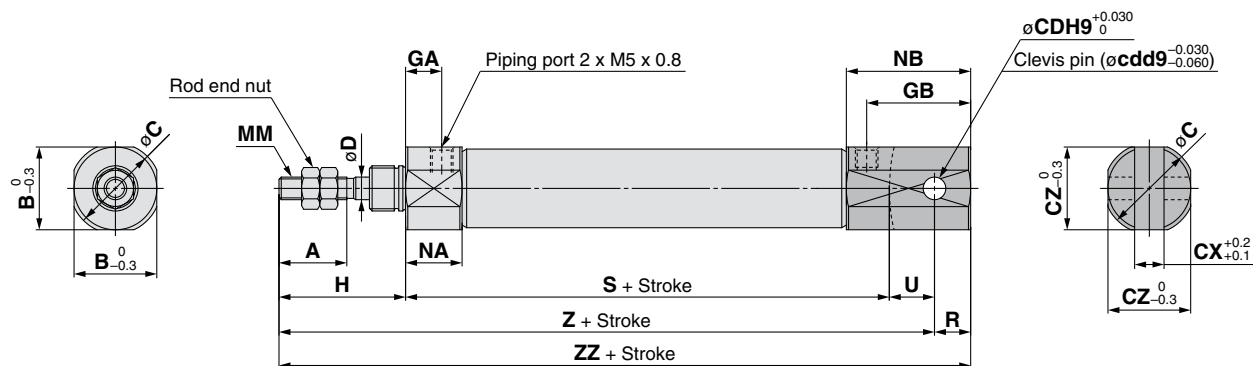


☆ Refer to page 116 for details of the mounting nut.

Boresize	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	GB	H	MM	NA	NB	NN	S	Z
10	15	12	14	4	8	13	4.5	1.6	24	14	32	8	5	28	M4 x 0.7	12.5	9.5	M8 x 1.0	46	82
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	8	5	28	M5 x 0.8	12.5	9.5	M10 x 1.0	47	83

### Double clevis (D)

**CJ2XD** **Bore size** – **Stroke** **Z**



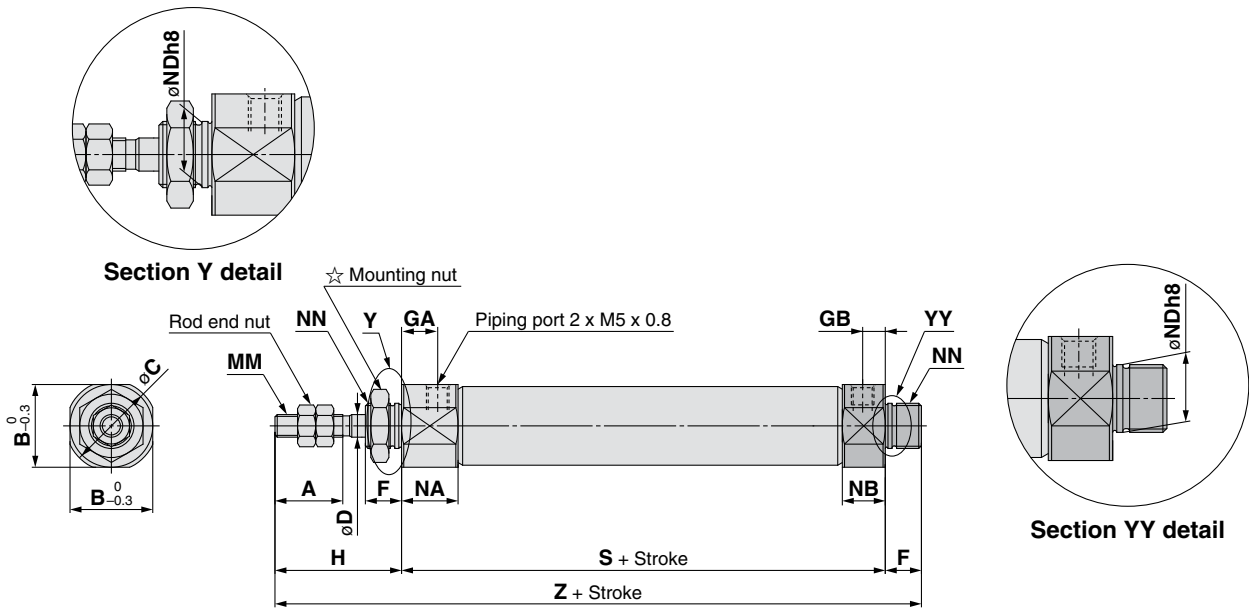
\* A clevis pin and retaining rings are included.

