

# Air Cylinder

Ø 6, Ø 10, Ø 16

New

RoHS

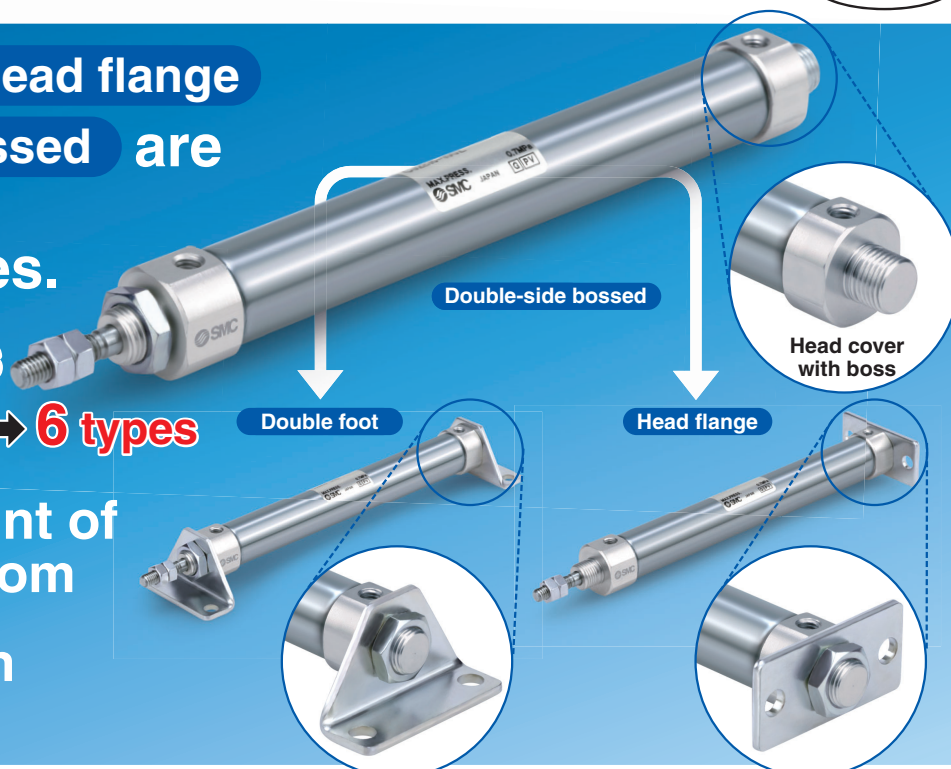
Double foot Head flange  
Double-side bossed are  
added to the  
mounting types.

4 types → 7 types

New For Ø 6, 3 types → 6 types

Improved amount of  
mounting freedom

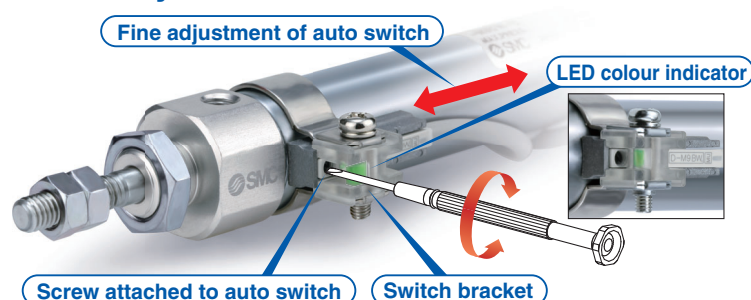
Head cover with  
boss is added.



## Easy fine adjustment of auto switch position

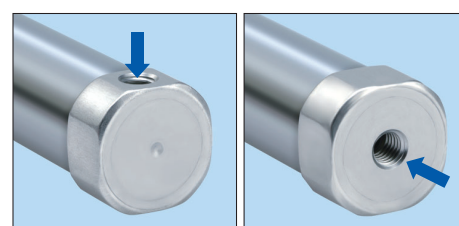
Fine adjustment of the auto switch position is possible by simply loosening the screw attached to the auto switch.

Transparent switch bracket improves  
visibility of indicator LED.



## Head cover port location “Perpendicular to axis” is newly added to Ø 6.

Improved piping flexibility



New Ø 6	●	○
Ø 10	○	○
Ø 16	○	○



Series CJ2



CAT.EUS20-226D-UK

## 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.

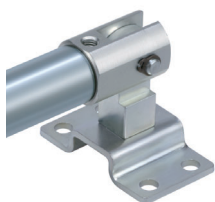
Example) **CDJ2D16-50Z- N W -M9BW-B**

### Pivot bracket

—	None
<b>N</b>	Pivot bracket is shipped together with the product, but not assembled.

※: Only for CJ2D (double clevis) type  
※: Except Ø 6

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



### Rod end bracket

—	None
<b>V</b>	Single knuckle joint
<b>W</b>	Double knuckle joint
<b>T</b>	Rod end cap (Flat type)
<b>U</b>	Rod end cap (Round type)

※: Ø 6: Except V, W

**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

**D: Double clevis**  
(Except Ø 6)

**B: Basic**

**E: Double-side bossed**

**L: Single foot**

**N: Pivot bracket**  
(Except Ø 6)

**G: Head flange**

**M: Double foot**

**U: Rod end cap**  
(Round type)

**T: Rod end cap**  
(Flat type)

**V: Single knuckle joint**  
(Except Ø 6)

**W: Double knuckle joint**  
(Except Ø 6)

**F: Rod flange**

## 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  
※: Except Ø 6

## Head cover

4 types of head cover shape are available.

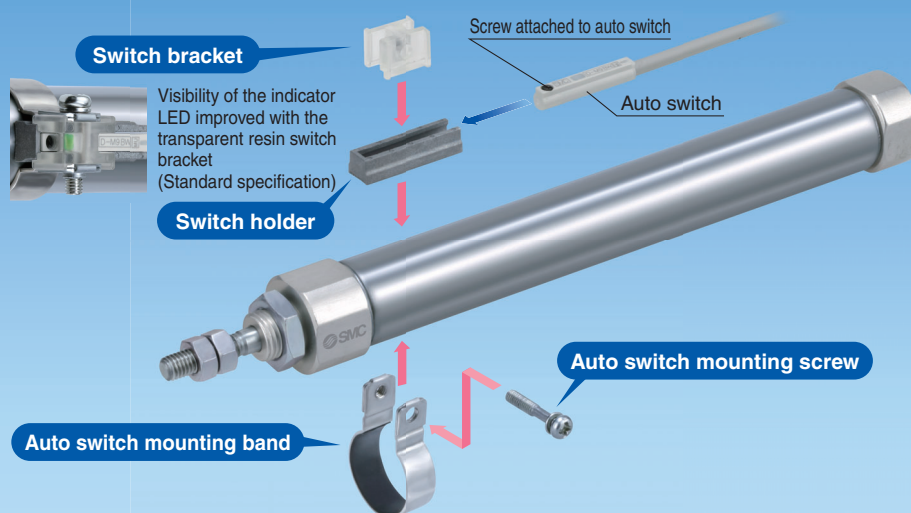
Basic	Double clevis
	(Except Ø 6)
Axial piping	With boss

Specifications and dimensions are the same as the current product.

No environmental hazardous substances used

## 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									
	15	30	45	60	75	100	125	150	175	200
6	●	●	●	●						
10	●	●	●	●	●	●	●	●		
16	●	●	●	●	●	●	●	●	●	●

## Series Variations

Series	Action	Type	Bore size [mm]			Variations		Page
			6	10	16	Built-in magnet	Air cushion	
Standard <b>CJ2-Z</b>	Double acting	Single rod	●	●	●	●	●	5
	Double acting	Double rod	●	●	●	●	●	23
	Single acting	Single rod (Spring return /extend)	●	●	●	●		30
Non-rotating rod <b>CJ2K-Z</b>	Double acting	Single rod		●	●	●		47
	Single acting	Single rod (Spring return /extend)		●	●	●		54
Built-in speed controller <b>CJ2Z-Z</b>	Double acting	Single rod		●	●	●		66
	Double acting	Double rod		●	●	●		73
Direct mount <b>CJ2R-Z</b>	Double acting	Single rod		●	●	●		78
	Single acting	Single rod (Spring return /extend)		●	●	●		82
Direct mount, Non-rotating rod <b>CJ2RK-Z</b>	Double acting	Single rod		●	●	●		86
	Single acting	Single rod (Spring return /extend)		●	●	●		89
With end lock <b>CBJ2</b>	Double acting	Single rod			●	●		93
Smooth Cylinder <b>CJ2Y-Z</b>	Double acting	Single rod		●	●	●		<a href="http://www.smc.eu">www.smc.eu</a>
Low Speed Cylinder <b>CJ2X-Z</b>	Double acting	Single rod		●	●	●		<a href="http://www.smc.eu">www.smc.eu</a>

\*: The air cylinder with end lock has the same shape as the current product. \*: For details about the clean series, refer to the catalogue on [www.smc.eu](http://www.smc.eu).  
\*: Air cushion is only available for Ø 10 and Ø 16.



# 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	5	23	30		47	54		
Symbol	Specifications	Applicable bore size	Ø 6 to Ø 16				Ø 10, Ø 16				
Standard	Standard	Ø 6 to Ø 16	●	●	●	●	●	●	●		
D	Built-in magnet		●	●	●	●	●	●	●		
CJ2□-□A	Air cushion	Ø 10, Ø 16	●	●	—	—	—	—	—		
10-, 11-	Clean series*1	Ø 6 to Ø 16	●	●*10	○	○	—	—	—		
25A-	Copper (Cu) and Zinc (Zn)-free*6	Ø 10, Ø 16	●	○	○	○	○	○	○		
XB6	Heat resistant cylinder (−10 to 150°C)*3, 4	Ø 6 to Ø 16	◎	◎	○	○	○	○	○		
XB7	Cold resistant cylinder (−40 to 70°C)*3, 4		◎	◎	○	○	○	○	○		
XB9	Low speed cylinder (10 to 50 mm/s)*4		◎	—	—	—	—	—	—		
XB13	Low speed cylinder (5 to 50 mm/s)	Ø 6	◎	—	—	—	—	—	—		
XC3	Special port position*2, 4	Ø 6 to Ø 16	◎	○	—	—	◎	—	—		
XC8	Adjustable stroke cylinder/ Adjustable extension type*4	Ø 10, Ø 16	◎	—	○	○	○	○	○		
XC9	Adjustable stroke cylinder/ Adjustable retraction type*4		◎	—	○	—	◎	○	—		
XC10	Dual stroke cylinder/Double rod type*4		◎	—	○	○	◎	○	○		
XC11	Dual stroke cylinder/Single rod type*4		◎	—	—	—	○	—	—		
XC22	Fluororubber seal*4	Ø 6 to Ø 16	◎	◎	◎	◎	◎	○	○		
XC51	With hose nipple		◎	◎	◎	◎	◎	◎	◎		
XC85	Grease for food processing equipment	Ø 10, Ø 16	◎	◎	◎	◎	◎	◎	◎		
X446	PTFE grease		◎	◎	◎	◎	◎	◎	◎		
X773	Short pitch mounting	Ø 6	—	—	◎	—	—	—	—		

\*1: Mounting type: Not compatible with the clevis type.

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

\*2: An auto switch is available in the band mounting type only.

\*3: The products with an auto switch are not compatible.

\*4: The products with an air cushion are not compatible.

\*5: For details about the smooth cylinder and low speed cylinder, refer to the catalogue on [www.smc.eu](http://www.smc.eu).

\*6: For details, refer to the catalogue on [www.smc.eu](http://www.smc.eu).

\*7: The shape is the same as the current product.

\*8: Available only for locking at head end.

\*9: Available only for locking at rod end.

\*10: Ø 10 and Ø 16 only

\*11: Copper and fluorine-free [20-] are available as standard products.

	CJ2Z (Built-in speed controller type)		CJ2R (Direct mount type)			CJ2RK (Direct mount, Non-rotating rod type)			CBJ2 (With end lock)*7	CJ2Y*5 Smooth Cylinder	CJ2X*5 Low Speed Cylinder	
	Double acting		Double acting	Single acting		Double acting	Single acting		Double 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	Single rod	
	66	73	78	82		86	89		93	—	—	
	Ø 10, Ø 16								Ø 16	Ø 10, Ø 16	Ø 10, Ø 16	Symbol
	●	●	●	●	●	●	●	●	●	●	●	Standard
	●	●	●	●	●	●	●	●	●	●	●	D
	—	—	○	—	—	—	—	—	—	—	—	CJ2□-□A
	—	—	●	○	○	—	—	—	○*8	—	—	10-, 11-
	○	○	○	○	○	○	○	○	○	○	○	25A-
	○	○	○	○	○	○	○	○	○	—	—	XB6
	○	○	○	○	○	○	○	○	—	—	—	XB7
	—	—	—	—	—	—	—	—	○	—	—	XB9
	—	—	—	—	—	—	—	—	—	—	—	XB13
	—	—	○	—	—	○	—	—	○	◎	○	XC3
	○	—	○	○	○	○	○	○	—	—	—	XC8
	—	—	◎	○	—	◎	○	—	○*9	◎	—	XC9
	○	—	○	○	○	○	○	○	○	○	—	XC10
	—	—	○	—	—	○	—	—	○*9	—	—	XC11
	○	○	◎	○	○	○	○	○	○	—	—	XC22
	◎	◎	◎	◎	◎	◎	◎	◎	—	—	—	XC51
	◎	◎	◎	◎	◎	◎	◎	◎	—	—	—	XC85
	◎	◎	◎	◎	◎	◎	◎	◎	—	—	—	X446
	—	—	—	—	—	—	—	—	—	—	—	X773

Standard	Double Acting, Single Rod	CJ2
Standard	Double Acting, Double Rod	CJ2W
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	Double 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
With End Lock	Double Acting, Single Rod	CBJ2
With End Lock	Auto Switch	Auto Switch
With End Lock	Made to Order	Made to Order

# Air Cylinder: Standard Type Double Acting, Single Rod

## Series CJ2

Ø 6, Ø 10, Ø 16

RoHS



### How to Order

**CJ2B16-60A Z- - -**

**With auto switch** **CDJ2B16-60A 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

\*: Foot/Flange brackets are shipped together with the product, but not assembled.  
\*: Double clevis is only available for Ø 10 and Ø 16.

**Cylinder standard stroke [mm]**  
Refer to "Standard Strokes" on page 6.

**Bore size**

6	6 mm
10	10 mm
16	16 mm

**Head cover port location**

—	Perpendicular to axis
R	Axial

\*: For double clevis, double side bossed, double foot and head flange, the port is located perpendicular to the cylinder axis.

**Pivot bracket**

—	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.  
\*: Except Ø 6

**Rod end bracket**

—	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.  
\*: Ø 6: Except knuckle joint

**Made to Order**  
Refer to page 6 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 107 for auto switch mounting brackets.  
\*: Ø 6: Band mounting only

**Number of auto switches**

—	2 pcs.
S	1 pc.
n	"n" pcs.

**Auto switch**

—	Without auto switch
---	---------------------

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

★ Enter the auto switch mounting type (A or B) even when a built-in magnet cylinder without an auto switch is required.

\*: Refer to "Ordering Example of Cylinder Assembly" on page 6.

### Applicable Auto Switches/Refer to the Auto Switch Guide 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 (—)	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-colour indicator)	Grommet		3-wire (NPN)	5 V, 12 V		M9NVW	M9NW	M9NVW	M9NW	●	●	●	○	—	○	—		○	IC circuit				
				3-wire (PNP)			M9PWV	M9PW	M9PWV	M9PW	●	●	●	○	—	○	—							
				2-wire			12 V	M9BWV	M9BW	M9BWV	M9BW	●	●	●	○	—	○		—					
				3-wire (NPN)			M9NAV*1	M9NA*1	M9NAV*1	M9NA*1	○	○	●	○	—	○	—		○	IC circuit				
	Water resistant (2-colour indicator)	Grommet		3-wire (PNP)	5 V, 12 V		M9PAV*1	M9PA*1	M9PAV*1	M9PA*1	○	○	●	○	—	○	—		○	IC circuit				
				2-wire	12 V		M9BAV*1	M9BA*1	M9BAV*1	M9BA*1	○	○	●	○	—	○	—		○	—				
	With diagnostic output (2-colour indicator)	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*2	A93	A93V*2	A93	●	●	●	●	—	—	—	—			
									100 V or less	A90V	A90	A90V	A90	●	—	●	—	—	—	—	—	—	IC circuit	
		—		—	C73C				A73C	—	●	—	●	●	●	—	—	—	—	—				
		24 V or less		—	C80C				A80C	—	●	—	●	●	●	—	—	—	—	—	IC circuit			
Diagnostic indication (2-colour indicator)		Grommet	Yes	—	—	—	A79W	—	●	—	●	—	—	—	—	—	—	—						

\*1: 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.

\*2: 1 m type lead wire is only applicable to D-A93.

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

\*: Since there are other applicable auto switches than listed above, refer to page 108 for details.

\*: For details about auto switches with pre-wired connector, refer to the Auto Switch Guide on [www.smc.eu](http://www.smc.eu).

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

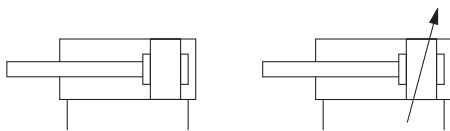
\*: The D-A90□/M90□□/A70□□/A80□□/F70□□/J70□□ auto switches are shipped together, (but not assembled). (For band mounting, only the auto switch mounting brackets are assembled before shipment.)



## Symbol

Rubber bumper

Air cushion



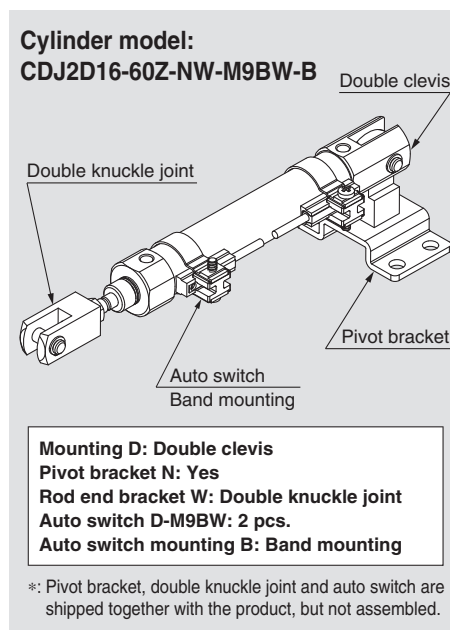
## Made to Order

(For details, refer to pages 111 to 120.)

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
-XB13*1	Low speed cylinder (5 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
-X773*1	Short pitch mounting

\*1: Ø 6 only

## Ordering Example of Cylinder Assembly



\*: Except Ø 6

## Specifications

Bore size [mm]		6	10	16
Action		Double acting, Single rod		
Fluid		Air		
Proof pressure		1 MPa		
Maximum operating pressure		0.7 MPa		
Minimum operating pressure	Rubber bumper	0.12 MPa	0.06 MPa	
	Air cushion	—	0.1 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	Rubber bumper/Air cushion	
Lubrication		Not required (Non-lube)		
Piston speed	Rubber bumper	50 to 750 mm/s		
	Air cushion	—	50 to 1000 mm/s	
Allowable kinetic energy	Rubber bumper	0.012 J	0.035 J	0.090 J
	Air cushion (Effective cushion length)	—	0.07 J (9.4 mm)	0.18 J (9.4 mm)
Stroke length tolerance		+1.0 0		

## Standard Strokes

Bore size	Standard stroke	Maximum manufacturable stroke [mm]
6	15, 30, 45, 60	200
10	15, 30, 45, 60, 75, 100, 125, 150	400
16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200	400

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

\*: Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on [www.smc.eu](http://www.smc.eu). In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

## Mounting and Accessories

●...Mounted on the product. ○...Can be ordered within the cylinder model.

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.

\*: Double clevis is only available for Ø 10 and Ø 16.

## Mounting Brackets/Part No.

Mounting bracket	Bore size [mm]		
	6	10	16
Foot	CJ-L006C	CJ-L010C	CJ-L016C
Flange	CJ-F006C	CJ-F010C	CJ-F016C
T-bracket*	—	CJ-T010C	CJ-T016C

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

Refer to pages 101 to 108 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.

## Moisture Control Tube Series IDK

When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions. Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to the IDK series in the catalogue on [www.smc.eu](http://www.smc.eu).

## Weights

Bore size [mm]		Rubber bumper			Air cushion	
		6	10	16	10	16
Basic weight (When the stroke is zero)	Basic	20	22	46	39	66
	Axial piping	17	22	46	39	66
	Double clevis (including clevis pin)	—	24	54	43	74
	Head-side bossed	20	23	48	40	68
Additional weight per 15 mm of stroke		2	4	7	4	7
Mounting bracket weight	Single foot	8	8	25	8	25
	Double foot	16	16	50	16	50
	Rod flange	5	5	13	5	13
	Head flange	5	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	1	2	1	2
	Rod end cap (Round type)	1	1	2	1	2
	T-bracket	—	32	50	32	50

## ⚠ Precautions

Refer to page 121 before handling.

※: Mounting nut and rod end nut are included in the basic weight.

※: Mounting nut is not included in the basic weight for the double clevis.

Calculation:

Example) CJ2L10-45Z

- Basic weight ..... 22 (Ø 10)
- Additional weight ..... 4/15 stroke
- Cylinder stroke ..... 45 stroke
- Mounting bracket weight ..... 8 (Axial foot)

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

## Clean Series

10-CJ2 Mounting 6 10 - Stroke Head cover port location Z 16

• 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.

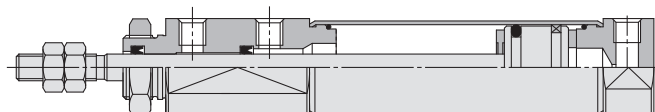


## Specifications

Action		Double acting, Single rod
Bore size [mm]		6, 10, 16
Maximum operating pressure		0.7 MPa
Minimum operating pressure	Ø 6	0.14 MPa
	Ø 10, Ø 16	0.08 MPa
Cushion		Rubber bumper/Air cushion
Standard stroke [mm]		Same as standard type. (Refer to page 6.)
Auto switch		Mountable (Band mounting)
Mounting		Basic, Double-side bossed*, Single/Double foot*, Rod/Head flange*

※: Ø 10 and Ø 16 only

## Construction



※: The above figure is for Ø 16.

For the detailed specifications, refer to the catalogue on [www.smc.eu](http://www.smc.eu).

## Low Speed Cylinder

CJ2 X Mounting 10 16 - Stroke Head cover port location 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.

## 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	Ø 10	0.035 J
	Ø 16	0.090 J

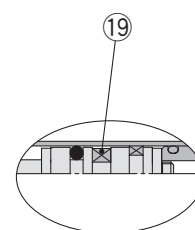
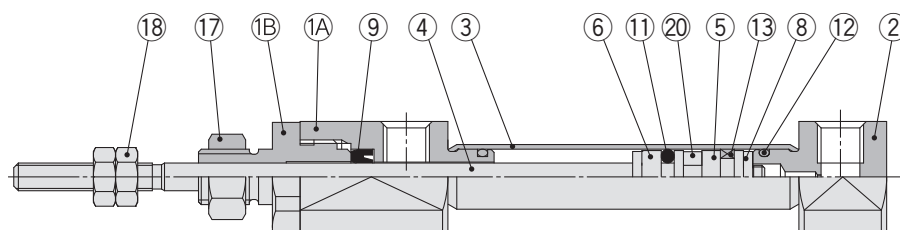
For details, refer to the catalogue on [www.smc.eu](http://www.smc.eu).



## Construction (Not able to disassemble)

Ø 6

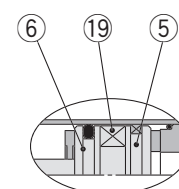
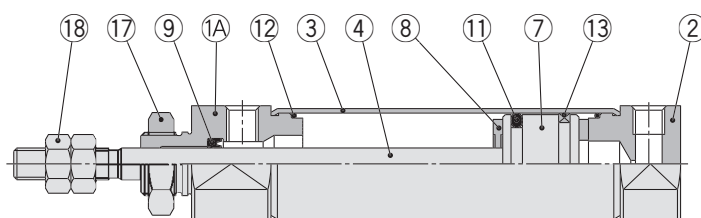
Rubber bumper



With auto switch

Ø 10, Ø 16

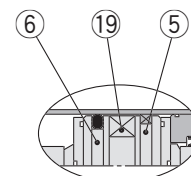
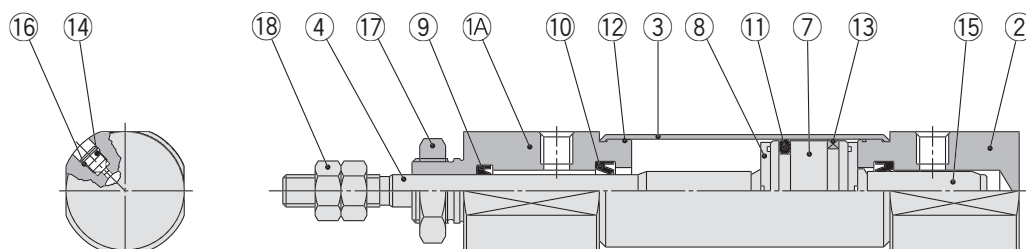
Rubber bumper



With auto switch

Ø 10, Ø 16

Air cushion



With auto switch

## Component Parts

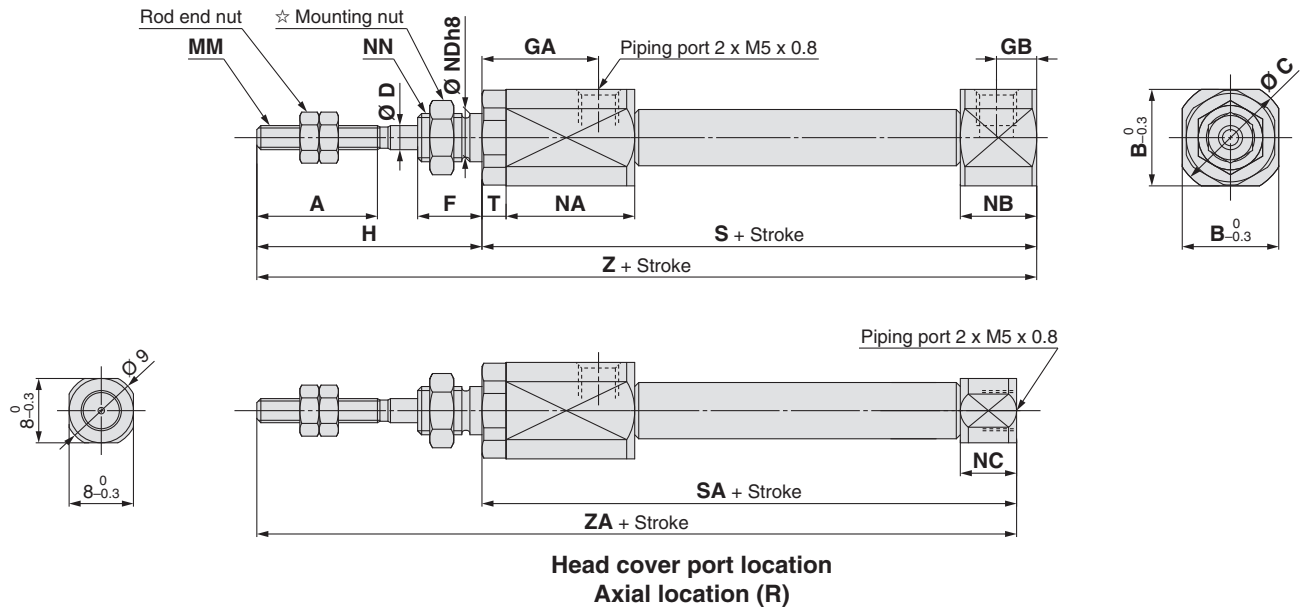
No.	Description	Material	Note
1A	Rod cover	Aluminium alloy	
1B	Seal retainer	Aluminium alloy	Ø 6 only
2	Head cover	Aluminium alloy	
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminium alloy	
6	Piston B	Aluminium alloy	
7	Piston	Aluminium alloy	
8	Bumper	Urethane	
9	Rod seal	NBR	
10	Cushion seal	NBR	

No.	Description	Material	Note
11	Piston seal	NBR	
12	Tube gasket	NBR	
13	Wear ring	Resin	
14	Cushion needle	Carbon steel	
15	Cushion ring	Aluminium alloy	
16	Needle seal	NBR	
17	Mounting nut	Rolled steel	
18	Rod end nut	Rolled steel	
19	Magnet	—	
20	Spacer	Aluminium alloy	Ø 6: Without magnet

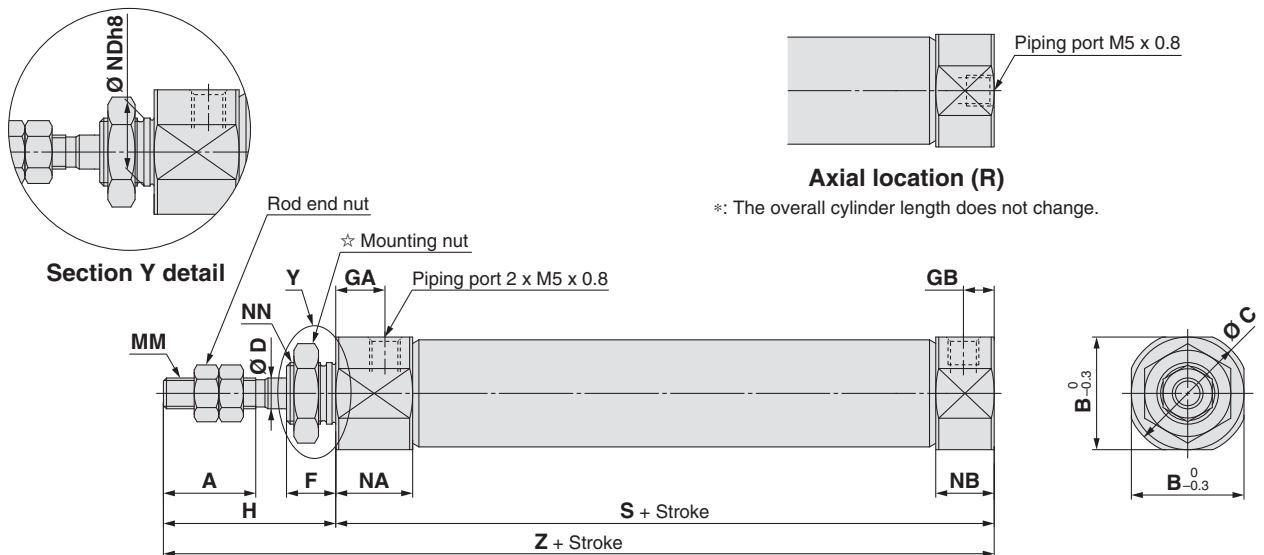
## Dimensions

### Basic (B)

**CJ2B6 – Stroke Head cover port location Z**



**CJ2B  $\frac{10}{16}$  - Stroke Head cover port location Z**



☆ For details of the mounting nut, refer to page 22.

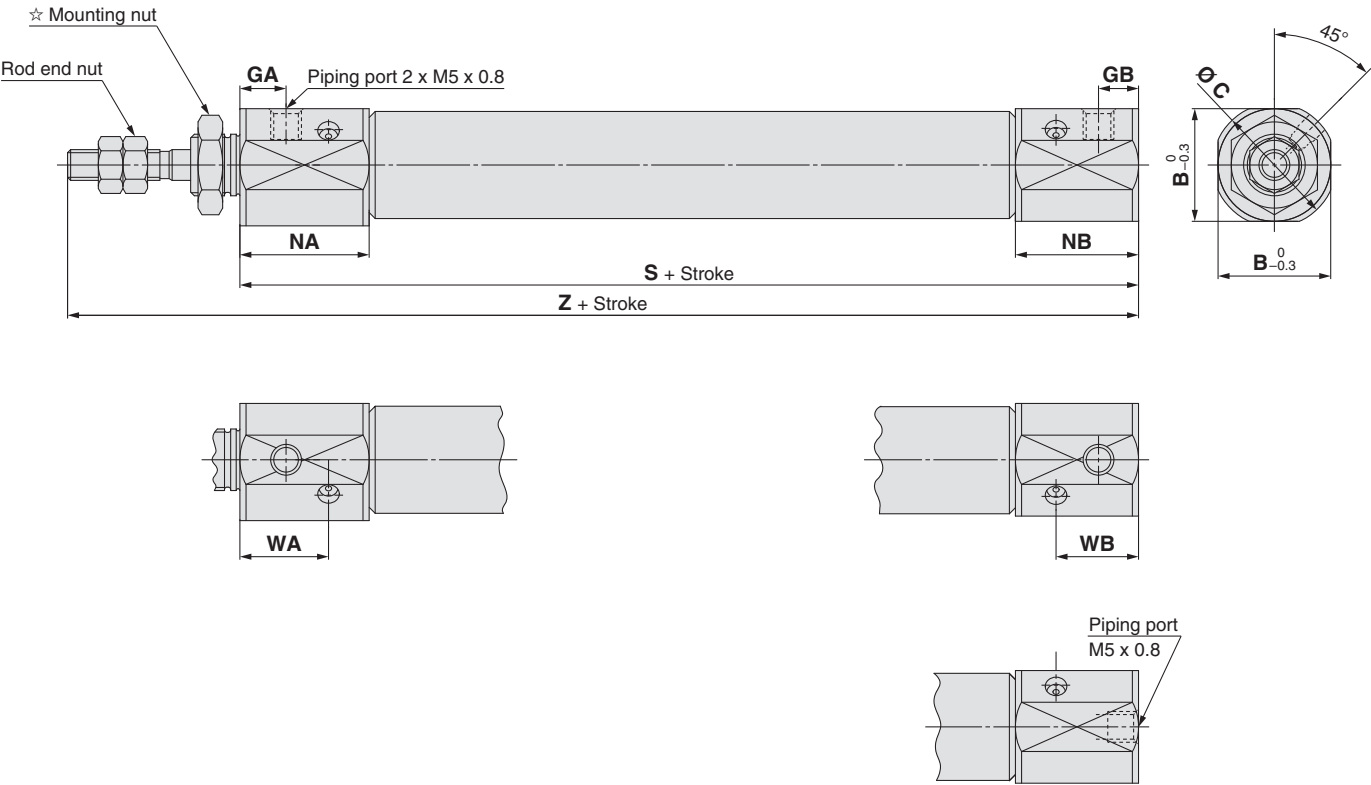
[mm]

Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	NC	NDh8	NN	S	SA	T	Z	ZA
<b>6</b>	15	12	14	3	8	14.5	5	28	M3 x 0.5	16	9.5	7	6 <sub>-0.018</sub> <sup>0</sup>	M6 x 1.0	51.5	49	3	79.5	77
<b>10</b>	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	—	—	74	—
<b>16</b>	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	—	—	75	—

Dimensions

Basic (B)

With air cushion: CJ2B  $\frac{10}{16}$  – Stroke A Head cover port location Z



☆ For details of the mounting nut, refer to page 22.

Dimensions other than the table below are the same as those on page 9. [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

Head cover port location  
Axial location (R)

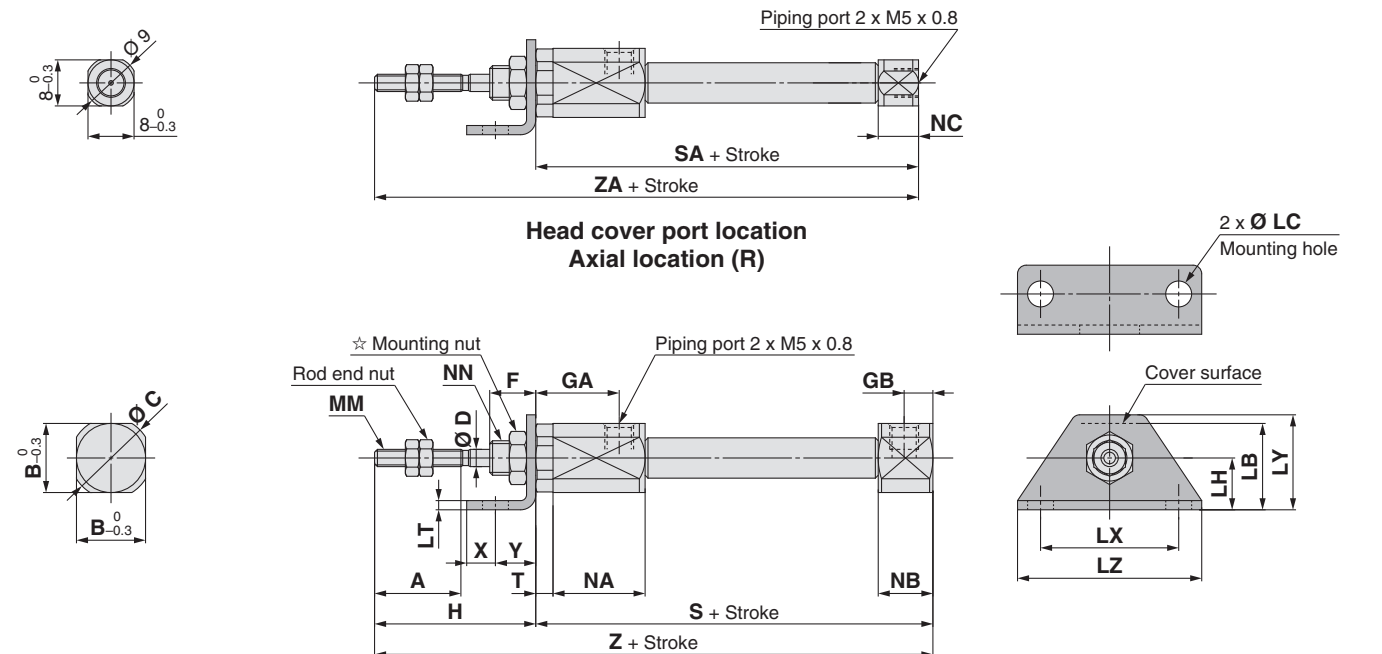
※: The overall cylinder length does not change.

Double Acting, Single Rod	CJ2
Double Acting, Double Rod	CJ2W
Single Acting, Spring Return/Extend	CJ2
Double Acting, Single Rod	CJ2K
Single Acting, Spring Return/Extend	CJ2K
Double Acting, Single Rod	CJ2Z
Double Acting, Double Rod	CJ2ZW
Double Acting, Single Rod	CJ2R
Single Acting, Spring Return/Extend	CJ2R
Double Acting, Single Rod	CJ2RK
Single Acting, Spring Return/Extend	CJ2RK
With End Lock	CBJ2
Auto Switch	Auto Switch
Made to Order	Made to Order

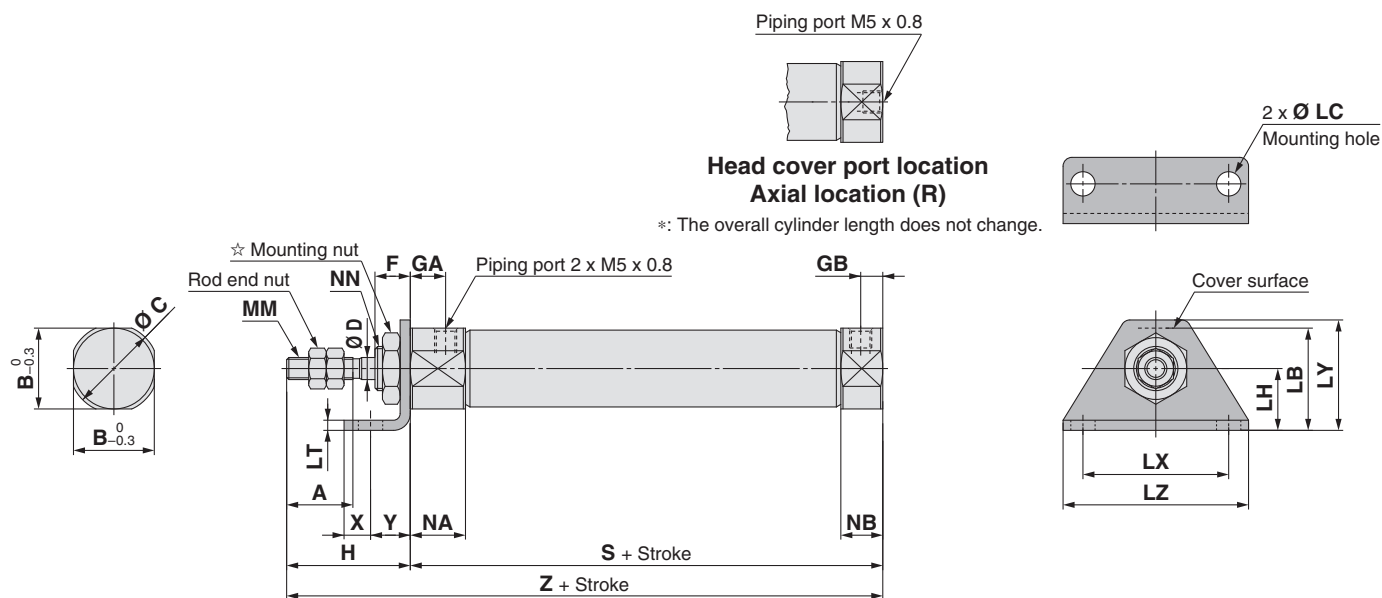
## Dimensions

### Single foot (L)

**CJ2L6 – Stroke Head cover port location Z**



**CJ2L**  $\frac{10}{16}$  – **Stroke** **Head cover port location** **Z**



☆ For details of the mounting nut, refer to page 22.

[mm]

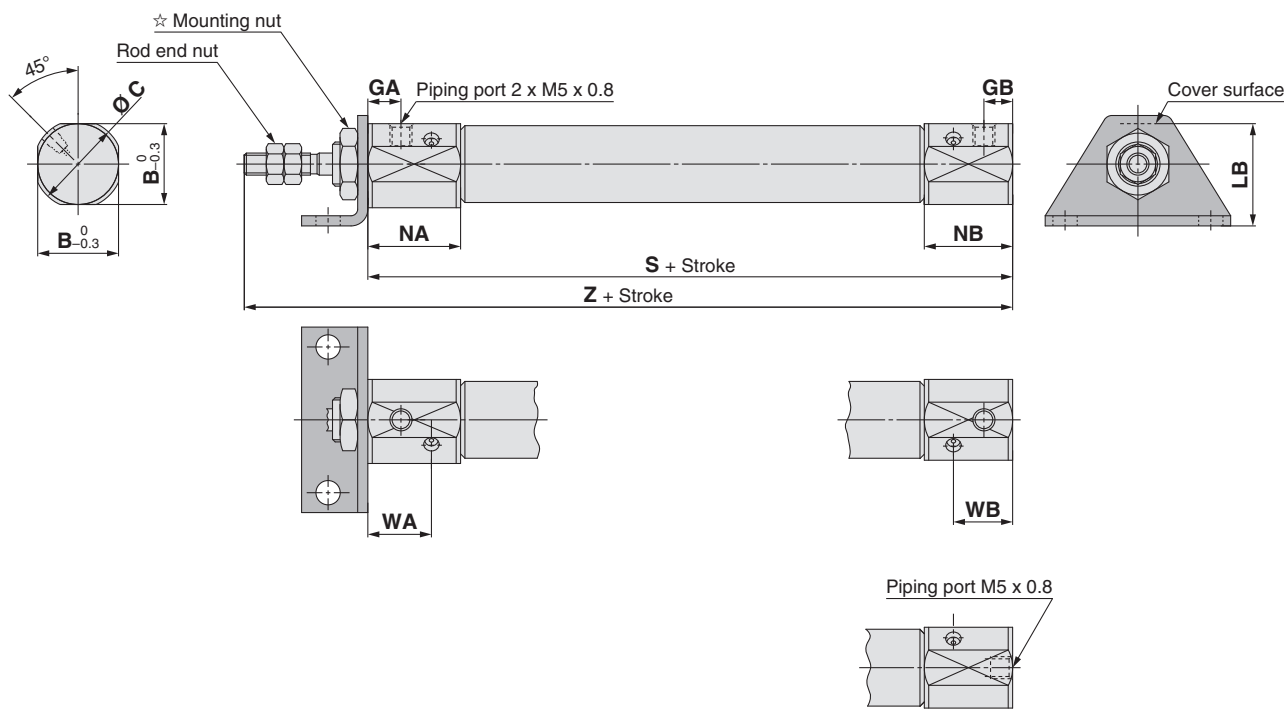
Bore size	A	B	C	D	F	GA	GB	H	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NC	NN	S	SA	T	X	Y	Z	ZA
<b>6</b>	15	12	14	3	8	14.5	5	28	15	4.5	9	1.6	24	16.5	32	M3 x 0.5	16	9.5	7	M6 x 1.0	51.5	49	3	5	7	79.5	77
<b>10</b>	15	12	14	4	8	8	5	28	15	4.5	9	1.6	24	16.5	32	M4 x 0.7	12.5	9.5	—	M8 x 1.0	46	—	—	5	7	74	—
<b>16</b>	15	18.3	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

Single foot (L)

With air cushion: CJ2L 10 16 – 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 22.