(mm)																		
Bore size	A	B	C	CD(cd)	CX	CZ	D	GA	GB	H	MM	NA	NB	R	S	U	Z	ZZ
<b>10</b>	15	12	14	3.3	3.2	12	4	8	18	28	M4 x 0.7	12.5	22.5	5	46	8	82	87
<b>16</b>	15	18.3	20	5	6.5	18.3	5	8	23	28	M5 x 0.8	12.5	27.5	8	47	10	85	93

## Dimensions

### Double-side bossed (E)

CJ2XE Bore size – Stroke **Z**



☆ Refer to page 116 for details of the mounting nut.

Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	NDh8	NN	S	Z
10	15	12	14	4	8	8	5	28	M4 x 0.7	12.5	9.5	8 <sup>0</sup> <sub>-0.022</sub>	M8 x 1.0	46	82
16	15	18.3	20	5	8	8	5	28	M5 x 0.8	12.5	9.5	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	47	83

Smooth Cylinders

CJ2Y-Z

CM2Y-Z

CG1Y-Z

MBY-Z

CA2Y-Z

CS2Y

CQSY

CQ2Y-Z

Low Speed Cylinders

CJ2X-Z

CM2X-Z

CQSX

CQ2X

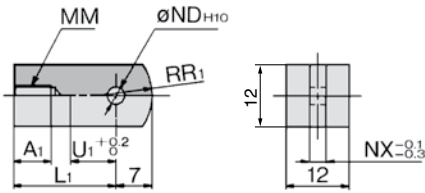
CUX

Auto Switch

Made to Order

# Dimensions of Accessories

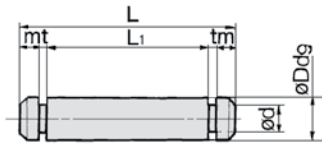
## Single Knuckle Joint



Material: Rolled steel

Part no.	Applicable bore size	A <sub>1</sub>	L <sub>1</sub>	MM	ND <sub>H10</sub>	NX	R <sub>1</sub>	U <sub>1</sub>
I-J010C	10	8	21	M4 x 0.7	3.3 <sup>+0.048</sup> <sub>0</sub>	3.1	8	9
I-J016C	16	8	25	M5 x 0.8	5 <sup>+0.048</sup> <sub>0</sub>	6.4	12	14

## Clevis Pin

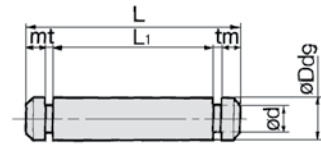


Material: Stainless steel

Part no.	Applicable bore size	Dd9	d	L	L <sub>1</sub>	m	t	Included retaining ring
CD-J010	10	3.3 <sup>-0.030</sup> <sub>-0.060</sub>	3	15.2	12.2	1.2	0.3	Type C 3.2
CD-Z015	16	5 <sup>-0.030</sup> <sub>-0.060</sub>	4.8	22.7	18.3	1.5	0.7	Type C 5

\* Retaining rings are included with a clevis pin.

## Knuckle Pin



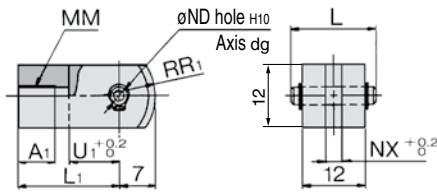
Material: Stainless steel

Part no.	Applicable bore size	Dd9	d	L	L <sub>1</sub>	m	t	Included retaining ring
CD-J010	10	3.3 <sup>-0.030</sup> <sub>-0.060</sub>	3	15.2	12.2	1.2	0.3	Type C 3.2
IY-J015	16	5 <sup>-0.030</sup> <sub>-0.060</sub>	4.8	16.6	12.2	1.5	0.7	Type C 5

\* For size Ø10, a clevis pin is diverted.

\* Retaining rings are included with a knuckle pin.

## Double Knuckle Joint



Material: Rolled steel

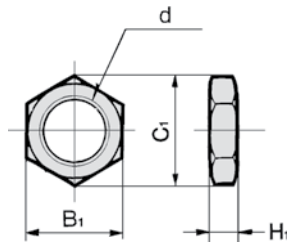
Part no.	Applicable bore size	A <sub>1</sub>	L	L <sub>1</sub>	MM
Y-J010C	10	8	15.2	21	M4 x 0.7
Y-J016C	16	11	16.6	21	M5 x 0.8

Part no.	ND <sub>d9</sub>	ND <sub>H10</sub>	NX	R <sub>1</sub>	U <sub>1</sub>
Y-J010C	3.3 <sup>-0.030</sup> <sub>-0.060</sub>	3.3 <sup>+0.048</sup> <sub>0</sub>	3.2	8	10
Y-J016C	5 <sup>-0.030</sup> <sub>-0.060</sub>	5 <sup>+0.048</sup> <sub>0</sub>	6.5	12	10

\* A knuckle pin and retaining rings are included.

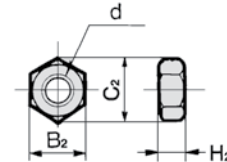
## Mounting Nut



Material: Carbon steel

Part no.	Applicable bore size	B <sub>1</sub>	C <sub>1</sub>	d	H <sub>1</sub>
SNJ-010C	10	11	12.7	M8 x 1.0	4
SNJ-016C	16	14	16.2	M10 x 1.0	4

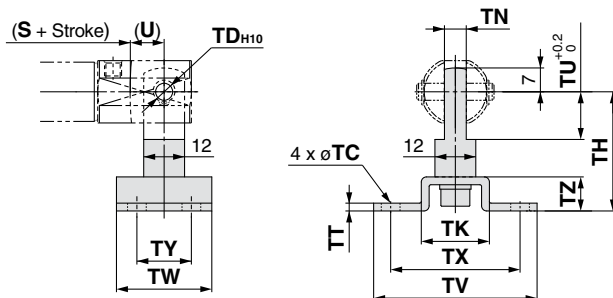
## Rod End Nut



Material: Carbon steel

Part no.	Applicable bore size	B <sub>2</sub>	C <sub>2</sub>	d	H <sub>2</sub>
NTJ-010C	10	7	8.1	M4 x 0.7	3.2
NTJ-015C	16	8	9.2	M5 x 0.8	4

## T-bracket



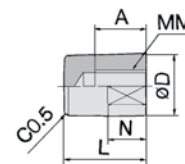
Part no.	Applicable bore size	TC	TD <sub>H10</sub>	TH	TK	TN	TT	TU	TV	TW	TX	TY	TZ
CJ-T010C	10	4.5	3.3 <sup>+0.048</sup> <sub>0</sub>	29	18	3.1	2	9	40	22	32	12	8
CJ-T016C	16	5.5	5 <sup>+0.048</sup> <sub>0</sub>	35	20	6.4	2.3	14	48	28	38	16	10

\* A T-bracket includes a T-bracket base, single knuckle joint, hexagon socket head bolt and spring washer.

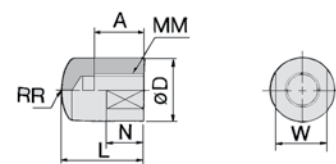
\* For dimensions of (U) and (S + Stroke), refer to the double clevis drawing on page 114.

## Rod End Cap

Flat type/CJ-CF□□□



Round type/CJ-CR□□□



Material: Polyacetal

Part no.		Applicable bore size	A	D	L	MM	N	R	W
Flat type	Round type								
CJ-CF010	CJ-CR010	10	8	10	13	M4 x 0.7	6	10	8
CJ-CF016	CJ-CR016	16	10	12	15	M5 x 0.8	7	12	10