Dimensions other than the table below are the same as those on page 11. [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

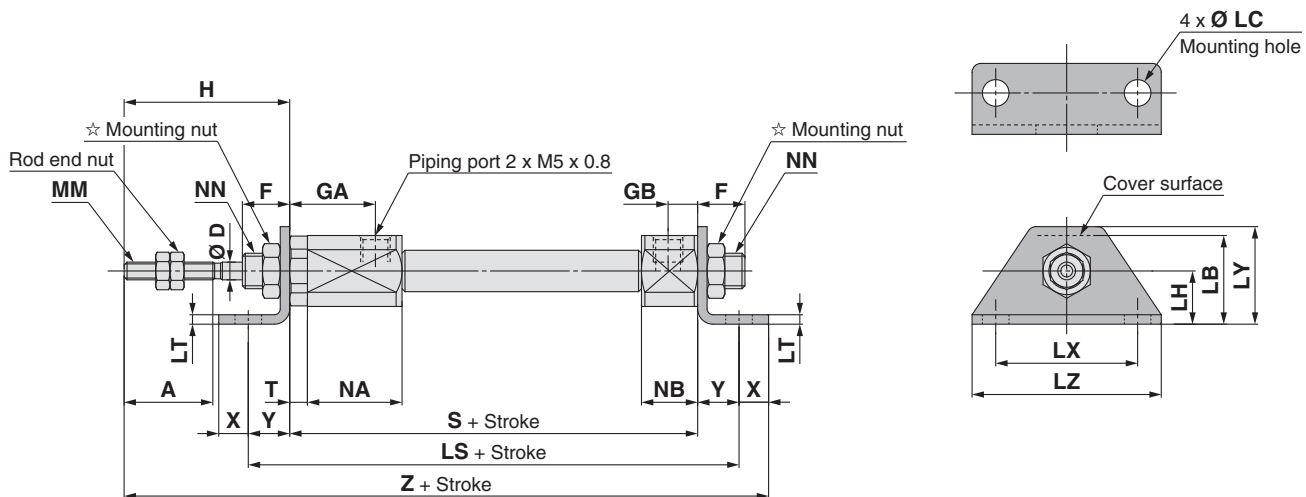
Double Acting, Single Rod	CJ2
Standard	CJ2W
Double Acting, Double Rod	CJ2
Single Acting, Spring Return/Extend	CJ2K
Non-rotating Rod	CJ2K
Double Acting, Single Rod	CJ2Z
Double Acting, Double Rod	CJ2ZW
Built-in Speed Controller	CJ2R
Double Acting, Single Rod	CJ2R
Double Acting, Double Rod	CJ2RK
Direct Mount	CJ2RK
Single Acting, Spring Return/Extend	CBJ2
With End Lock	Auto Switch
Made to Order	

# Series CJ2

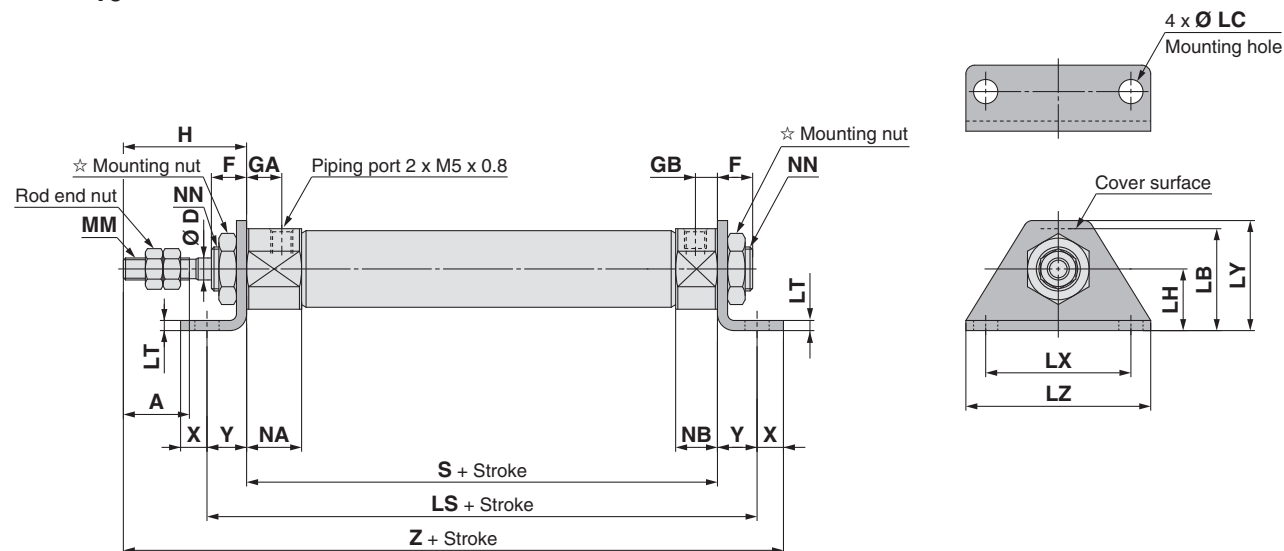
## Dimensions

### Double foot (M)

#### CJ2M6 – Stroke Z



#### CJ2M 10/16 – Stroke Z



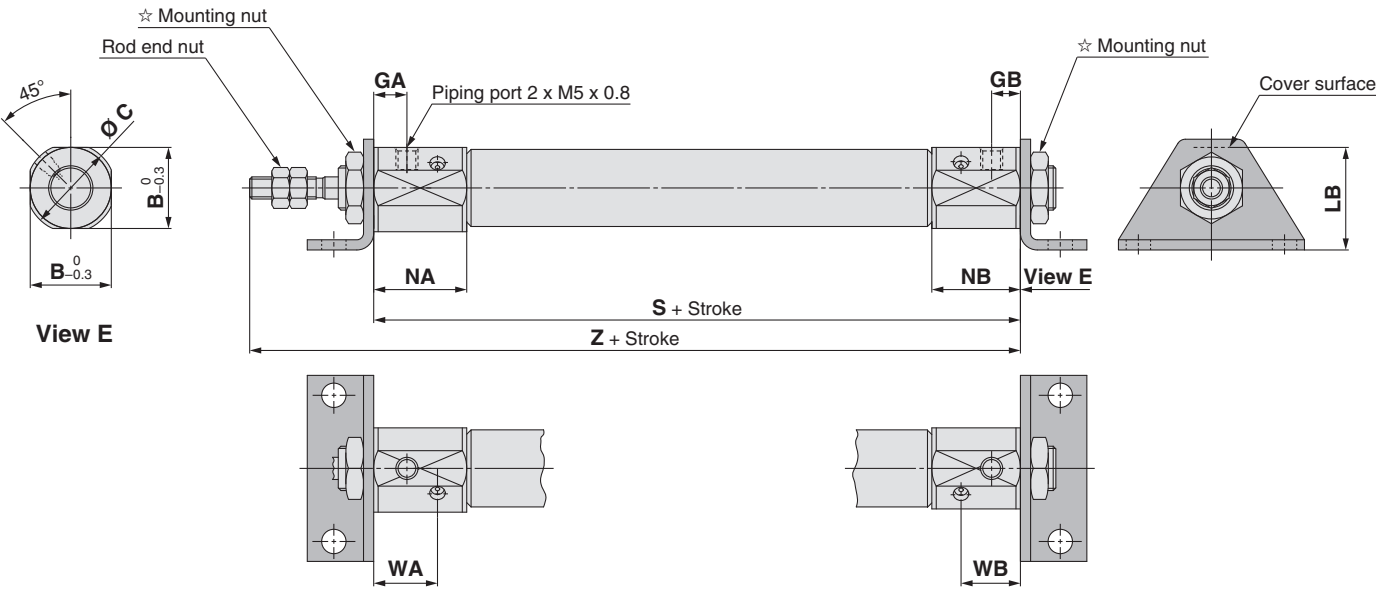
☆ For details of the mounting nut, refer to page 22.

Bore size	A	D	F	GA	GB	H	LB	LC	LH	LS	LT	LX	LY	LZ	MM	NA	NB	NN	S	T	X	Y	Z
6	15	3	8	14.5	5	28	15	4.5	9	65.5	1.6	24	16.5	32	M3 x 0.5	16	9.5	M6 x 1.0	51.5	3	5	7	91.5
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

Dimensions

Double foot (M)

With air cushion: CJ2M  $\frac{10}{16}$  – Stroke AZ



☆ For details of the mounting nut, refer to page 22.

With Air Cushion/Dimensions other than the table below are the same as those on page 13. [mm]

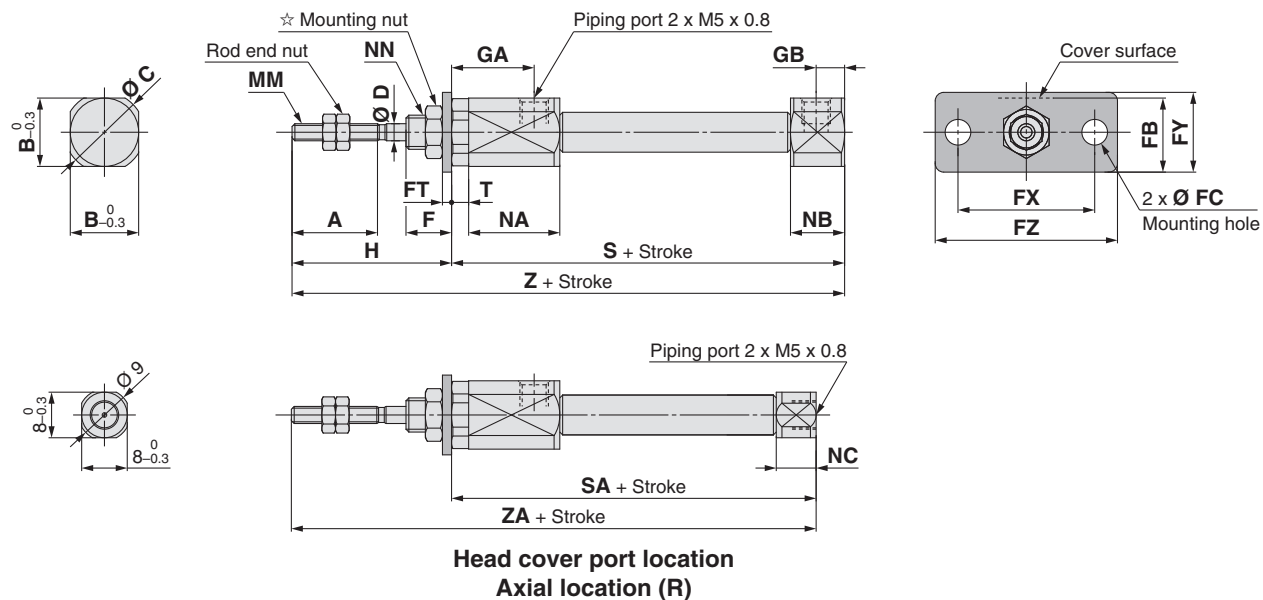
Bore size	B	C	GA	GB	LB	NA	NB	WA	WB	S	Z
10	15	17	7.5	6.5	16.5	21	20	14.4	13.4	65	93
16	18.3	20	7.5	6.5	23	21	20	14.4	13.4	66	94

Double Acting, Single Rod	CJ2
Double Acting, Double Rod	CJ2W
Single Acting, Spring Return/Extend	CJ2
Double Acting, Single Rod	CJ2K
Single Acting, Spring Return/Extend	CJ2K
Double Acting, Single Rod	CJ2Z
Double Acting, Double Rod	CJ2ZW
Double Acting, Single Rod	CJ2R
Single Acting, Spring Return/Extend	CJ2R
Double Acting, Single Rod	CJ2RK
Single Acting, Spring Return/Extend	CJ2RK
With End Lock	CBJ2
Auto Switch	Auto Switch
Made to Order	Made to Order

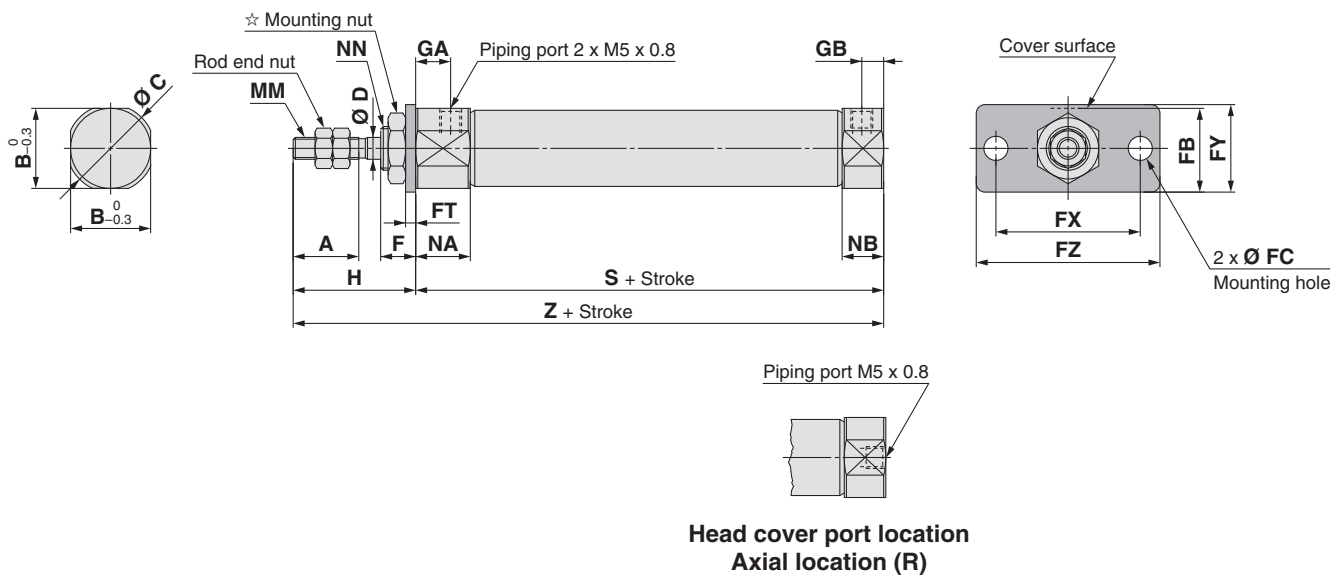
## Dimensions

### Rod flange (F)

#### CJ2F6 – Stroke Head cover port location Z



#### CJ2F10/16 – Stroke Head cover port location Z



\*: The overall cylinder length does not change.

☆ For details of the mounting nut, refer to page 22.

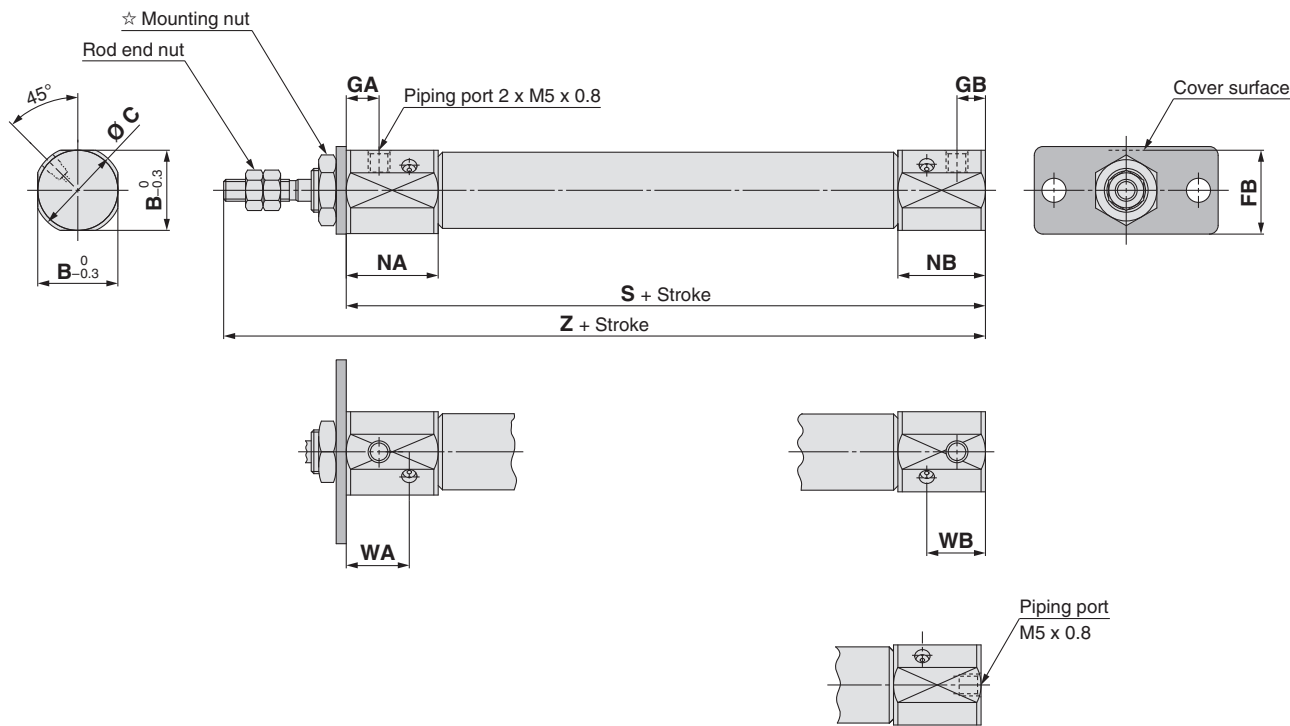
Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	GB	H	MM	NA	NB	NC	NN	S	SA	T	Z	ZA
6	15	12	14	3	8	13	4.5	1.6	24	14	32	14.5	5	28	M3 x 0.5	16	9.5	7	M6 x 1.0	51.5	49	3	79.5	77
10	15	12	14	4	8	13	4.5	1.6	24	14	32	8	5	28	M4 x 0.7	12.5	9.5	—	M8 x 1.0	46	—	—	74	—
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	8	5	28	M5 x 0.8	12.5	9.5	—	M10 x 1.0	47	—	—	75	—



Dimensions

Rod flange (F)

With air cushion: CJ2F  $\frac{10}{16}$  – 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 22.

Dimensions other than the table below are the same as those on page 15. [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

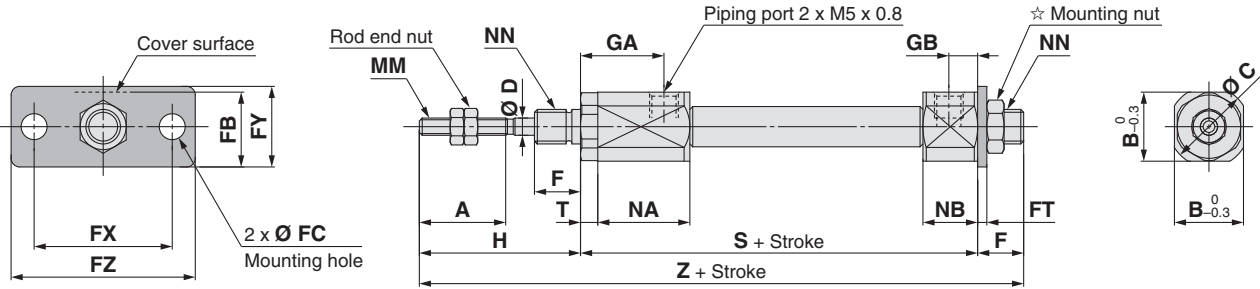
With End Lock	CBJ2
Direct Mount, Non-rotating Rod	CJ2RK
Direct Mount, Spring Return/Extend	CJ2R
Direct Mount, Single Rod	CJ2R
Built-in Speed Controller	CJ2ZW
Built-in Speed Controller	CJ2Z
Non-rotating Rod	CJ2K
Non-rotating Rod	CJ2K
Standard	CJ2W
Standard	CJ2
Double Acting, Double Rod	CJ2W
Double Acting, Single Rod	CJ2

# Series **CJ2**

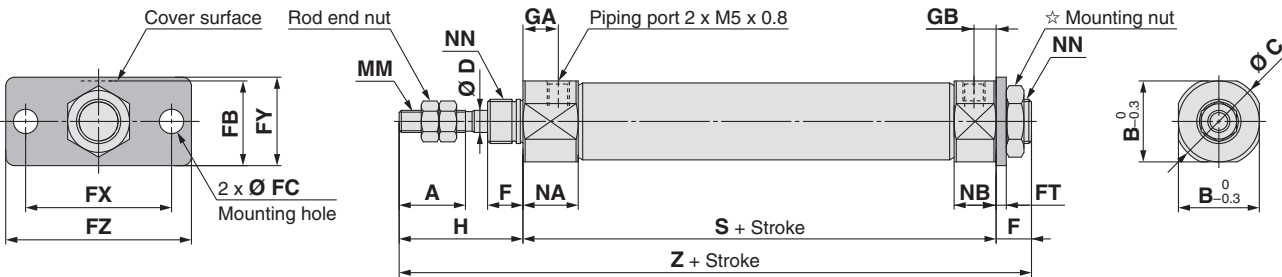
## Dimensions

### Head flange (G)

CJ2G6 – Stroke Z



CJ2G <sup>10</sup>/<sub>16</sub> – Stroke Z

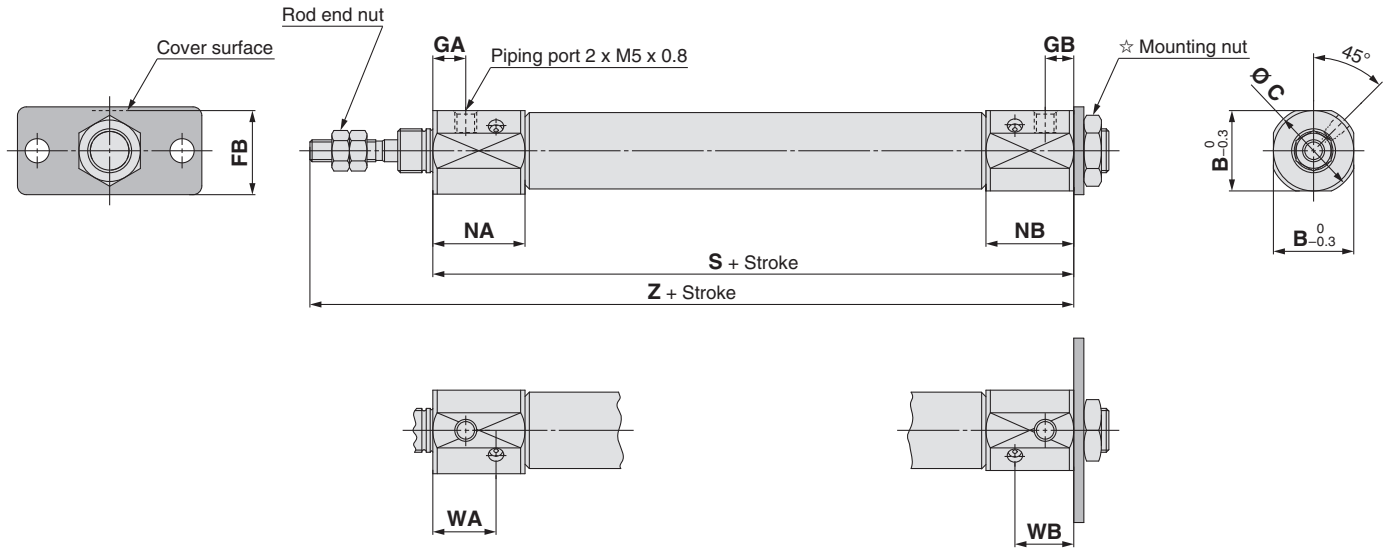


☆ For details of the mounting nut, refer to page 22.

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	GB	H	MM	NA	NB	NN	S	T	Z
6	15	12	14	3	8	13	4.5	1.6	24	14	32	14.5	5	28	M3 x 0.5	16	9.5	M6 x 1.0	51.5	3	87.5
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

**Head flange (G)**

With air cushion: CJ2G  $\frac{10}{16}$  - Stroke AZ



☆ For details of the mounting nut, refer to page 22.

**With Air Cushion**/Dimensions other than the table below are the same as those on page 17. [mm]

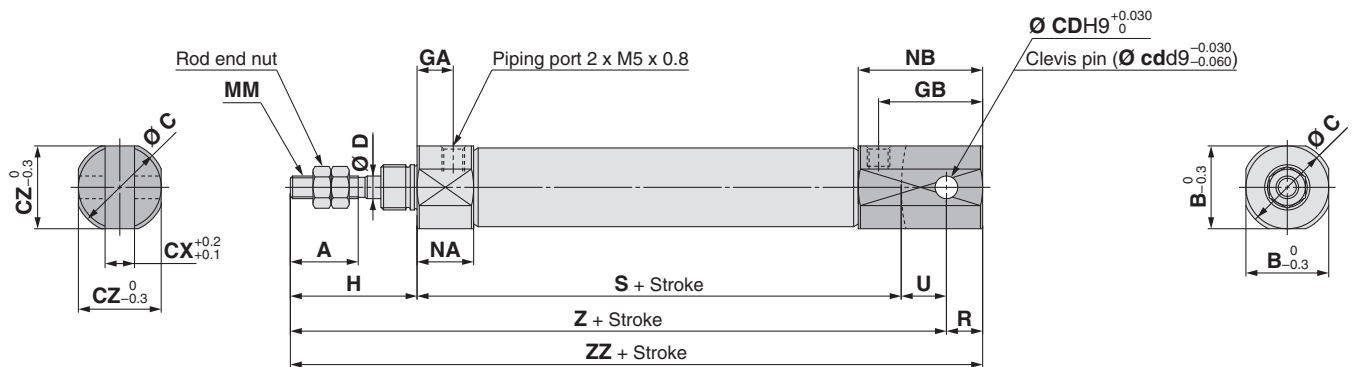
Bore size	B	C	FB	GA	GB	NA	NB	WA	WB	S	Z
<b>10</b>	15	17	14.5	7.5	6.5	21	20	14.4	13.4	65	93
<b>16</b>	18.3	20	19	7.5	6.5	21	20	14.4	13.4	66	94

# Series CJ2

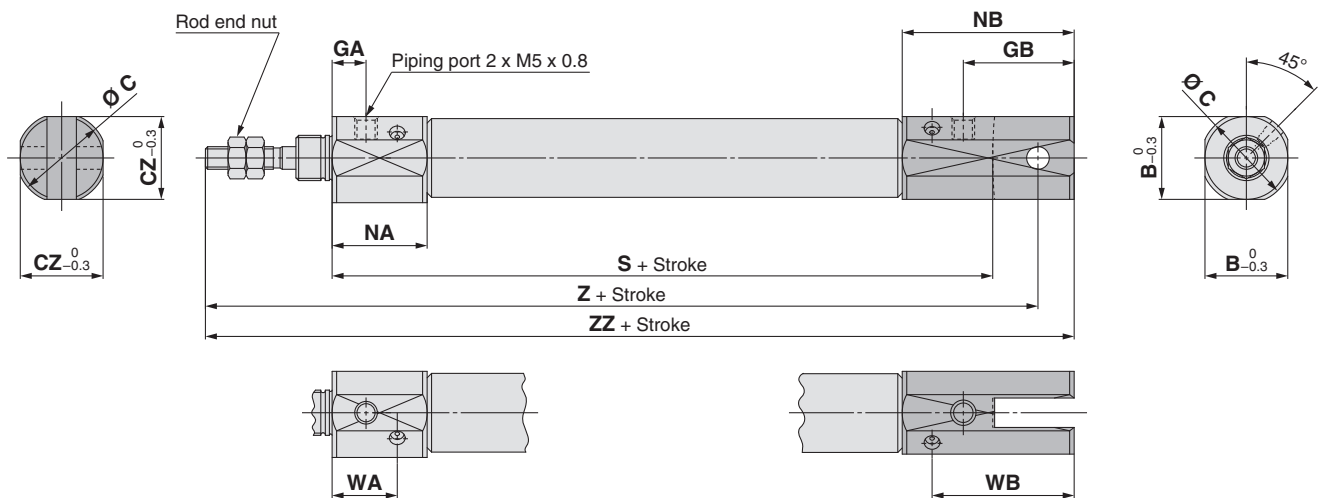
## Dimensions

### Double clevis (D)

CJ2D  $\frac{10}{16}$  - Stroke Z



With air cushion: CJ2D  $\frac{10}{16}$  - 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]

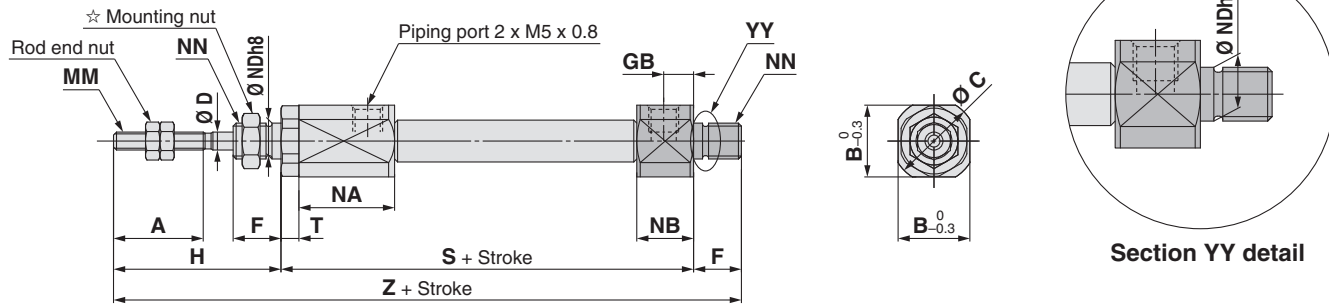
Bore size	B	C	CZ	GA	GB	NA	NB	WA	WB	S	Z	ZZ
10	15	17	15	7.5	19.5	21	33	14.4	26.4	65	101	106
16	18.3	20	18.3	7.5	24.5	21	38	14.4	31.4	66	104	112



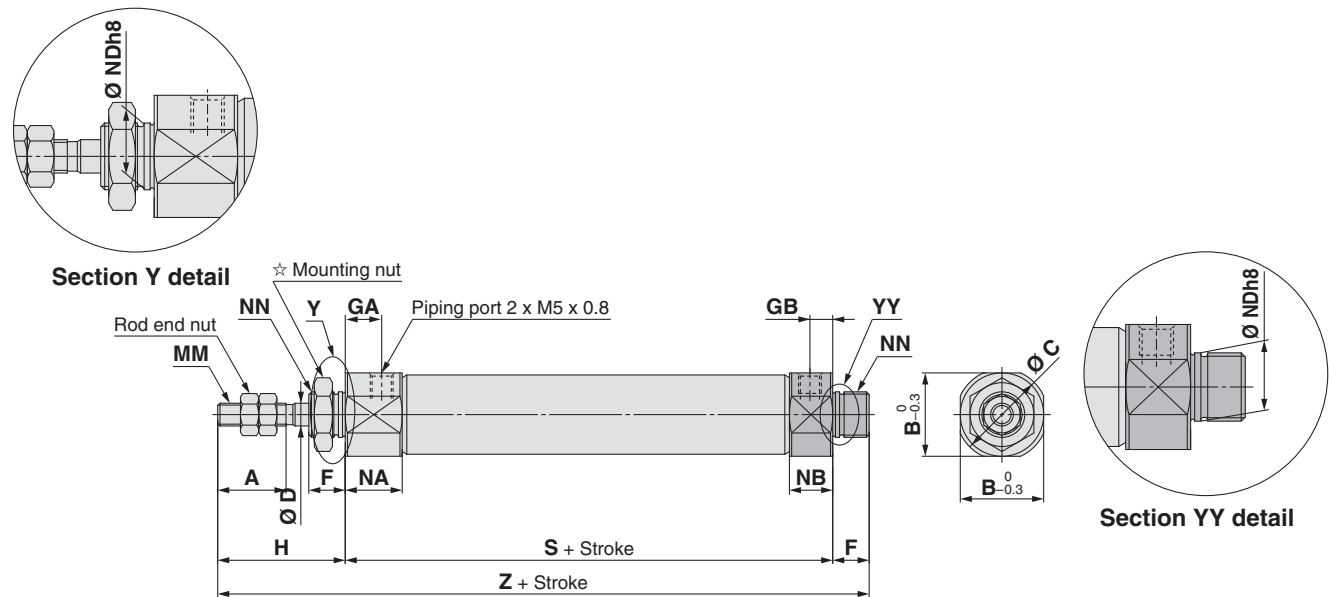
## Dimensions

### Double-side bossed (E)

CJ2E6 – Stroke Z



CJ2E 10/16 – Stroke Z



☆ For details of the mounting nut, refer to page 22.

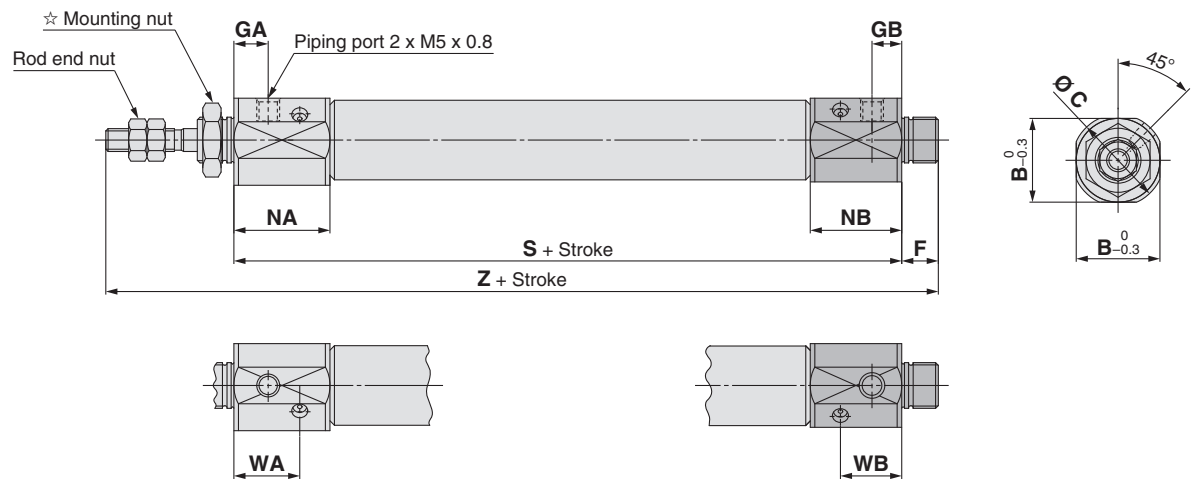
Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	NDh8	NN	S	T	Z
6	15	12	14	3	8	14.5	5	28	M3 x 0.5	16	9.5	6 <sup>0</sup> <sub>-0.018</sub>	M6 x 1.0	51.5	3	87.5
10	15	12	14	4	8	8	5	28	M4 x 0.7	12.5	9.5	8 <sup>0</sup> <sub>-0.022</sub>	M8 x 1.0	46	—	82
16	15	18.3	20	5	8	8	5	28	M5 x 0.8	12.5	9.5	10 <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	47	—	83

# Series CJ2

## Dimensions

### Double-side bossed (E)

With air cushion: CJ2E  $\frac{10}{16}$  - Stroke AZ



☆ For details of the mounting nut, refer to page 22.

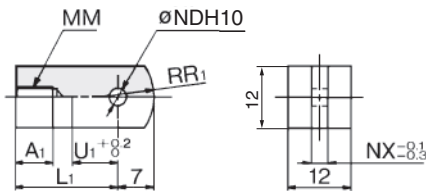
With Air Cushion/Dimensions other than the table below are the same as those on page 20. [mm]

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

## Series CJ2

# Dimensions of Accessories (Option)

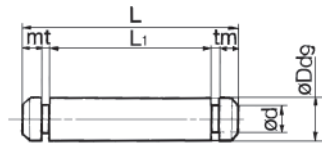
### Single Knuckle Joint



Material: Rolled steel

Part no.	Applicable bore size	A <sub>1</sub>	L <sub>1</sub>	MM	NDH10	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

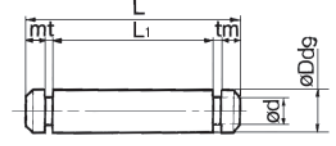


Material: Stainless steel

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
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 Ø 10 double clevis type, with air cushion and built-in speed controller.  
\*: Retaining rings are included with a clevis pin.

### Knuckle Pin

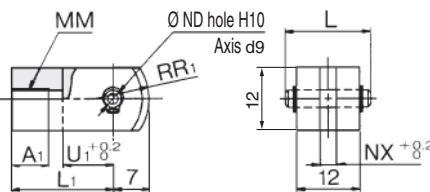


Material: Stainless steel

Part no.	Applicable bore size	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 Ø 10, a clevis pin is diverted.  
\*: Retaining rings are included with a knuckle pin.

### Double Knuckle Joint



Material: Rolled steel

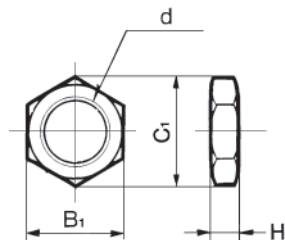
Part no.	Applicable bore size	A <sub>1</sub>	L	L <sub>1</sub>	MM
Y-J010C	10	8	15.2	21	M4 x 0.7
Y-J016C	16	11	16.6	21	M5 x 0.8

Part no.	NDd9	NDH10	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

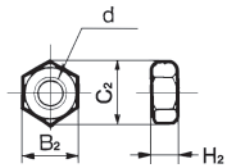


Material: Carbon steel

Part no.	Applicable bore size	B <sub>1</sub>	C <sub>1</sub>	d	H <sub>1</sub>
SNJ-006C	6	8	9.2	M6 x 1.0	4
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 Ø 16 non-rotating type. (Use SNJ-016C for Ø 10 non-rotating type.)

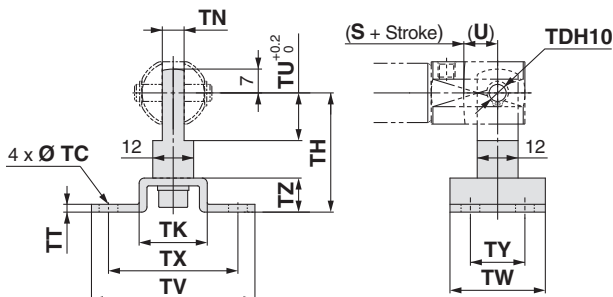
### Rod End Nut



Material: Carbon steel

Part no.	Applicable bore size	B <sub>2</sub>	C <sub>2</sub>	d	H <sub>2</sub>
NTJ-006B	6	5.5	6.4	M3 x 0.5	2.4
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



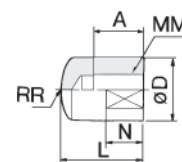
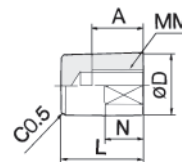
Part no.	Applicable bore size	TC	TDH10	TH	TK	TN	TT	TU	TV	TW	TX	TY	TZ
CJ-T010C	10	4.5	3.3 <sup>+0.048</sup> <sub>0</sub>	29	18	3.1	2	9	40	22	32	12	8
CJ-T016C	16	5.5	5 <sup>+0.048</sup> <sub>0</sub>	35	20	6.4	2.3	14	48	28	38	16	10

\*: 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 19.

### 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-CF006	CJ-CR006	6	6	8	11	M3 x 0.5	5	8	6
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** Ø 6, Ø 10, Ø 16

RoHS

## How to Order



With auto switch

**CJ2W** **B** **16** - **60** **A** **Z** - **—**  
**CDJ2W** **L** **16** - **60** **A** **Z** - **M9BW** **—** - **B** - **—**

With auto switch  
(Built-in magnet)

Mounting

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

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

Bore size

<b>6</b>	6 mm
<b>10</b>	10 mm
<b>16</b>	16 mm

Cylinder standard stroke [mm]  
Refer to "Standard Strokes" on page 24.

Cushion

—	Rubber bumper
<b>A</b>	Air cushion

\*: Ø 6: Rubber bumper only

Auto switch

—	Without auto switch
---	---------------------

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

★ Enter the auto switch mounting type (A or B) even when a built-in magnet cylinder without an auto switch is required.

Number of auto switches

—	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 107 for auto switch mounting brackets.

\*: Ø 6: Band mounting only

Made to Order

Refer to page 24 for details.

## Applicable Auto Switches/Refer to the Auto Switch Guide 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 (—)	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		
		3-wire (PNP)		M9PV			M9P	M9PV	M9P	●	●	●	○	—	○				
	Connector	2-wire		12 V	M9BV		M9B	M9BV	M9B	●	●	●	○	—	○	—			
	Diagnostic indication (2-colour indicator)	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*1	M9NA*1	M9NAV*1	M9NA*1	○	○	●	○	—	○		IC circuit
	3-wire (PNP)	M9PAV*1		M9PA*1	M9PAV*1			M9PA*1	○	○	●	○	—	○					
	2-wire	12 V		M9BAV*1	M9BA*1		M9BAV*1	M9BA*1	○	○	●	○	—	○	—				
	With diagnostic output (2-colour indicator)	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	—
						—	200 V	—	—	A72	A72H	●	—	●	—	—	—	—	
		Connector	No	2-wire	24 V	12 V	100 V	A93V*2	A93	A93V*2	A93	●	●	●	●	—	—		—
							100 V or less	A90V	A90	A90V	A90	●	—	●	—	—	—	IC circuit	
							—	—	C73C	A73C	—	●	—	●	●	●	—		—
							24 V or less	—	C80C	A80C	—	●	—	●	●	●	—	—	
	Diagnostic indication (2-colour indicator)	Grommet	Yes	—	—	—	A79W	—	●	—	●	—	—	—	—	—			

\*1: 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.

\*2: 1 m type lead wire is only applicable to D-A93.

\*: Lead wire length symbols: 0.5 m..... — (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 108 for details.

\*: For details about auto switches with pre-wired connector, refer to the Auto Switch Guide on [www.smc.eu](http://www.smc.eu).

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

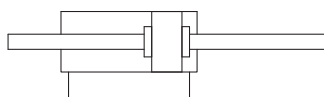
\*: The D-A93□/M9□□□/A7□□/A80□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only the auto switch mounting brackets are assembled before shipment.)



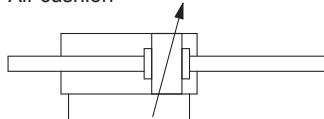


## Symbol

Double acting, Double rod, Rubber bumper



Air cushion



## Made to Order

(For details, refer to pages 111 to 120.)

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 101 to 108 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 121 before handling.

## Moisture Control Tube Series IDK



When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions. Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to the **IDK series in the catalogue on [www.smc.eu](http://www.smc.eu)**.

## Specifications

Bore size [mm]		6	10	16
Action		Double acting, Double rod		
Fluid		Air		
Proof pressure		1 MPa		
Maximum operating pressure		0.7 MPa		
Minimum operating pressure	Rubber bumper	0.15 MPa	0.1 MPa	
	Air cushion	—	0.1 MPa	
Ambient and fluid temperature		Without auto switch: -10 °C to 70 °C (No freezing) With auto switch: -10 °C to 60 °C		
Cushion		Rubber bumper	Rubber bumper/Air cushion	
Lubrication		Not required (Non-lube)		
Piston speed	Rubber bumper	50 to 750 mm/s		
	Air cushion	—	50 to 1000 mm/s	
Allowable kinetic energy	Rubber bumper	0.012 J	0.035 J	0.090 J
	Air cushion (Effective cushion length)	—	0.07 J (9.4 mm)	0.18 J (9.4 mm)
Stroke length tolerance		+1.0 0		

## Standard Strokes

Bore size	Standard stroke [mm]
6	15, 30, 45, 60
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 increments is possible. (Spacers are not used.) Produced upon receipt of order.

\*: Please consult with SMC for strokes which exceed the standard stroke length.

\*: Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on [www.smc.eu](http://www.smc.eu). In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

## Mounting and Accessories

Refer to page 22 for details about part numbers and dimensions.

●...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]		
	6	10	16
Foot	CJ-L006C	CJ-L010C	CJ-L016C
Flange	CJ-F006C	CJ-F010C	CJ-F016C

## Weights

Bore size [mm]		Rubber bumper			Air cushion	
		6	10	16	10	16
Basic weight (When the stroke is zero)	Basic	25	29	56	36	61
	Additional weight per 15 mm of stroke	3	4.5	7.5	4.5	7.5
Mounting bracket weight	Foot	16	16	50	16	50
	Flange	5	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	1	2	1	2
	Rod end cap (Round type)	1	1	2	1	2

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

Calculation:

Example) **CJ2WL10-45Z**

- Basic weight ..... 29 (Ø 10)
- Additional weight ..... 4.5/15 stroke
- Cylinder stroke ..... 45 stroke
- Mounting bracket weight ..... 16 (Foot)

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

Clean Series

10-CJ2W Mounting 10 – Stroke Z  
• Clean Series

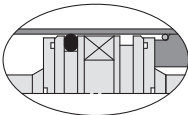
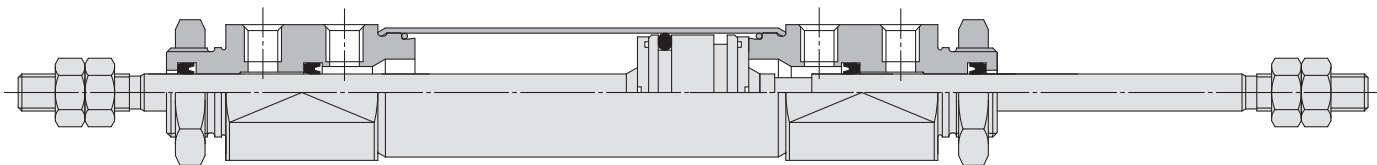
Air cylinder which is applicable for the system which discharges leakage from the rod section directly into the outside of clean room by relief port and making an actuator's rod section having a double seal construction.

For the detailed specifications, refer to the catalogue on [www.smc.eu](http://www.smc.eu).

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 24.)
Auto switch	Mountable (Band mounting)
Mounting	Basic, Foot, Flange

Construction (Not able to disassemble)

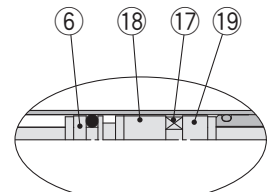
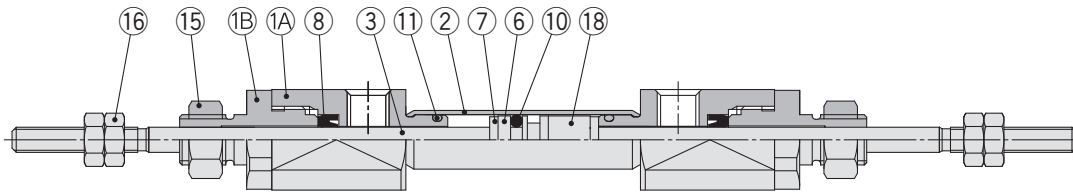


With auto switch

## Construction (Not able to disassemble)

Ø 6

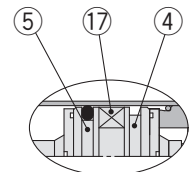
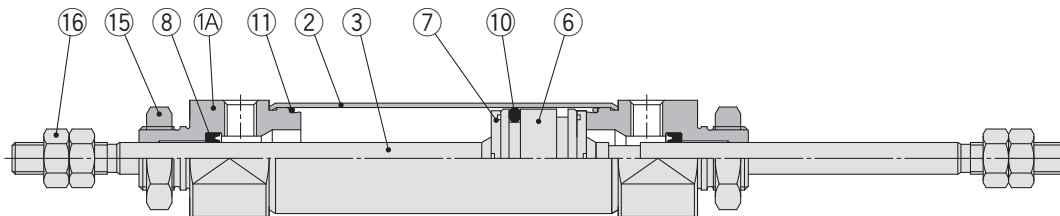
Rubber bumper



With auto switch

Ø 10, Ø 16

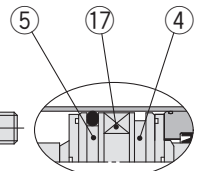
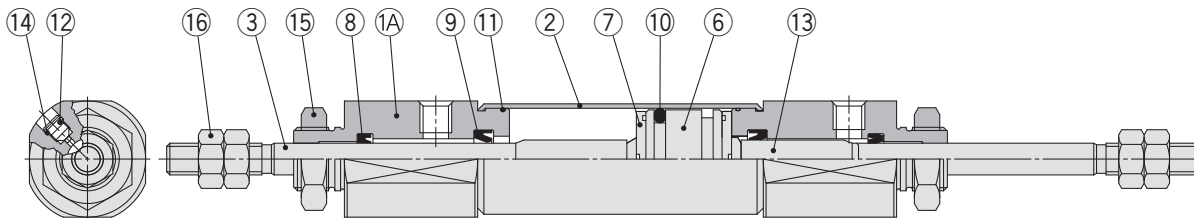
Rubber bumper



With auto switch

Ø 10, Ø 16

Air cushion



With auto switch

## Component Parts

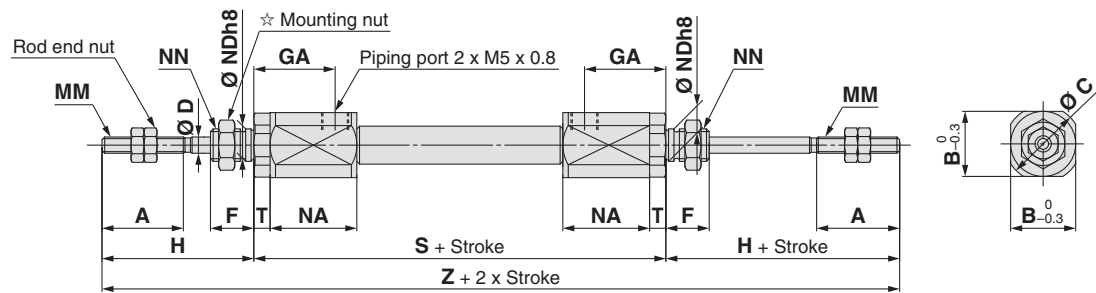
No.	Description	Material	Note
1A	Rod cover	Aluminium alloy	
1B	Seal retainer	Aluminium alloy	Ø 6 only
2	Cylinder tube	Stainless steel	
3	Piston rod	Stainless steel	
4	Piston A	Aluminium alloy	
5	Piston B	Aluminium alloy	
6	Piston	Aluminium alloy	
7	Bumper	Urethane	
8	Rod seal	NBR	
9	Cushion seal	NBR	

No.	Description	Material	Note
10	Piston seal	NBR	
11	Tube gasket	NBR	
12	Cushion needle	Carbon steel	
13	Cushion ring	Aluminium alloy	
14	Needle seal	NBR	
15	Mounting nut	Rolled steel	
16	Rod end nut	Rolled steel	
17	Magnet	—	
18	Spacer A	Aluminium alloy	Ø 6 only
19	Spacer B	Aluminium alloy	Ø 6 only

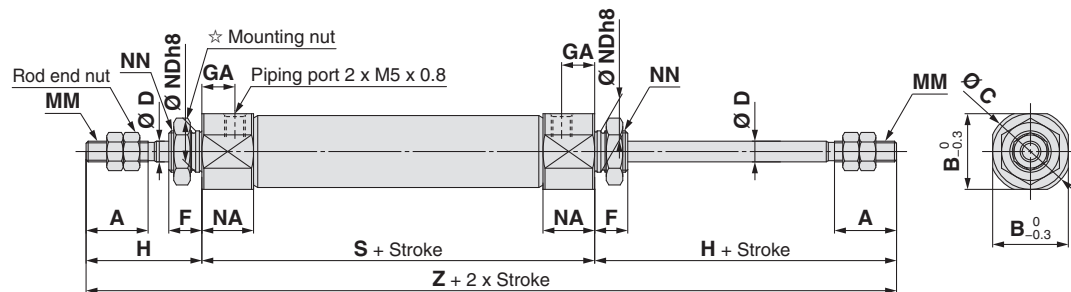
# Series CJ2W

## Basic (B)

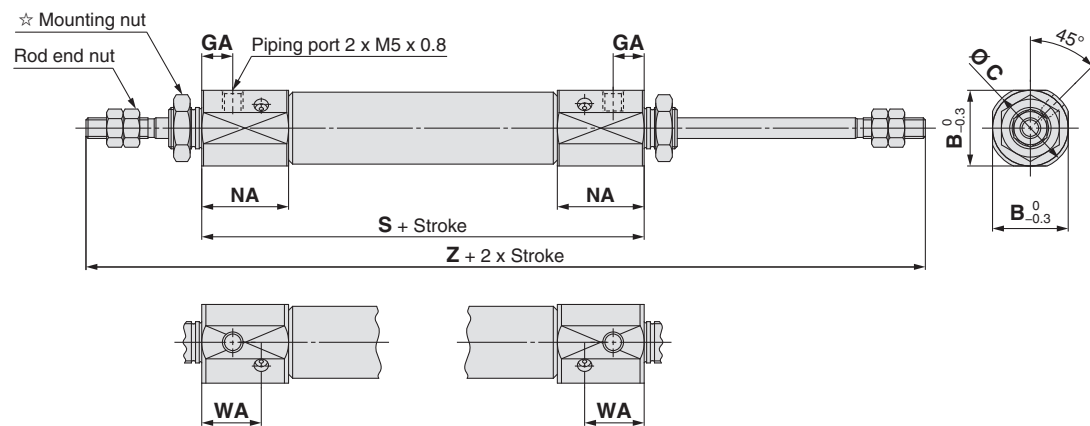
### CJ2WB6 – Stroke Z



### CJ2WB 10/16 – Stroke Z



### With air cushion: CJ2WB 10/16 – Stroke AZ



☆ For details of the mounting nut, refer to page 22.