# Auto Switch Mounting

## Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

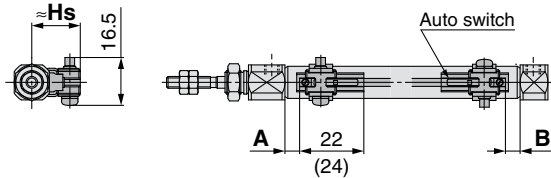
### Solid state auto switch

#### <Band mounting>

D-M9□

D-M9□W

D-M9□A



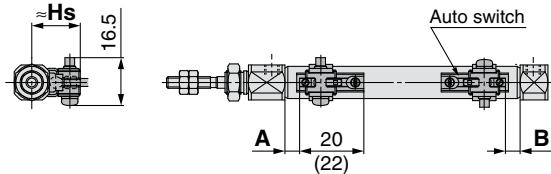
( ): Dimension of the D-M9□A

A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-M9□V

D-M9□MV

D-M9□AV



( ): Dimension of the D-M9□AV

A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

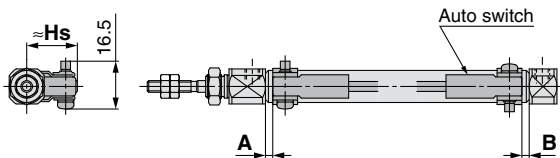
D-H7□

D-H7□W

D-H7BA

D-H7NF

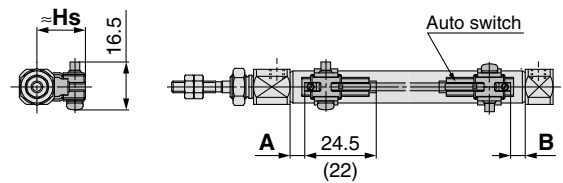
D-H7C



### Reed auto switch

#### <Band mounting>

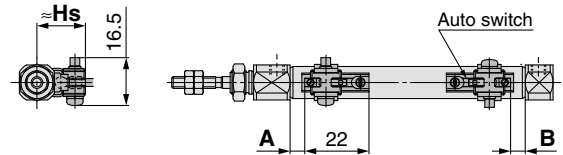
D-A9□



( ): Dimension of the D-A96

A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

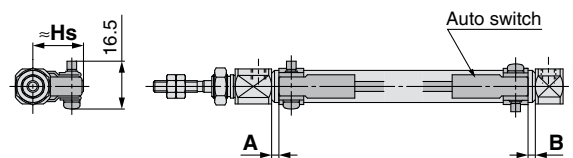
D-A9□V



A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-C7□/C80

D-C73C□/C80C



Smooth Cylinders

Low Speed Cylinders

CJ2Y-Z

CM2Y-Z

CG1Y-Z

MBY-Z

CA2Y-Z

CS2Y

CQSY

CQ2Y-Z

CJ2X-Z

CM2X-Z

CQSX

CQ2X

CUX

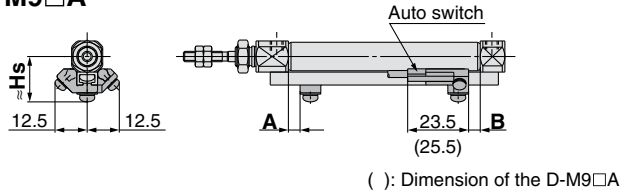
Auto Switch

Made to Order

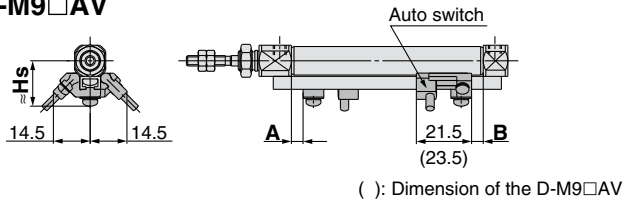
## Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