Bore size	A	B	C	D	F	GA	H	MM	NA	NDh8	NN	S	T	Z
6	15	12	14	3	8	14.5	28	M3 x 0.5	16	6 <sup>0</sup> <sub>-0.018</sub>	M6 x 1.0	61 (66)	3	117 (122)
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

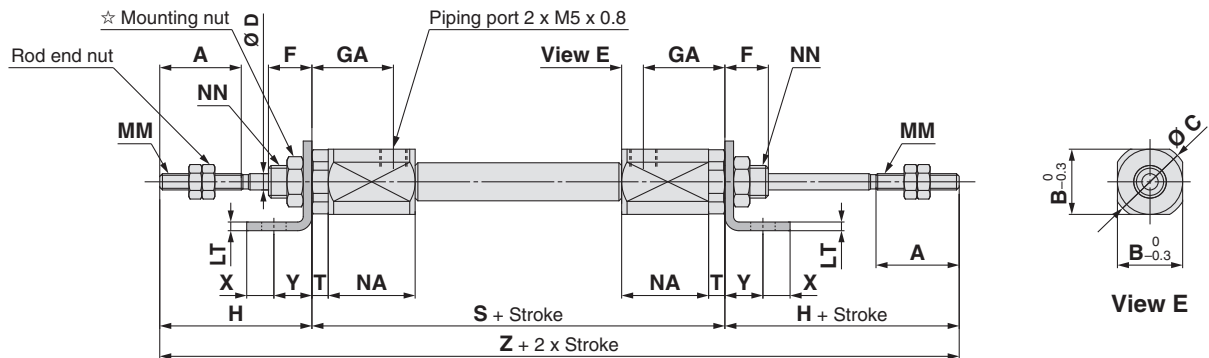
With Air Cushion/Dimensions other than the table below are the same as the table above.

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

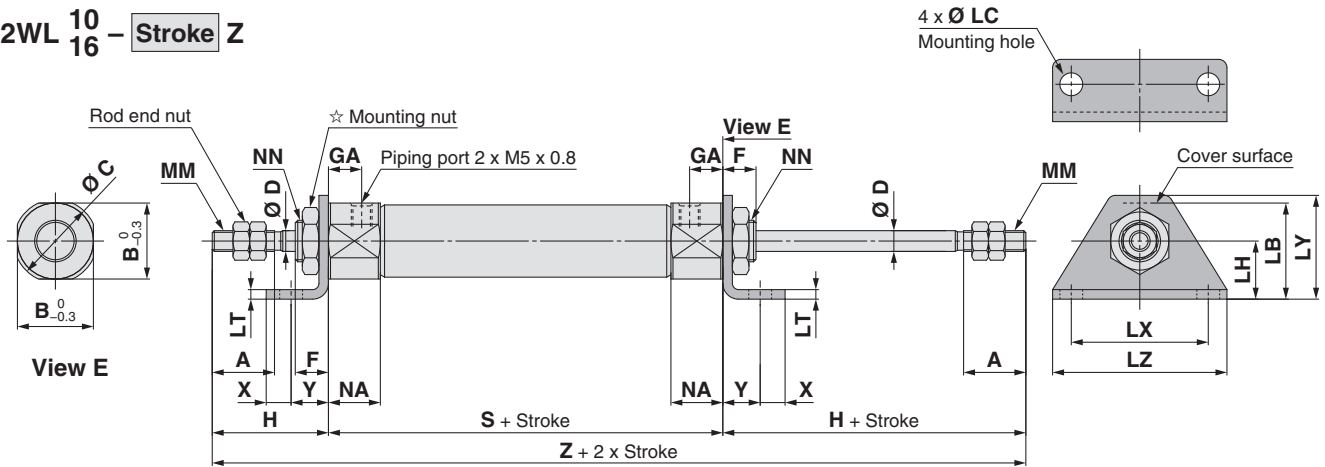
※: ( ) in S and Z dimensions: With auto switch

## Foot (L)

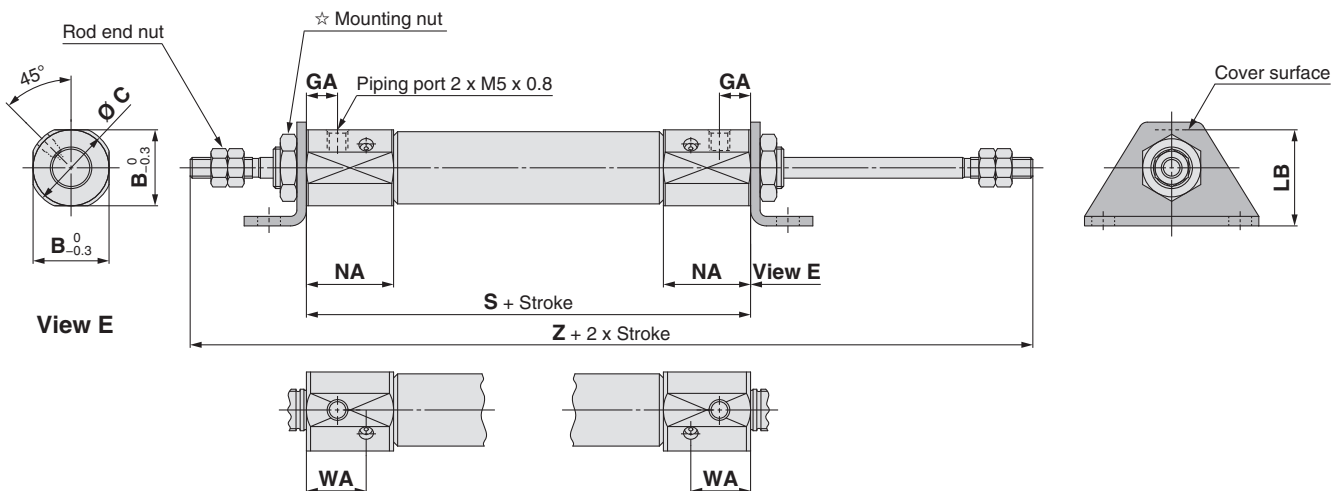
### CJ2WL6 – Stroke Z



### CJ2WL 10/16 – Stroke Z



### With air cushion: CJ2WL 10/16 – Stroke AZ



☆ For details of the mounting nut, refer to page 22.

Bore size	A	B	C	D	F	GA	H	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NN	S	T	X	Y	Z
6	15	12	14	3	8	14.5	28	15	4.5	9	1.6	24	16.5	32	M3 x 0.5	16	M6 x 1.0	61 (66)	3	5	7	117 (122)
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.

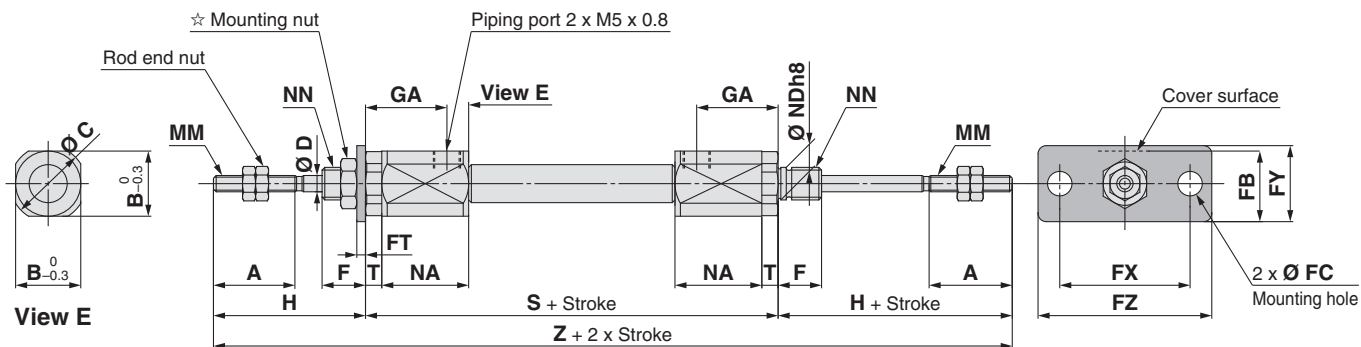
Bore size	B	C	GA	LB	NA	WA	S	Z
10	15	17	7.5	16.5	21	14.4	66	122
16	18.3	20	7.5	23	21	14.4	67	123

※: ( ) in S and Z dimensions: With auto switch

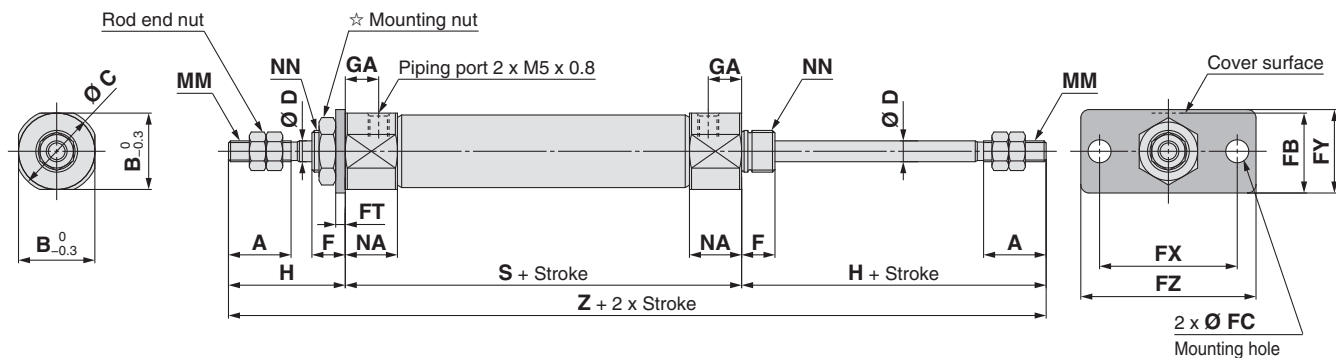
# Series CJ2W

## Flange (F)

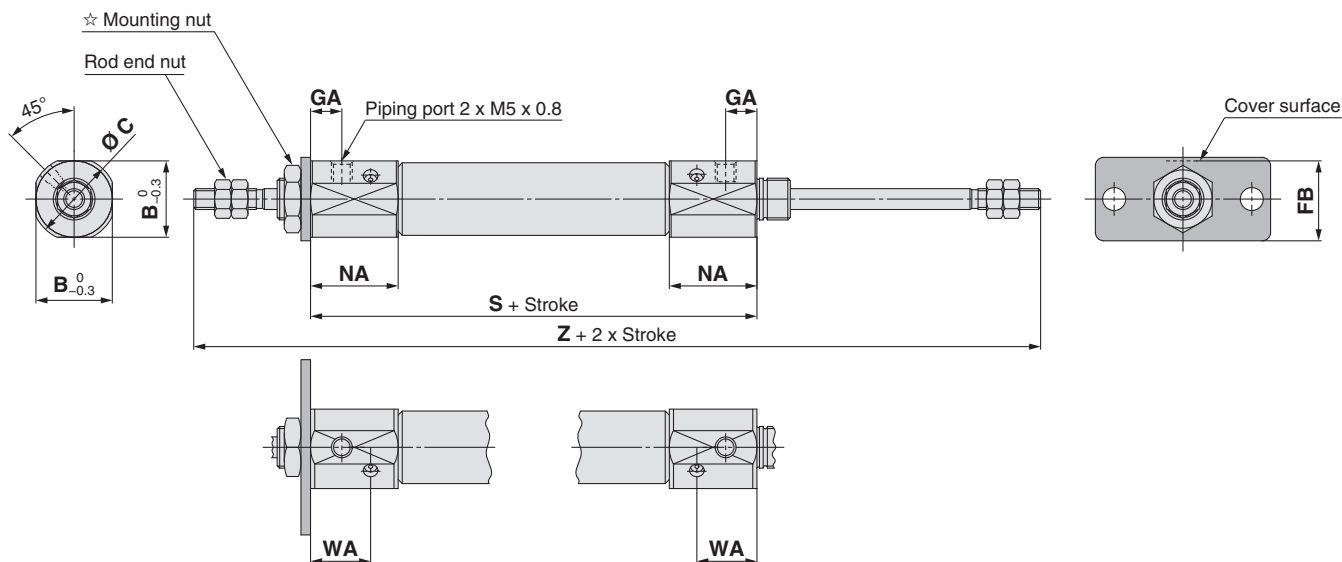
### CJ2WF6 – Stroke Z



### CJ2WF 10/16 – Stroke Z



### With air cushion: CJ2WF 10/16 – Stroke AZ



☆ For details of the mounting nut, refer to page 22.

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	H	MM	NA	NN	S	T	Z
6	15	12	14	3	8	13	4.5	1.6	24	14	32	14.5	28	M3 x 0.5	16	M6 x 1.0	61 (66)	3	117 (122)
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 0.8	12.5	M10 x 1.0	50	—	106

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

※: ( ) in S and Z dimensions: With auto switch

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

Ø 6, Ø 10, Ø 16

RoHS

### How to Order

**Cylinder standard stroke [mm]**  
Refer to "Standard Strokes" on page 31.

**Action**

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

**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

**Bore size**

6	6 mm
10	10 mm
16	16 mm

**Pivot bracket**

—	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.  
\*: Except Ø 6

**Auto switch**

—	Without 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 107 for auto switch mounting brackets.  
\*: Ø 6: Band mounting only

**Number of auto switches**

—	2 pcs.
S	1 pc.
n	"n" pcs.

**Rod end bracket**

—	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.  
\*: Ø 6: Except knuckle joint

**Head cover port location**

—	Perpendicular to axis
R	Axial

\*: For double clevis, double side bossed, double foot and head flange, the port is located perpendicular to the cylinder axis.  
\*: Not applicable to single acting, spring extend (T).

**Made to Order**  
Refer to page 31 for details.

**Ordering Example**  
CJ2B16-45S Z- M9BW B-

### Applicable Auto Switches/Refer to the Auto Switch Guide 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)	24 V	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	0.5 (—)	1 (M)	3 (L)	5 (Z)	None (N)	—○	IC circuit	Relay, PLC		
		3-wire (PNP)		M9PV				M9P	M9PV	M9P	●●●○—○	—○									
		Connector		2-wire				M9BV	M9B	M9BV	M9B	●●●○—○	—○								
		—		H7C				J79C	—	●—●●●—	—										
	Diagnostic indication (2-colour indicator)	Grommet		3-wire (NPN)		5 V, 12 V	M9NWV	M9NW	M9NWV	M9NW	●●●○—○	—○	—○	IC circuit							
				3-wire (PNP)		M9PWV	M9PW	M9PWV	M9PW	●●●○—○	—○										
				2-wire		M9BWV	M9BW	M9BWV	M9BW	○●●●○—○	—○										
				—		M9NAV*1	M9NA*1	M9NAV*1	M9NA*1	○○●○—○	—○										
	Water resistant (2-colour indicator)	Grommet		3-wire (NPN)		5 V, 12 V	M9PAV*1	M9PA*1	M9PAV*1	M9PA*1	○○●○—○	—○	—○	IC circuit							
				3-wire (PNP)		M9BAV*1	M9BA*1	M9BAV*1	M9BA*1	○○●○—○	—○										
				2-wire		—	H7NF	—	F79F	●—●○—○	—○										
				4-wire (NPN)		5 V, 12 V	—	—	—	—	—○	—○									
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	24 V	5 V	—	A96V	A96	A96V	A96	●—●—	—	—	—	—	—	IC circuit	—		
				—		200 V	—	—	A72	A72H	●—●—	—	—								
		Connector		2-wire		100 V	A93V*2	A93	A93V*2	A93	●●●●	—	—	—○	IC circuit						
						100 V or less	A90V	A90	A90V	A90	●—●●●●	—	—								
	Diagnostic indication (2-colour indicator)	Grommet		No		24 V or less	—	C80C	A80C	—	●—●●●●	—	—	—	—	—	—	—	—	IC circuit	Relay, PLC
				Yes		—	—	—	A79W	—	●—●—	—	—	—	—	—	—				
				No		—	—	—	—	—	—	—	—	—	—	—	—	—	—		
				Yes		—	—	—	—	—	—	—	—	—	—	—	—	—	—		

\*1: 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.

\*2: 1 m type lead wire is only applicable to D-A93.

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

\*: Since there are other applicable auto switches than listed, refer to page 108 for details.

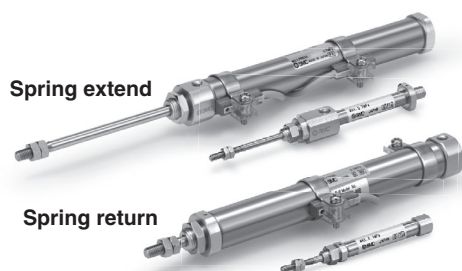
\*: For details about auto switches with pre-wired connector, refer to the Auto Switch Guide on [www.smccu.eu](http://www.smccu.eu).

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

\*: The D-A90□/M90□□/A70□□/A80□□/F70□□/J70□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)



# Series CJ2



## Symbol

Single acting, Spring return, Rubber bumper      Single acting, Spring extend, Rubber bumper



## Made to Order

(For details, refer to pages 111 to 120.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC22	Fluororubber seal
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease
-X773*1	Short pitch mounting/Single acting, spring return

\*1: Ø 6 only

Refer to pages 101 to 108 for cylinders with auto switches.

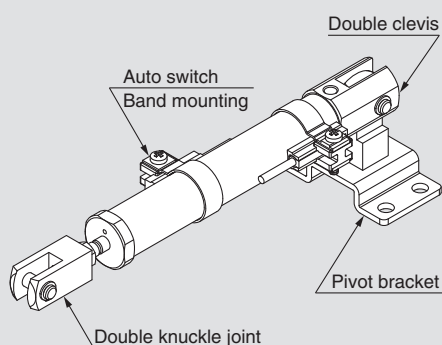
- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

## ⚠ Precautions

Refer to page 121 before handling.

## Ordering Example of Cylinder Assembly

Cylinder model: CDJ2D16-45SZ-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]	6	10	16
<b>Action</b>	Single acting, Spring return/Single acting, Spring extend		
<b>Fluid</b>	Air		
<b>Proof pressure</b>	1 MPa		
<b>Maximum operating pressure</b>	0.7 MPa		
<b>Minimum operating pressure</b>	Spring return	0.2 MPa	0.15 MPa
	Spring extend	0.25 MPa	0.15 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		
<b>Lubrication</b>	Not required (Non-lube)		
<b>Stroke length tolerance</b>	+1.0 0		
<b>Piston speed</b>	50 to 750 mm/s		
<b>Allowable kinetic energy</b>	0.012 J	0.035 J	0.090 J

## Standard Strokes

Bore size	Standard stroke [mm]
6	15, 30, 45, 60
10	15, 30, 45, 60
16	15, 30, 45, 60, 75, 100, 125, 150

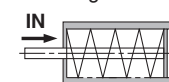
\*: Manufacture of intermediate strokes in 1 mm increments is possible. (Spacers are not used.)  
 \*: Please consult with SMC for strokes which exceed the standard stroke length.

\*: Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on [www.smc.eu](http://www.smc.eu). In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

## Spring Reaction Force

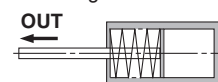
Bore size [mm]	Spring reaction force [N]	
	Primary	Secondary
6	1.77	3.72
10	3.53	6.86
16	6.86	14.2

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]		
	6	10	16
Foot	CJ-L006C	CJ-L010C	CJ-L016C
Flange	CJ-F006C	CJ-F010C	CJ-F016C
T-bracket*1	—	CJ-T010C	CJ-T016C

\*1: T-bracket is used with double clevis (D).

## Mounting and Accessories

/Refer to page 22 for details about part numbers and dimensions.

●...Mounted on the product. ○...Can be ordered within the cylinder model.

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.

\*: Double clevis is only available for Ø 10 and Ø 16.

## Moisture Control Tube Series IDK



When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.

Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to the catalogue on [www.smc.eu](http://www.smc.eu).

## Weights

### Spring Return

Bore size [mm]		6			10				16			
Mounting		Basic	Axial piping	Head-side bossed	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	17	15	18	28	28	29	28	62	62	69	64
	30 stroke	20	18	21	35	35	35	35	77	77	84	79
	45 stroke	23	21	23	44	44	45	45	95	95	102	97
	60 stroke	26	24	27	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	8	8	8				25			
	Double foot	16	16	16	16				50			
	Rod flange	5	5	5	5				13			
	Head flange	5	5	5	5				13			
Accessories	Single knuckle joint	—	—	—	17				23			
	Double knuckle joint (including knuckle pin)	—	—	—	25				21			
	Rod end cap (Flat type)	1	1	1	1				2			
	Rod end cap (Round type)	1	1	1	1				2			
	T-bracket	—	—	—	32				50			

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

\*: Mounting nut is not attached to the double clevis, so the mounting nut weight is already subtracted.

Calculation:

Example) **CJ2L10-45SZ**

• Basic weight ..... 44 (Ø 10-45 stroke)

• Mounting bracket weight..... 8 (Single foot)

44 + 8 = **52 g**

### Spring Extend

Bore size [mm]		6		10				16			
Mounting		Basic	Head-side bossed	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	18	19	28	28	30	29	63	63	71	67
	30 stroke	21	22	34	34	36	35	77	77	85	80
	45 stroke	24	24	42	42	44	43	93	93	100	96
	60 stroke	27	28	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	8	8				25			
	Double foot	16	16	16				50			
	Rod flange	5	5	5				13			
	Head flange	5	5	5				13			
Accessories	Single knuckle joint	—	—	17				23			
	Double knuckle joint (including knuckle pin)	—	—	25				21			
	Rod end cap (Flat type)	1	1	1				2			
	Rod end cap (Round type)	1	1	1				2			
	T-bracket	—	—	32				50			

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

\*: Mounting nut is not attached to the double clevis, so the mounting nut weight is already subtracted.

Calculation:

Example) **CJ2L10-45TZ**

• Basic weight ..... 42 (Ø 10-45 stroke)

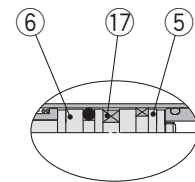
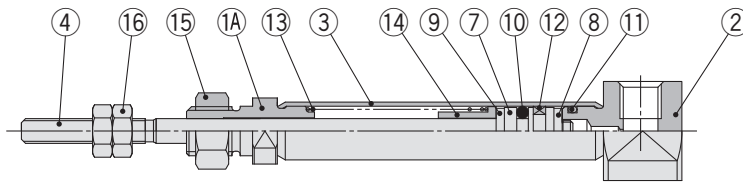
• Mounting bracket weight..... 8 (Single foot)

42 + 8 = **50 g**

## Construction (Not able to disassemble)

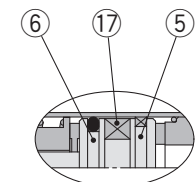
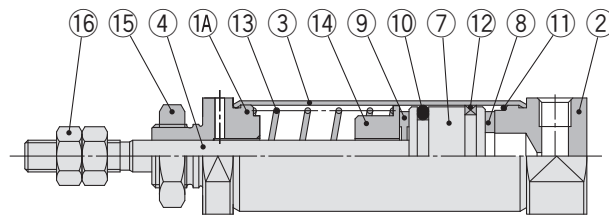
### Single acting, Spring return

Ø 6



With auto switch

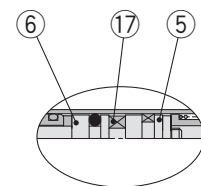
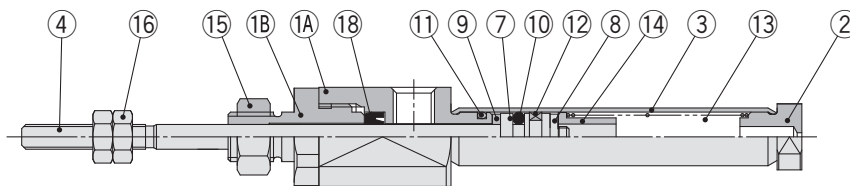
Ø 10, Ø 16



With auto switch

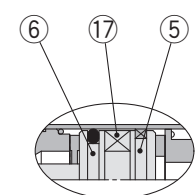
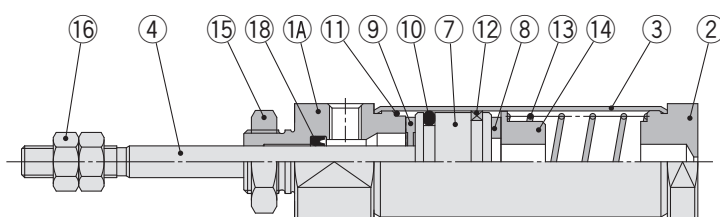
### Single acting, Spring extend

Ø 6



With auto switch

Ø 10, Ø 16



With auto switch

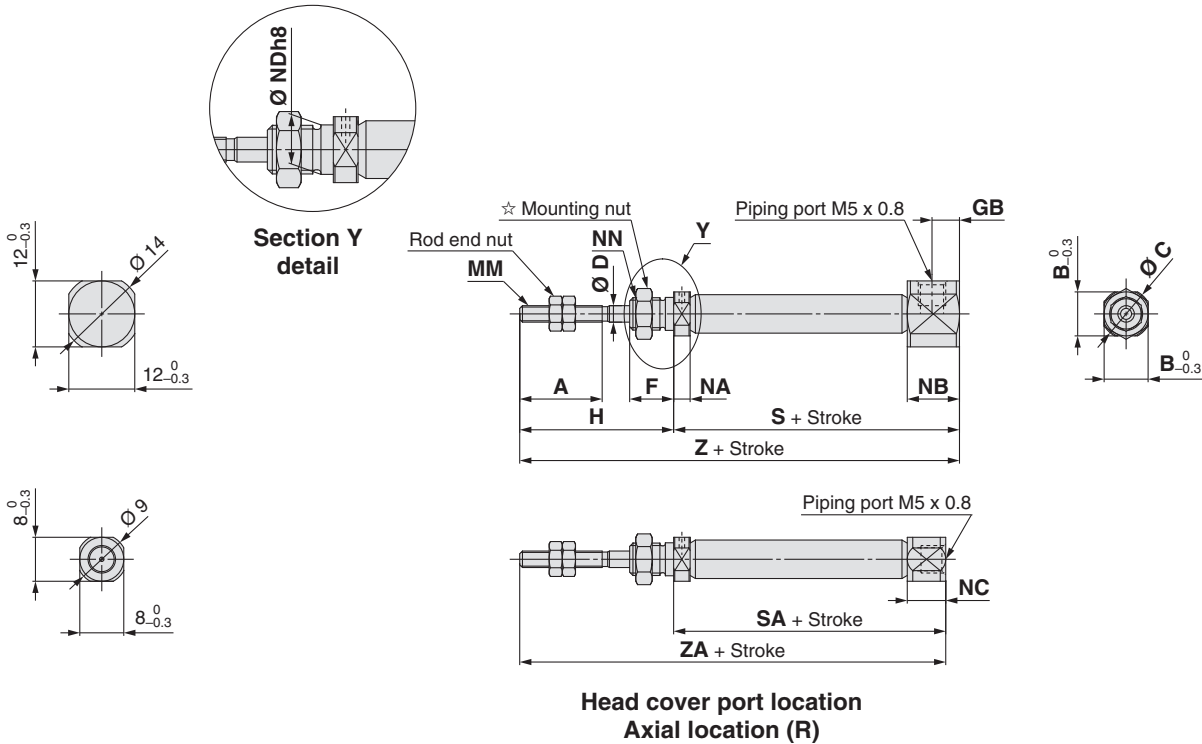
## Component Parts

No.	Description	Material	Note
1A	Rod cover	Aluminium alloy	
1B	Seal retainer	Aluminium alloy	Ø 6 only
2	Head cover	Aluminium alloy	
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminium alloy	
6	Piston B	Aluminium alloy	
7	Piston	Aluminium alloy	
8	Bumper A	Urethane	
9	Bumper B	Urethane	

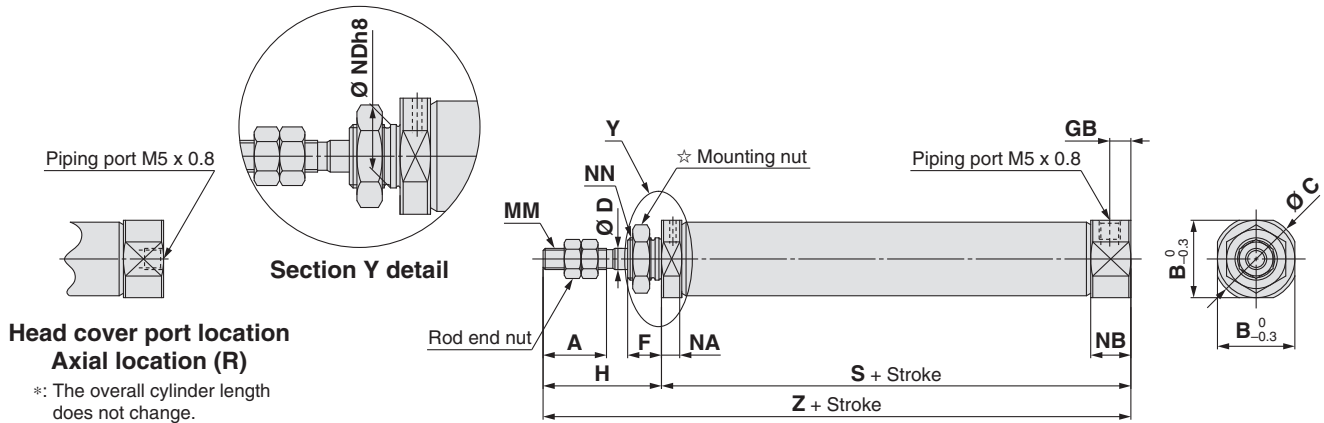
No.	Description	Material	Note
10	Piston seal	NBR	
11	Tube gasket	NBR	
12	Wear ring	Resin	
13	Return spring	Piano wire	
14	Spring seat	Aluminium alloy	
15	Mounting nut	Rolled steel	
16	Rod end nut	Rolled steel	
17	Magnet	—	
18	Rod seal	NBR	

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

CJ2B6 – Stroke S Head cover port location Z



CJ2B 10/16 – Stroke S Head cover port location Z



☆ For details of the mounting nut, refer to page 22.

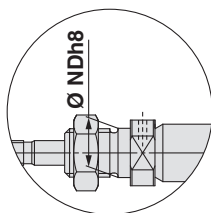
Bore size	A	B	C	D	F	GB	H	MM	NA	NB	NC	NDh8	NN	S							
														5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
6	15	8	9	3	8	5	28	M3 x 0.5	3	9.5	7	6 <sup>0</sup> <sub>-0.018</sub>	M6 x 1.0	37 (42)	46 (51)	50 (55)	64 (69)	—	—	—	—
10	15	12	14	4	8	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	—	—	—	—
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

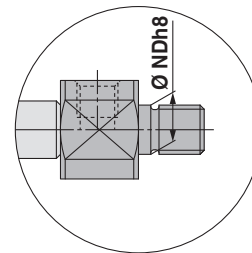
Bore size	SA								Z								ZA							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
6	34.5 (39.5)	43.5 (48.5)	47.5 (52.5)	61.5 (66.5)	—	—	—	—	65 (70)	74 (79)	78 (83)	92 (97)	—	—	—	—	62.5 (67.5)	71.5 (76.5)	75.5 (80.5)	89.5 (94.5)	—	—	—	—
10	—	—	—	—	—	—	—	—	73.5	81	93	105	—	—	—	—	—	—	—	—	—	—	—	—
16	—	—	—	—	—	—	—	—	73.5	82	94	106	112	136	154	166	—	—	—	—	—	—	—	—

\*: ( ) in S, SA, Z and ZA dimensions: With auto switch

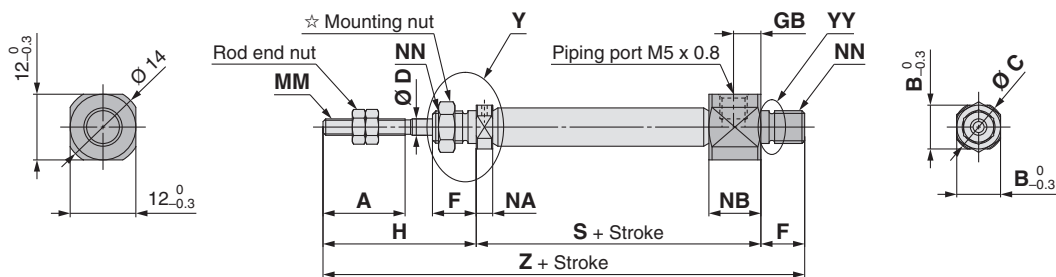
### Single Acting, Spring Return: Double-side Bossed (E)

CJ2E6 – **Stroke** SZ

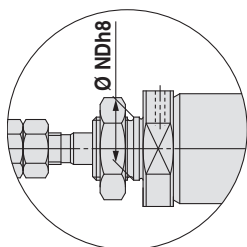
### Section Y detail



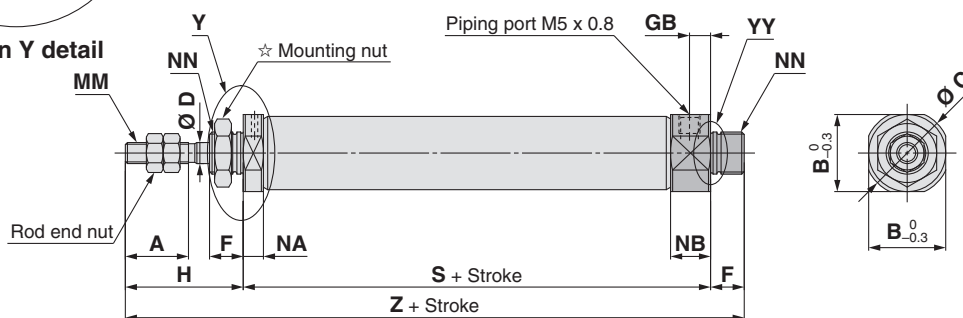
### Section YY detail



CJ2E  $\frac{10}{16}$  – Stroke SZ



### Section Y detail



### Section YY detail

☆ For details of the mounting nut, refer to page 22.

★ For details of the mounting nut, refer to page 22.

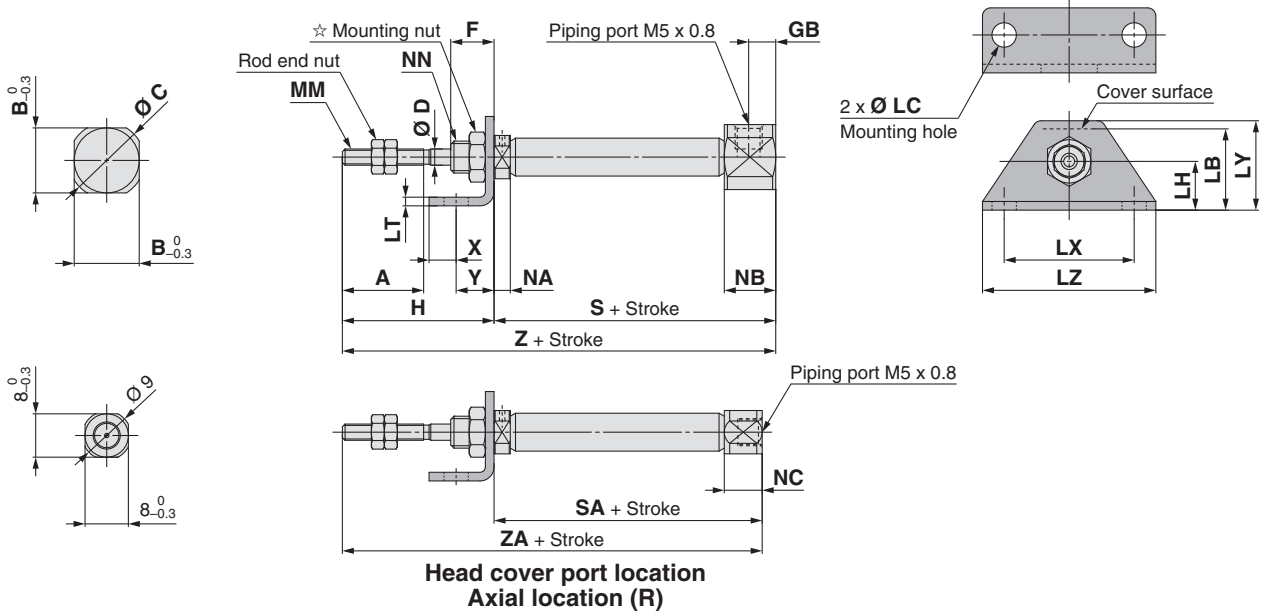
[mm]

Bore size	A	B	C	D	F	GB	H	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
6	15	8	9	3	8	5	28	M3 x 0.5	3	9.5	6 <sup>0</sup> <sub>-0.018</sub>	M6 x 1.0	37 (42)	46 (51)	50 (55)	64 (69)	—	—	—	—	73 (78)	82 (87)	86 (91)	100 (105)	—	—	—	—
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	—	—	—	—	81.5	89	101	113	—	—	—	—
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	90	102	114	120	144	162	174

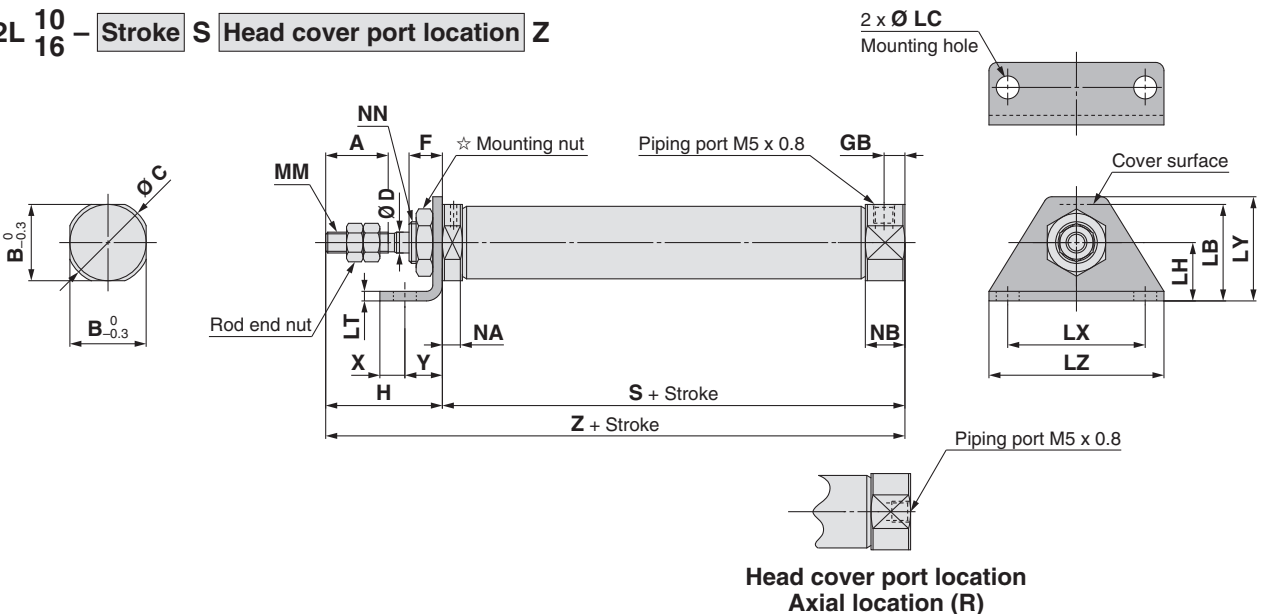
\*: ( ) in S and Z dimensions: With auto switch

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

CJ2L6 – Stroke S Head cover port location Z



CJ2L 10/16 – Stroke S Head cover port location Z



\*: The overall cylinder length does not change.

☆ For details of the mounting nut, refer to page 22.

Bore size	A	B	C	D	F	GB	H	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN	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
6	15	12	14	3	8	5	28	13	4.5	9	1.6	24	16.5	32	M3 x 0.5	3	9.5	M6 x 1.0	37 (42)	46 (51)	50 (55)	64 (69)	—	—	—	—
10	15	12	14	4	8	5	28	15	4.5	9	1.6	24	16.5	32	M4 x 0.7	4.8	9.5	M8 x 1.0	45.5	53	65	77	—	—	—	—
16	15	18.3	20	5	8	5	28	23	5.5	14	2.3	33	25	42	M5 x 0.8	4.8	9.5	M10 x 1.0	45.5	54	66	78	84	108	126	138

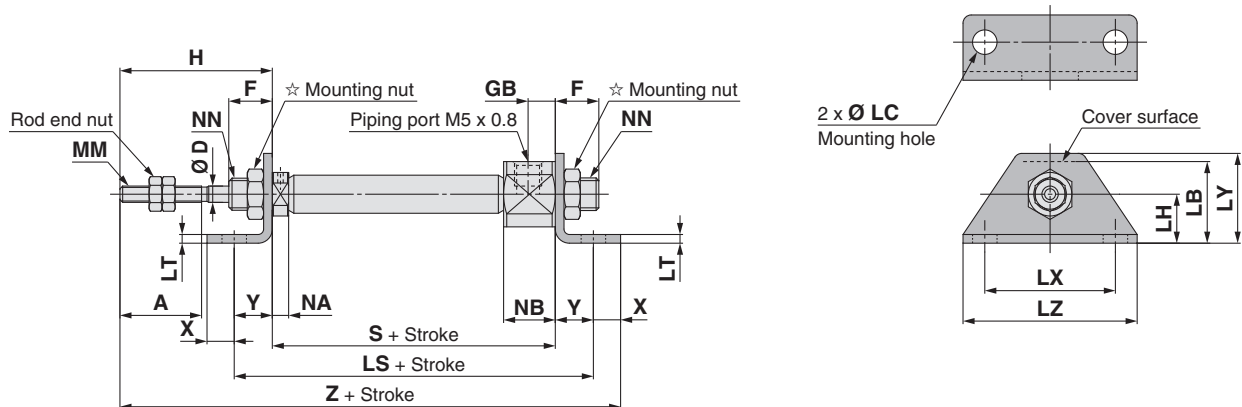
  

Bore size	SA								X	Y	Z								ZA							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st			5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
6	34.5 (39.5)	43.5 (48.5)	47.5 (52.5)	61.5 (66.5)	—	—	—	—	5	7	65 (70)	74 (79)	78 (83)	92 (97)	—	—	—	—	62.5 (67.5)	71.5 (76.5)	75.5 (80.5)	89.5 (94.5)	—	—	—	—
10	—	—	—	—	—	—	—	—	5	7	73.5	81	93	105	—	—	—	—	—	—	—	—	—	—	—	—
16	—	—	—	—	—	—	—	—	6	9	73.5	82	94	106	112	136	154	166	—	—	—	—	—	—	—	—

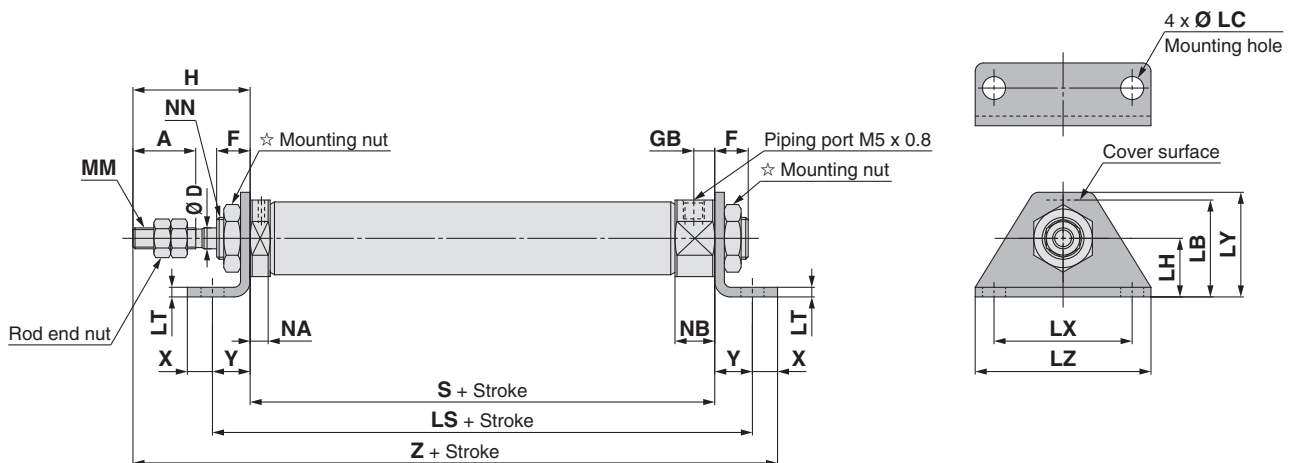
\*: ( ) in S, SA, Z and ZA dimensions: With auto switch

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

CJ2M6 – Stroke SZ



CJ2M 10/16 – Stroke SZ



☆ For details of the mounting nut, refer to page 22.

Bore size	A	D	F	GB	H	LB	LC	LH	LS								LT	LX	LY	LZ	MM	NA
									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						
6	15	3	8	5	28	13	4.5	9	51 (56)	60 (65)	64 (69)	78 (83)	—	—	—	—	1.6	24	16.5	32	M3 x 0.5	3
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
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

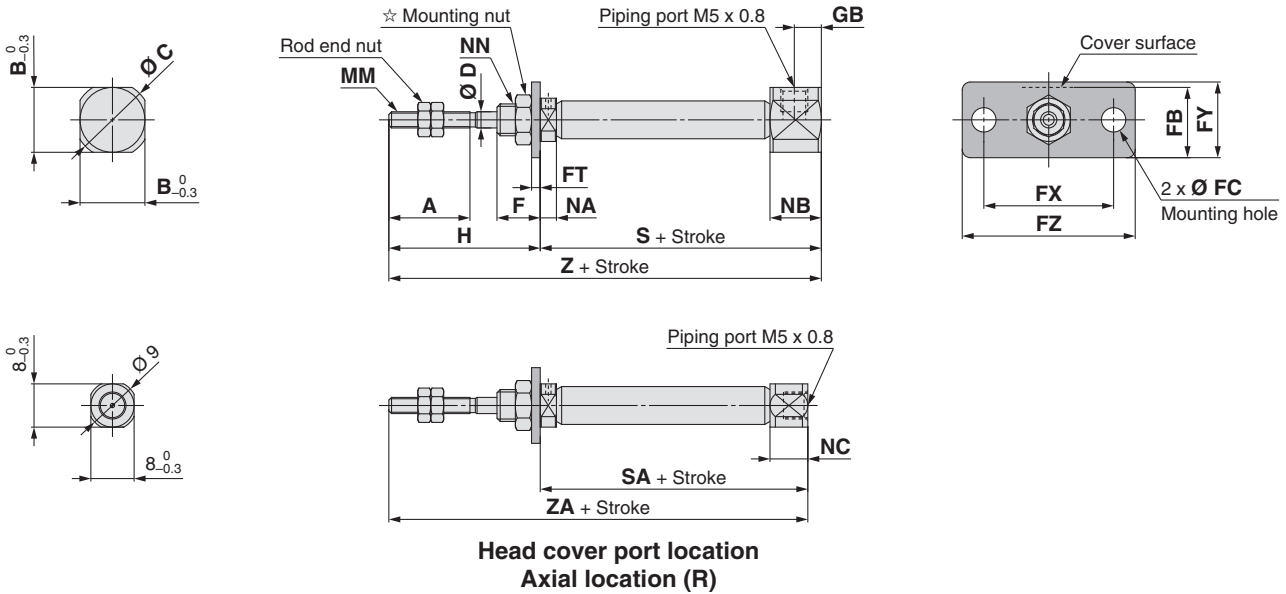
Bore size	NB	NN	S								X	Y	Z							
			5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st			5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
6	9.5	M6 x 1.0	37 (42)	46 (51)	50 (55)	64 (69)	—	—	—	—	5	7	77 (82)	86 (91)	90 (95)	104 (109)	—	—	—	—
10	9.5	M8 x 1.0	45.5	53	65	77	—	—	—	—	5	7	85.5	93	105	117	—	—	—	—
16	9.5	M10 x 1.0	45.5	54	66	78	84	108	126	138	6	9	88.5	97	109	121	127	151	169	181

☆: ( ) in LS, S and Z dimensions: With auto switch

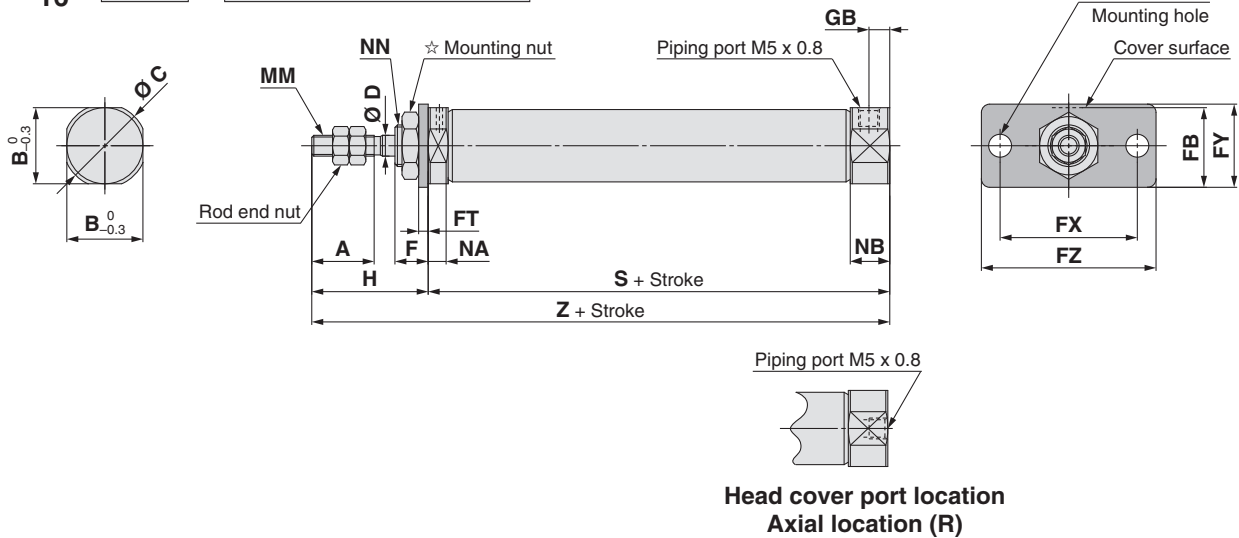


## Single Acting, Spring Return: Rod Flange (F)

CJ2F6 – Stroke S Head cover port location Z



CJ2F 10/16 – Stroke S Head cover port location Z



\*: The overall cylinder length does not change.

☆ For details of the mounting nut, refer to page 22.

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GB	H	MM	NA	NB	NC	NN	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
6	15	12	14	3	8	11	4.5	1.6	24	14	32	5	28	M3 x 0.5	3	9.5	7	M6 x 1.0	37 (42)	46 (51)	50 (55)	64 (69)	—	—	—	—
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	—	—	—	—
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

Bore size	SA								Z								ZA							
	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	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
6	34.5 (39.5)	43.5 (48.5)	47.5 (52.5)	61.5 (66.5)	—	—	—	—	65 (70)	74 (79)	78 (83)	92 (97)	—	—	—	—	62.5 (67.5)	71.5 (76.5)	75.5 (80.5)	89.5 (94.5)	—	—	—	—
10	—	—	—	—	—	—	—	—	73.5	81	93	105	—	—	—	—	—	—	—	—	—	—	—	—
16	—	—	—	—	—	—	—	—	73.5	82	94	106	112	136	154	166	—	—	—	—	—	—	—	—

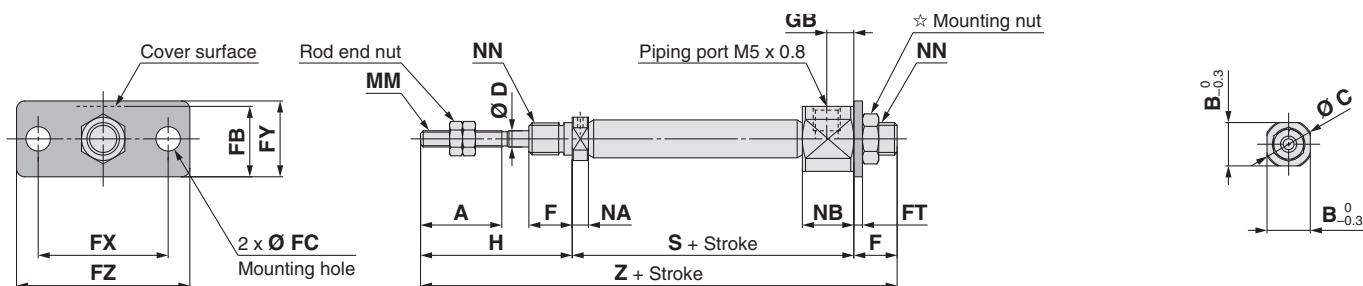
\*: ( ) in S, SA, Z and ZA dimensions: With auto switch

Standard	Double Acting, Single Rod	CJ2
Standard	Double Acting, Double Rod	CJ2W
Single-Acting, Spring Return/Extend	Single Acting, Single Rod	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
With End Lock	Double Acting, Single Rod	CBJ2
Auto Switch		Auto Switch
Made to Order		Made to Order

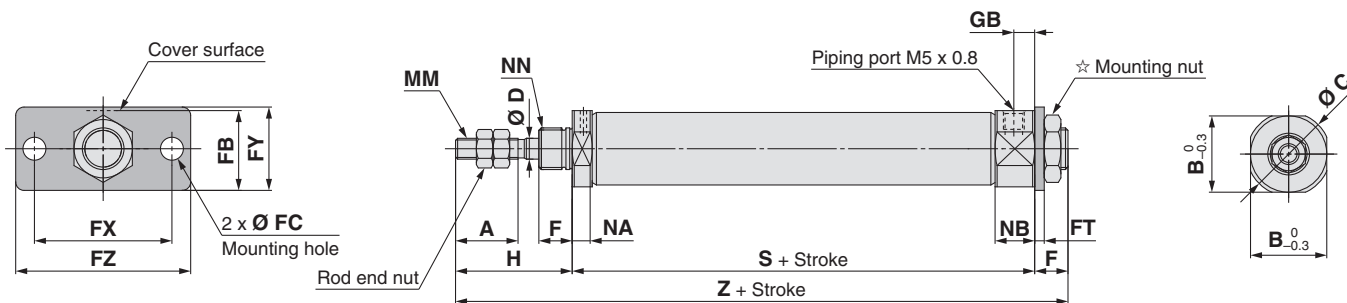
# Series CJ2

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

CJ2G6 – Stroke SZ



CJ2G <sup>10</sup>/<sub>16</sub> – Stroke SZ



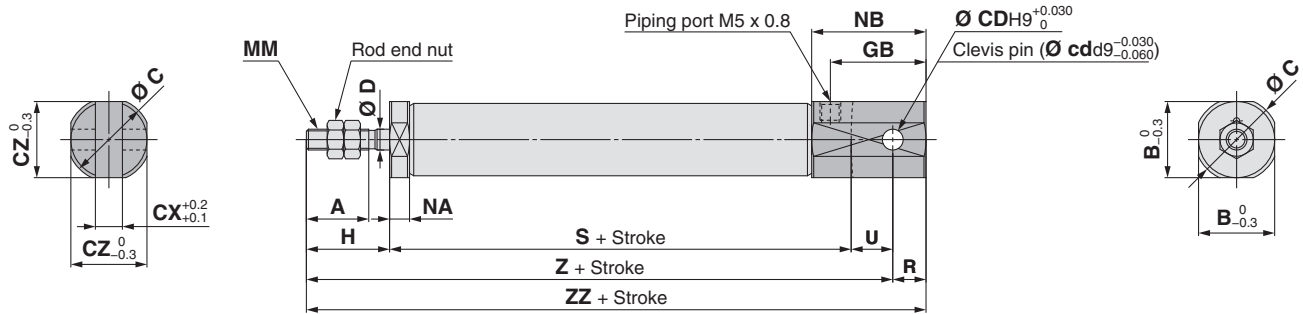
☆ For details of the mounting nut, refer to page 22.

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GB	H	MM	NA	NB	NN
6	15	8	9	3	8	11	4.5	1.6	24	14	32	5	28	M3 x 0.5	3	9.5	M6 x 1.0
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
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
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	
6	37 (42)	46 (51)	50 (55)	64 (69)	—	—	—	—	73 (78)	82 (87)	86 (91)	100 (105)	—	—	—	—	
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	

※: ( ) in S and Z dimensions: With auto switch

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

CJ2D  $\frac{10}{16}$  – 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

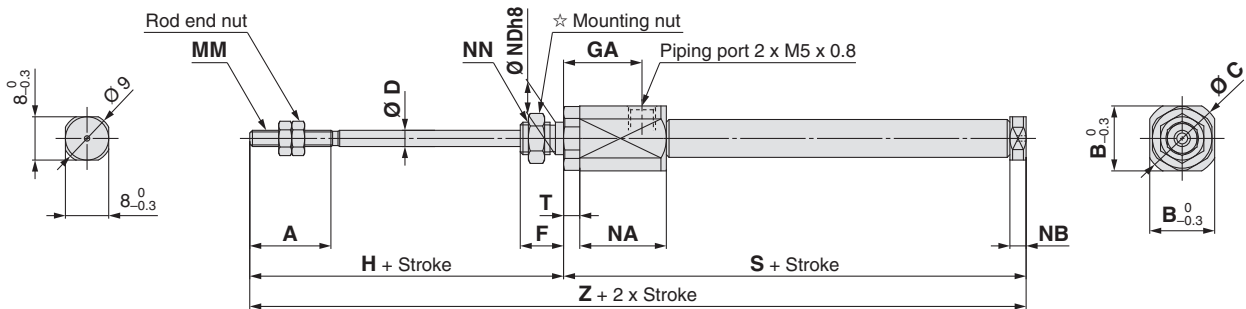
Bore size	Z								ZZ							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	73.5	81	93	105	—	—	—	—	78.5	86	98	110	—	—	—	—
16	75.5	84	96	108	114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

※: A clevis pin and retaining rings are included.

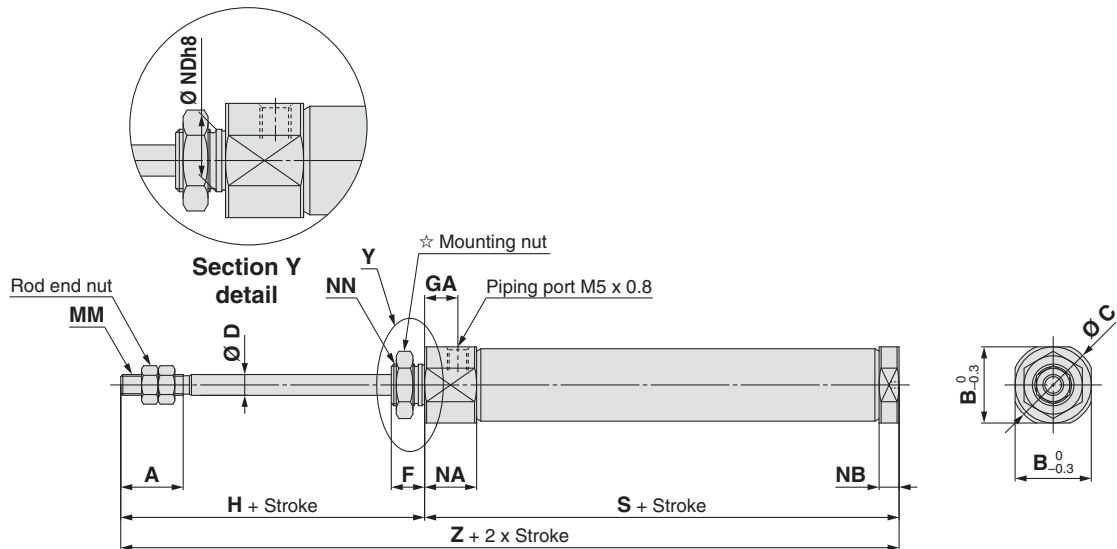
Double Acting, Single Rod	CJ2
Double Acting, Double Rod	CJ2W
Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	CJ2K
Single Acting, Spring Return/Extend	CJ2K
Double Acting, Single Rod	CJ2Z
Double Acting, Double Rod	CJ2ZW
Direct Mount	CJ2R
Single Acting, Spring Return/Extend	CJ2R
Double Acting, Single Rod	CJ2RK
Double Acting, Double Rod	CJ2RK
With End Lock	CBJ2
Auto Switch	Auto Switch
Made to Order	Made to Order

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

CJ2B6 – Stroke TZ



CJ2B <sup>10</sup>/<sub>16</sub> – Stroke TZ



☆ For details of the mounting nut, refer to page 22.

[mm]

Bore size	A	B	C	D	F	GA	H	MM	NA	NB	NDh8	NN	T
6	15	12	14	3	8	14.5	28	M3 x 0.5	16	3	6 <sup>0</sup> <sub>-0.018</sub>	M6 x 1.0	3
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	—
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	—

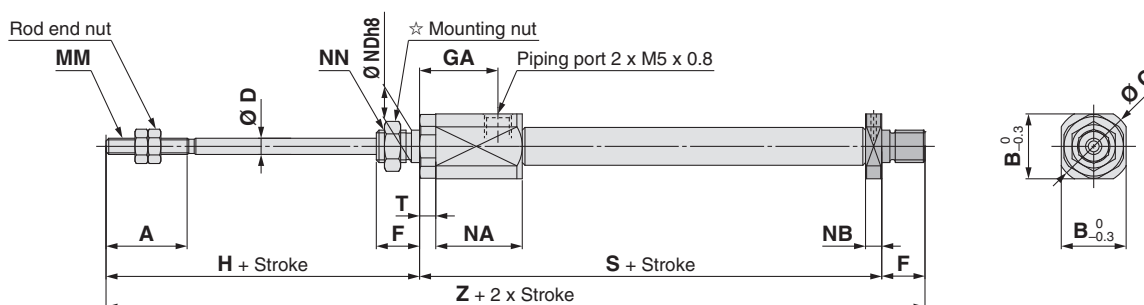
  

Bore size	S								Z							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
6	46.5 (51.5)	55.5 (60.5)	59.5 (64.5)	73.5 (78.5)	—	—	—	—	74.5 (79.5)	83.5 (88.5)	87.5 (92.5)	101.5 (106.5)	—	—	—	—
10	48.5	56	68	80	—	—	—	—	76.5	84	96	108	—	—	—	—
16	48.5	57	69	81	87	111	129	141	76.5	85	97	109	115	139	157	169

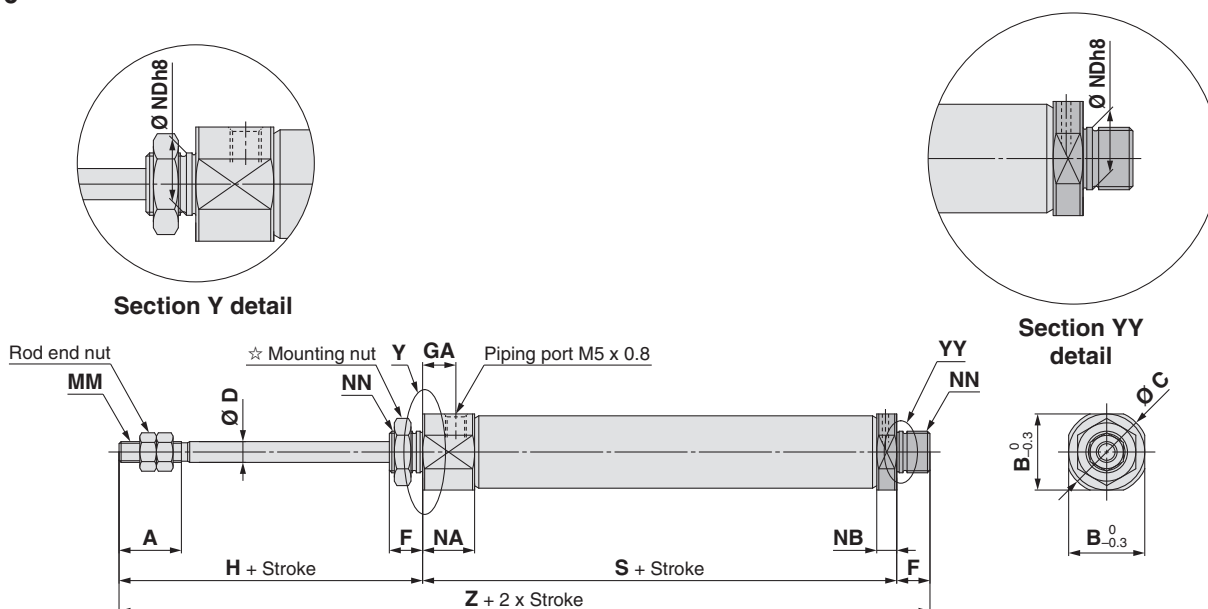
☆: ( ) in S and Z dimensions: With auto switch

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

CJ2E6 – Stroke TZ



CJ2E 10  
16 – Stroke TZ



☆ For details of the mounting nut, refer to page 22.

Bore size	A	B	C	D	F	GA	H	MM	NA	NB	NDh8	NN
6	15	12	14	3	8	14.5	28	M3 x 0.5	16	3	6 <sup>0</sup> <sub>-0.018</sub>	M6 x 1.0
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
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

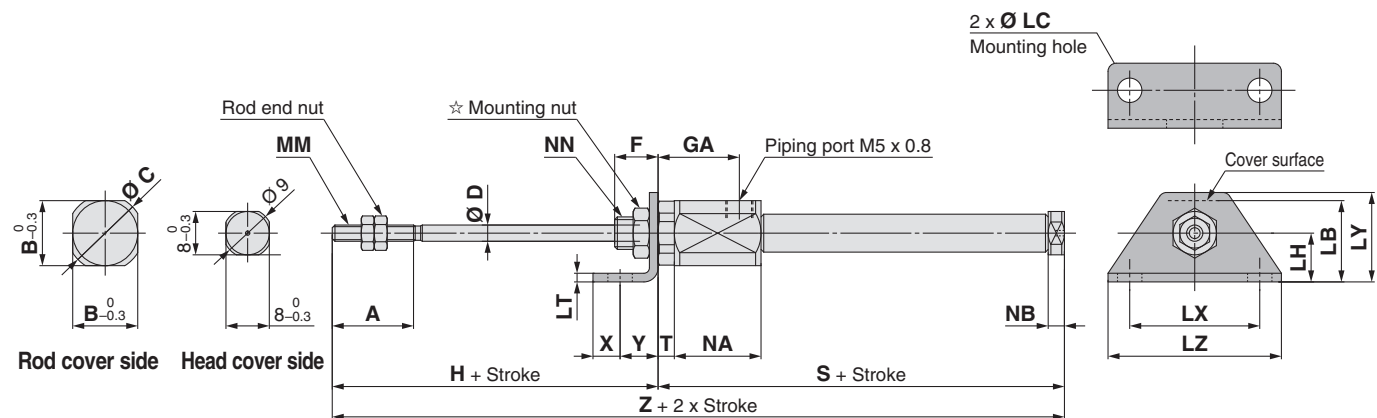
Bore size	S								Z							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
6	46.5 (51.5)	55.5 (60.5)	59.5 (64.5)	73.5 (78.5)	—	—	—	—	82.5 (87.5)	91.5 (96.5)	95.5 (100.5)	109.5 (114.5)	—	—	—	—
10	48.5	56	68	80	—	—	—	—	84.5	92	104	116	—	—	—	—
16	48.5	57	69	81	87	111	129	141	84.5	93	105	117	123	147	165	177

※: ( ) in S and Z dimensions: With auto switch

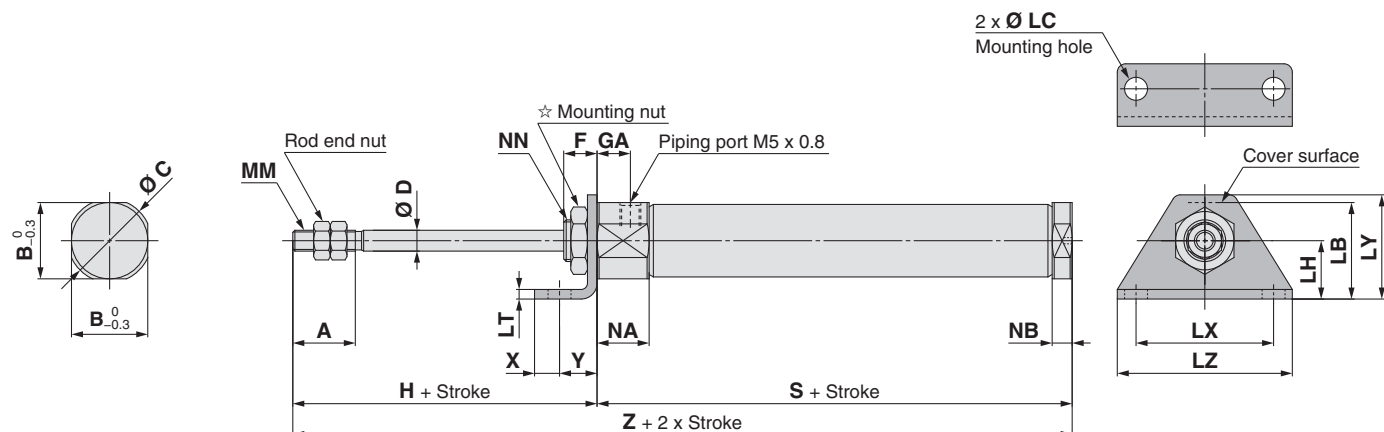
Standard	Double Acting, Single Rod	CJ2
Standard	Double Acting, Double Rod	CJ2W
Standard	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Double Acting, Double Rod	CJ2K
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	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	Single Acting, Spring Return/Extend	CJ2RK
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Double Acting, Double Rod	CJ2RK
With End Lock	Double Acting, Single Rod	CBJ2
With End Lock	Double Acting, Double Rod	CBJ2
With End Lock	Single Acting, Spring Return/Extend	CBJ2
Auto Switch	Double Acting, Single Rod	Auto Switch
Auto Switch	Double Acting, Double Rod	Auto Switch
Auto Switch	Single Acting, Spring Return/Extend	Auto Switch
Made to Order	Double Acting, Single Rod	Made to Order
Made to Order	Double Acting, Double Rod	Made to Order
Made to Order	Single Acting, Spring Return/Extend	Made to Order

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

CJ2L6 – Stroke TZ



CJ2L  $\frac{10}{16}$  – Stroke TZ



☆ For details of the mounting nut, refer to page 22.

Bore size	A	B	C	D	F	GA	H	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN	T
6	15	12	14	3	8	14.5	28	15	4.5	9	1.6	24	16.5	32	M3 x 0.5	16	3	M6 x 1.0	3
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	—
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	—

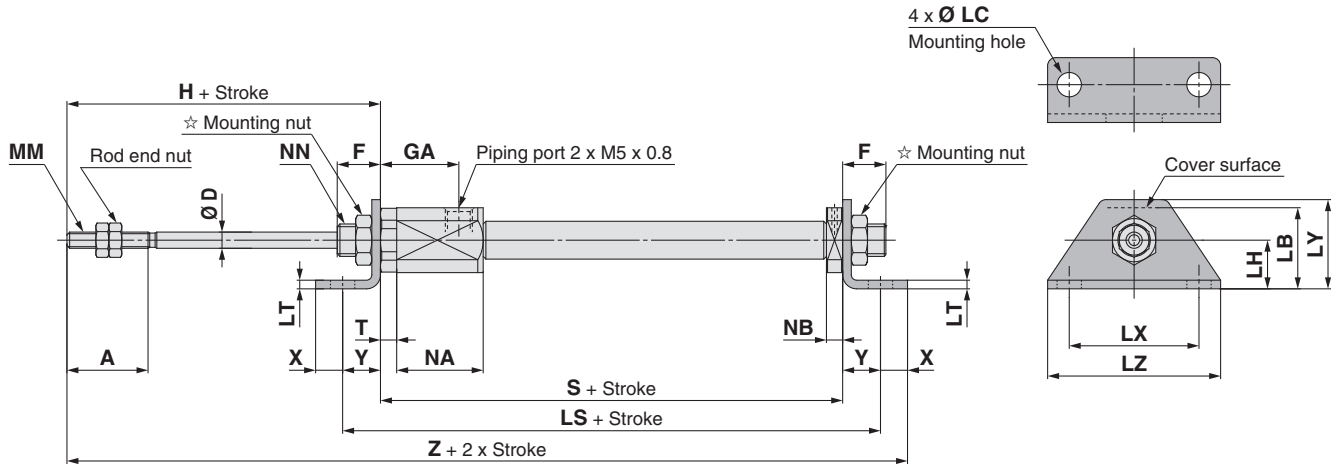
  

Bore size	S								X	Y	Z							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st			5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
6	46.5 (51.5)	55.5 (60.5)	59.5 (64.5)	73.5 (78.5)	—	—	—	—	5	7	74.5 (79.5)	83.5 (88.5)	87.5 (92.5)	101.5 (106.5)	—	—	—	—
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

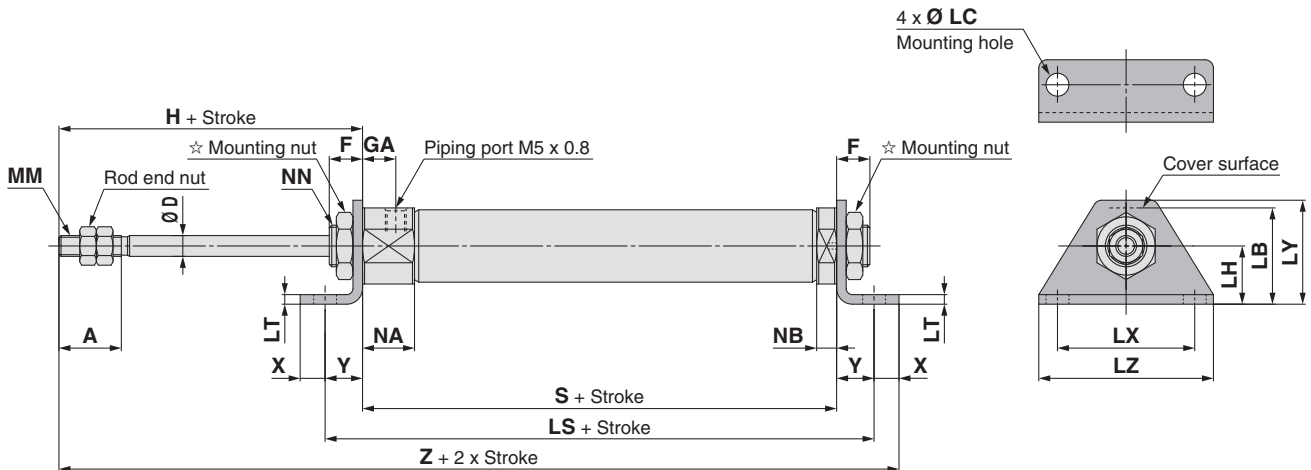
※: ( ) in S and Z dimensions: With auto switch

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

CJ2M6 – Stroke TZ



CJ2M 10/16 – Stroke TZ



☆ For details of the mounting nut, refer to page 22.

Bore size	A	D	F	GA	H	LB	LC	LH	LS								LT	LX	LY	LZ	MM
									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					
6	15	3	8	14.5	28	15	4.5	9	60.5 (65.5)	69.5 (74.5)	73.5 (78.5)	87.5 (101.5)	—	—	—	—	1.6	24	16.5	32	M3 x 0.5
10	15	4	8	8	28	15	4.5	9	62.5	70	82	94	—	—	—	—	1.6	24	16.5	32	M4 x 0.7
16	15	5	8	8	28	23	5.5	14	66.5	75	87	99	105	129	147	159	2.3	33	25	42	M5 x 0.8

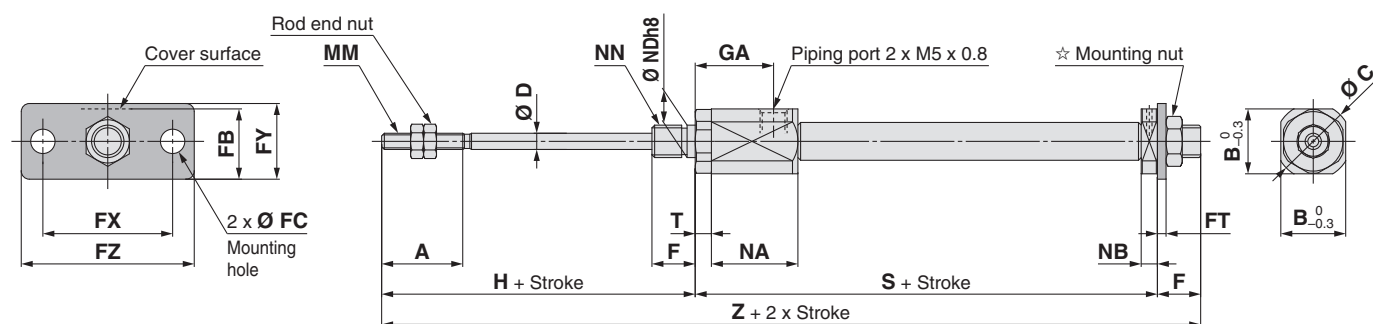
Bore size	NA	NB	NN	S								X	Y	Z							
				5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st			5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
6	16	3	M6 x 1.0	46.5 (51.5)	55.5 (60.5)	59.5 (64.5)	73.5 (78.5)	—	—	—	—	5	7	86.5 (91.5)	95.5 (100.5)	99.5 (104.5)	113.5 (118.5)	—	—	—	—
10	12.5	4.8	M8 x 1.0	48.5	56	68	80	—	—	—	—	5	7	88.5	96	108	120	—	—	—	—
16	12.5	4.8	M10 x 1.0	48.5	57	69	81	87	111	129	141	6	9	91.5	100	112	124	130	154	172	184

※: ( ) in LS, S and Z dimensions: With auto switch

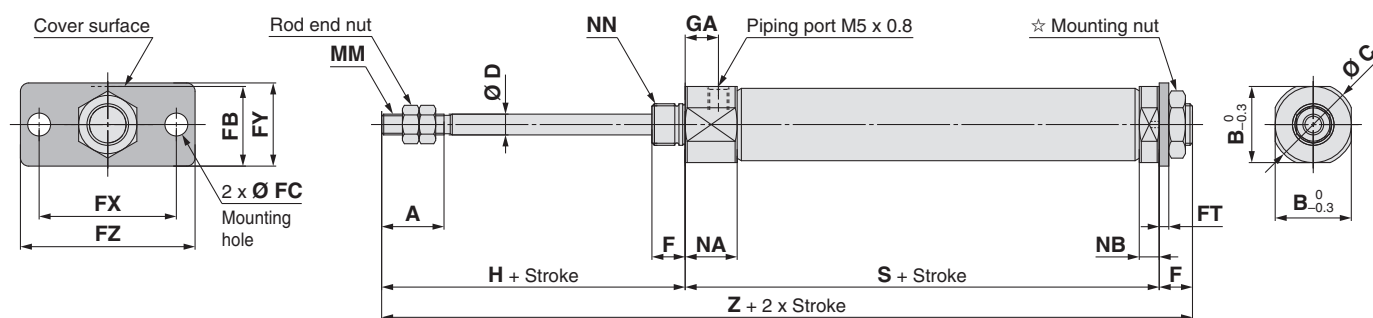
Double Acting, Single Rod	CJ2
Double Acting, Double Rod	CJ2W
Standard	CJ2
Single Acting, Spring Return/Extend	CJ2K
Non-rotating Rod	CJ2K
Single Acting, Spring Return/Extend	CJ2Z
Double Acting, Single Rod	CJ2R
Double Acting, Double Rod	CJ2R
Built-in Speed Controller	CJ2Z
Double Acting, Single Rod	CJ2R
Double Acting, Double Rod	CJ2R
Direct Mount	CJ2R
Single Acting, Spring Return/Extend	CJ2RK
Double Acting, Single Rod	CJ2RK
Double Acting, Double Rod	CJ2RK
With End Lock	CBJ2
Auto Switch	Auto Switch
Made to Order	Made to Order



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

CJ2G6 – **Stroke** TZ

## CJ2G 10-16-Stroke TZ



☆ For details of the mounting nut, refer to page 22.

[mm]

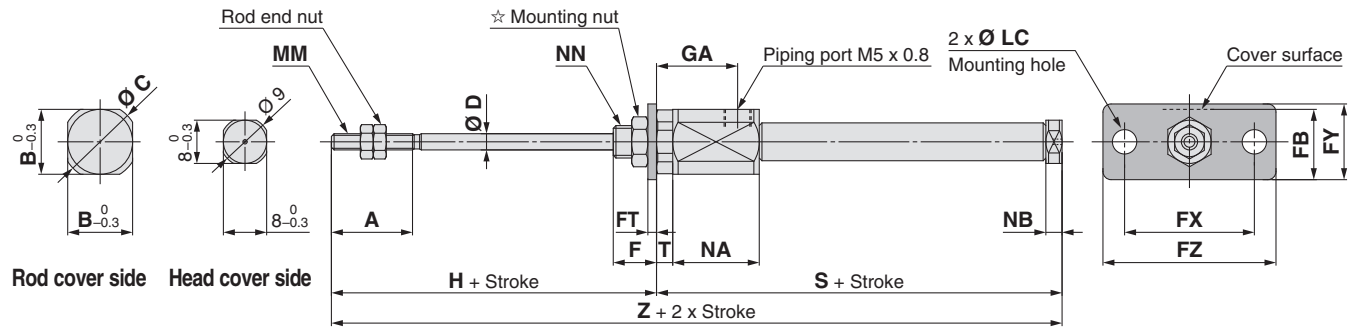
Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	H	MM	NA	NB	NN
6	15	12	14	3	8	13	4.5	1.6	24	14	32	14.5	28	M3 x 0.5	16	3	M6 x 1.0
10	15	12	14	4	8	13	4.5	1.6	24	14	32	8	28	M4 x 0.7	12.5	4.8	M8 x 1.0
16	15	18.3	20	5	8	19	5.5	2.3	33	20	42	8	28	M5 x 0.8	12.5	4.8	M10 x 1.0

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
6	46.5 (51.5)	55.5 (60.5)	59.5 (64.5)	73.5 (78.5)	—	—	—	—	82.5 (87.5)	91.5 (96.5)	95.5 (100.5)	109.5 (114.5)	—	—	—	—
10	48.5	56	68	80	—	—	—	—	84.5	92	104	116	—	—	—	—
16	48.5	57	69	81	87	111	129	141	84.5	93	105	117	123	147	165	177

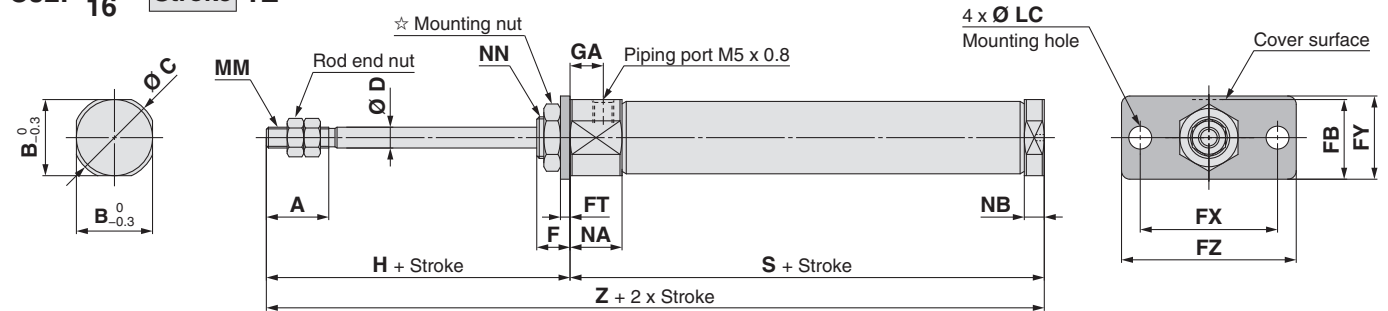
\*: ( ) in S and Z dimensions: With auto switch

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

### CJ2F6 – Stroke TZ



### CJ2F 10/16 – Stroke TZ



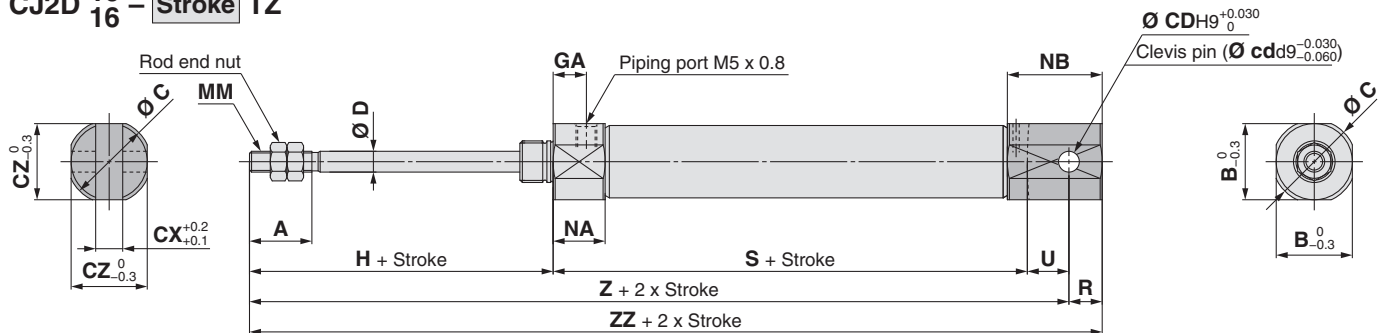
☆ For details of the mounting nut, refer to page 22.

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	H	MM	NA	NB	NN	T	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																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

※: ( ) in S and Z dimensions: With auto switch

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

### CJ2D 10/16 – Stroke TZ



※: A clevis pin and retaining rings are included.

															S							
Bore size	A	B	C	CD (cd)	CX	CZ	D	GA	H	MM	NA	NB	R	U	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

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

## Series CJ2K

Ø 10, Ø 16

RoHS

### How to Order



**Bore size**

10	10 mm
16	16 mm

**Cylinder standard stroke [mm]**  
Refer to "Standard Strokes" on page 48.

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

**With auto switch:** CDJ2K B 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

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

**Head cover port location**

—	Perpendicular to axis	
R	Axial	

\*: For double clevis, double side bossed, double foot and head flange, the port is located perpendicular to the cylinder axis.

**Pivot bracket**

—	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.

**Auto switch**

—	Without auto switch
---	---------------------

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

★ Enter the auto switch mounting type (A or B) even when a built-in magnet cylinder without an auto switch is required.

**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 107 for auto switch mounting brackets.

**Made to Order**  
Refer to page 48 for details.

**Rod end bracket**

—	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.

**Number of auto switches**

—	2 pcs.
S	1 pc.
n	"n" pcs.

\*: Refer to "Ordering Example of Cylinder Assembly" on page 48.

### Applicable Auto Switches/Refer to the Auto Switch Guide 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 (—)	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-colour indicator)	Grommet		3-wire (NPN)	5 V, 12 V		—	H7C	J79C	—	●	—	●	●	●	—	—		IC circuit	
				3-wire (PNP)			M9NVV	M9NW	M9NVV	M9NW	●	●	●	○	—	○				
				2-wire	12 V		M9PWV	M9PW	M9PWV	M9PW	●	●	●	○	—	○	—			
	Water resistant (2-colour indicator)			3-wire (NPN)	5 V, 12 V		M9BWV	M9BW	M9BWV	M9BW	●	●	●	○	—	○	IC circuit			
				3-wire (PNP)			M9NAV*1	M9NA*1	M9NAV*1	M9NA*1	○	○	●	○	—	○				
				2-wire	12 V		M9PAV*1	M9PA*1	M9PAV*1	M9PA*1	○	○	●	○	—	○			—	
	With diagnostic output (2-colour indicator)			4-wire (NPN)	5 V, 12 V		M9BAV*1	M9BA*1	M9BAV*1	M9BA*1	○	○	●	○	—	○	—		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*2	A93	A93V*2	A93	●	●	●	●	—	—	—		
							100 V or less	A90V	A90	A90V	A90	●	—	●	—	—	—	—		IC circuit
							—	—	C73C	A73C	—	●	—	●	●	●	—	—		
	24 V or less	—					C80C	A80C	—	●	—	●	●	●	—	—	IC circuit			
	Diagnostic indication (2-colour indicator)	Grommet					Yes	—	—	—	A79W	—	●	—	●	—	—	—		—

\*1: 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.

\*2: 1 m type lead wire is only applicable to D-A93.

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

\*: Since there are other applicable auto switches than listed, refer to page 108 for details.

\*: For details about auto switches with pre-wired connector, refer to the Auto Switch Guide on [www.smc.eu](http://www.smc.eu).

\*: 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.)

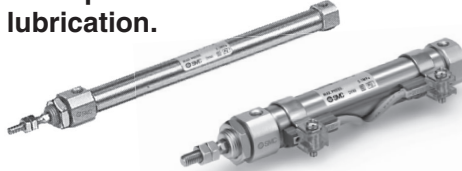
# Air Cylinder: Non-rotating Rod Type Double Acting, Single Rod *Series CJ2K*

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

**Non-rotating accuracy**

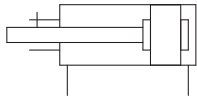
Ø 10: ±1.5°, Ø 16: ±1°

**Can operate without lubrication.**



## Symbol

Double acting, Single rod, Rubber bumper



**Made to Order**

(For details, refer to pages 111 to 120.)

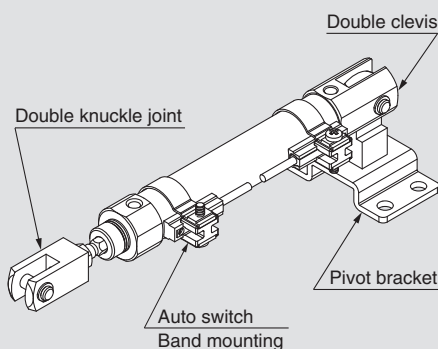
Symbol	Specifications
-XA□	Change of rod end shape
-XC3	Special port location
-XC9	Adjustable stroke cylinder/Adjustable retraction type
-XC10	Dual stroke cylinder/Double rod type
-XC22	Fluororubber seal
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease

## ⚠ Precautions

**Refer to page 121 before handling.**

## Ordering Example of Cylinder Assembly

Cylinder model: CDJ2KD16-60Z-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
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 (No freezing)	
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

## 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 in 1 mm increments is possible. (Spacers are not used.)

\*: Please consult with SMC for strokes which exceed the standard stroke length.

\*: Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on [www.smc.eu](http://www.smc.eu). In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

## Mounting and Accessories

/Refer to page 22 for details about part numbers and dimensions.

●...Mounted on the product. ○...Can be ordered within the cylinder model.

Mounting		Basic	Foot	Flange	Double*1 clevis	Double clevis (including T-bracket)
Standard	Mounting nut	●	●	●	—	—
	Rod end nut	●	●	●	●	●
	Clevis pin	—	—	—	●	●
Option	Single knuckle joint	○	○	○	○	○
	Double knuckle joint*1	○	○	○	○	○
	Rod end cap (Flat/Round type)	○	○	○	○	○
	T-bracket	—	—	—	○	●

\*1: 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*1	CJ-T010C	CJ-T016C

\*1: T-bracket is used with double clevis (D).

Refer to pages 101 to 108 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 CJ2K

## 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.

\*: Mounting nut is not included in the basic weight for the double clevis.