### <Rail mounting>

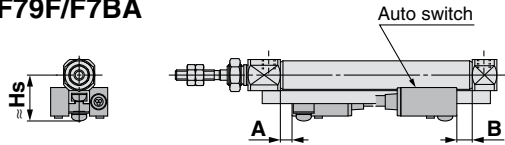
D-M9□  
D-M9□W  
D-M9□A



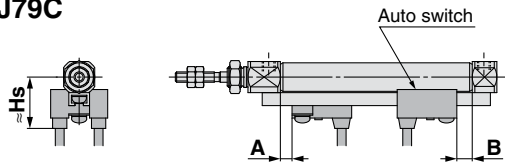
D-M9□V  
D-M9□WV  
D-M9□AV



D-F7□/J79  
D-F7□W/J79W  
D-F79F/F7BA

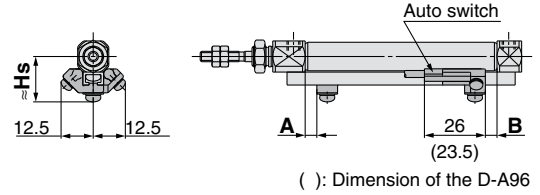


D-F7□V/F7□WV  
D-F7BAV  
D-J79C

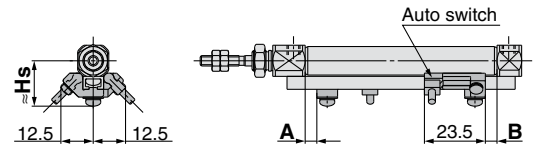


### <Rail mounting>

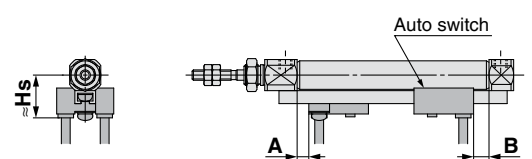
D-A9□



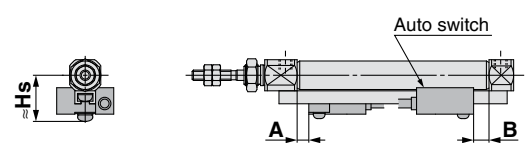
D-A9□V



D-A7□/A80  
D-A73C/A80C  
D-A79W



D-A7□H/A80H



**Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height****Auto Switch Proper Mounting Position**

(mm)

Auto switch model	Band mounting							
	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-C7□ D-C80 D-C73C D-C80C		D-H7□ D-H7C D-H7NF D-H7□W D-H7BA	
Bore size	A	B	A	B	A	B	A	B
10	(5) 6	(5) 6	(1) 2	(1) 2	2.5	2.5	1.5	1.5
16	(5.5) 6.5	(5.5) 6.5	(1.5) 2.5	(1.5) 2.5	3	3	2	2

\* The values in ( ) are measured from the end of the auto switch mounting bracket.

Auto switch model	Rail mounting											
	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V		D-A7□ D-A80		D-A7□H/A80H D-A73C/A80C D-F7□/J79 D-F7□W/J79W D-F7□V/F7□WV D-F79F D-J79C D-F7BA D-F7BAV		D-F7NT		D-A79W	
Bore size	A	B	A	B	A	B	A	B	A	B	A	B
10	4.5	4.5	0.5	0.5	3	3	3.5	3.5	8.5	8.5	0.5	0.5
16	5	5	1	1	3.5	3.5	4	4	9	9	1	1

\* Adjust the auto switch after confirming the operating condition in the actual setting.

**Auto Switch Mounting Height**

(mm)

Auto switch model	Band mounting					
	D-M9□ D-M9□W D-M9□A D-A9□	D-M9□V D-M9□WV D-M9□AV D-A9□V	D-C7□/C80 D-H7□/H7□W D-H7NF D-H7BA	D-C73C D-C80C	D-H7C	D-A7□ D-A80
Bore size	Hs	Hs	Hs	Hs	Hs	Hs
10	17	18	17	19.5	20	16.5
16	20.5	21	20.5	23	23.5	19.5

Auto switch model	Rail mounting					
	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV D-A9□ D-A9□V	D-A7□H/A80H D-F7□/J79 D-F7□W/J79W D-F7BA/F79F D-F7NT	D-A73C D-A80C	D-F7□V D-F7□WV D-F7BAV	D-J79C	D-A79W
Bore size	Hs	Hs	Hs	Hs	Hs	Hs
10	17.5	17.5	23.5	20	23	19
16	21	20.5	26.5	23	26	22



## Minimum Stroke for Auto Switch Mounting

(mm)