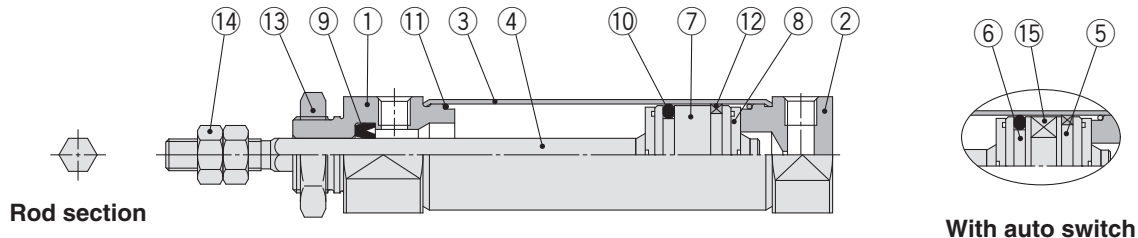
Calculation:

Example) **CJ2KL10-45Z**

- Basic weight ..... 25 (Ø 10)
- 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)



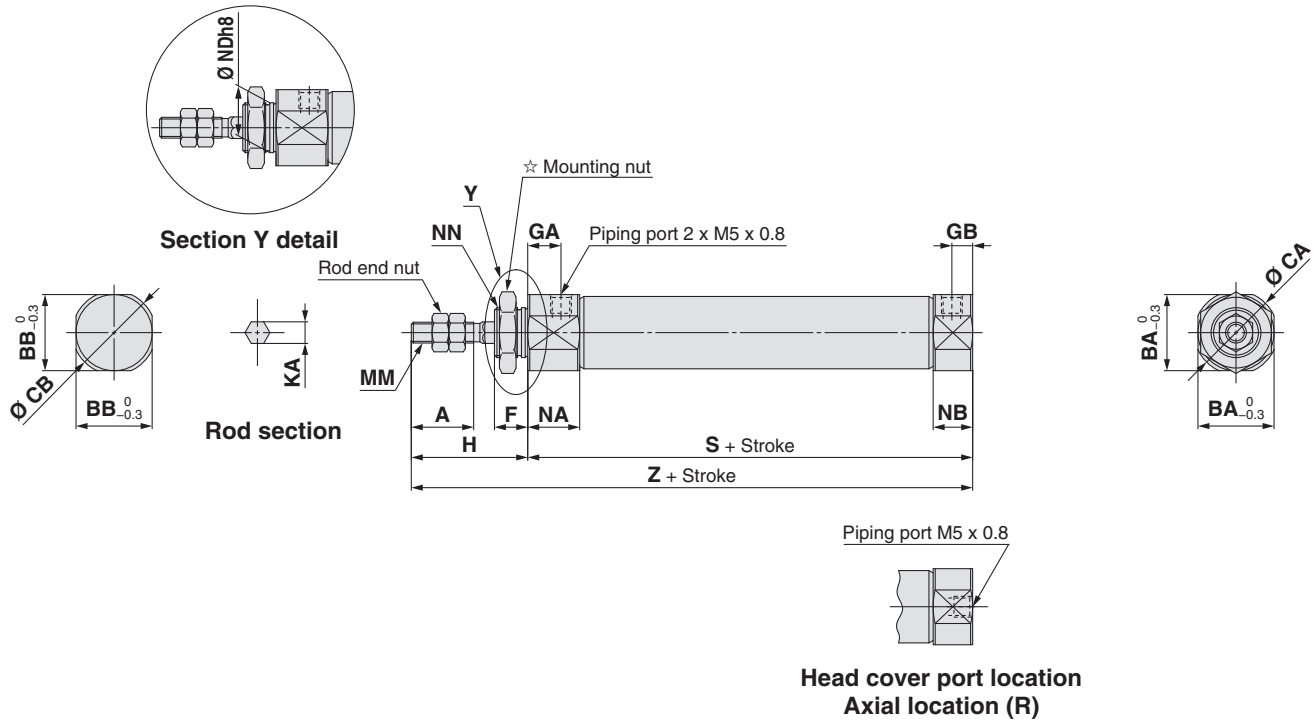
## Component Parts

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

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

## Basic (B)

CJ2KB  $\frac{10}{16}$  - Stroke Head cover port location Z



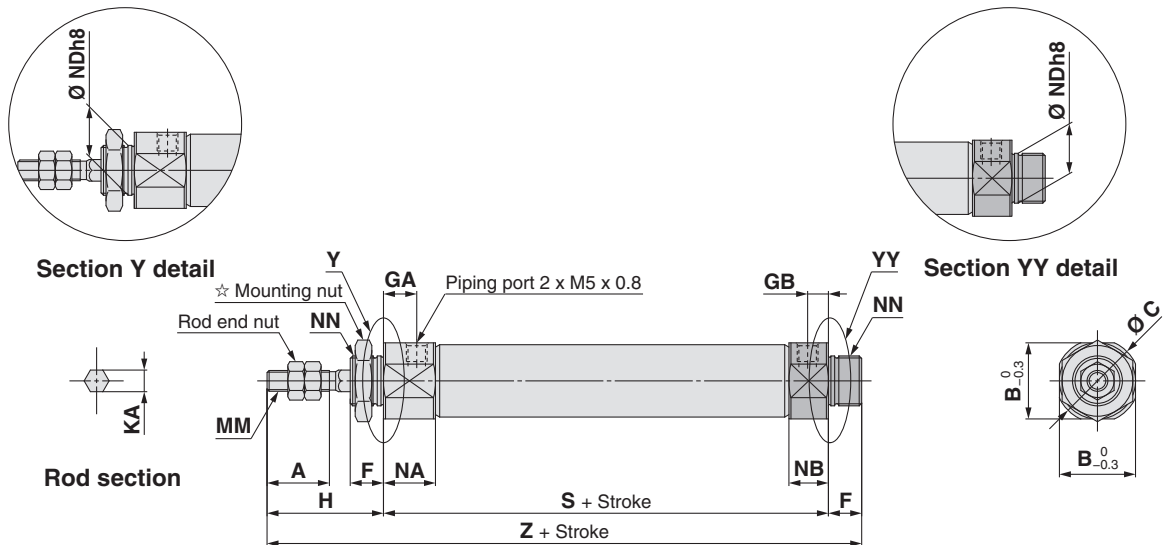
\*: The overall cylinder length does not change.

☆ Refer to page 22 for details of the mounting nut. (SNJ-016C for Ø 10, SNKJ-016C for Ø 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</sub> <sup>0</sup> <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</sub> <sup>0</sup> <sub>-0.027</sub>	M12 x 1.0	47	75

## Double-side Bossed (E)

CJ2KE  $\frac{10}{16}$  - Stroke Z



☆ Refer to page 22 for details of the mounting nut. (SNJ-016C for Ø 10, SNKJ-016C for Ø 16)

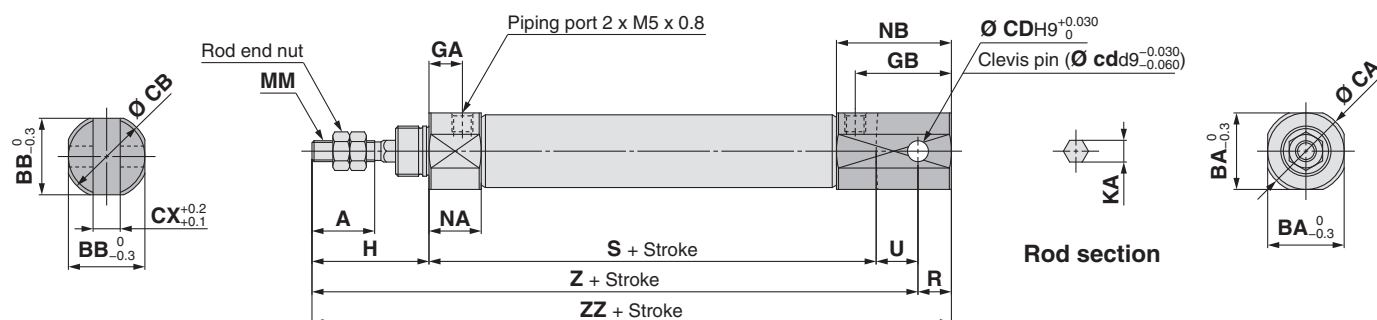
Bore size	A	B	C	F	GA	GB	H	KA	MM	NA	NB	NDh8	NN	S	Z
10	15	15	17	8	8	5	28	4.2	M4 x 0.7	12.5	9.5	10 <sub>0</sub> <sup>0</sup> <sub>-0.022</sub>	M10 x 1.0	46	82
16	15	18.3	20	8	8	5	28	5.2	M5 x 0.8	12.5	9.5	12 <sub>0</sub> <sup>0</sup> <sub>-0.027</sub>	M12 x 1.0	47	83

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	Double Acting, Double Rod	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2RK
With End Lock	Double Acting, Single Rod	CBJ2
With End Lock	Double Acting, Double Rod	Auto Switch
Made to Order		

## Series CJ2K

## Double Clevis (D)

CJ2KD  $\frac{10}{16}$  - Stroke Z

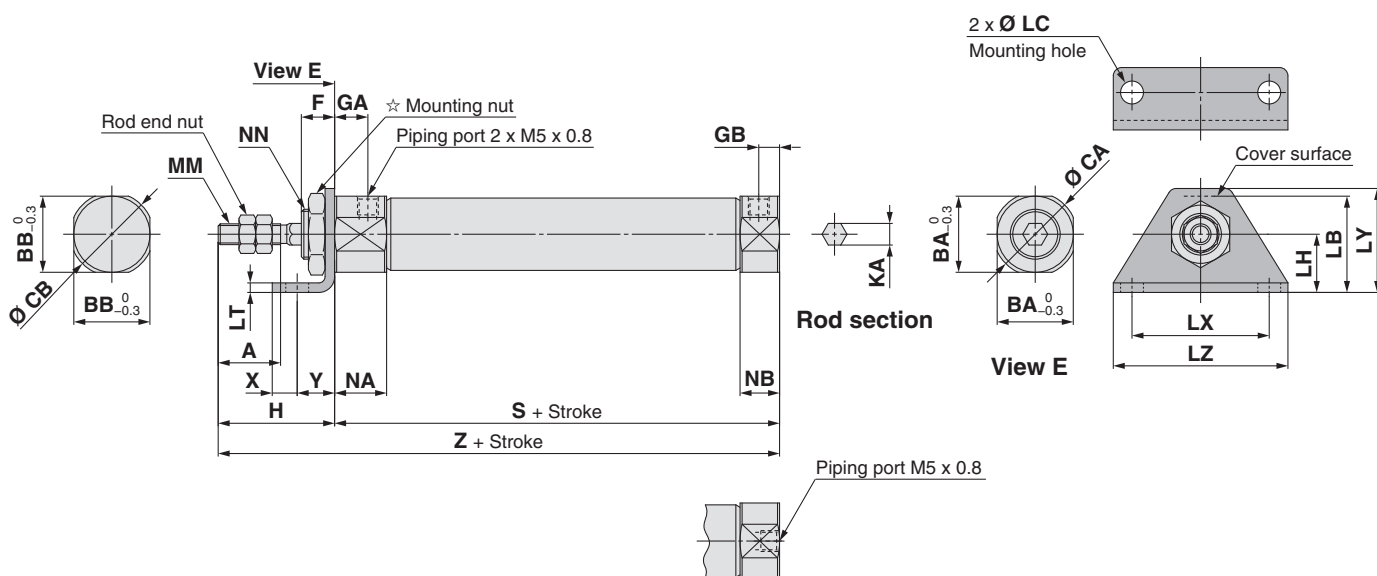


\*: A clevis pin and retaining rings are included.

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

### Single Foot (L)

**CJ2KL  $\frac{10}{16}$  – Stroke** **Head cover port location Z**



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

\*: The overall cylinder length does not change.

☆ Refer to page 22 for details of the mounting nut. (SNJ-016C for Ø 10, SNKJ-016C for Ø 16)

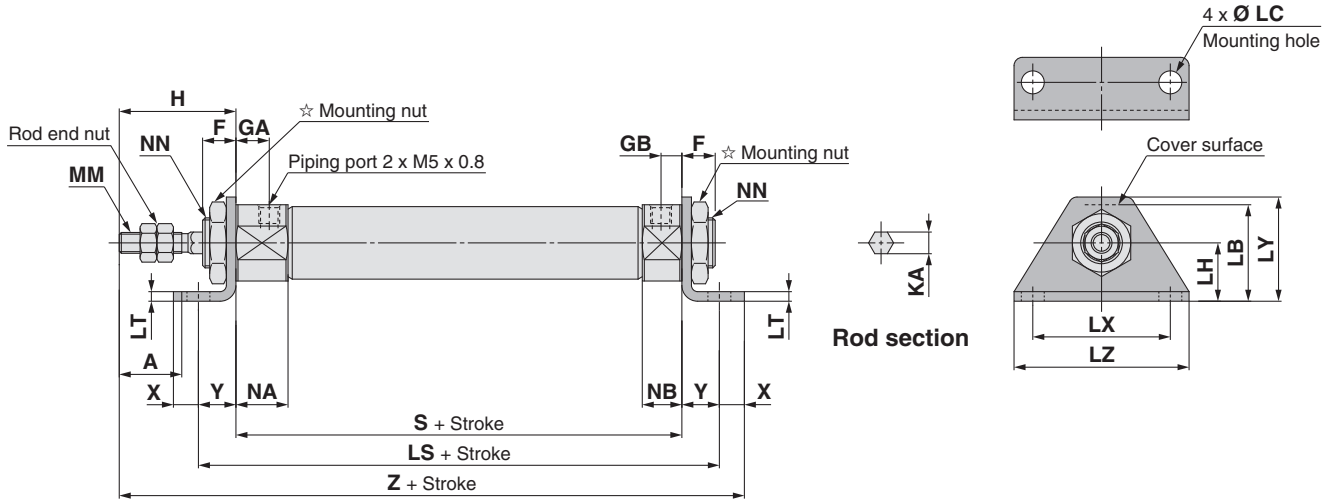
☆ Refer to page 22 for details of the mounting nut. (SNJ-016C for Ø 10, SNKJ-016C for Ø 16)

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
10	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
16	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



## Double Foot (M)

CJ2KM  $\frac{10}{16}$  – Stroke Z

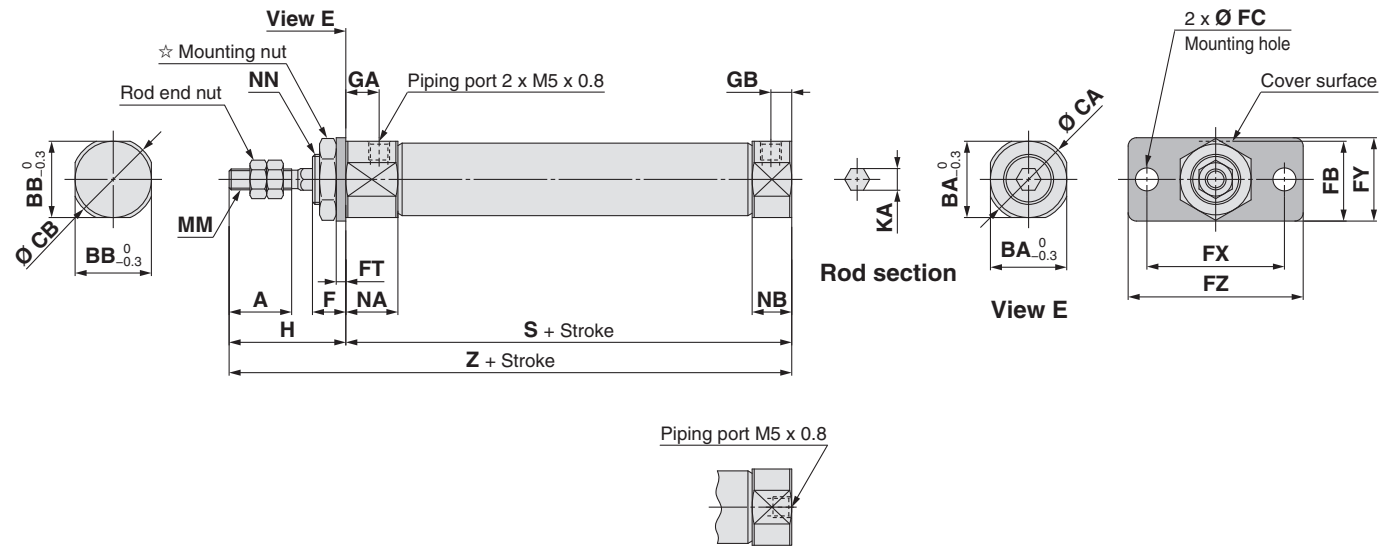


☆ Refer to page 22 for details of the mounting nut. (SNJ-016C for Ø 10, SNKJ-016C for Ø 16)

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	89
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	90

## Rod Flange (F)

CJ2KF  $\frac{10}{16}$  – Stroke Head cover port location Z



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

※: The overall cylinder length does not change.

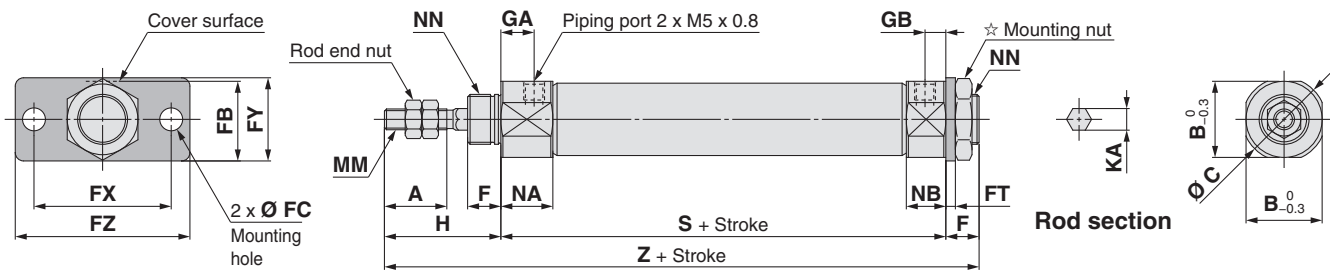
☆ Refer to page 22 for details of the mounting nut. (SNJ-016C for Ø 10, SNKJ-016C for Ø 16)

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

# Series CJ2K

## Head Flange (G)

CJ2KG  $\frac{10}{16}$  - Stroke Z



☆ Refer to page 22 for details of the mounting nut. (SNJ-016C for Ø 10, SNKJ-016C for Ø 16)

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

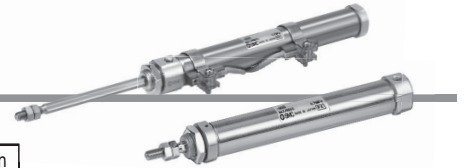
# Air Cylinder: Non-rotating Rod Type Single Acting, Spring Return/Extend

## Series CJ2K

Ø 10, Ø 16

RoHS

### How to Order



**Cylinder standard stroke [mm]**  
Refer to "Standard Strokes" on page 55.

**Action**

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

**CJ2K B 16 - 45 S Z - - -**

**With auto switch**

**CDJ2K B 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

**Bore size**

10	10 mm
16	16 mm

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

**Head cover port location**

—	Perpendicular to axis	
R	Axial	

\*: For double clevis, double side bossed, double foot and head flange, the port is located perpendicular to the cylinder axis.  
\*: Not applicable to single acting, spring extend (T).

**Pivot bracket**

—	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.

**Rod end bracket**

—	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.

**Auto switch**

—	Without auto switch
---	---------------------

\*: For applicable auto switches, refer to the table below.  
★ Enter the auto switch mounting type (A or B) even when a built-in magnet cylinder without an auto switch is required.

**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 107 for auto switch mounting brackets.

**Number of auto switches**

—	2 pcs.
S	1 pc.
n	"n" pcs.

\*: Refer to "Ordering Example of Cylinder Assembly" on page 55.

**Applicable Auto Switches/Refer to the Auto Switch Guide 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 (—)	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-colour indicator)	Grommet		3-wire (NPN)	24 V		5 V, 12 V	—	H7C	J79C	—	●	—	●	●	●	—		—	IC circuit
				3-wire (PNP)				M9NVV	M9NW	M9NVV	M9NW	●	●	●	○	—	○			
				2-wire				M9PWV	M9PW	M9PWV	M9PW	●	●	●	○	—	○			
				3-wire (NPN)				M9BWV	M9BW	M9BWV	M9BW	●	●	●	○	—	○			
	Water resistant (2-colour indicator)	Grommet		3-wire (PNP)	5 V, 12 V		M9NAV*1	M9NA*1	M9NAV*1	M9NA*1	○	○	●	○	—	○	○		IC circuit	
				2-wire			M9PAV*1	M9PA*1	M9PAV*1	M9PA*1	○	○	●	○	—	○				
				2-wire			M9BAV*1	M9BA*1	M9BAV*1	M9BA*1	○	○	●	○	—	○				
With diagnostic output (2-colour indicator)	Connector	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*2	A93	A93V*2	A93	●	●	●	●	—	—		—
								100 V or less	A90V	A90	A90V	A90	●	—	●	—	—	—		—
	No	—		—	C73C			A73C	—	●	—	●	●	●	—	—	—			
		24 V or less		—	C80C			A80C	—	●	—	●	●	●	—	—	IC circuit			
	Diagnostic indication (2-colour indicator)	Grommet		Yes	—	—	—	A79W	—	—	—	●	—	●	—	—	—			

\*1: 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.

\*2: 1 m type lead wire is only applicable to D-A93.

\*: Lead wire length symbols: 0.5 m..... — (Example) M9NV 5 m..... Z (Example) M9NWZ  
1 m..... M (Example) M9NWM None..... N (Example) H7CN  
3 m..... L (Example) M9NWL

\*: Since there are other applicable auto switches than listed, refer to page 108 for details.

\*: For details about auto switches with pre-wired connector, refer to the **Auto Switch Guide** on [www.smc.eu](http://www.smc.eu).

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

\*: The D-A90□/M90□□/A70□□/A80□□/F70□□/J70□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)

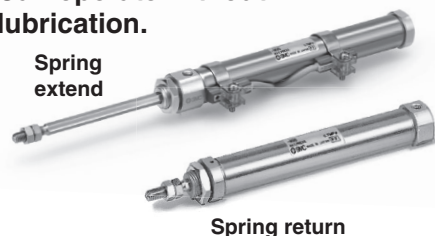
# Series CJ2K

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

**Non-rotating accuracy**

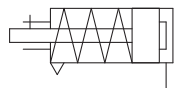
Ø 10: ±1.5°, Ø 16: ±1°

**Can operate without lubrication.**

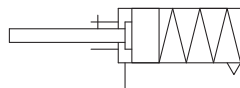


## Symbol

Single acting, Spring return,  
Rubber bumper



Single acting, Spring extend,  
Rubber bumper



**Made to Order**

(For details, refer to pages 111 to 120.)

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

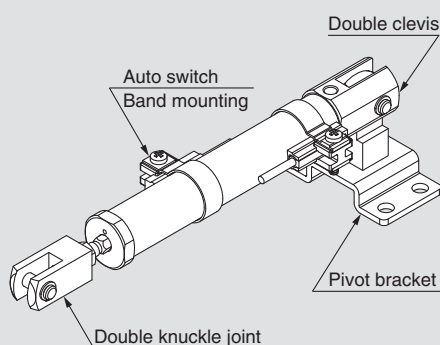


## Precautions

**Refer to page 121 before handling.**

## Ordering Example of Cylinder Assembly

Cylinder model: CDJ2KD16-45SZ-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
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 (No freezing)	
Cushion	Rubber bumper (standard equipment)	
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

## 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 in 1 mm increments is possible. (Spacers are not used.)

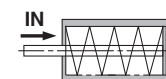
\*: Please consult with SMC for strokes which exceed the standard stroke length.

\*: Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on [www.smc.eu](http://www.smc.eu). In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

## Spring Reaction Force

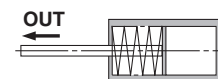
Bore size [mm]	Spring reaction force [N]	
	Primary	Secondary
10	3.53	6.86
16	6.86	14.2

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. ○...Can be ordered within the cylinder model.

Mounting		Basic	Foot	Flange	Double*1 clevis	Double clevis (including T-bracket)
Standard	Mounting nut	●	●	●	—	—
	Rod end nut	●	●	●	●	●
	Clevis pin	—	—	—	●	●
Option	Single knuckle joint	○	○	○	○	○
	Double knuckle joint*1	○	○	○	○	○
	Rod end cap (Flat/Round type)	○	○	○	○	○
	T-bracket	—	—	—	○	●

\*1: 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*1	CJ-T010C	CJ-T016C

\*1: T-bracket is used with double clevis (D).

Refer to pages 101 to 108 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 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.

\*: Mounting nut is not included in the basic weight for the double clevis.

Calculation:

Example) **CJ2KL10-45SZ**

- Basic weight ..... 48 (Ø 10)
- 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.

\*: Mounting nut is not included in the basic weight for the double clevis.

Calculation:

Example) **CJ2KL10-45TZ**

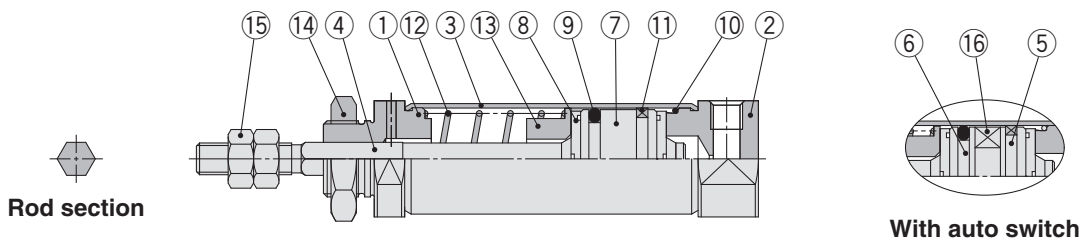
- Basic weight ..... 44 (Ø 10)
- Cylinder stroke ..... 45 stroke
- Mounting bracket weight ..... 8 (Single foot)

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

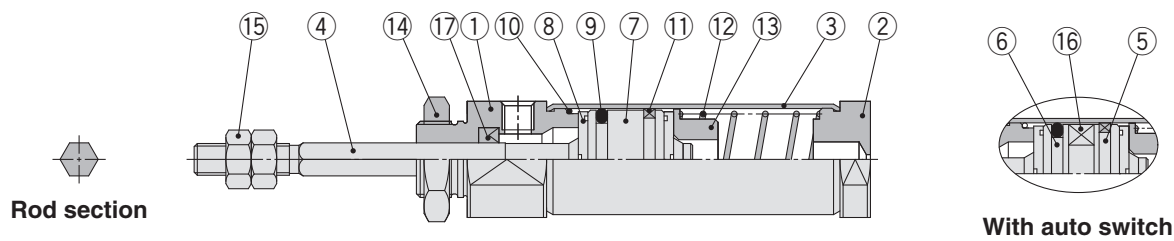
Double Acting, Single Rod	CJ2
Double Acting, Double Rod	CJ2W
Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	CJ2K
Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	CJ2Z
Double Acting, Single Rod	CJ2R
Double Acting, Double Rod	CJ2R
Direct Mount	CJ2R
Single Acting, Spring Return/Extend	CJ2RK
Double Acting, Single Rod	CJ2RK
Double Acting, Double Rod	CJ2RK
With End Lock	CBJ2
Auto Switch	Auto Switch
Made to Order	Made to Order

**Construction (Not able to disassemble)**

**Single acting, Spring return**



**Single acting, Spring extend**



**Component Parts**

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

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

CJ2KB <sup>10</sup>/<sub>16</sub> – Stroke S Head cover port location Z



[mm]

[mm]CJ2KE  $\frac{10}{16}$  - Stroke SZ

[mm]

[mm]

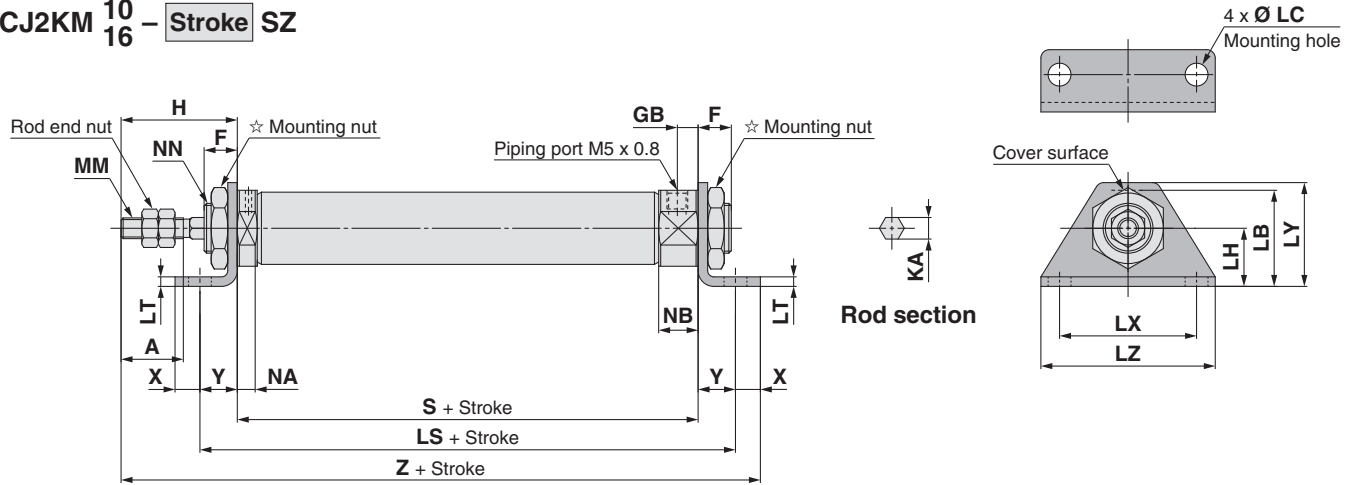
Made to Order	Auto Switch	With End Lock	Direct Mount, Non-rotating Rod	Direct Mount	Built-in Speed Controller	Non-rotating Rod	Standard
		Double Acting, Single Rod CJ2RK	Double Acting, Single Rod CJ2RK	Double Acting, Double Rod CJ2ZW	Double Acting, Single Rod CJ2Z	Double Acting, Single Rod CJ2K	Double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





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

CJ2KM  $\frac{10}{16}$  – Stroke SZ



☆ For details of the mounting nut, refer to page 22.

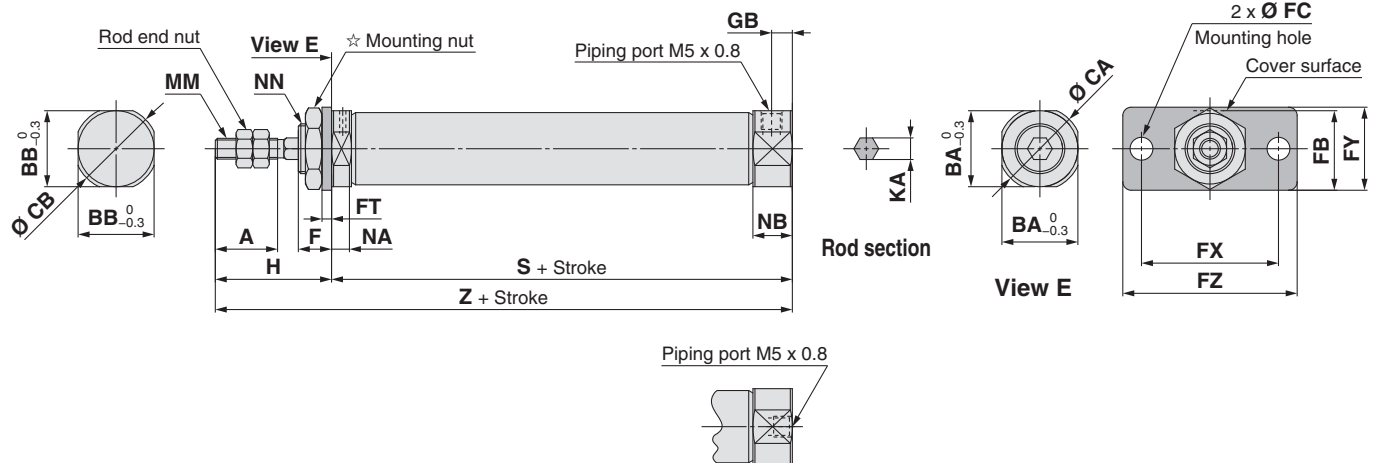
Bore size	A	F	GB	H	LB	LC	LH	LS								LT	LX	LY	LZ	KA	MM	NA	NB	NN
								5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st									
10	15	8	5	28	21.5	5.5	14	63.5	71	83	95	—	—	—	—	2.3	33	25	42	4.2	M4 x 0.7	4.8	9.5	M10 x 1.0
16	15	8	5	28	23	5.5	14	63.5	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	—	—	—	—	6	9	88.5	96	108	120	—	—	—	—
16	45.5	54	66	78	84	108	126	138	6	9	88.5	97	109	121	127	151	169	181

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

CJ2KF  $\frac{10}{16}$  – Stroke S Head cover port location Z



Head cover port location  
Axial location (R)

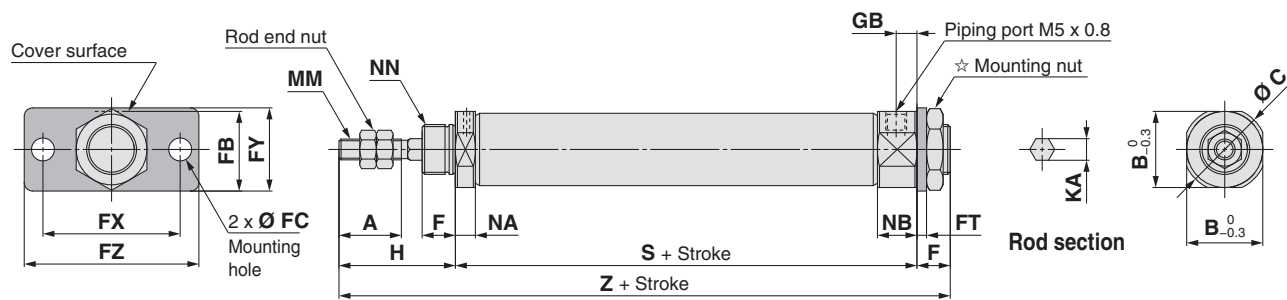
※: The overall cylinder length does not change.

☆ For details of the mounting nut, refer to page 22.

Bore size	A	BA	BB	CA	CB	F	FB	FC	FT	FX	FY	FZ	GB	H	KA	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	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	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	M12 x 1.0	45.5	54	66	78	84	108	126	138	73.5	82	94	106	112	136	154	166

Single Acting, Spring Return: Head Flange (G)

CJ2KG <sup>10</sup>/<sub>16</sub> – Stroke SZ



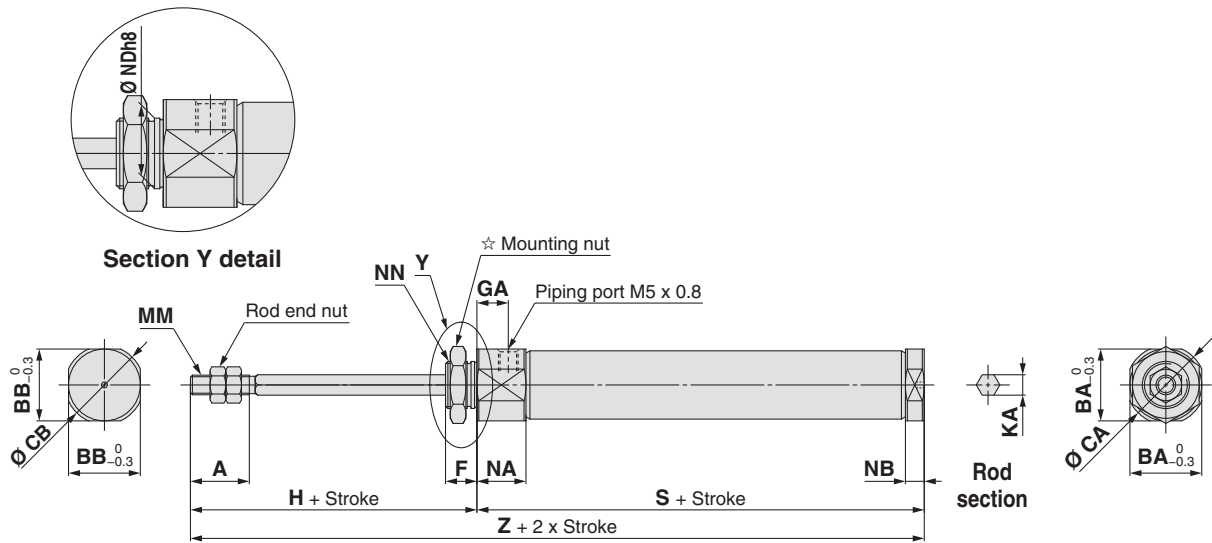
☆ For details of the mounting nut, refer to page 22.

[mm]																	
Bore size	A	B	C	F	FB	FC	FT	FX	FY	FZ	GB	H	KA	MM	NA	NB	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	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	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

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

CJ2KB  $\frac{10}{16}$  - Stroke TZ

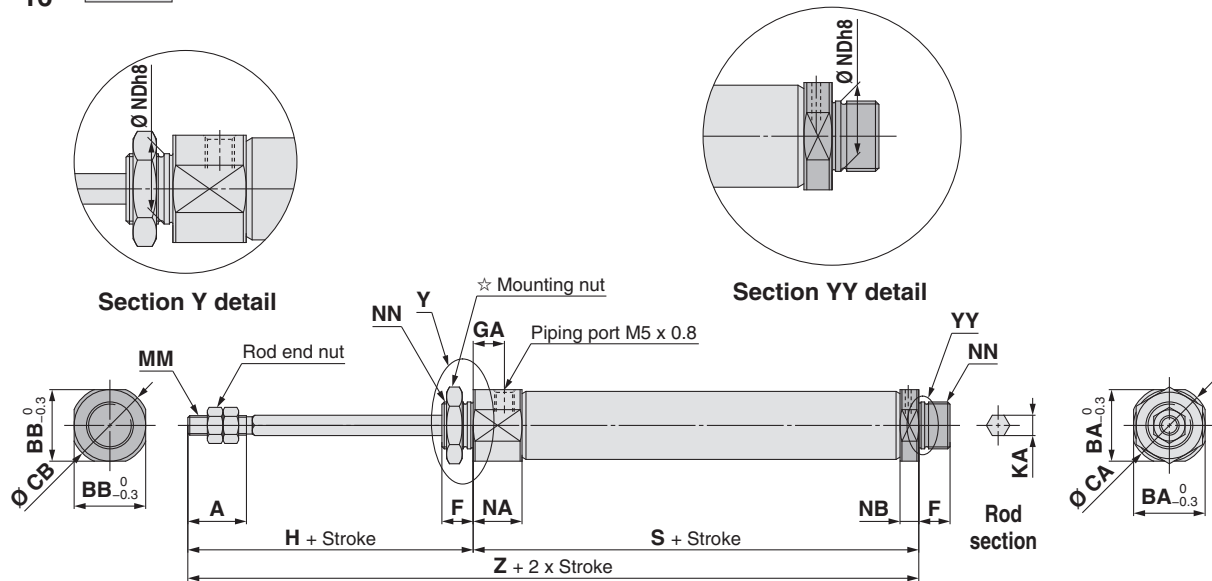


☆ For details of the mounting nut, refer to page 22.

Bore size	A	B	A	B	C	B	C	F	G	A	H	K	A	M	N	A	B	N	Dh8	N	S												Z																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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																					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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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

CJ2KE  $\frac{10}{16}$  - Stroke TZ



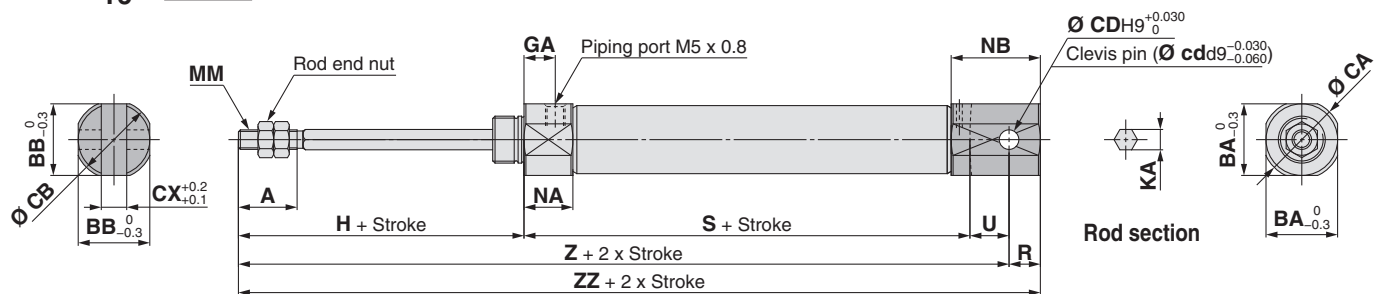
☆ For details of the mounting nut, refer to page 22.

Bore size	A	B	A	B	C	A	B	C	F	G	A	H	K	A	M	M	N	N	Dh8	N	N	S												Z																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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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	—	—	—	—	84.5	92	104	116	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

# Series CJ2K

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

CJ2KD  $\frac{10}{16}$  – Stroke TZ



\* A clevis pin and retaining rings are included.

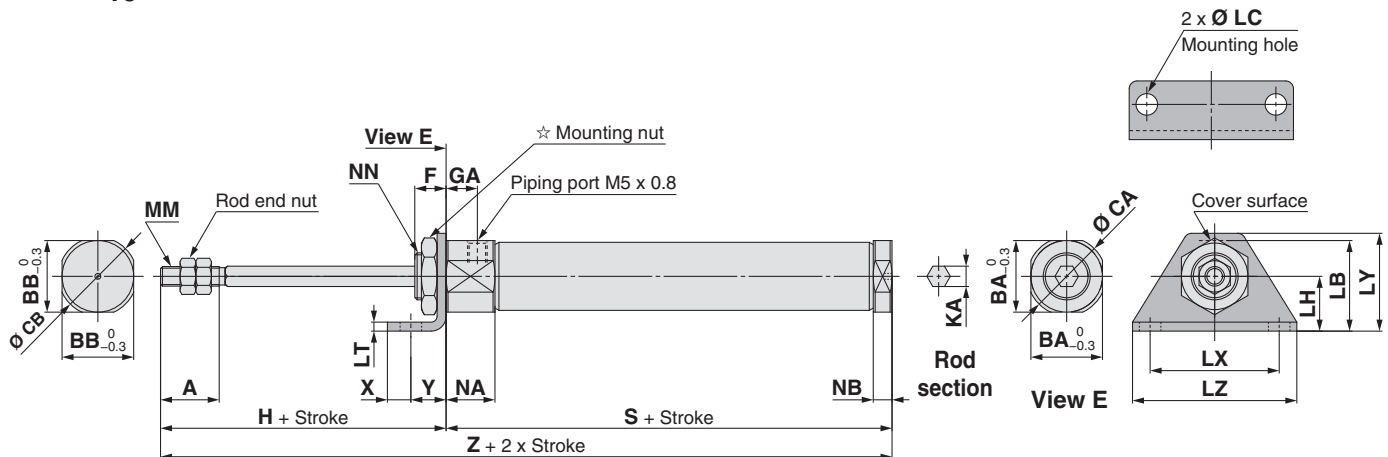
Bore size	A	BA	BB	CA	CB	CD (cd)	CX	GA	H	KA	MM	NA	NB	R	U	S							
																5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	15	15	12	17	14	3.3	3.2	8	28	4.2	M4 x 0.7	12.5	17.8	5	8	48.5	56	68	80	—	—	—	—
16	15	18.3	18.3	20	20	5	6.5	8	28	5.2	M5 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

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

CJ2KL  $\frac{10}{16}$  – Stroke TZ



☆ For details of the mounting nut, refer to page 22.

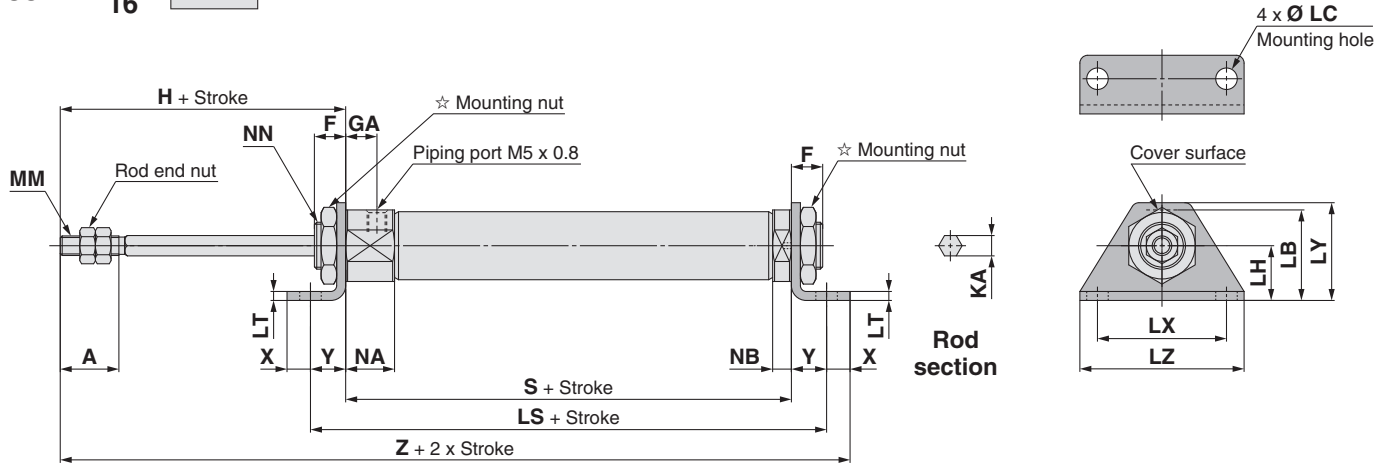
Bore size	A	BA	BB	CA	CB	F	GA	H	KA	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN
10	15	15	12	17	14	8	8	28	4.2	21.5	5.5	14	2.3	33	25	42	M4 x 0.7	12.5	4.8	M10 x 1.0
16	15	18.3	18.3	20	20	8	8	28	5.2	23	5.5	14	2.3	33	25	42	M5 x 0.8	12.5	4.8	M12 x 1.0

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	—	—	—	—	6	9	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

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

CJ2KM  $\frac{10}{16}$  – Stroke TZ



☆ For details of the mounting nut, refer to page 22.

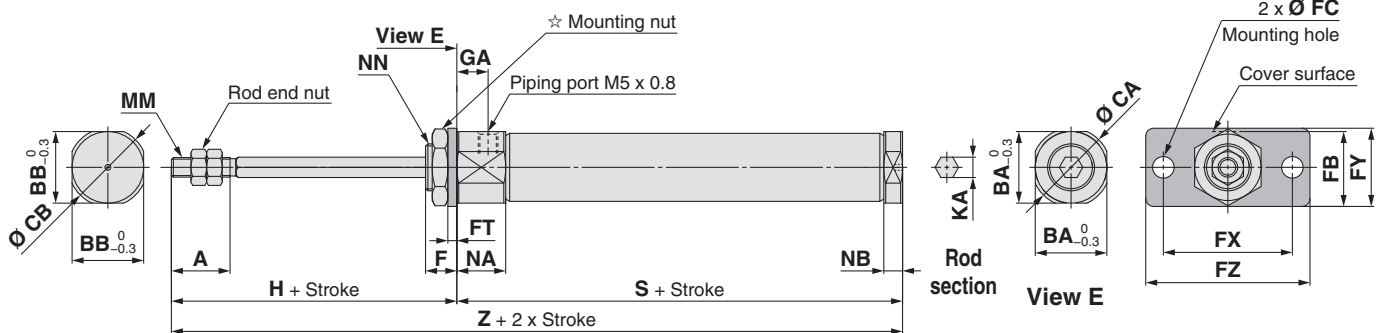
Bore size	A	F	GA	H	KA	LB	LC	LH	LS								LT	LX	LY	LZ	MM	NA	NB	NN
									5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st								
10	15	8	8	28	4.2	21.5	5.5	14	66.5	74	86	98	—	—	—	—	2.3	33	25	42	M4 x 0.7	12.5	4.8	M10 x 1.0
16	15	8	8	28	5.2	23	5.5	14	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	—	—	—	—	6	9	91.5	99	111	123	—	—	—	—
16	48.5	57	69	81	87	111	129	141	6	9	91.5	100	112	124	130	154	172	184

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

CJ2KF  $\frac{10}{16}$  – Stroke TZ



☆ For details of the mounting nut, refer to page 22.

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

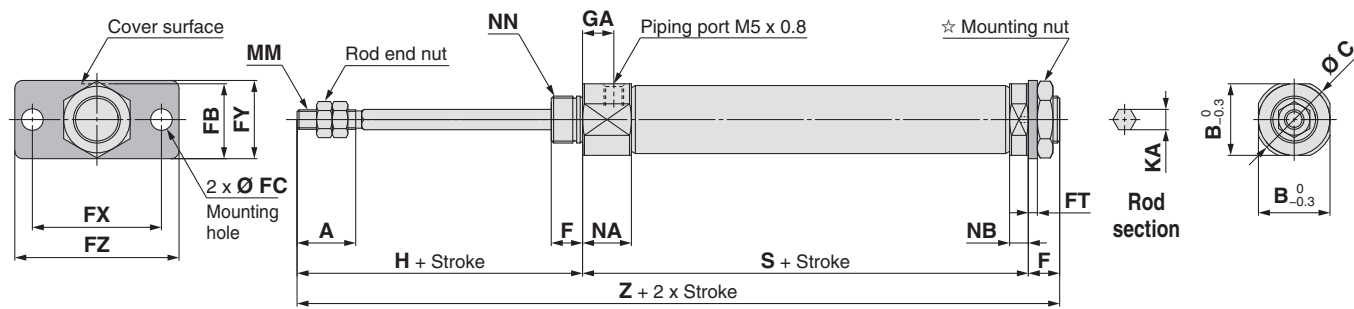
  

Bore size	S								Z							
	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st	5 to 15 st	16 to 30 st	31 to 45 st	46 to 60 st	61 to 75 st	76 to 100 st	101 to 125 st	126 to 150 st
10	48.5	56	68	80	—	—	—	—	76.5	84	96	108	—	—	—	—
16	48.5	57	69	81	87	111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

Series **CJ2K**

Single Acting, Spring Extend: Head Flange (G)

CJ2KG  $\frac{10}{16}$  – Stroke TZ



☆ For details of the mounting nut, refer to page 22.

[mm]																		
Bore size	A	B	C	F	FB	FC	FT	FX	FY	FZ	GA	H	KA	MM	NA	NB	NN	
10	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	
16	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	

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	48.5	56	68	80	—	—	—	—	84.5	92	104	116	—	—	—	—
16	48.5	57	69	81	87	111	129	141	84.5	93	105	117	123	147	165	177



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

## Series CJ2Z

Ø 10, Ø 16

RoHS

### How to Order



**Bore size**

10	10 mm
16	16 mm

**Cylinder standard stroke [mm]**  
Refer to "Standard Strokes" on page 67.

**Ordering Example:** CJ2Z B 16 - 60 Z - [ ] - [ ] - [ ]

**With auto switch:** CDJ2Z B 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

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

**Pivot bracket**

—	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.

**Auto switch**

—	Without auto switch
---	---------------------

\*: For applicable auto switches, refer to the table below.  
★ Enter the auto switch mounting type (A or B) even when a built-in magnet cylinder without an auto switch is required.

**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 107 for auto switch mounting brackets.

**Number of auto switches**

—	2 pcs.
S	1 pc.
n	"n" pcs.

**Head cover port location**

—	Perpendicular to axis
R	Axial

**Rod end bracket**

—	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 67 for details.

\*: For double clevis, double side bossed, double foot and head flange, the port is located perpendicular to the cylinder axis.

\*: Refer to "Ordering Example of Cylinder Assembly" on page 67.

### Applicable Auto Switches/Refer to the Auto Switch Guide 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 (—)	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-colour indicator)	Grommet		3-wire (NPN)				24 V	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)	M9NAV*1	M9NA*1	M9NAV*1				M9NA*1	○	○	●	○	—	○							
	Water resistant (2-colour indicator)	Grommet		3-wire (PNP)	24 V	5 V, 12 V	—	M9PAV*1	M9PA*1	M9PAV*1	M9PA*1	○	○	●	○	—	○	IC circuit						
				2-wire				12 V	M9BAV*1	M9BA*1	M9BAV*1	M9BA*1	○	○	●	○	—			○				
				With diagnostic output (2-colour indicator)				4-wire (NPN)	5 V, 12 V	—	H7NF	—	F79F	●	—	●	○			—	○	IC circuit		
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	24 V	—	200 V	—	—	A72	A72H	●	—	●	—	—	—	—				
										100 V	A93V*2	A93	A93V*2	A93	●	●	●	●	—		—	IC circuit		
						100 V or less		A90V	A90	A90V	A90	●	—	●	●	●	—	—	—					
		Connector				—		—	C73C	A73C	—	●	—	●	●	●	—	—		IC circuit				
						24 V or less		—	C80C	A80C	—	●	—	●	●	●	—	—	—					
	Diagnostic indication (2-colour indicator)	Grommet				Yes		—	—	—	—	—	200 V	—	—	A79W	—	●		—	●	—	—	—

\*1: 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.

\*2: 1 m type lead wire is only applicable to D-A93.

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

\*: Since there are other applicable auto switches than listed, refer to page 108 for details.

\*: For details about auto switches with pre-wired connector, refer to the Auto Switch Guide on [www.smc.eu](http://www.smc.eu).

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

\*: The D-A90□/M90□□/A70□□/A80□□/F70□□/J70□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)

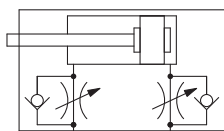
# Series CJ2Z

## 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 111 to 120.)

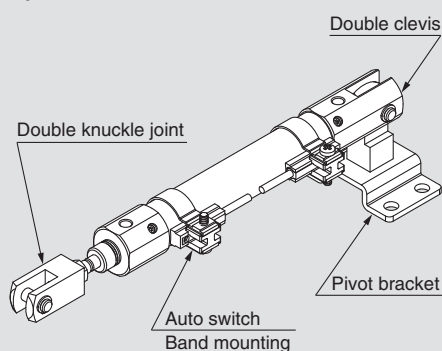
Symbol	Specifications
-XA□	Change of rod end shape
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease

## ⚠ Precautions

Refer to page 121 before handling.

## Ordering Example of Cylinder Assembly

Cylinder model: CDJ2ZD16-60Z-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
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 (No freezing) 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

## Standard Strokes

Bore size	Standard stroke	Maximum manufacturable stroke [mm]
10	15, 30, 45, 60, 75, 100, 125, 150	400
16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200	400

\*: Manufacture of intermediate strokes in 1 mm increments is possible. (Spacers are not used.)

\*: Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on [www.smc.eu](http://www.smc.eu). In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

## Mounting and Accessories

Refer to page 22 for details about part numbers and dimensions.

●...Mounted on the product. ○...Can be ordered within the cylinder model.

	Mounting	Basic	Foot	Flange	Double <sup>*1</sup> clevis	Double clevis (including T-bracket)
Standard	Mounting nut	●	●	●	—	—
	Rod end nut	●	●	●	●	●
	Clevis pin	—	—	—	●	●
Option	Single knuckle joint	○	○	○	○	○
	Double knuckle joint <sup>*1</sup>	○	○	○	○	○
	Rod end cap (Flat/Round type)	○	○	○	○	○
	T-bracket	—	—	—	○	●

\*1: 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 <sup>*1</sup>	CJ-T010C	CJ-T016C

\*1: T-bracket is used with double clevis (D).

Refer to pages 101 to 108 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
	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.

\*: Mounting nut is not included in the basic weight for the double clevis.

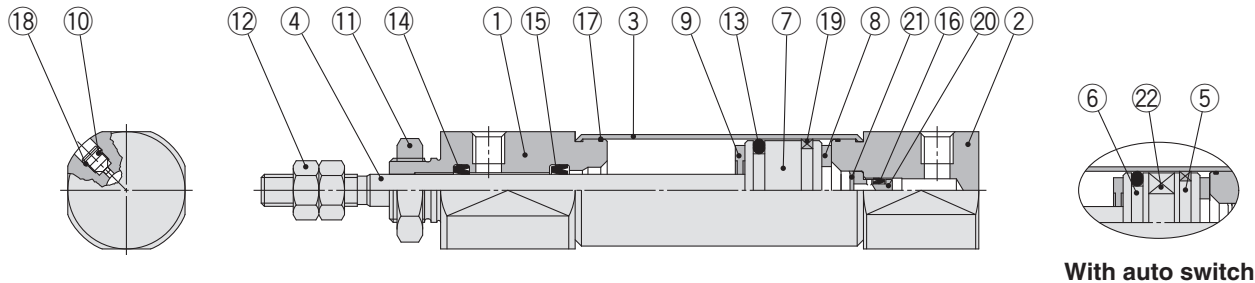
Calculation:

Example) **CJ2ZL10-45Z**

- Basic weight..... 36 (Ø 10)
- 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)



## Component Parts

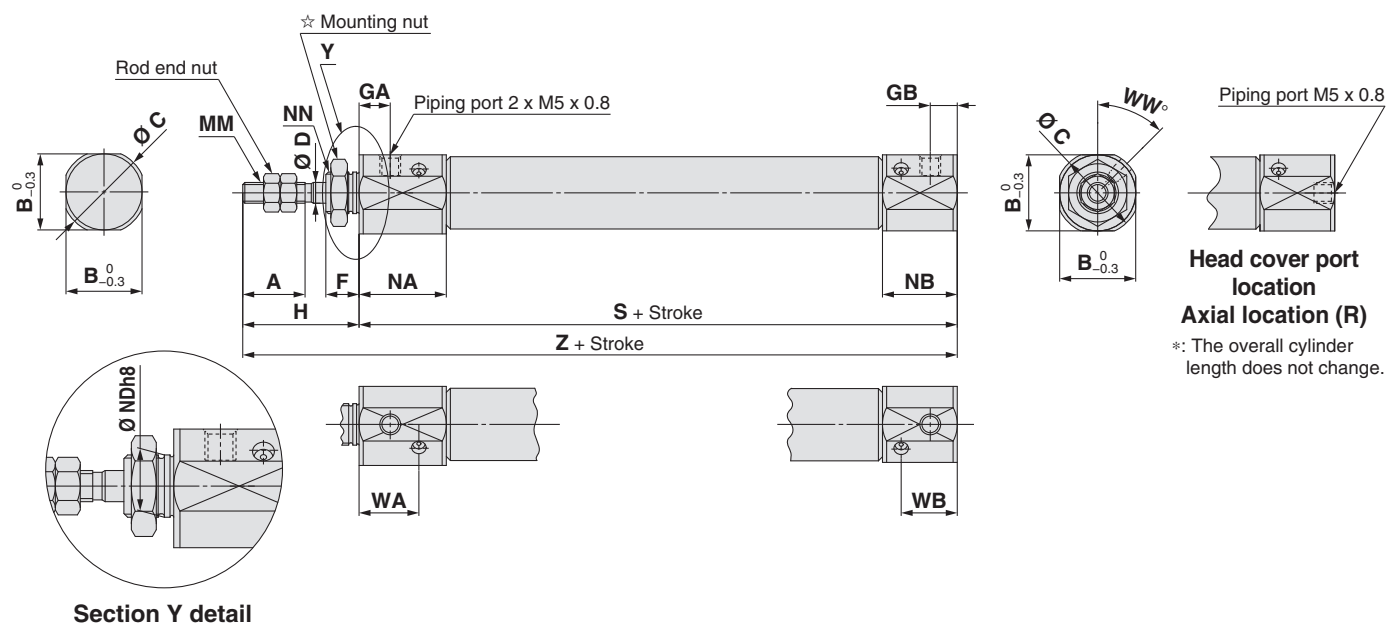
No.	Description	Material	Note
1	Rod cover	Aluminium alloy	
2	Head cover	Aluminium alloy	
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminium alloy	
6	Piston B	Aluminium alloy	
7	Piston	Aluminium alloy	
8	Bumper A	Urethane	
9	Bumper B	Urethane	
10	Speed controller needle	Carbon steel	
11	Mounting nut	Rolled steel	

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

# Series CJ2Z

## Basic (B)

CJ2ZB  $\frac{10}{16}$  - Stroke Head cover port location Z

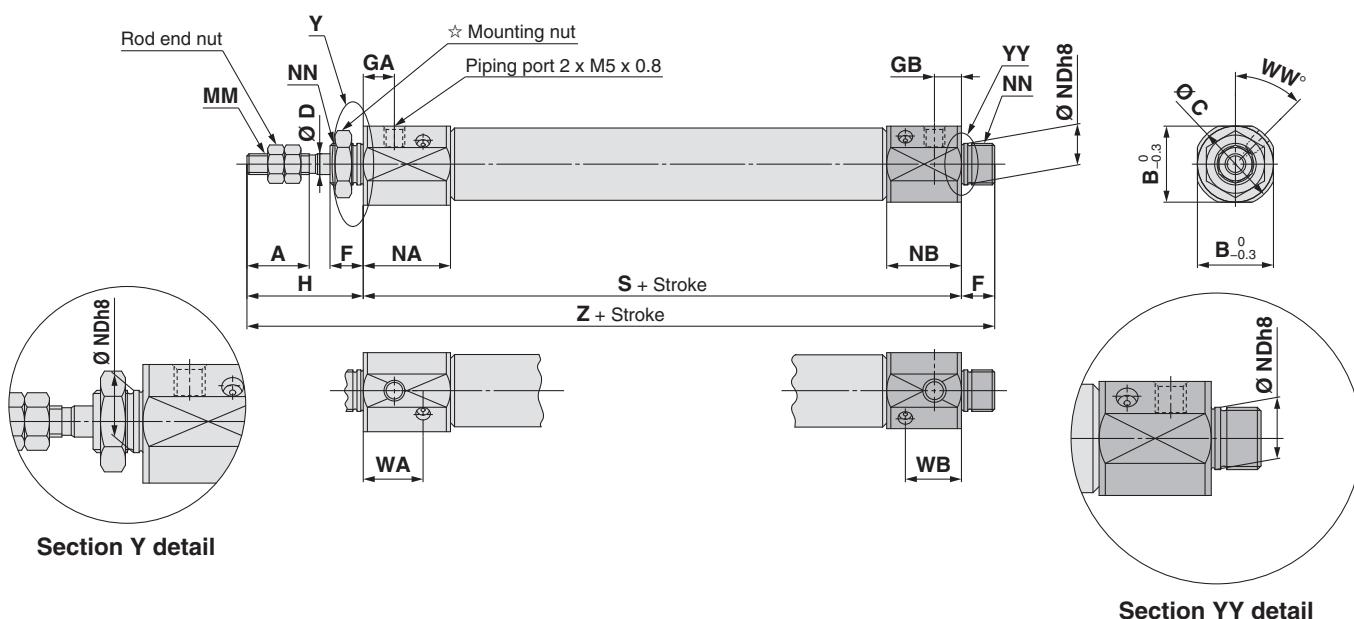


☆ For details of the mounting nut, refer to page 22.

Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	NDh8	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> <sup>0</sup>	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> <sup>0</sup>	M10 x 1.0	14.4	13.5	45	64	92

## Double-side Bossed (E)

CJ2ZE  $\frac{10}{16}$  - Stroke Z

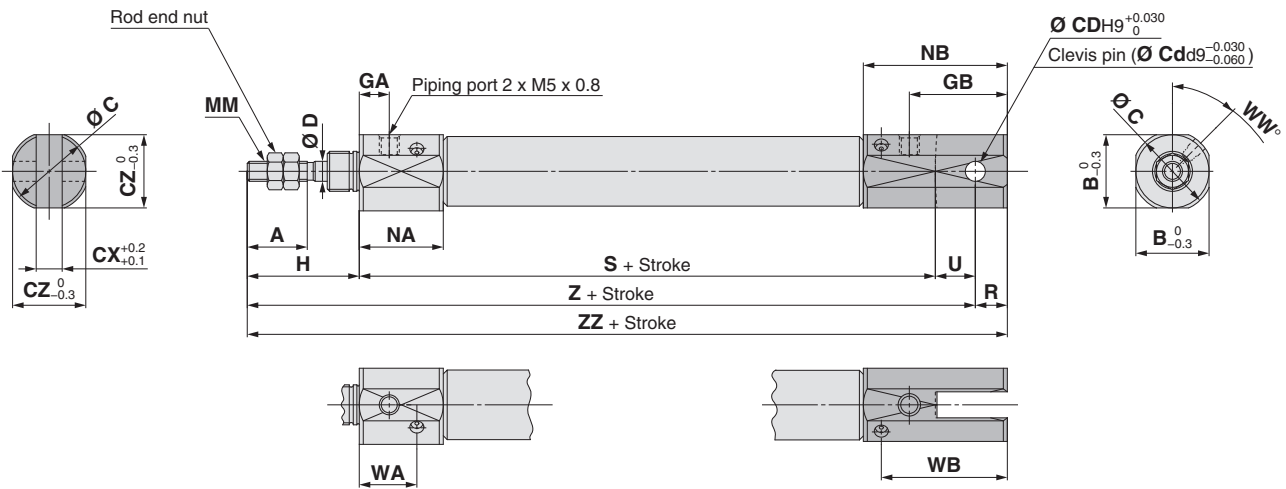


☆ For details of the mounting nut, refer to page 22.

Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	NDh8	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> <sup>0</sup>	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> <sup>0</sup>	M10 x 1.0	14.4	13.5	45	64	100

## Double Clevis (D)

CJ2ZD  $\frac{10}{16}$  – Stroke Z

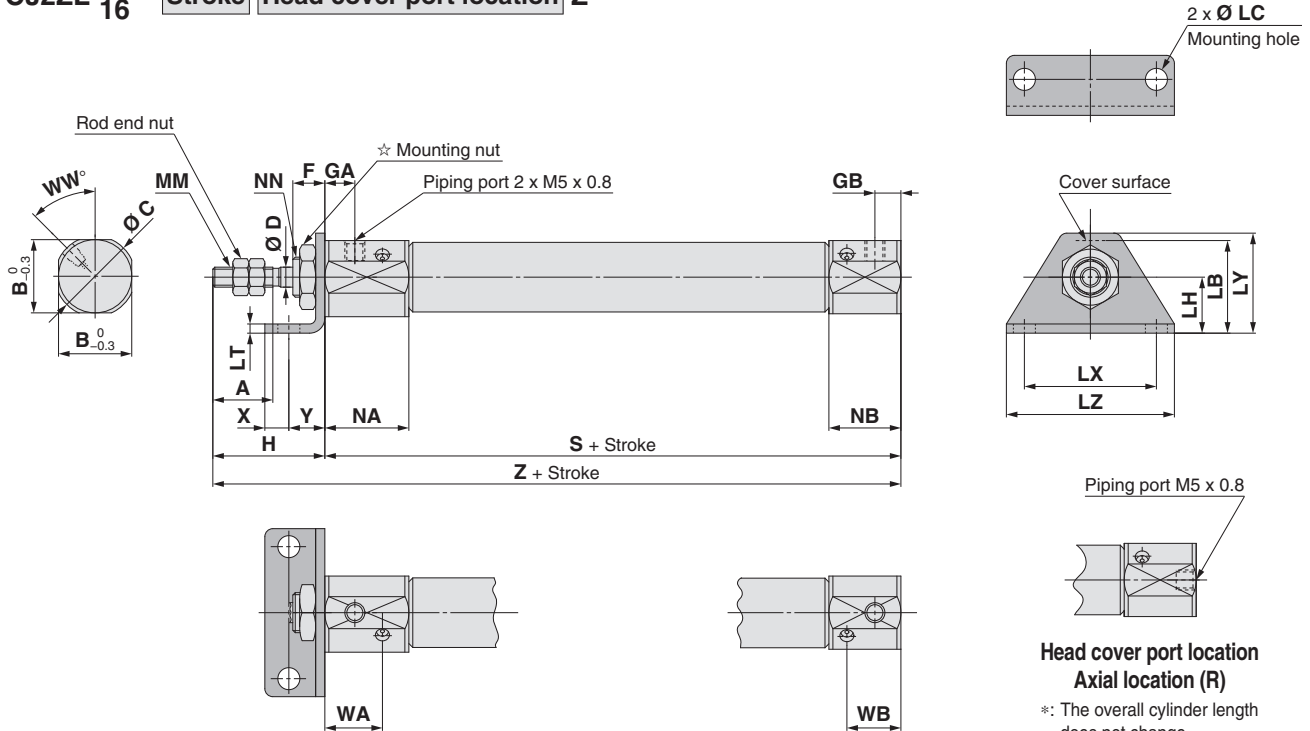


\*: A clevis pin and retaining rings are included.

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  $\frac{10}{16}$  – Stroke Head cover port location Z



☆ For details of the mounting nut, refer to page 22.

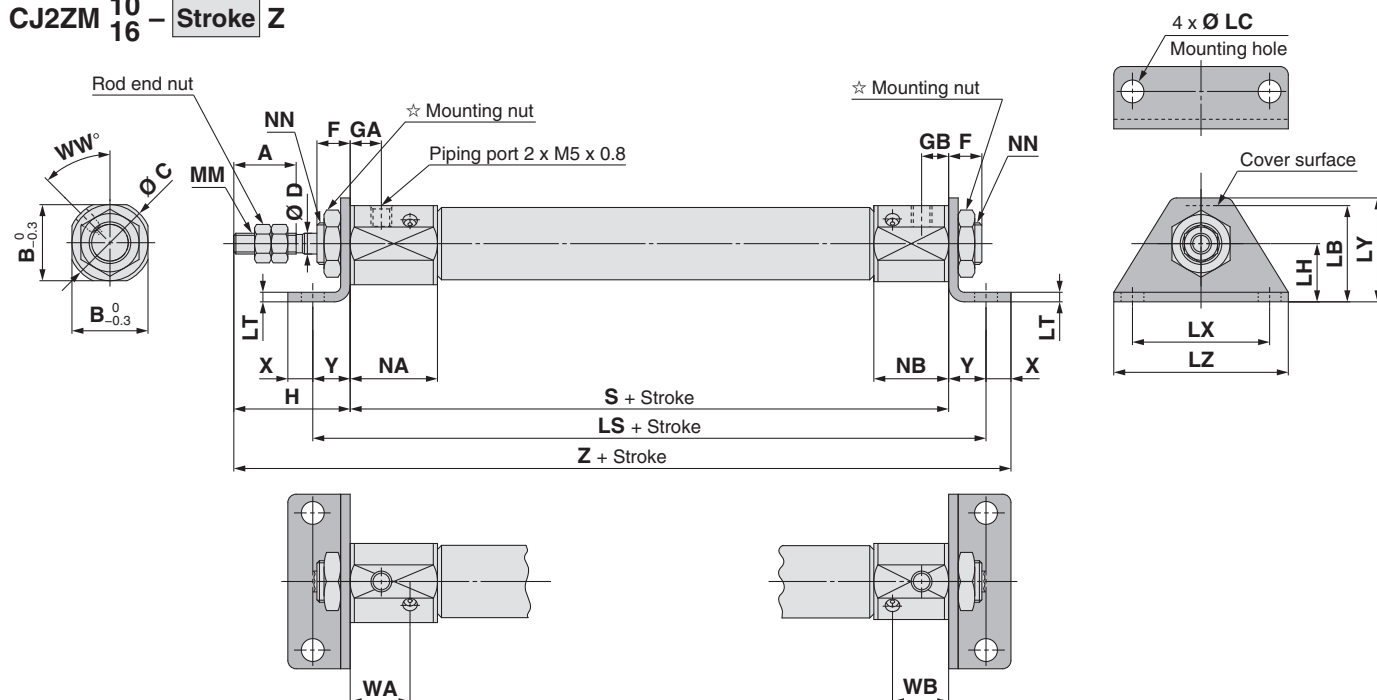
Bore size	A	B	C	D	F	GA	GB	H	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN	WA	WB	WW	S	X	Y	Z
10	15	15	17	4	8	7.5	6.5	28	15	4.5	9	1.6	24	16.5	32	M4 x 0.7	21	18	M8 x 1.0	14.4	13.5	45	63	5	7	91
16	15	18.3	20	5	8	7.5	6.5	28	23	5.5	14	2.3	33	25	42	M5 x 0.8	21	18	M10 x 1.0	14.4	13.5	45	64	6	9	92

Head cover port location  
Axial location (R)  
\*: The overall cylinder length  
does not change.

# Series CJ2Z

## Double Foot (M)

CJ2ZM  $\frac{10}{16}$  – Stroke Z

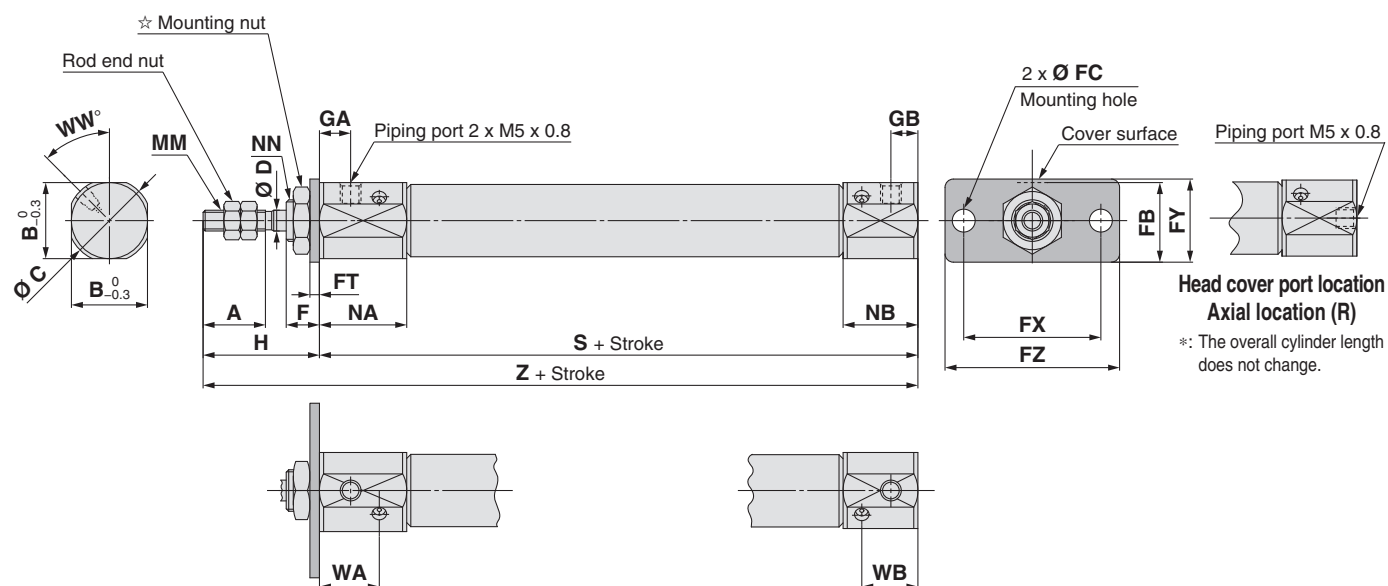


☆ For details of the mounting nut, refer to page 22.

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  $\frac{10}{16}$  – Stroke Head cover port location Z

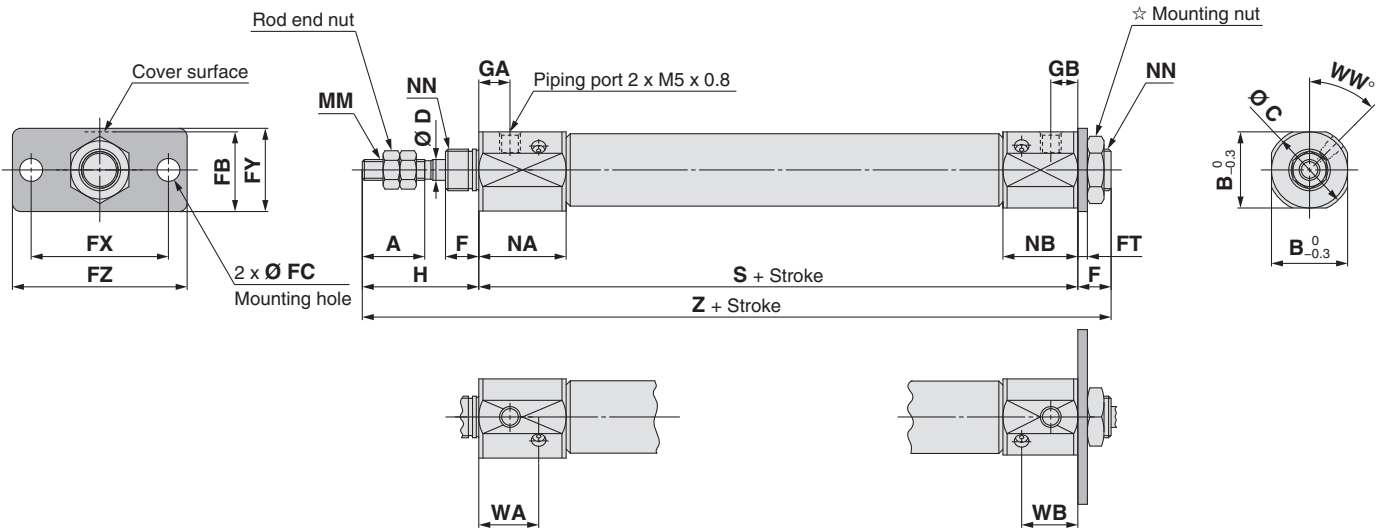


☆ For details of the mounting nut, refer to page 22.

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

Head Flange (G)

CJ2ZG  $\frac{10}{16}$  – Stroke Z



☆ For details of the mounting nut, refer to page 22.

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	99
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	100

Standard	Double Acting, Single Rod	CJ2
Standard	Double Acting, Double Rod	CJ2W
Single Acting, Spring Return/Extend	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Double Acting, Double Rod	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
With End Lock	Double Acting, Single Rod	CBJ2
With End Lock	Double Acting, Double Rod	CBJ2W
Auto Switch	Double Acting, Single Rod	Auto Switch
Auto Switch	Double Acting, Double Rod	Auto Switch



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

## Series *CJ2ZW*

Ø 10, Ø 16

RoHS



### How to Order

**CJ2ZW** **B** **16** - **60** **Z** - **□**

**With auto switch** **CDJ2ZW** **L** **16** - **60** **Z** - **M9BW** **□** - **B** - **□**

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

**Mounting** •

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

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

**Bore size** •

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

**Cylinder standard stroke [mm]** •  
Refer to "Standard Strokes" on page 74.

**Auto switch** •

—	Without auto switch
---	---------------------

\*: For applicable auto switches, refer to the table below.  
★ Enter the auto switch mounting type (A or B) even when a built-in magnet cylinder without an auto switch is required.

**Made to Order** •  
Refer to page 74 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 107 for auto switch mounting brackets.

**Number of auto switches**

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

### Applicable Auto Switches/Refer to the Auto Switch Guide for further information on auto switches.

Applicable Auto Switch																											
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 (—)	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-colour indicator)	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)					M9NAV*1	M9NA*1	M9NAV*1	M9NA*1	○	○	●	○	—			○	—	○		IC circuit			
	3-wire (PNP)	M9PAV*1		M9PA*1				M9PAV*1	M9PA*1	○	○	●	○	—	○												
	2-wire	12 V		M9BAV*1				M9BA*1	M9BAV*1	M9BA*1	○	○	●	○	—	○	—										
	With diagnostic output (2-colour indicator)	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	●	—	●	—	—	—	
100 V			A93V*2		A93	A93V*2	A93						●	●	●	●	—	—	—	—							
100 V or less			A90V		A90	A90V	A90						●	—	●	—	—	—	—	—	—	IC circuit					
Connector			No	2-wire	12 V	—	—	C73C	A73C		—	—	●	—	●	●	●	—	—	—	—						
						—	—	C80C	A80C		—	—	●	—	●	●	●	—	—	—	—	IC circuit					
						24 V or less	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—					
						—	—	—	—		A79W	—	—	—	—	—	—	—	—	—	—	—					

\*1: 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.

\*2: 1 m type lead wire is only applicable to D-A93.

\*: Lead wire length symbols: 0.5 m..... — (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 108 for details.

\*: For details about auto switches with pre-wired connector, refer to the Auto Switch Guide on [www.smc.eu](http://www.smc.eu).

\*: 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.)

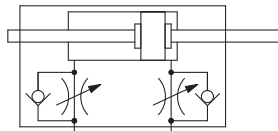
# Air Cylinder: Built-in Speed Controller Type Double Acting, Double Rod **Series CJ2ZW**

## 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 111 and 120.)

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 121 before handling.

## Specifications

Bore size [mm]	10	16
Action	Double acting, Double 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 (No freezing)	
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

## 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 in 1 mm increments is possible. (Spacers are not used.)

\*: Please consult with SMC for strokes which exceed the standard stroke length.

\*: Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on [www.smc.eu](http://www.smc.eu). In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

## Mounting and Accessories

/Refer to page 22 for details about part numbers and dimensions.

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

Mounting		Basic	Foot	Flange
Standard	Mounting nut	●	●	●
	Rod end nut	●	●	●
Option	Single knuckle joint	○	○	○
	Double knuckle joint*1	○	○	○

\*1: 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 101 to 108 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 CJ2ZW

## Weights

Bore size [mm]		[g]	
		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

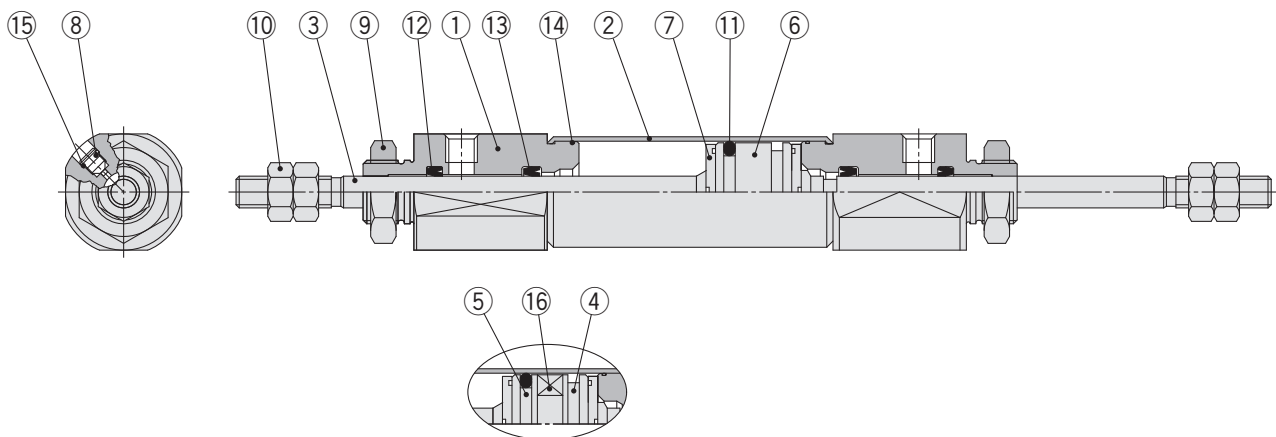
※: Mounting nut and rod end nut are included in the basic weight.

Calculation:

Example) **CJ2ZWL10-45Z**

- Basic weight .....36 (Ø 10)
  - 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)



With auto switch

## Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminium alloy	
2	Cylinder tube	Stainless steel	
3	Piston rod	Stainless steel	
4	Piston A	Aluminium alloy	
5	Piston B	Aluminium alloy	
6	Piston	Aluminium alloy	
7	Bumper	Urethane	
8	Speed controller needle	Carbon steel	

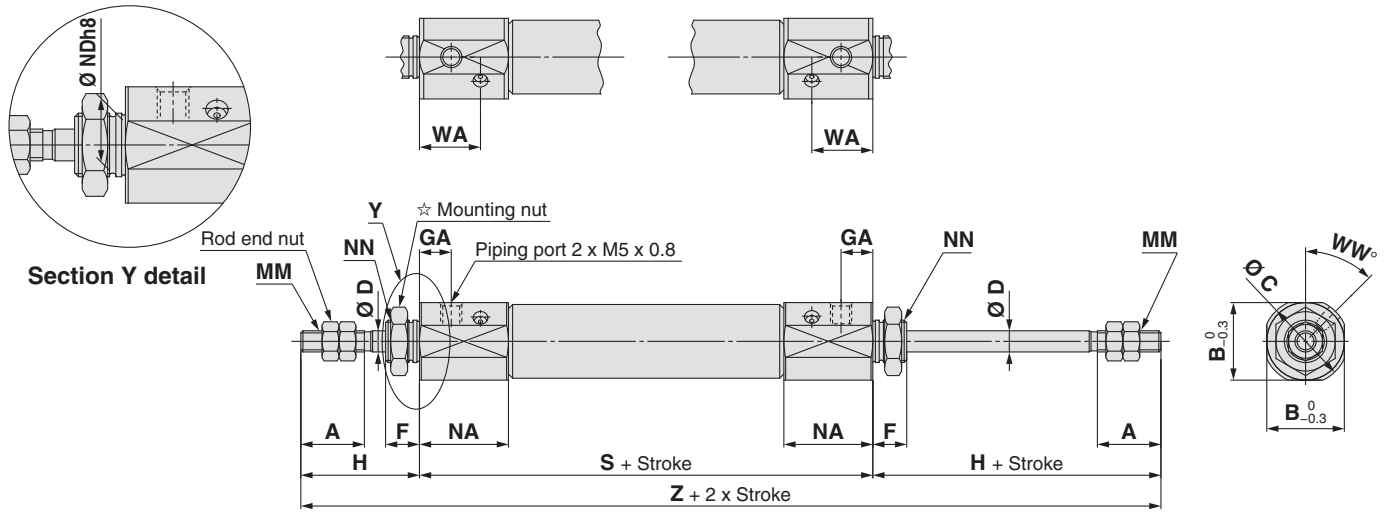
No.	Description	Material	Note
9	Mounting nut	Rolled steel	
10	Rod end nut	Rolled steel	
11	Piston seal	NBR	
12	Rod seal	NBR	
13	Check seal	NBR	
14	Tube gasket	NBR	
15	Needle seal	NBR	
16	Magnet	—	

# Air Cylinder: Built-in Speed Controller Type

## Double Acting, Double Rod *Series CJ2ZW*

### Basic (B)

CJ2ZWB  $\frac{10}{16}$  - Stroke Z

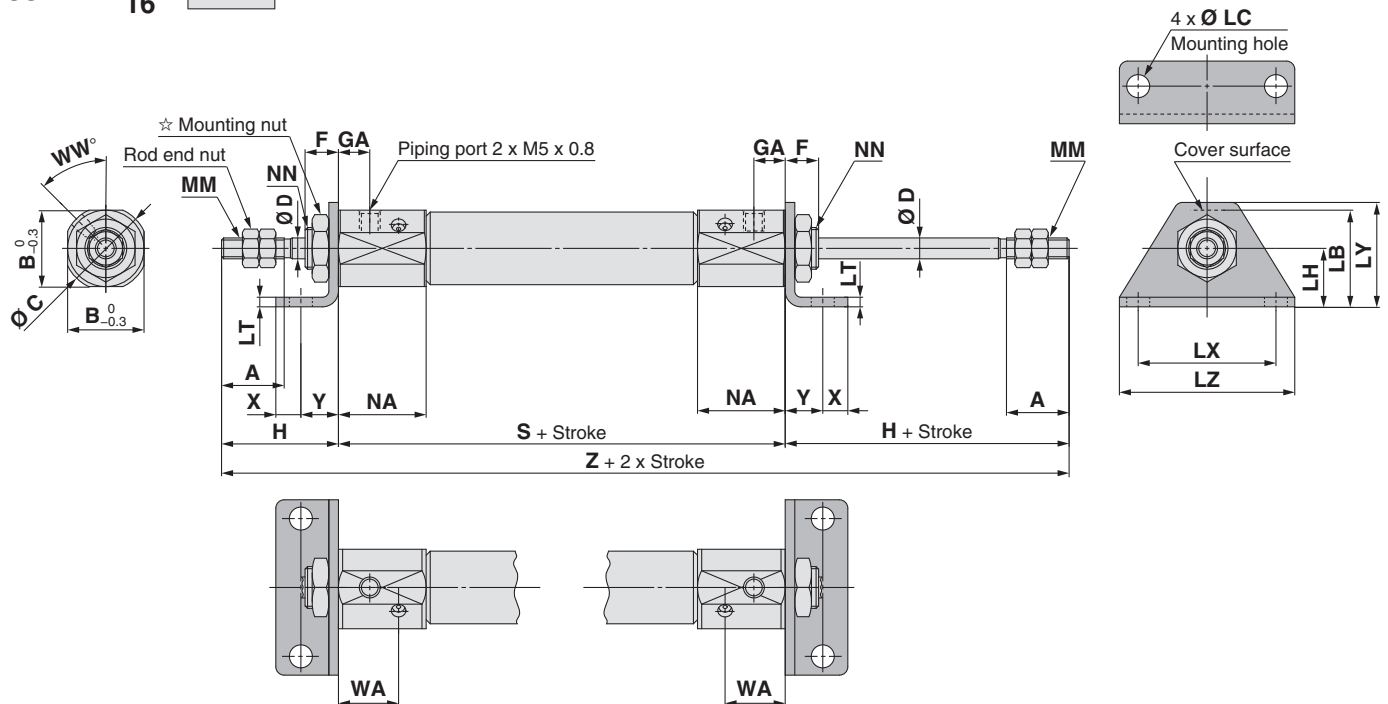


☆ For details of the mounting nut, refer to page 22.

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 $^{0}_{-0.022}$	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 $^{0}_{-0.022}$	M10 x 1.0	14.4	45	67	123

### Foot (L)

CJ2ZWL  $\frac{10}{16}$  - Stroke Z



☆ For details of the mounting nut, refer to page 22.

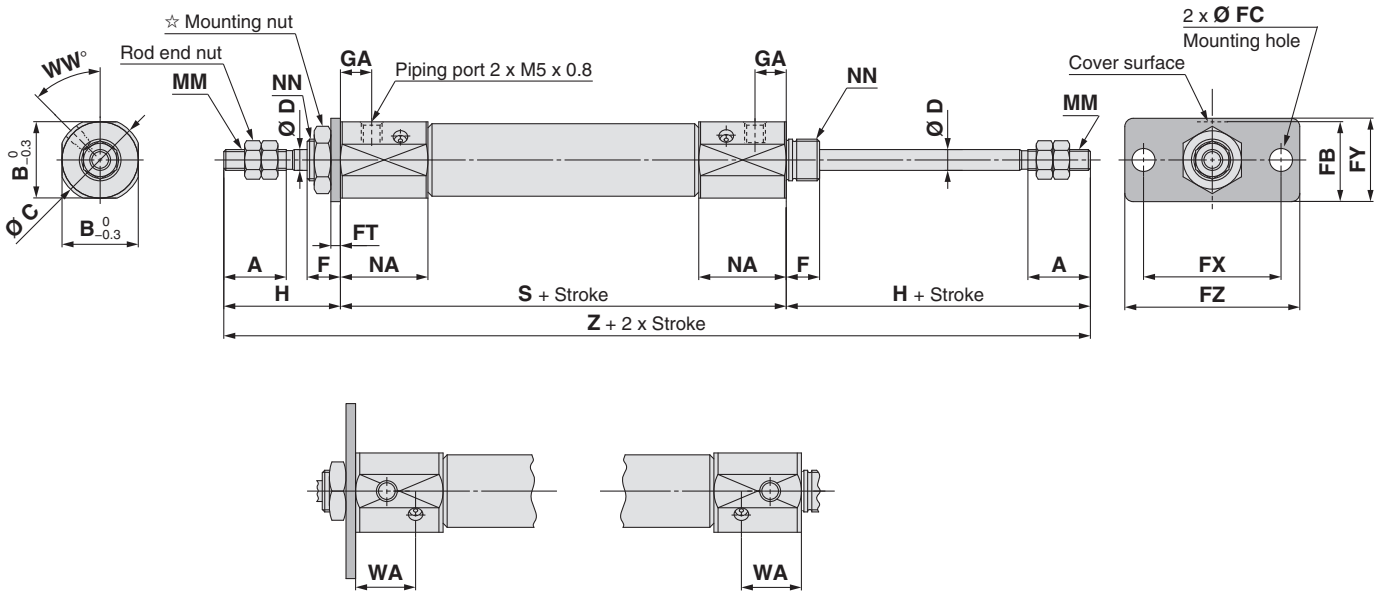
Bore size	A	B	C	D	F	GA	H	LB	LC	LH	LT	LX	LY	LZ	NN	NA	NN	WA	WW	S	X	Y	Z
10	15	15	17	4	8	7.5	28	15	4.5	9	1.6	24	16.5	32	M4 x 0.7	21	M8 x 1.0	14.4	45	66	5	7	122
16	15	18.3	20	5	8	7.5	28	23	5.5	14	2.3	33	25	42	M5 x 0.8	21	M10 x 1.0	14.4	45	67	6	9	123

Double Acting, Single Rod	CJ2
Double Acting, Double Rod	CJ2W
Single Acting, Spring Return/Extend	CJ2
Double Acting, Single Rod	CJ2K
Double Acting, Double Rod	CJ2K
Single Acting, Spring Return/Extend	CJ2K
Double Acting, Single Rod	CJ2Z
Double Acting, Double Rod	CJ2ZW
Double Acting, Single Rod	CJ2R
Double Acting, Double Rod	CJ2R
Single Acting, Spring Return/Extend	CJ2R
Double Acting, Single Rod	CJ2RK
Double Acting, Double Rod	CJ2RK
Single Acting, Spring Return/Extend	CJ2RK
With End Lock	CBJ2
Auto Switch	Auto Switch
Made to Order	Made to Order

# Series CJ2ZW

## Flange (F)

CJ2ZWF  $\frac{10}{16}$  - Stroke Z



☆ For details of the mounting nut, refer to page 22.

\* For details of the mounting nut, refer to page 22.

																			[mm]	
Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	H	MM	NA	NN	WA	WW	S	Z
<b>10</b>	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
<b>16</b>	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

# Air Cylinder: Direct Mount Type Double Acting, Single Rod

## Series CJ2R

Ø 10, Ø 16

RoHS

### How to Order



Cylinder standard stroke [mm]  
Refer to "Standard Strokes" on page 79.

**CJ2RA 16-60 Z- -**

**With auto switch** **CDJ2RA 16-60 Z- - M9BW - B -**

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

**Mounting**  
**A** Bottom mounting

**Bore size**  
**10** 10 mm  
**16** 16 mm

**Head cover port location**  
— Perpendicular to axis  
**R** Axial

**Auto switch**  
— Without auto switch  
\*: For applicable auto switches, refer to the table below.  
★ Enter the auto switch mounting type (A or B) even when a built-in magnet cylinder without an auto switch is required.

**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 107 for auto switch mounting brackets.

**Rod end bracket**  
— 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 79 for details.

**Number of auto switches**  
— 2 pcs.  
**S** 1 pc.  
**n** "n" pcs.

\*: Refer to "Ordering Example of Cylinder Assembly" on page 79.

### Applicable Auto Switches/Refer to the Auto Switch Guide 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 (—)	1 (M)	3 (L)	5 (Z)	None (N)		
Solid state auto switch	—	Grommet	No	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	—	○	IC circuit
				3-wire (PNP)	12 V		M9PV	M9P	M9PV	M9P	●	●	●	○	—	○	
		Connector	No	2-wire	12 V		M9BV	M9B	M9BV	M9B	●	●	●	○	—	○	
				—	—		—	H7C	J79C	—	●	—	●	●	—	—	
	Diagnostic indication (2-colour indicator)	Grommet	Yes	3-wire (NPN)	5 V, 12 V		M9NVV	M9NV	M9NVV	M9NV	●	●	●	○	—	○	IC circuit
				3-wire (PNP)	12 V		M9PVV	M9PV	M9PVV	M9PV	●	●	●	○	—	○	
		Connector	No	2-wire	12 V		M9BVV	M9BV	M9BVV	M9BV	●	●	●	○	—	○	
				—	—		—	H7NF	—	F79F	●	—	●	○	—	○	
	Water resistant (2-colour indicator)	Grommet	No	3-wire (NPN)	5 V, 12 V		M9NAV*1	M9NA*1	M9NAV*1	M9NA*1	○	○	●	○	—	○	IC circuit
				3-wire (PNP)	12 V		M9PAV*1	M9PA*1	M9PAV*1	M9PA*1	○	○	●	○	—	○	
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	5 V		A96V	A96	A96V	A96	●	—	●	—	—	—	IC circuit
				—	200 V		—	—	A72	A72H	●	—	●	—	—	—	
		Connector	No	2-wire	100 V		A93V*2	A93	A93V*2	A93	●	●	●	●	—	—	
				—	100 V or less		A90V	A90	A90V	A90	●	—	●	—	—	—	
	Diagnostic indication (2-colour indicator)	Grommet	Yes	—	—		—	C73C	A73C	—	●	—	●	●	●	—	IC circuit
				—	24 V or less		—	C80C	A80C	—	●	—	●	●	●	—	
		Connector	No	—	—		—	—	—	—	●	—	●	●	●	—	
				—	—		—	—	—	—	●	—	●	●	●	—	
		Grommet	Yes	—	—		—	—	A79W	—	●	—	●	—	—	—	
				—	—		—	—	—	—	●	—	●	—	—	—	

\*1: 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.

\*2: 1 m type lead wire is only applicable to D-A93.

\*: Lead wire length symbols: 0.5 m..... — (Example) M9NV  
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 108 for details.

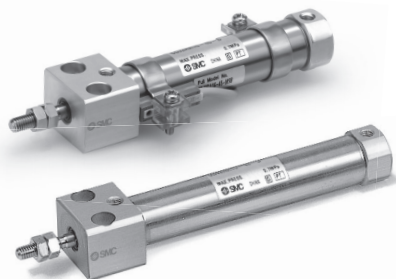
\*: For details about auto switches with pre-wired connector, refer to the **Auto Switch Guide** on [www.smc.eu](http://www.smc.eu).

\*: 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.)

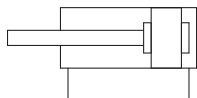
# Series CJ2R

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 111 to 120.)

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

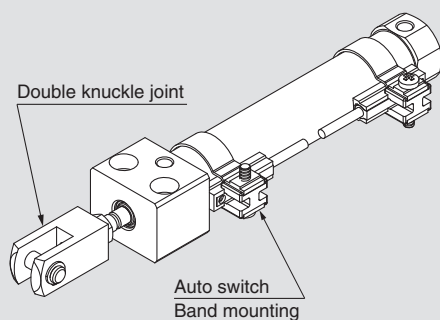


## Precautions

Refer to page 121 before handling.

## Ordering Example of Cylinder Assembly

Cylinder model: CDJ2RA16-60Z-W-M9BW-B



**Mounting A: Bottom mounting**  
**Rod end bracket W: Double knuckle joint**  
**Auto switch D-M9BW: 2 pcs.**  
**Auto switch mounting B: Band mounting**

\*: Double knuckle joint and auto switch are shipped together with the product, but not assembled.