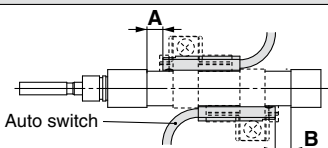
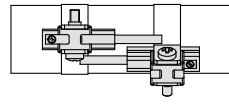
Auto switch mounting	Auto switch model	Number of auto switches				
		With 1 pc.	With 2 pcs.		With n pcs. (n: Number of auto switches)	
			Different surfaces	Same surface	Different surfaces	Same surface
Band mounting	D-M9□ D-M9□W D-M9□A D-A9□	10	15 Note 1)	45 Note 1)	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	$45 + 15 (n-2)$ (n = 2, 3, 4, 5...)
	D-M9□V	5	15 Note 1)	35	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	$35 + 25 (n-2)$ (n = 2, 3, 4, 5...)
	D-M9□WV D-M9□AV	10	15 Note 1)	35	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	$35 + 25 (n-2)$ (n = 2, 3, 4, 5...)
	D-A9□V	5	10	35	$10 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	$35 + 25 (n-2)$ (n = 2, 3, 4, 5...)
	D-C7□ D-C80	10	15	50	$15 + 40 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	$50 + 20 (n-2)$ (n = 2, 3, 4, 5...)
	D-H7□/H7□W D-H7BA D-H7NF	10	15	60	$15 + 45 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	$60 + 22.5 (n-2)$ (n = 2, 3, 4, 5...)
	D-C73C D-C80C D-H7C	10	15	65	$15 + 50 \frac{(n-2)}{2}$ (n = 2, 4, 6...) Note 3)	$50 + 27.5 (n-2)$ (n = 2, 3, 4, 5...)
Rail mounting	D-M9□V	5	—	5	—	$10 + 10 (n-2)$ (n = 4, 6...) Note 4)
	D-A9□V	5	—	10	—	$10 + 15 (n-2)$ (n = 4, 6...) Note 4)
	D-M9□ D-A9□	10	—	10	—	$15 + 15 (n-2)$ (n = 4, 6...) Note 4)
	D-M9□WV D-M9□AV	10	—	15	—	$15 + 15 (n-2)$ (n = 4, 6...) Note 4)
	D-M9□W	15	—	15	—	$20 + 15 (n-2)$ (n = 4, 6...) Note 4)
	D-M9□A	15	—	20	—	$20 + 15 (n-2)$ (n = 4, 6...) Note 4)
	D-A7□/A80 D-A7□H/A80H D-A73C/A80C	5	—	10	—	$15 + 10 (n-2)$ (n = 4, 6...) Note 4)
	D-A7□H D-A80H	5	—	10	—	$15 + 15 (n-2)$ (n = 4, 6...) Note 4)
	D-A79W	10	—	15	—	$10 + 15 (n-2)$ (n = 4, 6...) Note 4)
	D-F7□ D-J79	5	—	5	—	$15 + 15 (n-2)$ (n = 4, 6...) Note 4)
	D-F7□V D-J79C	5	—	5	—	$10 + 10 (n-2)$ (n = 4, 6...) Note 4)
	D-F7□W/J79W D-F7BA/F79F/F7NT	10	—	15	—	$15 + 20 (n-2)$ (n = 4, 6...) Note 4)
	D-F7□WV D-F7BAV	10	—	15	—	$10 + 15 (n-2)$ (n = 4, 6...) Note 4)

Note 3) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.

Note 4) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.

However, the minimum even number is 4. So, 4 is used for the calculation when "n" is 1 to 3.

Note 1) Auto switch mounting

Auto switch model	With 2 auto switches	
	Different surfaces Note 1)	Same surface Note 1)
	 <p>The proper auto switch mounting position is 5.5 mm inward from the switch holder edge. The above A and B indicate values for band mounting in the table of page 119.</p>	 <p>The auto switch is mounted by slightly displacing it in a direction (cylinder tube circumferential exterior) so that the auto switch and lead wire do not interfere with each other.</p>
D-M9□/M/9□W/M9□A	Less than 20 stroke Note 2)	Less than 55 stroke Note 2)
D-A90/A93	—	Less than 50 stroke Note 2)

Note 2) Minimum stroke for auto switch mounting in styles other than those mentioned in Note 1.