## 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 (No freezing)	
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

## Standard Strokes

Bore size	Standard stroke	Maximum manufacturable stroke [mm]
10	15, 30, 45, 60, 75, 100, 125, 150	400
16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200	400

\*: Manufacture of intermediate strokes in 1 mm increments is possible. (Spacers are not used.)

\*: Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on [www.smc.eu](http://www.smc.eu). In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

## Accessories

Refer to page 22 for details about part numbers and dimensions.

Standard	Rod end nut
Option*2	Single knuckle joint, Double knuckle joint*1, Rod end cap (Flat/Round type)

\*1: A knuckle pin and retaining rings are shipped together with double knuckle joint.

\*2: Can be ordered within the cylinder model.

## Weights

			[g]
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 (Ø 10)
- Additional weight .... 4/15 stroke
- Cylinder stroke ..... 45 stroke

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

Refer to pages 101 to 108 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.



Clean Series

10-CJ2RA 10  
16 – Stroke Head cover port location Z

• Clean Series

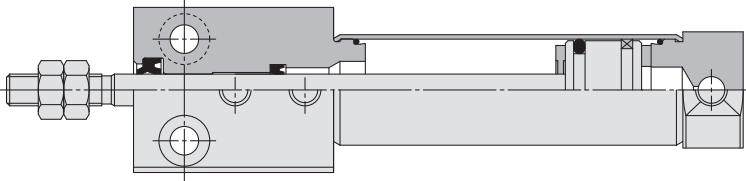
Air cylinder which is applicable for the system which discharges leakage from the rod section directly into the outside of clean room by relief port and making an actuator's rod section having a double seal construction.

For the detailed specifications, refer to the catalogue on [www.smc.eu](http://www.smc.eu).

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 79.)
Auto switch	Mountable (Band mounting)
Mounting	Bottom mounting

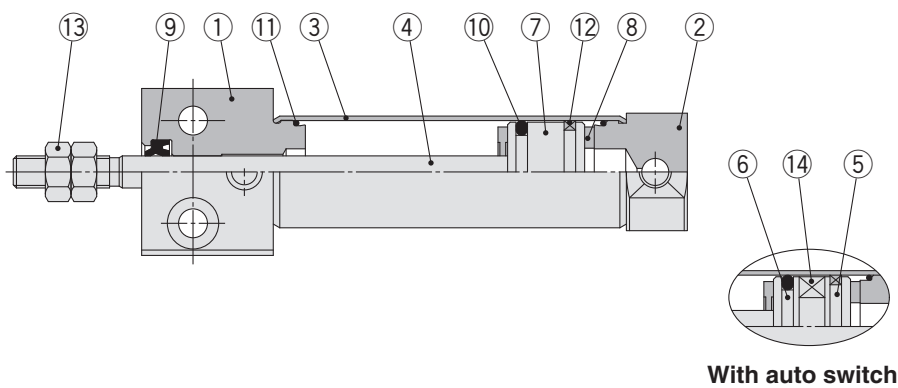
Construction (Not able to disassemble)



Standard	Double Acting, Single Rod	CJ2
Standard	Double Acting, Double Rod	CJ2W
Single Acting, Spring Return/Extend	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
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
With End Lock		CBJ2
		Auto Switch
		Made to Order

# Series CJ2R

## Construction (Not able to disassemble)



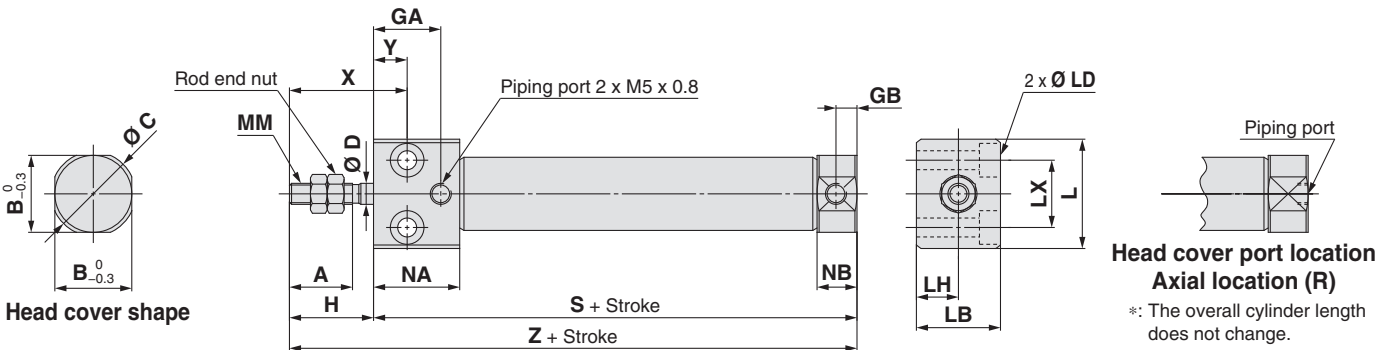
### Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminium alloy	
2	Head cover	Aluminium alloy	
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminium alloy	
6	Piston B	Aluminium alloy	
7	Piston	Aluminium alloy	

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

## Bottom Mounting

CJ2RA 10 16 – 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	Ø 3.5 through, Ø 6.5 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	Ø 4.5 through, Ø 8 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

Ø 10, Ø 16

RoHS

### How to Order

**Cylinder standard stroke [mm]**  
Refer to "Standard Strokes" on page 83.

**Action**

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

**With auto switch**

**Mounting**

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

**Bore size**

10	10 mm
16	16 mm

**Head cover port location**

—	Perpendicular to axis
R	Axial

**Auto switch**

—	Without auto switch
---	---------------------

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

★ Enter the auto switch mounting type (A or B) even when a built-in magnet cylinder without an auto switch is required.

**Rod end bracket**

—	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.

**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 107 for auto switch mounting brackets.

**Number of auto switches**

—	2 pcs.
S	1 pc.
n	"n" pcs.

**Made to Order**  
Refer to page 83 for details.

**Ordering Example**

**CJ2RA 16-45 S Z - -**

**CDJ2RA 16-45 S Z - M9BW - B -**

### Applicable Auto Switches/Refer to the Auto Switch Guide 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 (—)	1 (M)	3 (L)	5 (Z)	None (N)		
Solid state auto switch	Diagnostic indication (2-colour indicator)	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9NV	M9N	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)	12 V		M9PV	M9P	M9PV	M9P	●	●	●	○	○		
		Connector	Yes	2-wire	12 V		M9BV	M9B	M9BV	M9B	●	●	●	○	○		
				—	—		—	H7C	J79C	—	●	—	●	●	—		
	Water resistant (2-colour indicator)	Grommet	Yes	3-wire (NPN)	5 V, 12 V		M9NWV	M9NW	M9NWV	M9NW	●	●	●	○	○		
				3-wire (PNP)	12 V		M9PWV	M9PW	M9PWV	M9PW	●	●	●	○	○		
				2-wire	12 V		M9BWV	M9BW	M9BWV	M9BW	●	●	●	○	○		
				3-wire (NPN)	5 V, 12 V		M9NAV*1	M9NA*1	M9NAV*1	M9NA*1	○	○	●	○	○		
				3-wire (PNP)	12 V		M9PAV*1	M9PA*1	M9PAV*1	M9PA*1	○	○	●	○	○		
				2-wire	12 V		M9BAV*1	M9BA*1	M9BAV*1	M9BA*1	○	○	●	○	○		
Reed auto switch	Diagnostic indication (2-colour indicator)	Grommet	Yes	3-wire (NPN equivalent)	5 V		A96V	A96	A96V	A96	●	—	●	—	—	IC circuit	Relay, PLC
				—	—		—	—	A72	A72H	●	—	●	—	—		
		Connector	No	2-wire	12 V		A93V*2	A93	A93V*2	A93	●	●	●	●	—		
				—	—		A90V	A90	A90V	A90	●	—	●	—	—		
	Diagnostic indication (2-colour indicator)	Grommet	Yes	—	100 V or less		—	C73C	A73C	—	●	—	●	●	—		
				—	24 V or less		—	C80C	A80C	—	●	—	●	●	—		
				—	—		—	—	A79W	—	●	—	●	—	—		
				—	—		—	—	—	—	●	—	●	—	—		
				—	—		—	—	—	—	●	—	●	—	—		
				—	—		—	—	—	—	●	—	●	—	—		

\*1: 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.

\*2: 1 m type lead wire is only applicable to D-A93.

\*: Lead wire length symbols: 0.5 m..... — (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 108 for details.

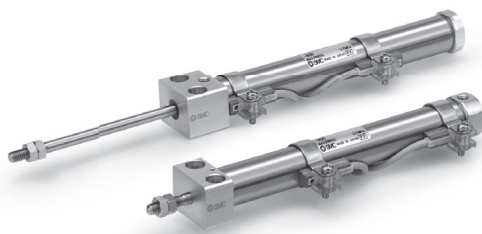
\*: For details about auto switches with pre-wired connector, refer to the Auto Switch Guide on [www.smc.eu](http://www.smc.eu).

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

\*: The D-A90□/M90□□/A70□□/A80□□/F70□□/J70□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)

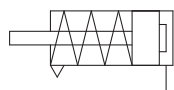
# Series CJ2R

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

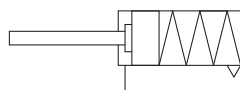


## Symbol

Single acting, Spring return,  
Rubber bumper



Single acting, Spring extend,  
Rubber bumper



## Made to Order

(For details, refer to pages 111 to 120.)

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

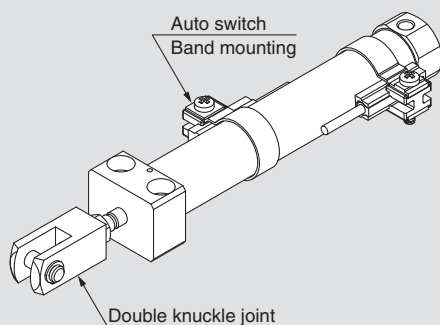


## Precautions

Refer to page 121 before handling.

## Ordering Example of Cylinder Assembly

Cylinder model: CDJ2RA16-45SZ-W-M9BW-B



**Mounting A: Bottom mounting**  
**Rod end bracket W: Double knuckle joint**  
**Auto switch D-M9BW: 2 pcs.**  
**Auto switch mounting B: Band mounting**

\*: Double knuckle joint and auto switch are shipped together with the product, but not assembled.

## 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 (No freezing) 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

## 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 in 1 mm increments is possible. (Spacers are not used.)

\*: Please consult with SMC for strokes which exceed the standard stroke length.

\*: Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on [www.smc.eu](http://www.smc.eu). In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

## Accessories /Refer to page 22 for details about part numbers and dimensions.

Standard	Rod end nut
Option*2	Single knuckle joint, Double knuckle joint*1 Rod end cap (Flat type, Round type)

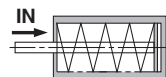
\*1: A knuckle pin and retaining rings are shipped together with double knuckle joint.

\*2: Can be ordered within the cylinder model.

## Spring Reaction Force

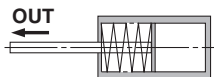
Bore size [mm]	Spring reaction force [N]	
	Primary	Secondary
10	3.53	6.86
16	6.86	14.2

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 101 to 108 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

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	

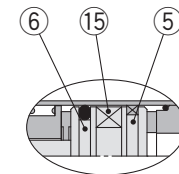
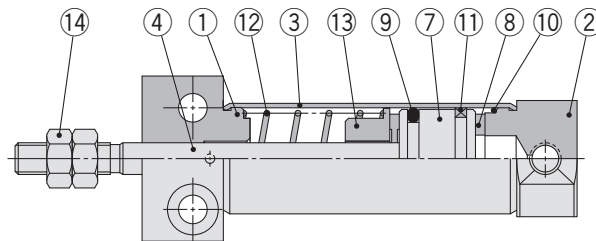
※: Rod end nut is included in the basic weight.

### Spring Extend

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	

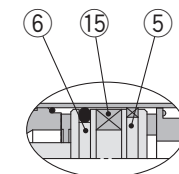
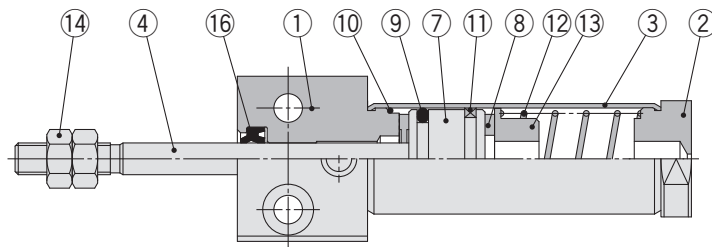
## Construction (Not able to disassemble)

### Single acting, Spring return



With auto switch

### Single acting, Spring extend



With auto switch

## Component Parts

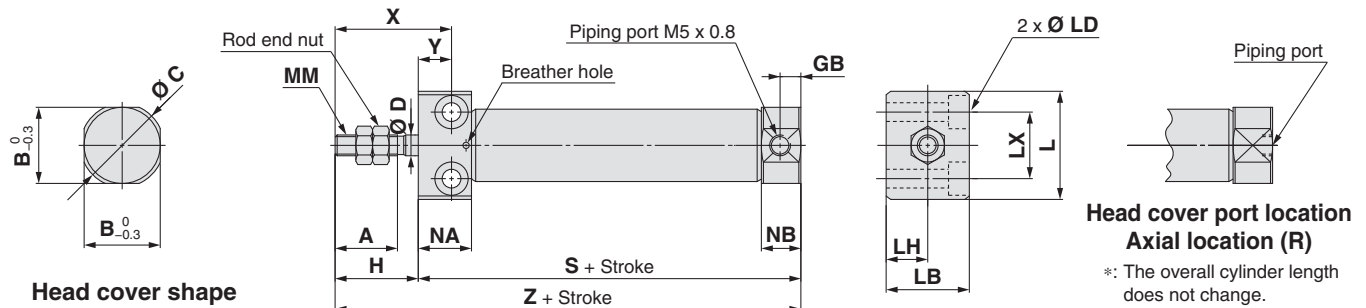
No.	Description	Material	Note
1	Rod cover	Aluminium alloy	
2	Head cover	Aluminium alloy	
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminium alloy	
6	Piston B	Aluminium alloy	
7	Piston	Aluminium alloy	
8	Bumper	Urethane	

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

# Series CJ2R

## Single Acting: Bottom Mounting

Spring return: CJ2RA  $\frac{10}{16}$  – Stroke S Head cover port location Z

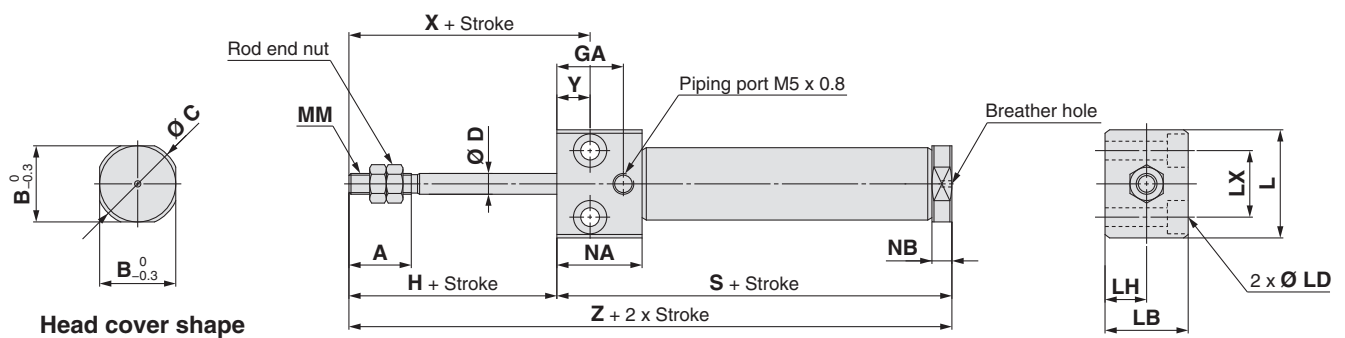


Bore size	A	B	C	D	GB	H	L	LB	LD	LH	LX	MM	NA	NB	X	Y
10	15	12	14	4	5	20	23	16	Ø 3.5 through, Ø 6.5 counterbore depth 4	8	12	M4 x 0.7	12.8	9.5	28	8
16	15	18.3	20	5	5	20	26	20	Ø 4.5 through, Ø 8 counterbore depth 5	10	16	M5 x 0.8	12.8	9.5	28	8

### 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

Spring extend: CJ2RA  $\frac{10}{16}$  – 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	Ø 3.5 through, Ø 6.5 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	Ø 4.5 through, Ø 8 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

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

## Series *CJ2RK*

Ø 10, Ø 16

RoHS

### How to Order



Cylinder standard stroke [mm]●  
Refer to "Standard Strokes" on page 87.

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

With auto switch

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

With auto switch  
(Built-in magnet)

Mounting●

**A** Bottom mounting

Bore size●

10	10 mm
16	16 mm

Head cover port location●

—	Perpendicular to axis	
R	Axial	

Auto switch●

— Without auto switch

\*: For applicable auto switches, refer to the table below.  
★ Enter the auto switch mounting type (A or B) even when a built-in magnet cylinder without an auto switch is required.

● Rod end bracket

—	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 87 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 107 for auto switch mounting brackets.

● Number of auto switches

—	2 pcs.
S	1 pc.
n	"n" pcs.

\*: Refer to "Ordering Example of Cylinder Assembly" on page 87.

### Applicable Auto Switches/Refer to the Auto Switch Guide 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 (—)	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		M9BV			M9B	M9BV	M9B	●	●	●	○	—	○	—						
	—	H7C		J79C			—	●	—	●	●	●	—	—								
	Diagnostic indication (2-colour indicator)	Grommet		3-wire (NPN)	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*1	M9NA*1	M9NAV*1	M9NA*1	○	○	●	○	—	○						
	Water resistant (2-colour indicator)	Grommet		3-wire (PNP)	5 V, 12 V	—	M9PAV*1	M9PA*1	M9PAV*1	M9PA*1	○	○	●	○	—	○	IC circuit					
				2-wire			M9BAV*1	M9BA*1	M9BAV*1	M9BA*1	○	○	●	○	—	○						
				—			—	H7NF	—	F79F	●	—	●	○	—	○			IC circuit			
				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	Relay, PLC			
								—	200 V	—	—	A72	A72H	●	—	●	—	—		—	—	
		Connector		2-wire				24 V	12 V	100 V	A93V*2	A93	A93V*2	A93	●	●	●	●		—	—	—
										100 V or less	A90V	A90	A90V	A90	●	—	●	—		—	—	—
	Grommet	Yes	2-wire		24 V or less	—	—			C73C	A73C	—	●	—	●	●	●	—		—	—	
						—	—			C80C	A80C	—	●	—	●	●	●	—		—	IC circuit	
				—		—	—	—	A79W	—	●	—	●	—	—	—	—					
				—		—	—	—	A79W	—	●	—	●	—	—	—	—					

\*1: 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.

\*2: 1 m type lead wire is only applicable to D-A93.

\*: Lead wire length symbols: 0.5 m..... — (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 108 for details.

\*: For details about auto switches with pre-wired connector, refer to the Auto Switch Guide on [www.smc.eu](http://www.smc.eu).

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

\*: The D-A90□/M90□□/A70□□/A80□□/F70□□/J70□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)

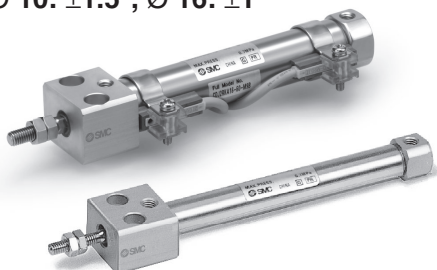


# Series CJ2RK

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

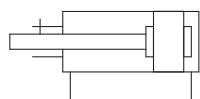
## Non-rotating accuracy

Ø 10: ±1.5°, Ø 16: ±1°



## Symbol

Double acting, Single rod, Rubber bumper



## Made to Order

(For details, refer to pages 111 to 120.)

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

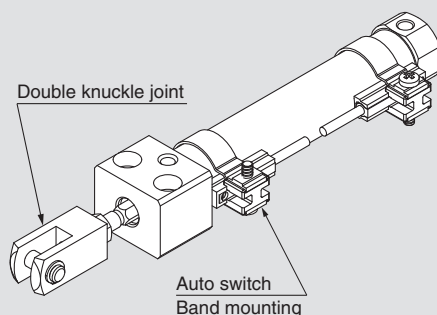


## Precautions

Refer to page 121 before handling.

## Ordering Example of Cylinder Assembly

Cylinder model: CDJ2RKA16-60Z-W-M9BW-B



**Mounting A: Bottom mounting**  
**Rod end bracket W: Double knuckle joint**  
**Auto switch D-M9BW: 2 pcs.**  
**Auto switch mounting B: Band mounting**

\*: Double knuckle joint and auto switch are shipped together with the product, but not assembled.

## 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 (No freezing)	
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

## 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 in 1 mm increments is possible. (Spacers are not used.)

\*: Please consult with SMC for strokes which exceed the standard stroke length.

\*: Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on [www.smc.eu](http://www.smc.eu). In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

## Accessories

Refer to page 22 for details about part numbers and dimensions.

Standard	Rod end nut
Option*2	Single knuckle joint, Double knuckle joint*1 Rod end cap (Flat/Round type)

\*1: A knuckle pin and retaining rings are shipped together with double knuckle joint.

\*2: Can be ordered within the cylinder model.

## Weights

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

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

Calculation:

Example) **CJ2RKA10-45Z**

• Basic weight ..... 36 (Ø 10)

• Additional weight .... 4/15 stroke

• Cylinder stroke ..... 45 stroke

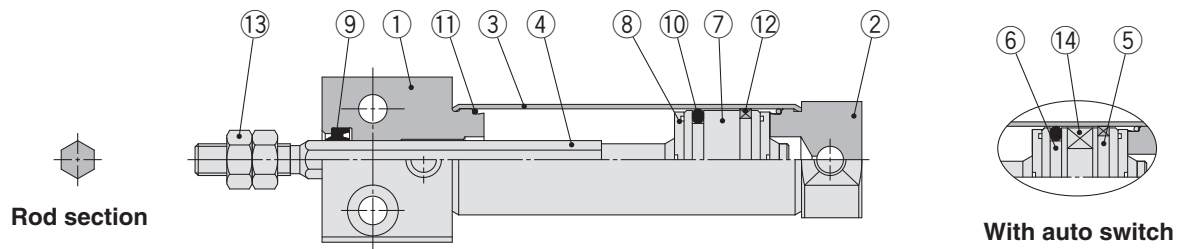
$36 + 4/15 \times 45 = 48 \text{ g}$

Refer to pages 101 to 108 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.

# Air Cylinder: Direct Mount, Non-rotating Rod Type Double Acting, Single Rod *Series CJ2RK*

## Construction (Not able to disassemble)



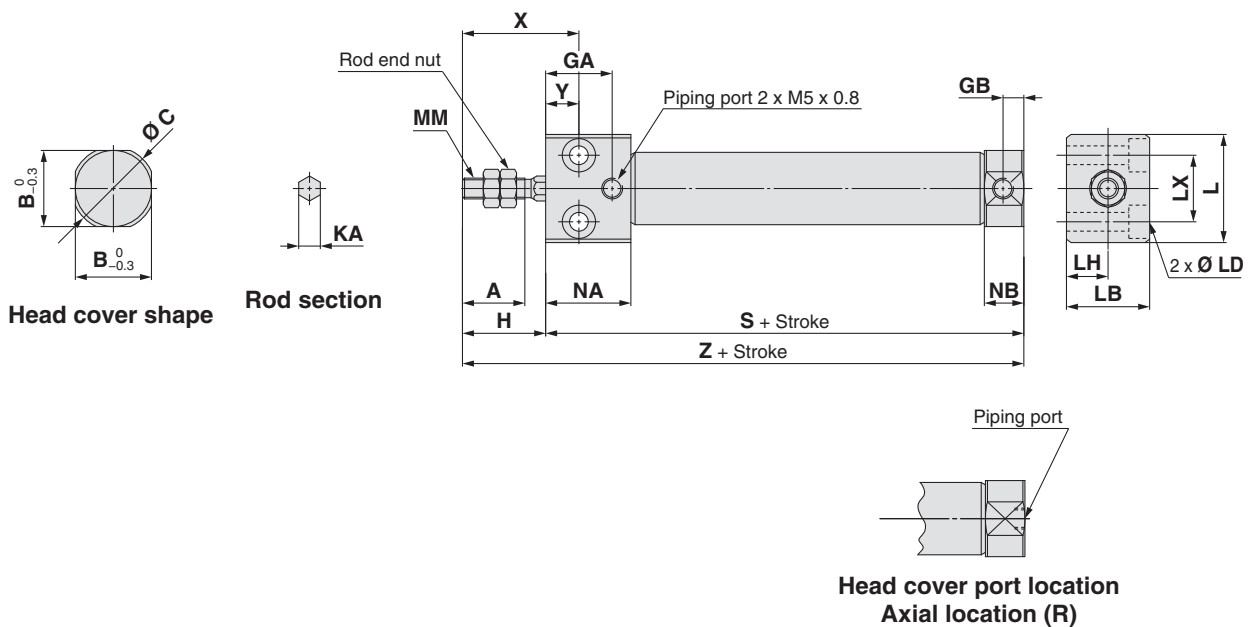
## Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminium alloy	
2	Head cover	Aluminium alloy	
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminium alloy	
6	Piston B	Aluminium alloy	
7	Piston	Aluminium alloy	

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

## Bottom Mounting

CJ2RKA  $\frac{10}{16}$  - Stroke Head cover port location Z



※: 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	Ø 3.5 through, Ø 6.5 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	Ø 4.5 through, Ø 8 counterbore depth 5	10	16	M5 x 0.8	20.5	9.5	28	8	55	75

[mm]

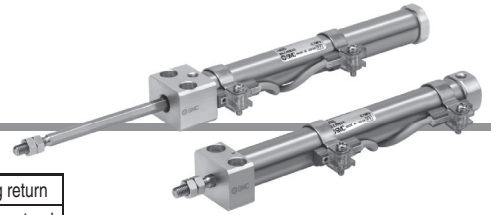
# Air Cylinder: Direct Mount, Non-rotating Rod Type Single Acting, Spring Return/Extend

## Series CJ2RK

Ø 10, Ø 16

RoHS

### How to Order



**Cylinder standard stroke [mm]**  
Refer to "Standard Strokes" on page 90.

#### Action

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

**CJ2RKA 16-45 S Z - -**

With auto switch

**CDJ2RKA 16-45 S Z - M9BW - B -**

With auto switch  
(Built-in magnet)

#### Mounting

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

#### Bore size

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

#### Head cover port location

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

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

#### Auto switch

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

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

★ Enter the auto switch mounting type (A or B) even when a built-in magnet cylinder without an auto switch is required.

#### Rod end bracket

<b>-</b>	None
<b>V</b>	Single knuckle joint
<b>W</b>	Double knuckle joint
<b>T</b>	Rod end cap (Flat type)
<b>U</b>	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 90 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 107 for auto switch mounting brackets.

#### Number of auto switches

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

\*: Refer to "Ordering Example of Cylinder Assembly" on page 90.

### Applicable Auto Switches/Refer to the Auto Switch Guide 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 (—)	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-colour indicator)	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-colour indicator)	Grommet		3-wire (NPN)	5 V, 12 V	M9NAV*1	M9NA*1	M9NAV*1	M9NA*1	○	○	●	○	—		○	IC circuit
	3-wire (PNP)	M9PAV*1					M9PA*1		M9PAV*1	M9PA*1	○	○	●	○	—	○				
	2-wire	12 V					M9BAV*1	M9BA*1	M9BAV*1	M9BA*1	○	○	●	○	—	○	—			
	With diagnostic output (2-colour indicator)			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*2	A93	A93V*2	A93	●	●	●	●	—	—	—		
							100 V or less	A90V	A90	A90V	A90	●	—	●	—	—	—	—		IC circuit
							—	—	C73C	A73C	—	●	—	●	●	●	—	—		—
	Grommet	No	2-wire	24 V or less	—	—	C80C	A80C	—	—	●	—	●	●	—	—	—	IC circuit		
					—	—	—	—	A79W	—	—	—	—	—	—	—	—	—		

\*1: 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.

\*2: 1 m type lead wire is only applicable to D-A93.

\*: Lead wire length symbols: 0.5 m..... — (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 108 for details.

\*: For details about auto switches with pre-wired connector, refer to the **Auto Switch Guide** on [www.smc.eu](http://www.smc.eu).

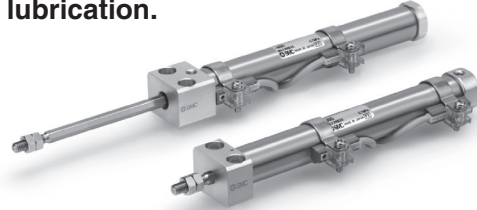
\*: Solid state auto switches marked with "○" are produced upon receipt of order.

\*: The D-A9□□/M9□□□/A7□□/A8□□/F7□□/J7□□ auto switches are shipped together, (but not assembled). (For band mounting, only auto switch mounting brackets are assembled before being shipped.)

# Air Cylinder: Direct Mount, Non-rotating Rod Type Single Acting, Spring Return/Extend **Series CJ2RK**

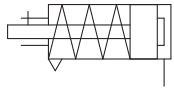
**A cylinder which rod does not rotate because of the hexagonal rod shape.**

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

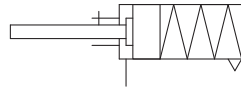


## Symbol

Single acting, Spring return,  
Rubber bumper



Single acting, Spring extend,  
Rubber bumper



**Made to Order**  
(For details, refer to pages 111 to 120.)

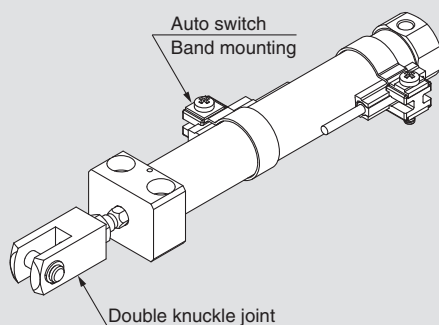
Symbol	Specifications
-XA□	Change of rod end shape
-XC51	With hose nipple
-XC85	Grease for food processing equipment
-X446	PTFE grease

## ⚠ Precautions

**Refer to page 121 before handling.**

## Ordering Example of Cylinder Assembly

Cylinder model: CDJ2RKA16-45SZ-W-M9BW-B



**Mounting A: Bottom mounting**  
**Rod end bracket W: Double knuckle joint**  
**Auto switch D-M9BW: 2 pcs.**  
**Auto switch mounting B: Band mounting**

\*: Double knuckle joint and auto switch are shipped together with the product, but not assembled.

## 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 (No freezing)	
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

## 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 in 1 mm increments is possible. (Spacers are not used.)

\*: Please consult with SMC for strokes which exceed the standard stroke length.

\*: Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on [www.smc.eu](http://www.smc.eu). In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

## Accessories/Refer to page 22 for details about part numbers and dimensions.

Standard	Rod end nut
Option*2	Single knuckle joint, Double knuckle joint*1 Rod end cap (Flat/Round type)

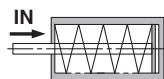
\*1: A knuckle pin and retaining rings are shipped together with double knuckle joint.

\*2: Can be ordered within the cylinder model.

## Spring Reaction Force

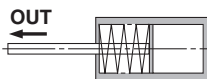
Bore size [mm]	Spring reaction force [N]	
	Primary	Secondary
10	3.53	6.86
16	6.86	14.2

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 101 to 108 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.

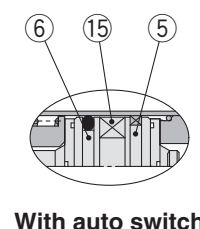
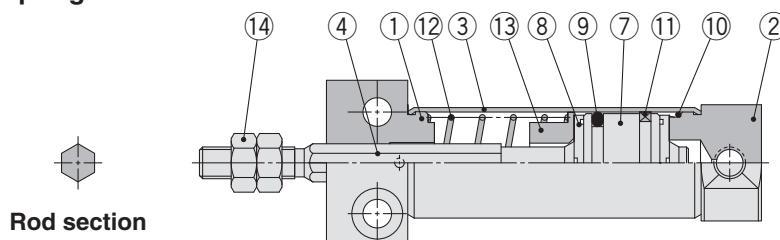
### Spring Extend

[g]

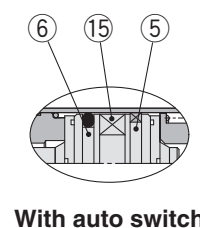
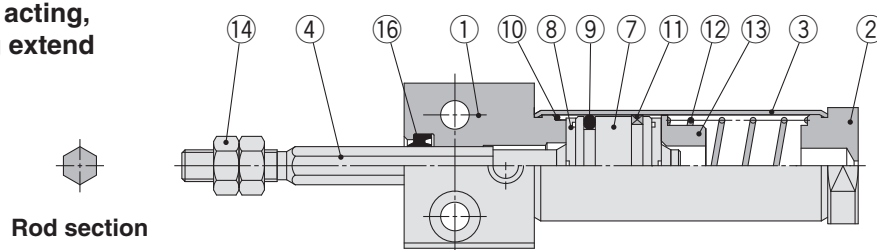
Bore size [mm]		10	16
Mounting		Basic	Basic
Basic weight	15 stroke	42	79
	30 stroke	48	93
	45 stroke	57	110
	60 stroke	66	126
	75 stroke		147
	100 stroke		177
	125 stroke		213
	150 stroke		234
Accessories	Single knuckle joint	17	23
	Double knuckle joint (including knuckle pin)	25	21
	Rod end cap (Flat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

## Construction (Not able to disassemble)

### Single acting, Spring return



### Single acting, Spring extend



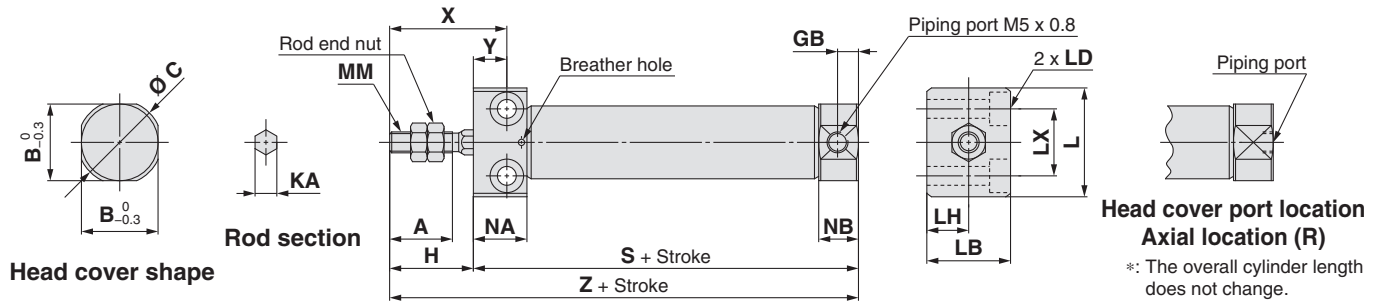
## Component Parts

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

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

## Single Acting: Bottom Mounting

Spring return: CJ2RK  $\frac{10}{16}$  – Stroke S Head cover port location Z

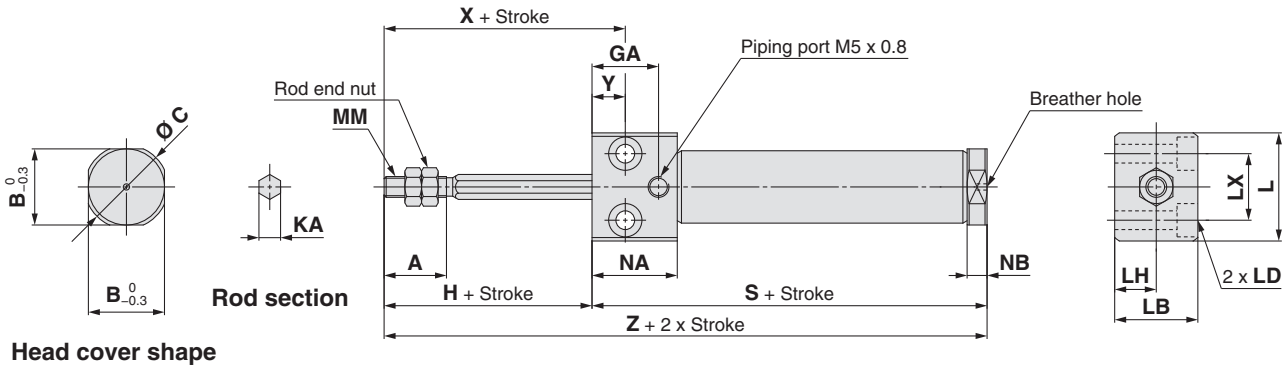


Bore size	A	B	C	GB	H	KA	L	LB	LD	LH	LX	MM	NA	NB	X	Y
10	15	12	14	5	20	4.2	23	16	Ø 3.5 through, Ø 6.5 counterbore depth 4	8	12	M4 x 0.7	12.8	9.5	28	8
16	15	18.3	20	5	20	5.2	26	20	Ø 4.5 through, Ø 8 counterbore depth 5	10	16	M5 x 0.8	12.8	9.5	28	8

### 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  $\frac{10}{16}$  – 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	Ø 3.5 through, Ø 6.5 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	Ø 4.5 through, Ø 8 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



# Air Cylinder: With End Lock

## Series CBJ2

Ø 16

RoHS

### How to Order

#### Built-in Magnet Cylinder Model

Suffix the symbol “-A” (Rail mounting) or “-B” (Band mounting) to the end of part number for cylinder with auto switch.

Example	Rail mounting	CDBJ2B16-45-HN-A
	Band mounting	CDBJ2B16-60-HN-B

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

\*: Refer to page 107 for auto switch mounting brackets.

**Cylinder standard stroke [mm]**  
Refer to “Standard Strokes” on page 94.

**Lock position**

H	Head end lock
R	Rod end lock

**CBJ2 L 16-60-H N**

With auto switch

**CDBJ2 L 16-60-H N -M9BW -C**

With auto switch  
(Built-in magnet)

**Mounting**

B	Basic
L	Axial foot
F	Rod flange
D	Double clevis*1

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

\*1: Rod end lock only.

**Manual release**

N	Non-locking type
---	------------------

**Auto switch**

—	Without auto switch
---	---------------------

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

★ Enter the auto switch mounting type (A or B) even when a built-in magnet cylinder without an auto switch is required.

**Auto switch mounting bracket\*2**

\*2: This symbol is indicated when the D-A9□ or M9□ type auto switch is specified.

This mounting bracket does not apply to other auto switches (D-C7□ and H7□, etc.) (—)

**Number of auto switches**

—	2 pcs.
S	1 pc.
n	“n” pcs.

#### Applicable Auto Switches/Refer to the Auto Switch Guide 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 (—)	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-colour indicator)	Grommet		3-wire (NPN)	5 V,12 V		M9N WV	M9N W	M9N WV	M9N W	●	●	●	○	—	○	IC circuit						
				3-wire (PNP)			M9P WV	M9P W	M9P WV	M9P W	●	●	●	○	—	○							
				2-wire	12 V		M9B WV	M9B W	M9B WV	M9B W	●	●	●	○	—	○	—						
				3-wire (NPN)	5 V,12 V		M9NA*1	M9NA*1	M9NA V*1	M9NA*1	○	○	●	○	—	○	IC circuit						
	3-wire (PNP)	M9PA V*1		M9PA*1			M9PA V*1	M9PA*1	○	○	●	○	—	○									
	Water resistant (2-colour indicator)	Grommet		2-wire	12 V		M9BA V*1	M9BA*1	M9BA V*1	M9BA*1	○	○	●	○	—	○	—						
				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*2	A93	A93V*2	A93	●	●	●	●	—	—	—				
								100 V or less	A90V	A90	A90V	A90	●	—	●	—	—	—	—	IC circuit			
								—	—	C73C	A73C	—	●	—	●	●	●	—	—	—			
								24 V or less	—	C80C	A80C	—	●	—	●	●	●	—	—	IC circuit			
Grommet			Yes	—		—	—	—	A79W	—	—	●	—	●	—	—	—	—					
				—		—	—	—	—	—	—	—	—	—	—	—	—						

\*1: 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.

\*2: 1 m type lead wire is only applicable to D-A93.

\*: Lead wire length symbols: 0.5 m..... — (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 108 for details.

\*: For details about auto switches with pre-wired connector, refer to the Auto Switch Guide on [www.smc.eu](http://www.smc.eu).

\*: 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). (However, when the D-A9□□/M9□□□□ types are selected, only auto switch mounting brackets are assembled before being shipped.)

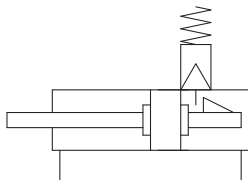
\*: When the D-A9□□/M9□□□□ types are mounted on a rail, order auto switch mounting brackets separately. Refer to page 107 for details.



The CJ2 air cylinder is equipped with end lock function.



**Symbol**  
Rubber bumper



## Specifications

Bore size [mm]	16
Action	Double acting, Single rod
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 (No freezing)
Cushion	Rubber bumper
Lubrication	Not required (Non-lube)
Stroke length tolerance	+1.0 0
Piston speed	50 to 750 mm/s
Allowable kinetic energy	0.090 J

\*: 0.06 MPa for parts other than the lock unit.

## Lock Specifications

Lock position	Head end, Rod end
Holding force (Max.)	98 N
Lock release pressure	0.15 MPa or less
Backlash	1 mm or less
Manual release	Non-locking type

## Standard Strokes

Bore size	Standard stroke [mm]
16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200

\*: Manufacture of intermediate strokes in 1 mm increments is possible. (Spacers are not used.)

\*: Applicable strokes should be confirmed according to the usage. For details, refer to "Air Cylinders Model Selection" on [www.smc.eu](http://www.smc.eu). In addition, the products that exceed the standard stroke might not be able to fulfill the specifications due to the deflection etc.

## Mounting Brackets/Part No.

Mounting bracket	Bore size [mm]
	16
Foot	CJ-L016B
Flange	CJ-F016B
T-bracket*1	CJ-T016B

\*1: T-bracket is used with double clevis (D).

Refer to pages 101 to 108 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.

### Moisture Control Tube Series IDK



When operating an actuator with a small diameter and a short stroke at a high frequency, the dew condensation (water droplet) may occur inside the piping depending on the conditions.

Simply connecting the moisture control tube to the actuator will prevent dew condensation from occurring. For details, refer to the **IDK series in the catalogue on [www.smc.eu](http://www.smc.eu)**.



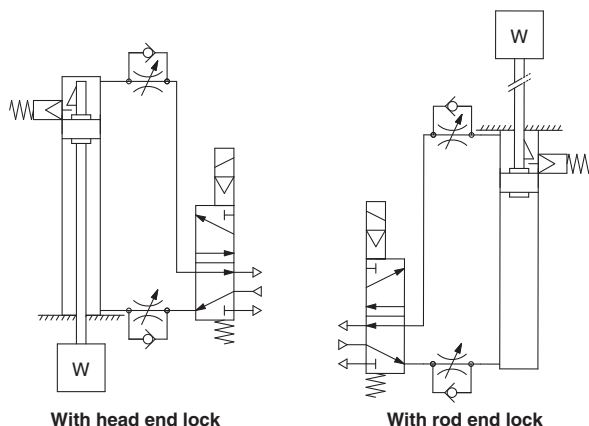
# Series CBJ2 Specific Product Precautions

Be sure to read this before handling. Please consult with SMC for products outside these specifications.

## Use Recommended Air Pressure Circuit.

### ⚠ Caution

- It is necessary for proper locking and unlocking.



## Selection

### ⚠ Caution

- Do not use a 3-position solenoid valve.**  
Avoid using this cylinder in combination with a 3-position solenoid valve (particularly the closed centre metal seal type). If air pressure becomes sealed inside the port on the side that contains the lock mechanism, the lock will not engage. Even if the lock is engaged at first, the air that leaks from the solenoid valve could enter the cylinder and cause the lock to disengage as time elapses.
- Back pressure is necessary for unlocking.**  
Before starting, make sure that air is supplied to the side that is not equipped with a lock mechanism as shown in the diagram above. Otherwise, the lock may not disengage. (Refer to "Lock Disengagement.")
- Disengage the lock before installing or adjusting the cylinder.**  
The lock could become damaged if the cylinder is installed with its lock engaged.
- Operate the cylinder at a load ratio of 50 % or less.**  
The lock might not disengage or might become damaged if a load ratio of 50 % is exceeded.
- Do not synchronize multiple cylinders.**  
Do not operate two or more end lock cylinders synchronized to move a single workpiece because one of the cylinder locks may not be able to disengage when required.
- Operate the speed controller under meter-out control.**  
If operated under meter-in control, the lock might not disengage.
- On the side that has a lock, make sure to operate at the stroke end of the cylinder.**  
The lock might not engage or disengage if the piston of the cylinder has not reached the stroke end.
- The position adjustment of the auto switch should be performed at two positions; a position determined by the stroke and a position after the backlash movement (by 1 mm).**  
When a 2-colour indication switch is adjusted to show green at the stroke end, the indication may turn red when the cylinder returns by the backlash. This, however, is not an error.

## Operating Pressure

### ⚠ Caution

Supply air pressure of 0.15 MPa or higher to the port on the side that has the lock mechanism, as it is necessary for disengaging the lock.

## Exhaust Air Speed

### ⚠ Caution

The lock will engage automatically if the air pressure at the port on the side that has the lock mechanism becomes 0.05 MPa or less. Be aware that if the piping on the side that has the lock mechanism is narrow and long, or if the speed controller is located far from the cylinder port, the exhaust air speed could become slower, involving a longer time for the lock to engage. A similar result will ensure if the silencer that is installed on the exhaust port of the solenoid valve becomes clogged.

## Lock Disengagement

### ⚠ Warning

To disengage the lock, make sure to supply air pressure to the port on the side without a lock mechanism, thus preventing the load from being applied to the lock mechanism. (Refer to the recommended air pressure circuit.) If the lock is disengaged when the port on the side that does not contain a lock mechanism is in the exhausted state and the load is being applied to the lock mechanism, undue force will be applied to the lock mechanism, and it may damage the lock mechanism. Also, it could be extremely dangerous, because the piston rod could move suddenly.

## Manual Disengagement

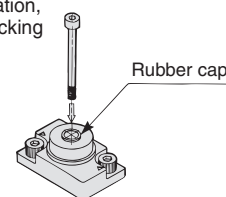
### ⚠ Caution

#### Non-locking type manual release

Insert the bolt, which is provided as an accessory part, through the rubber cap (it is not necessary to remove the rubber cap). Screw the bolt into the lock piston and pull the bolt to disengage the lock. Releasing the bolt will re-engage the lock. The bolt size, pulling force, and the stroke are listed below.

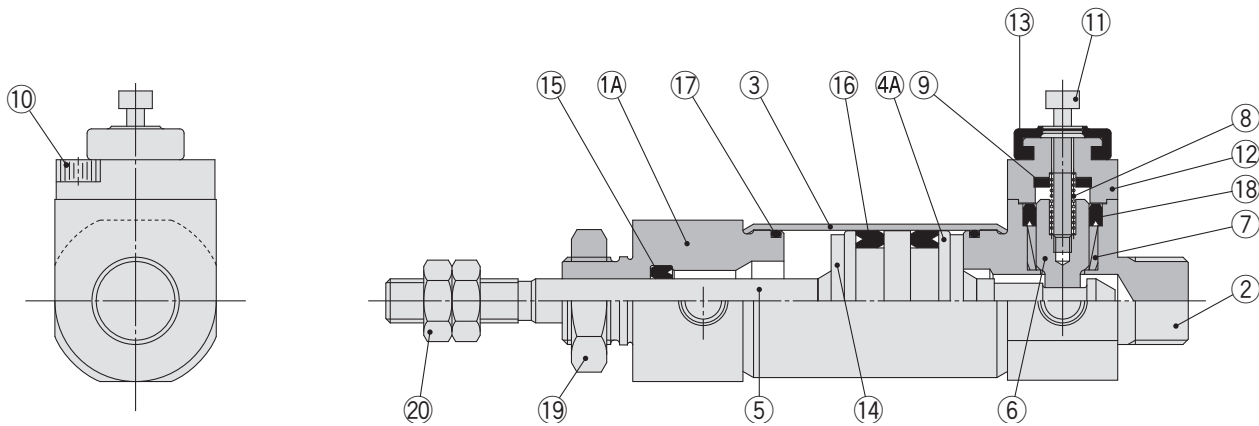
Bore size [mm]	Thread size	Pulling force [N]	Stroke [mm]
16	M2 x 0.4 x 20 L or more	4.9	2

Bolt should be detached under normal operation, otherwise it may cause malfunction of the locking feature.