## Operating Range

Auto switch model		Bore size (mm)	
		10	16
Band mounting	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	2.5	3
	D-A9□	6	7
	D-C7□/C80/C73C/C80C	7	7
	D-H7□/H7□W D-H7BA/H7NF	4	4
	D-H7C	8	9
Rail mounting	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	3	3.5
	D-A9□/A9□V	6	6.5
	D-A7□/A80/A7H/A80H D-A73C/A80C	8	9
	D-A79W	11	13
	D-F7□/J79/F7□W/J79W D-F7□V/F7□WV/F79F D-J79C/F7BA/F7BAV D-F7NT	5	5

\* Values which include hysteresis are for guideline purposes only, they are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

## Auto Switch Mounting Brackets/Part No.

Auto switch mounting	Auto switch model	Bore size (mm)	
		10	16
Band mounting	D-M9□ D-M9□V D-M9□W D-M9□WV D-A9□ D-A9□V	BJ6-010 (A set of a, b, c, d)	BJ6-016 (A set of a, b, c, d)
	D-M9□A <sup>Note 2)</sup> D-M9□AV <sup>Note 2)</sup>	BJ6-010S (A set of a, b, d, e)	BJ6-016S (A set of a, b, d, e)
Band mounting			
Band mounting	D-C7□/C80 D-C73C/C80C D-H7□/H7□W D-H7BA/H7NF	BJ2-010 (A set of band and screw)	BJ2-016 (A set of band and screw)
Rail mounting <sup>Note 4)</sup>	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A <sup>Note 5)</sup> D-M9□AV <sup>Note 5)</sup> D-A9□ D-A9□V	BQ2-012(S) (A set of a and b)	BQ2-012(S) (A set of a and b)

Note 1) Since the switch bracket (made from nylon) are affected in an environment where alcohol, chloroform, methylamines, hydrochloric acid or sulfuric acid is splashed over, so it cannot be used. Please contact SMC regarding other chemicals.

Note 2) Avoid the indicator LED for mounting the switch bracket. As the indicator LED is projected from the switch unit, indicator LED may be damaged if the switch bracket is fixed on the indicator LED.

Note 3) When the cylinder is shipped, the auto switch mounting bracket and the auto switch will be included.

Note 4) For the D-M9□A(V), order the BQ2-012S, which uses stainless steel mounting screws.

### Band Mounting Brackets Set Part No.

Set part no.	Contents
BJ2-□□□	• Auto switch mounting band (a) • Auto switch mounting screw (b)
BJ4-1	• Switch bracket (White/PBT) (e) • Switch holder (d)
BJ5-1	• Switch bracket (Transparent/Nylon) (c) • Switch holder (d)

### [Stainless Steel Mounting Screw]

The following stainless steel mounting screw kit is available. Use it in accordance with the operating environment. (Since the auto switch mounting bracket is not included, order it separately.)

BBA4: For D-C7/C8/H7 types

Note 5) Refer to the **WEB catalog** or Best Pneumatics No. 3 for details on the BBA4.

When the D-H7BA type auto switch is shipped independently, the BBA4 is attached.

**Other than the applicable auto switches listed in “How to Order”, the following auto switches are mountable.**

Refer to **the WEB catalog** or Best Pneumatics No.3 for the detailed specifications.

Type	Mounting	Model	Electrical entry	Features
Sold state	Band mounting	D-H7A1/H7A2/H7B	Grommet (In-line)	—
		D-H7NW/H7PW/H7BW		Diagnostic indication (2-color indication)
	Rail mounting	D-F79/F7P/J79		—
		D-F79W/F7PW/J79W		Diagnostic indication (2-color indication)
		D-F7NV/F7PV/F7BV	Grommet (Perpendicular)	—
		D-F7NWV/F7BWV		Diagnostic indication (2-color indication)
Reed	Band mounting	D-C73/C76	Grommet (In-line)	—
		D-C80		Without indicator light
	Rail mounting	D-A73H/A76H		—
		D-A80H		Without indicator light
		D-A73	Grommet (Perpendicular)	—
		D-A80		Without indicator light

\* With pre-wired connector is also available for solid state auto switches. For details, refer to **the WEB catalog** or Best Pneumatics No. 3.

\* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H) are also available. For details, refer to **the WEB catalog** or Best Pneumatics No. 3.