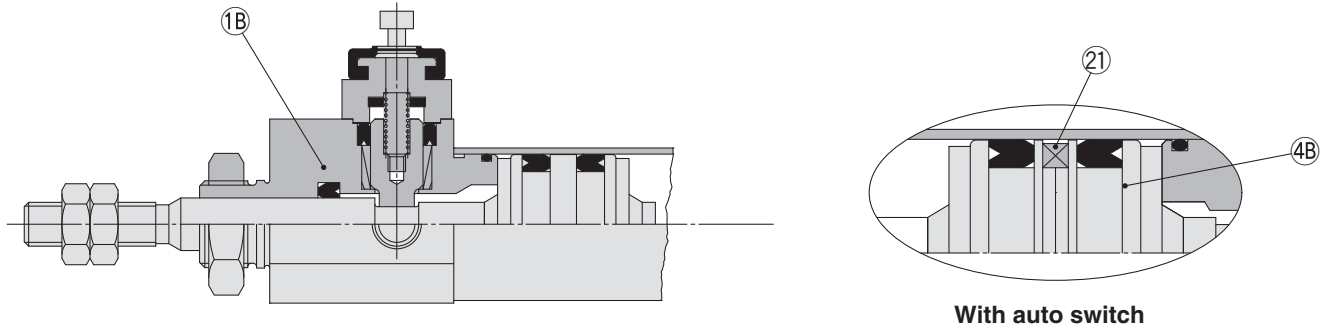


## Construction (Not able to disassemble)

### Head end lock



### Rod end lock



### Component Parts

No.	Description	Material	Note
1A	Rod cover	Aluminium alloy	
1B	Rod cover	Stainless steel	
2	Head cover	Aluminium alloy	
3	Cylinder tube	Stainless steel	
4A	Piston	Aluminium alloy	
4B	Piston B	Aluminium alloy	
5	Piston rod	Carbon steel	
6	Locking piston	Carbon steel	
7	Locking bushing	Copper alloy	
8	Lock spring	Spring steel	
9	Bumper	Urethane	
10	Hexagon socket head cap screw	Alloy steel	

No.	Description	Material	Note
11	Hexagon socket head cap screw	Alloy steel	
12	Cap	Aluminium alloy	
13	Rubber cap	Synthetic rubber	
14	Bumper	Urethane	
15	Rod seal	NBR	
16	Piston seal	NBR	
17	Tube gasket	NBR	
18	Locking piston seal	NBR	
19	Mounting nut	Brass	
20	Rod end nut	Rolled steel	
21	Magnet	—	

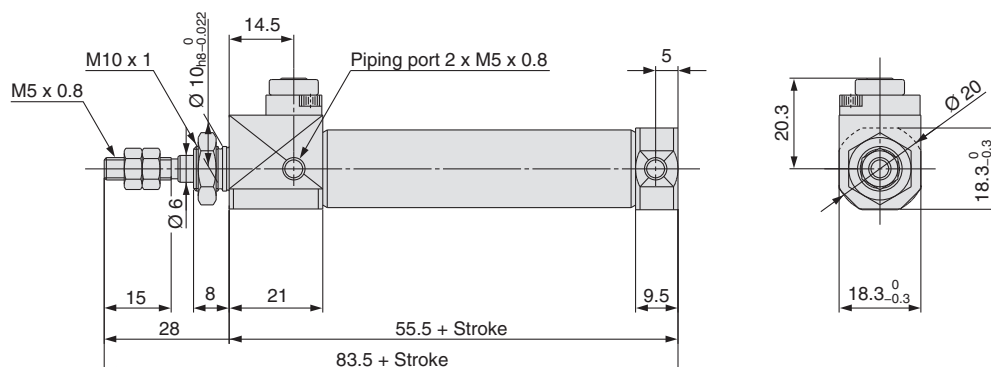
Standard	Double Acting, Single Rod	CJ2
	Double Acting, Double Rod	CJ2W
	Single Acting, Spring Return/Extend	CJ2
	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Double Acting, Single Rod	CJ2K
	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
	Double Acting, 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
With End Lock		CBJ2
		Auto Switch
		Made to Order

# Series CBJ2

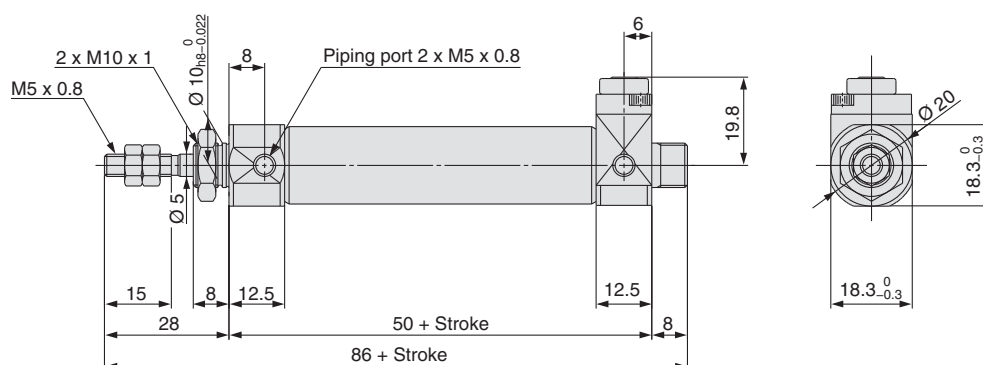
## Dimensions

### Basic

With rod end lock: C□BJ2B16-□-RN



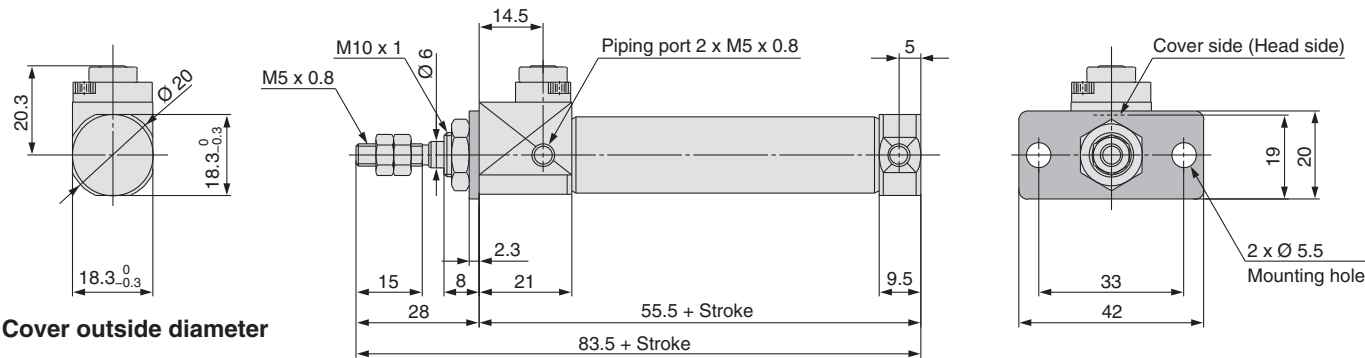
With head end lock: C□BJ2B16-□-HN



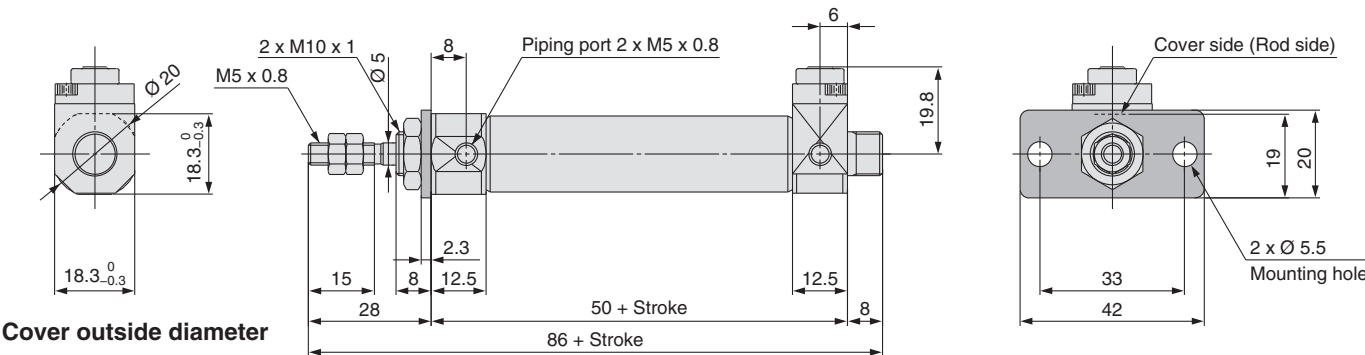
Dimensions

Flange

With rod end lock: C□BJ2F16-□-RN



With head end lock: C□BJ2F16-□-HN



Double Acting, Single Rod  
CJ2

Double Acting, Double Rod  
CJ2W

Single Acting, Spring Return/Extend  
CJ2

Double Acting, Single Rod  
CJ2K

Single Acting, Spring Return/Extend  
CJ2K

Double Acting, Single Rod  
CJ2Z

Double Acting, Double Rod  
CJ2ZW

Double Acting, Single Rod  
CJ2R

Single Acting, Spring Return/Extend  
CJ2R

Double Acting, Single Rod  
CJ2RK

Single Acting, Spring Return/Extend  
CJ2RK

With End Lock  
CBJ2

Auto Switch

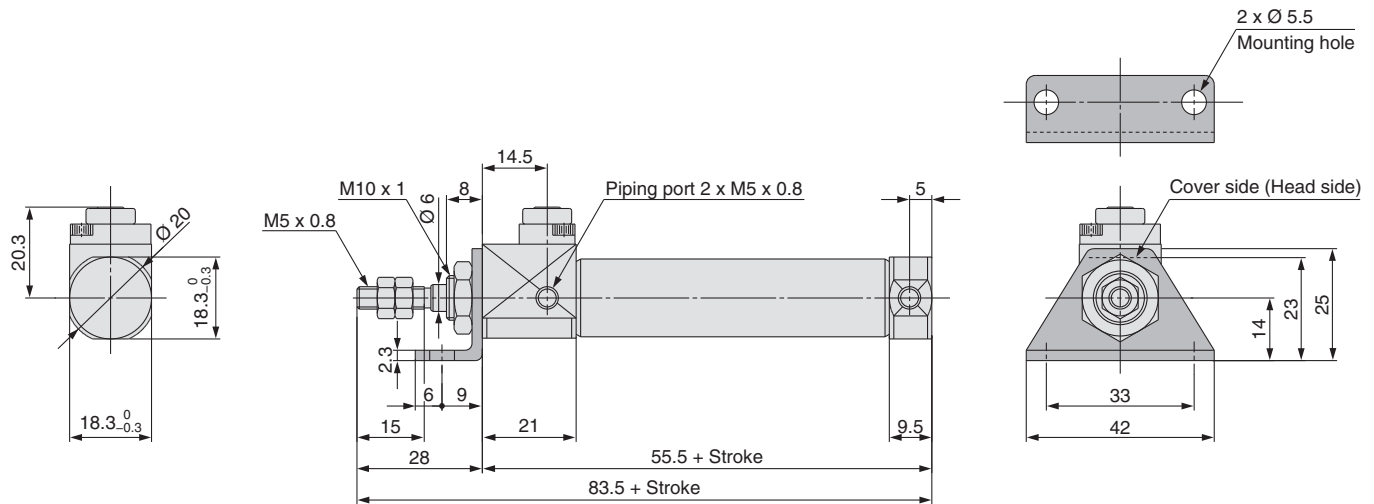
Made to Order

# Series CBJ2

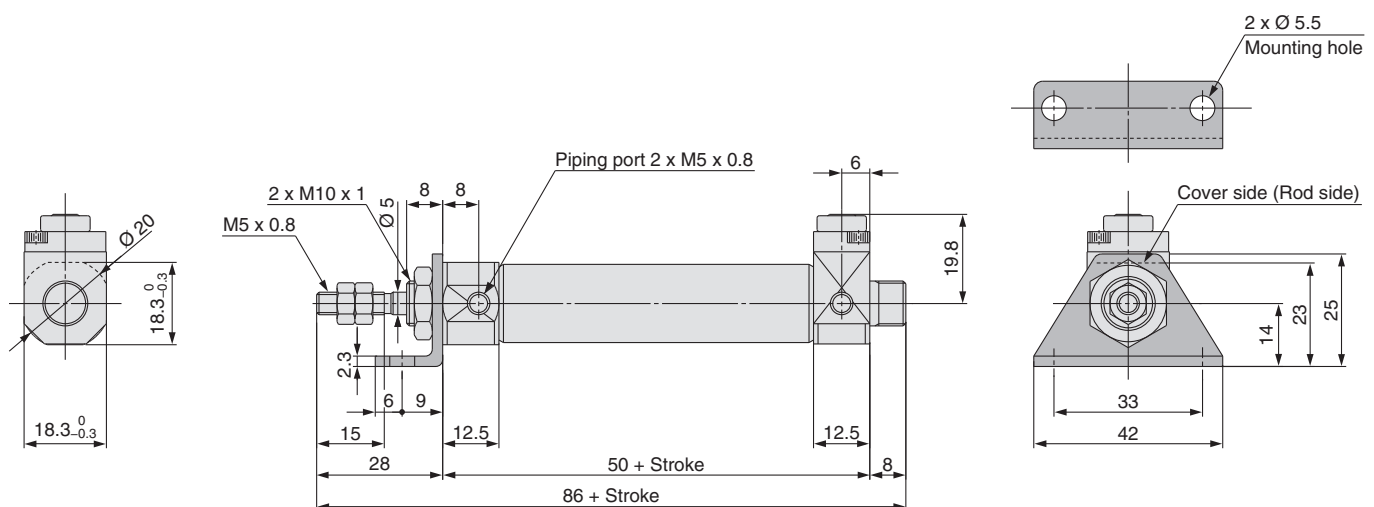
## Dimensions

### Axial foot

With rod end lock: C□BJ2L16-□-RN



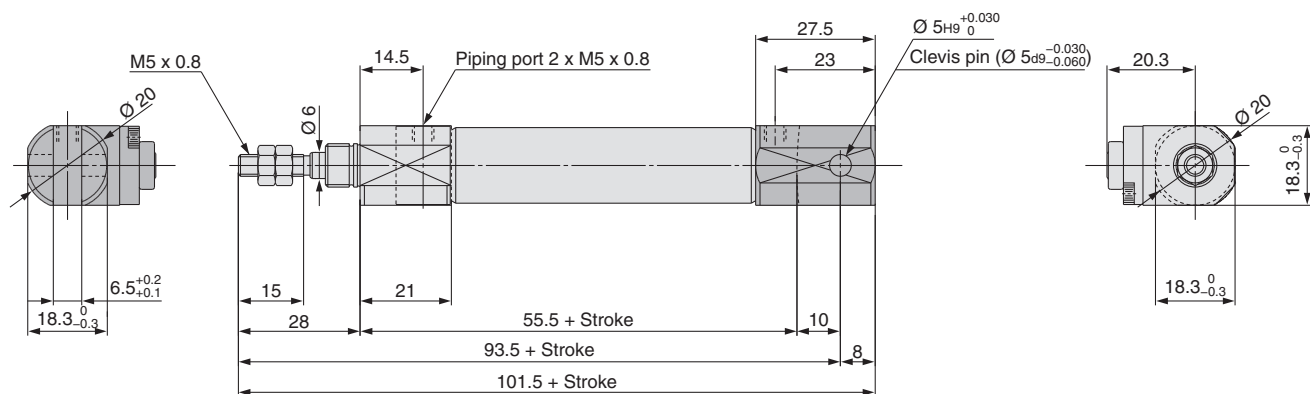
With head end lock: C□BJ2L16-□-HN



Dimensions

Double clevis

With rod end lock: C□BJ2D16-□-RN



With End Lock	CBJ2	
	Auto Switch	
	CJ2RK	
	CJ2RK	
Direct Mount, Non-rotating Rod	CJ2R	
	CJ2R	
	CJ2RK	
	CJ2RK	
Direct Mount	CJ2R	
	CJ2R	
	CJ2RK	
	CJ2RK	
Built-in Speed Controller	CJ2ZW	
	CJ2ZW	
	CJ2Z	
	CJ2Z	
Non-rotating Rod	CJ2K	
	CJ2K	
	CJ2K	
	CJ2K	
Standard	CJ2	
	CJ2	
	CJ2W	
	CJ2	



# Auto Switch Mounting

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

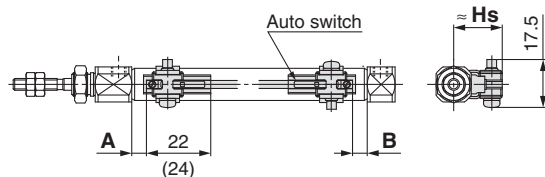
### Solid state auto switch

#### <Band mounting>

D-M9□

D-M9□W

D-M9□A



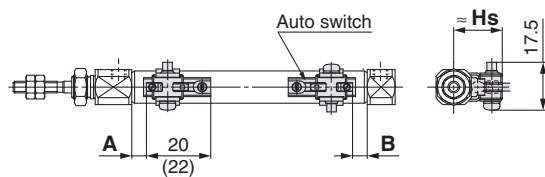
( ) : Dimension of the D-M9□A.

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.

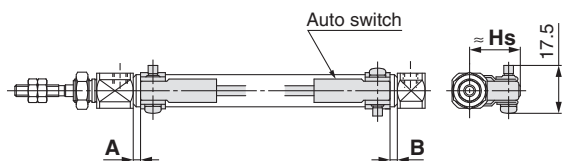
D-H7□

D-H7□W

D-H7BA

D-H7NF

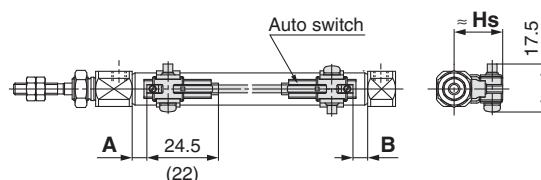
D-H7C



### Reed auto switch

#### <Band mounting>

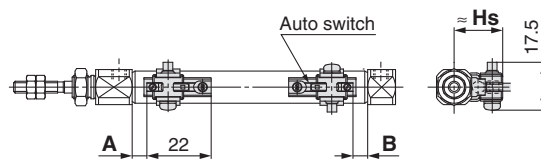
D-A9□



( ) : 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.

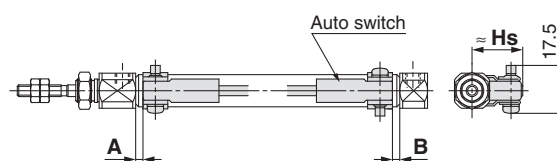
D-A9□V



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

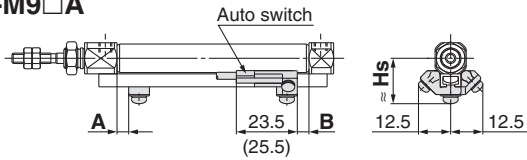
D-C73C□/C80C



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

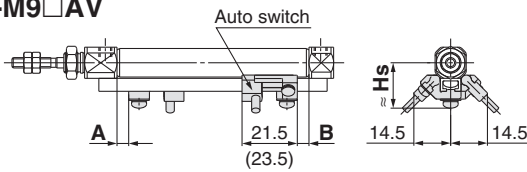
### <Rail mounting>

D-M9□  
D-M9□W  
D-M9□A



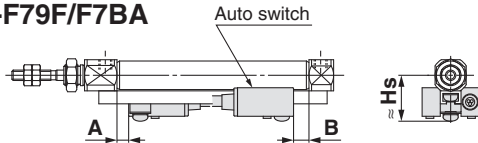
( ): Dimension of the D-M9□A.

D-M9□V  
D-M9□WV  
D-M9□AV

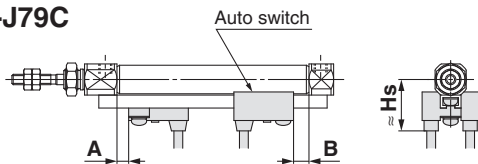


( ): Dimension of the D-M9□AV.

D-F7□/J79  
D-F7□W/J79W  
D-F79F/F7BA

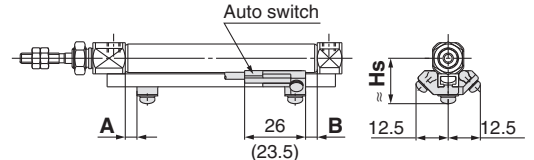


D-F7□V/F7□WV  
D-F7BAV  
D-J79C



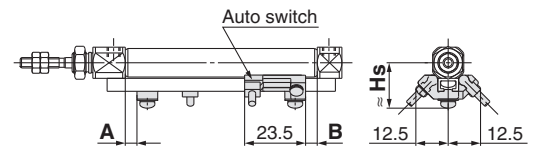
### <Rail mounting>

D-A9□

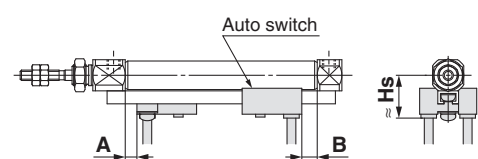


( ): Dimension of the D-A96.

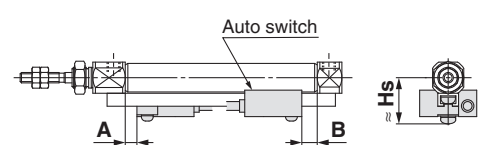
D-A9□V



D-A7□/A80  
D-A73C/A80C  
D-A79W



D-A7□H/A80H



With End Lock	CBJ2	Auto Switch	Made to Order
Direct Mount, Non-rotating Rod	CJ2RK	Single Acting, Spring Return/Extend	
Direct Mount	CJ2R	Double Acting, Single Rod	
Direct Mount	CJ2R	Double Acting, Single Rod	
Built-in Speed Controller	CJ2ZW	Double Acting, Double Rod	
Non-rotating Rod	CJ2K	Single Acting, Spring Return/Extend	
Non-rotating Rod	CJ2K	Double Acting, Single Rod	
Standard	CJ2W	Double Acting, Double Rod	
Standard	CJ2	Single Acting, Spring Return/Extend	
Standard	CJ2W	Double Acting, Double Rod	
Standard	CJ2	Double Acting, Single Rod	

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

### Auto Switch Proper Mounting Position (Single acting type excluded) [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-H7□ D-H7C D-H7NF D-H7□W D-H7BA		D-C7□ D-C80 D-C73C D-C80C	
Bore size	A	B	A	B	A	B	A	B
6	5.5 (4.5) [12]	5.5 (4.5) [4]	1.5 (0.5) [8]	1.5 (0.5) [0]	1 (7.5)	1 (0)	2 (8.5)	2 (0.5)
10	(5) 6	(5) 6	(1) 2	(1) 2	1.5	1.5	2.5	2.5
16	(5.5) 6.5	(5.5) 6.5	(1.5) 2.5	(1.5) 2.5	2	2	3	3

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

※: The values in [ ] for bore size Ø 6 are for the double rod type (CJ2W series).

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-F7□/J79 D-F7□W/J79W D-F7□V/F7□WV D-F79F D-J79C D-F7BA D-F7BAV D-A7□H/A80H D-A73C/A80C		D-F7NT		D-A7□ D-A80		D-A79W	
Bore size	A	B	A	B	A	B	A	B	A	B	A	B
6	—	—	—	—	—	—	—	—	—	—	—	—
10	4.5	4.5	0.5	0.5	3.5	3.5	8.5	8.5	3	3	0.5	0.5
16	5	5	1	1	4	4	9	9	3.5	3.5	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-H7□/H7□W D-H7NF D-H7BA D-C7□/C80	D-H7C	D-C73C D-C80C
	Hs	Hs	Hs	Hs	Hs
	6	15	16	15	18
10	17	18	17	20	19.5
16	20.5	21	20.5	23.5	23

								[mm]
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-F7□/J79 D-F7□W/J79W D-F7BA/F79F D-F7NT D-A7□H/A80H	D-F7□V D-F7□WV D-F7BAV	D-J79C	D-A7□ D-A80	D-A73C D-A80C	D-A79W	
	Hs	Hs	Hs	Hs	Hs	Hs	Hs	
	6	—	—	—	—	—	—	
10	17.5	17.5	20	23	16.5	23.5	19	
16	21	20.5	23	26	19.5	26.5	22	

# 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)

Auto switch model		Bore size	A dimensions									B
			5 to 9 st	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-M9□ D-M9□W/M9□WV D-M9□A/M9□AV	6	—	12	21	25	39	—	—	—	—	5.5
		10	—	13	20.5	32.5	44.5	—	—	—	—	6
		16	—	12.5	21	33	45	51	75	93	105	6.5
	D-M9□V	6	12	12	21	25	39	—	—	—	—	5.5
		10	13	13	20.5	32.5	44.5	—	—	—	—	6
		16	12.5	12.5	21	33	45	51	75	93	105	6.5
	D-A9□	6	—	8	17	21	35	—	—	—	—	1.5
		10	—	9	16.5	28.5	40.5	—	—	—	—	2
		16	—	8.5	17	29	41	47	71	89	101	2.5
	D-A9□V	6	8	8	17	21	35	—	—	—	—	1.5
		10	9	9	16.5	28.5	40.5	—	—	—	—	2
		16	8.5	8.5	17	29	41	47	71	89	101	2.5
	D-H7□/H7C D-H7□W/H7BA D-H7NF	6	—	7.5	16.5	20.5	34.5	—	—	—	—	1
		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
	D-C7□/C80 D-C73C D-C80C	6	—	8.5	17.5	21.5	35.5	—	—	—	—	2
		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
Rail mounting	D-M9□ 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-M9□V	10	11.5	11.5	19	31	43	—	—	—	—	4.5
		16	11	11	19.5	31.5	43.5	49.5	73.5	91.5	103.5	5
	D-A9□	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-A9□V	10	7.5	7.5	15	27	39	—	—	—	—	0.5
		16	7	7	15.5	27.5	39.5	45.5	69.5	87.5	99.5	1
	D-F7□/F7□V D-J79/J79C D-A7□H/A80H D-A73C/A80C	10	10.5	10.5	18	30	42	—	—	—	—	3.5
		16	10	10	18.5	30.5	42.5	48.5	72.5	90.5	102.5	4
	D-F7□W/J79W D-F7□WV/F79F D-F7BA/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-A7□/A80	10	10	10	17.5	29.5	41.5	—	—	—	—	3
		16	9.5	9.5	18	30	42	48	72	90	102	3.5
	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.

Standard	Double Acting, Single Rod	CJ2
Standard	Double Acting, Double Rod	CJ2W
Non-rotating Rod	Single Acting, Spring Return/End	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Single Acting, Spring Return/End	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/End	CJ2R
Direct Mount, Non-rotating Rod	Double Acting, Single Rod	CJ2RK
Direct Mount, Non-rotating Rod	Single Acting, Spring Return/End	CJ2RK
With End Lock	Double Acting, Single Rod	CBJ2
Auto Switch		Auto Switch
Made to Order		Made to Order

# Series CJ2

## 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)

[mm]

Auto switch model		Bore size	A	B dimensions								
				5 to 9 st	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-M9□	6	5.5	—	12	21	25	39	—	—	—	—
	D-M9□W/M9□WV	10	6	—	13	20.5	32.5	44.5	—	—	—	—
	D-M9□A/M9□AV	16	6.5	—	12.5	21	33	45	51	75	93	105
	D-M9□V	6	5.5	12	12	21	25	39	—	—	—	—
		10	6	13	13	20.5	32.5	44.5	—	—	—	—
		16	6.5	12.5	12.5	21	33	45	51	75	93	105
	D-A9□	6	1.5	—	8	17	21	35	—	—	—	—
		10	2	—	9	16.5	28.5	40.5	—	—	—	—
		16	2.5	—	8.5	17	29	41	47	71	89	101
	D-A9□V	6	1.5	8	8	17	21	35	—	—	—	—
		10	2	9	9	16.5	28.5	40.5	—	—	—	—
		16	2.5	8.5	8.5	17	29	41	47	71	89	101
	D-H7□/H7C D-H7□W/H7BA D-H7NF	6	1	—	7.5	16.5	20.5	34.5	—	—	—	—
		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-C7□/C80 D-C73C D-C80C	6	2	—	8.5	17.5	21.5	35.5	—	—	—	—
		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
Rail mounting	D-M9□ 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-M9□V	10	4.5	11.5	11.5	19	31	43	—	—	—	—
		16	5	11	11	19.5	31.5	43.5	49.5	73.5	91.5	103.5
	D-A9□	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
	D-A9□V	10	0.5	7.5	7.5	15	27	39	—	—	—	—
		16	1	7	7	15.5	27.5	39.5	45.5	69.5	87.5	99.5
	D-F7□/F7□V D-J79/J79C D-A7□H/A80H D-A73C/A80C	10	3.5	10.5	10.5	18	30	42	—	—	—	—
		16	4	10	10	18.5	30.5	42.5	48.5	72.5	90.5	102.5
	D-F7□W/J79W D-F7□WV/F79F D-F7BA/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-A7□/A80	10	3	10	10	17.5	29.5	41.5	—	—	—	—
		16	3.5	9.5	9.5	18	30	42	48	72	90	102
	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.

**Minimum Stroke for Auto Switch Mounting**

[mm]

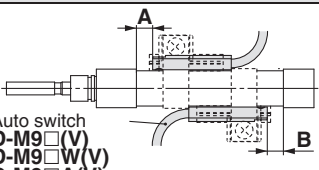
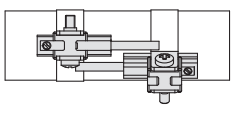
Auto switch mounting	Auto switch model	Number of auto switches				
		With 1 pc.	With 2 pcs.		With n pcs. (n: Number of auto switches)	
			Different surfaces	Same surface	Different surfaces	Same surface
Band mounting	D-M9□ D-M9□W D-M9□A D-A9□	10	15*1	45*1	$15 + 35 \frac{(n-2)}{2}$ (n = 2, 4, 6...)*3	45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

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

\*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.

\*5: The dimension stated in ( ) shows the minimum mountable stroke when the auto switch does not project from the end face of the cylinder body and the lead wire bending space is not hindered.

\*1: Auto switch mounting

Auto switch model	With 2 auto switches	
	Different surfaces*1	Same surface*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 103.</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*2	Less than 55 stroke*2
D-A9□	—	Less than 50 stroke*2

\*2: Minimum stroke for auto switch mounting in styles other than those mentioned in \*1.

## Operating Range

Auto switch model		Bore size [mm]		
		6	10	16
Band mounting	D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	2	2.5	3
	D-A9□	4.5	6	7
	D-H7□/H7□W D-H7BA/H7NF	3	4	4
	D-H7C	5	8	9
	D-C7□/C80/C73C/C80C	6	7	7
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-F7□/J79/F7□W/J79W D-F7□V/F7□WV/F79F D-J79C/F7BA/F7BAV D-F7NT	—	5	5
	D-A7□/A80/A7H/A80H D-A73C/A80C	—	8	9
	D-A79W	—	11	13

\*: 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]		
		6	10	16
Band mounting	D-M9□ D-M9□V D-M9□W D-M9□WV D-A9□ D-A9□V	BJ6-006 (A set of a, b, d, f)	BJ6-010 (A set of a, b, c, d)	BJ6-016 (A set of a, b, c, d)
	D-M9□A *2 D-M9□AV *2	BJ6-006S (A set of a, b, d, g)	BJ6-010S (A set of a, b, d, e)	BJ6-016S (A set of a, b, d, e)
Band mounting				
Band mounting	D-H7□/H7□W D-H7BA/H7NF D-C7□/C80 D-C73C/C80C	BJ2-006 (A set of band and screw)	BJ2-010 (A set of band and screw)	BJ2-016 (A set of band and screw)
Rail mounting	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A *4 D-M9□AV *4 D-A9□ D-A9□V	—	BQ2-012 (S) (A set of a and b)	BQ2-012 (S) (A set of a and b)

\*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.

\*2: As the indicator LED is projected from the auto switch unit, indicator LED may be damaged if the switch bracket is fixed on the indicator LED.

\*3: When the cylinder is shipped, the auto switch mounting bracket and the auto switch will be included.

\*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	Bore size [mm]		
		6	10	16
BJ2-□□□	• Auto switch mounting band (a) • Auto switch mounting screw (b)	BJ2-006	BJ2-010	BJ2-016
BJ4-1	• Switch bracket (White/PBT) (e) • Switch holder (d)	—	●	●
BJ4-2	• Switch bracket (Black/PBT) (g) • Switch holder (d)	●	—	—
BJ5-1	• Switch bracket (Transparent/Nylon) (c)*1 • Switch holder (d)	—	●	●
BJ5-2	• Switch bracket (Transparent blue/Nylon) (f)*1 • 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

\*5: Refer to the **Auto Switch Guide** on [www.smc.eu](http://www.smc.eu) 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 **Auto Switch Guide** on [www.smc.eu](http://www.smc.eu) for the detailed specifications.

Type	Mounting	Model	Electrical entry	Features	Applicable bore size
Sold state	Band mounting	D-H7A1/H7A2/H7B	Grommet (In-line)	—	Ø 6 to Ø 16
		D-H7NW/H7PW/H7BW		Diagnostic indication (2-colour indicator)	
	Rail mounting	D-F79/F7P/J79		—	Ø 10, Ø 16
		D-F79W/F7PW/J79W	Grommet (Perpendicular)	Diagnostic indication (2-colour indicator)	
		D-F7NV/F7PV/F7BV		—	
		D-F7NWV/F7BWV		Diagnostic indication (2-colour indicator)	
Reed	Band mounting	D-C73/C76	Grommet (In-line)	—	Ø 6 to Ø 16
		D-C80		Without indicator light	
	Rail mounting	D-A73H/A76H		—	Ø 10, Ø 16
		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 **Auto Switch Guide** on [www.smc.eu](http://www.smc.eu).

\*: Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H) are also available. For details, refer **Auto Switch Guide** on [www.smc.eu](http://www.smc.eu).

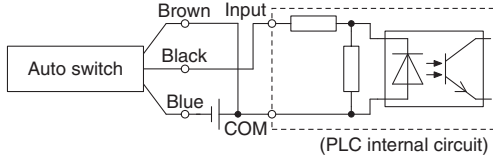
Standard	Double Acting, Single Rod	CJ2
Standard	Double Acting, Double Rod	CJ2W
Standard	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Double Acting, Double Rod	CJ2W
Non-rotating Rod	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	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
With End Lock	Double Acting, Single Rod	CBJ2
With End Lock	Double Acting, Double Rod	CBJ2W
Auto Switch		Auto Switch
Made to Order		Made to Order

# Prior to Use

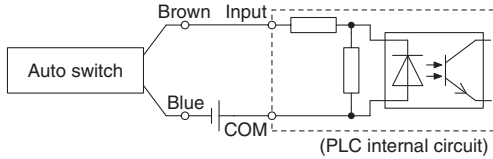
## Auto Switch Connection and Example

### Sink Input Specifications

#### 3-wire, NPN

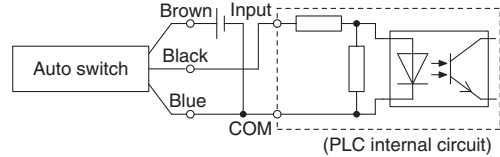


#### 2-wire

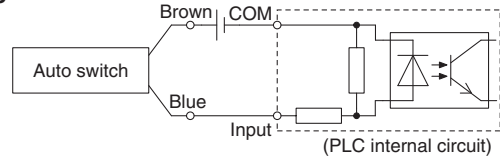


### Source Input Specifications

#### 3-wire, PNP



#### 2-wire



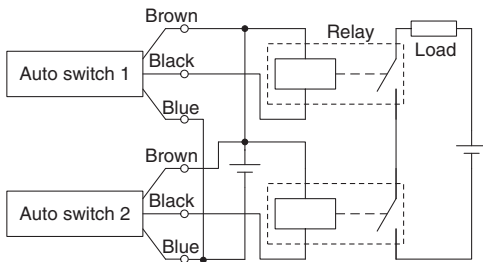
Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

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

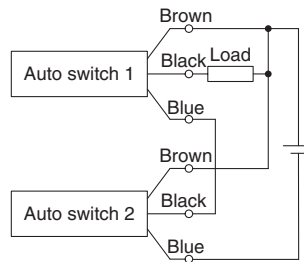
\* When using solid state auto switches, ensure the application is set up so the signals for the first 50 ms are invalid.

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

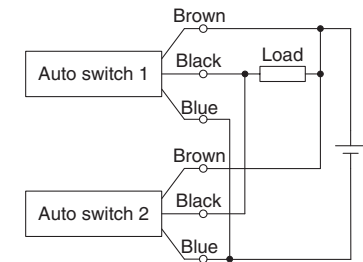
(Using relays)



(Performed with auto switches only)

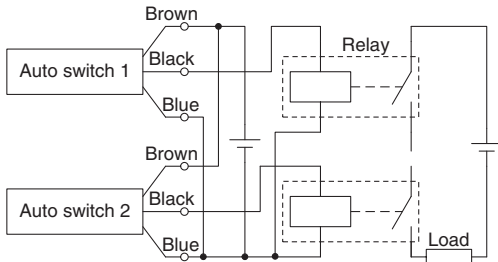


#### 3-wire OR connection for NPN output

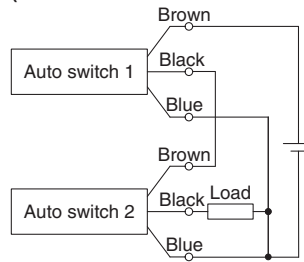


#### 3-wire AND connection for PNP output

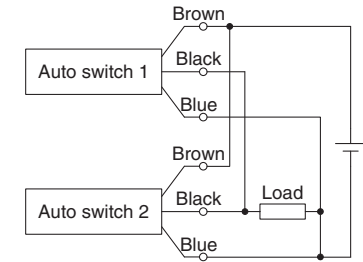
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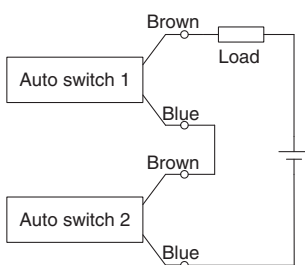
(Performed with auto switches only)



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



#### 2-wire AND connection

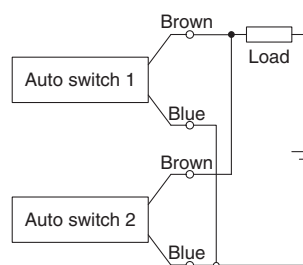


When two auto switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light up when both of the auto switches are in the ON state. Auto switches with load voltage less than 20 V cannot be used.

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

Example: Power supply is 24 V DC  
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.

Made to Order	Auto Switch
With End Lock	
CBJ2	Direct Mount, Non-rotating Rod Single Acting, Spring Return/Extend
CJ2RK	Direct Mount, Non-rotating Rod Double Acting, Single Rod
CJ2R	Direct Mount Single Acting, Spring Return/Extend
CJ2R	Direct Mount Double Acting, Single Rod
CJ2ZW	Built-in Speed Controller Double Acting, Double Rod
CJ2Z	Built-in Speed Controller Double Acting, Single Rod
CJ2K	Non-rotating Rod Single Acting, Spring Return/Extend
CJ2K	Non-rotating Rod Double Acting, Single Rod
CJ2	Standard Single Acting, Spring Return/Extend
CJ2W	Standard Double Acting, Double Rod
CJ2	Standard Double Acting, Single Rod



Please contact SMC for detailed specifications, delivery and prices.

## 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	Applicable bore size	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)
-XA0, 1, 10, 11	Change of rod end shape	Ø 6 to Ø 16	●	●	●	●	●	●	●

## Made to Order

Symbol	Specifications	Applicable bore size	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)	Ø 6 to Ø 16	●	●					
-XB7	Cold resistant cylinder (-40 to 70 °C)	Ø 6 to Ø 16	●	●					
-XB9	Low speed cylinder (10 to 50 mm/s)	Ø 6 to Ø 16	●						
-XB13	Low speed cylinder (5 to 50 mm/s)	Ø 6	●						
-XC3	Special port position	Ø 6 to Ø 16	●				●		
-XC8	Adjustable stroke cylinder/Adjustable extension type	Ø 10, Ø 16	●						
-XC9	Adjustable stroke cylinder/Adjustable retraction type	Ø 10, Ø 16	●				●		
-XC10	Dual stroke cylinder/Double rod type	Ø 10, Ø 16	●				●		
-XC11	Dual stroke cylinder/Single rod type	Ø 10, Ø 16	●						
-XC22	Fluororubber seal	Ø 6 to Ø 16	●	●	●	●	●		
-XC51	With hose nipple	Ø 6 to Ø 16	●	●	●	●	●	●	●
-XC85	Grease for food processing equipment	Ø 10, Ø 16	●	●	●	●	●	●	●
-X446	PTFE grease	Ø 10, Ø 16	●	●	●	●	●	●	●
-X773	Short pitch mounting	Ø 6			●				

CJ2Z (Built-in speed controller type)		CJ2R (Direct mount type)			CJ2RK (Direct mount, Non-rotating rod type)			Symbol	Page
Double acting		Double acting	Single acting		Double acting	Single 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)		
●	●	●	●	●	●	●	●	-XA0, 1, 10, 11	113

CJ2Z (Built-in speed controller type)		CJ2R (Direct mount type)			CJ2RK (Direct mount, Non-rotating rod type)			Symbol	Page
Double acting		Double acting	Single acting		Double acting	Single 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)		
								-XB6	114
								-XB7	114
								-XB9	114
								-XB13	115
								-XC3	115
								-XC8	115
		●			●			-XC9	116
								-XC10	116
		●						-XC11	117
		●						-XC22	118
●	●	●	●	●	●	●	●	-XC51	118
●	●	●	●	●	●	●	●	-XC85	119
●	●	●	●	●	●	●	●	-X446	119
								-X773	120

Standard	Double Acting, Single Rod	CJ2
	Double Acting, Double Rod	CJ2W
	Single Acting, Spring Return/Extend	CJ2
	Single Acting, Spring Return/Extend	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
	Double Acting, Double Rod	CJ2K
	Single Acting, Spring Return/Extend	CJ2K
	Single Acting, Spring Return/Extend	CJ2K
Built-in Speed Controller	Double Acting, Single Rod	CJ2Z
	Double Acting, Double Rod	CJ2ZW
	Single Acting, Single Rod	CJ2R
	Single Acting, Single Rod	CJ2R
Direct Mount	Double Acting, Single Rod	CJ2R
	Double Acting, Double Rod	CJ2R
	Single Acting, Single Rod	CJ2RK
	Single Acting, Single Rod	CJ2RK
With End Lock	Double Acting, Single Rod	CBJ2
	Double Acting, Double Rod	CBJ2
	Single Acting, Single Rod	Auto Switch
	Single Acting, Single Rod	Auto Switch

# Series CJ2

## Simple Specials

These changes are dealt with Simple Specials System.

Symbol

### 1 Change of Rod End Shape

-XA0, 1, 10, 11

#### Applicable Series

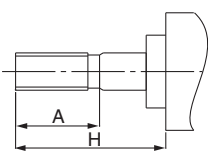
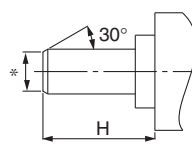
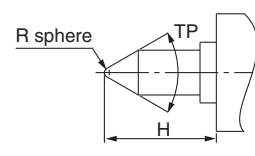
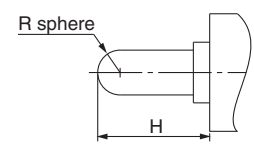
		Action	Symbol for change of rod end shape	Note
Standard type	CJ2	Double acting, Single rod	XA0, 1, 10, 11	*1
		Single acting (Spring return/extend)	XA0, 1, 10, 11	*1
	CJ2W	Double acting, Double rod	XA0, 1, 10, 11	
Non-rotating rod type	CJ2K	Double acting, Single rod	XA0, 1, 10, 11	*1
		Single acting (Spring return/extend)	XA0, 1, 10, 11	*1
Built-in speed controller type	CJ2Z	Double acting, Single rod	XA0, 1, 10, 11	*1
	CJ2ZW	Double acting, Double rod	XA0, 1, 10, 11	*1
Direct mount type	CJ2RA	Double acting, Single rod	XA0, 1, 10, 11	*2
		Single acting (Spring return/extend)	XA0, 1, 10, 11	*2
Direct mount, Non-rotating rod type	CJ2RK	Double acting, Single rod	XA0, 1, 10, 11	*2
		Single acting (Spring return/extend)	XA0, 1, 10, 11	*2

\*1: Except rod end bracket and pivot bracket \*2: Except rod end bracket

#### 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

Description	Model	Action	Note
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

- \*: Operate without lubrication from a pneumatic system lubricator.
- \*: Please contact SMC for details on the maintenance intervals for this cylinder, which differ from those of the standard cylinder.
- \*: 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.
- \*: 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 material	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

Description	Model	Action	Note
Standard type	CJ2	Double acting, Single rod	Except with air cushion and auto switch, rod end bracket, pivot bracket
	CJ2W	Double acting, Double rod	Except with air cushion and auto switch

- \*: Operate without lubrication from a pneumatic system lubricator.
- \*: Use dry air which is suitable for heatless air dryer, etc. not to cause the moisture to be frozen.
- \*: Please contact SMC for details on the maintenance intervals for this cylinder, which differ from those of the standard cylinder.
- \*: Mounting auto switch is impossible.
- \*: 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

Description	Model	Action	Note
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

- \*: 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
Standard	Double Acting, Double Rod	CJ2W
Single Acting, Spring Return	Single Rod	CJ2
Non-rotating Rod	Double Acting, Single Rod	CJ2K
Non-rotating Rod	Double Acting, Double Rod	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
With End Lock	Double Acting, Single Rod	CBJ2
Auto Switch		
Made to Order		



## 4 Low Speed Cylinder (5 to 50 mm/s)

Symbol  
**-XB13**

Even if driving at lower speeds 5 to 50 mm/s, there would be no stick-slip phenomenon and it can run smoothly.

### Applicable Series

Description	Model	Action	Note
Standard type	CJ2	Double acting, Single rod	Ø 6 only

\*: Operate without lubrication from a pneumatic system lubricator.  
\*: For the speed adjustment, use speed controllers for controlling at lower speeds. (AS-FM/AS-M series)

### How to Order

Standard model no.	-XB13
Low speed cylinder	

### Specifications

Piston speed	5 to 50 mm/s
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.

## 5 Special Port Location

Symbol  
**-XC3**

Compared with the standard type, a cylinder which changes the connection port location of rod/head cover.

### Applicable Series

Description	Model	Action	Note
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

Standard model no.	-XC3	A	B
Special port location			
Rod port location viewed from the rod side		Head port location viewed from the rod side	

\*: For port location, refer to the diagrams on the right and show the symbols of A, B, C and D.

### Specifications: Same as standard type

### Port Location

Corresponding symbol of mounting bracket (Positional relationships)	
	*: Viewed from the rod side, the ports are rendered A, B, C, and D, in the clockwise direction.
	<Position relation between clevis and port> *: Viewed from the rod side, with the clevis positioned as shown in the diagram, the ports are rendered A, B, C, and D, in the clockwise direction.

## 6 Adjustable Stroke Cylinder/Adjustable Extension Type

Symbol  
**-XC8**

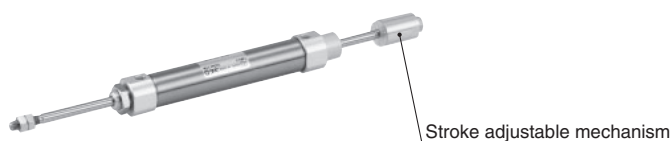
It adjusts the extending stroke by the stroke adjustable mechanism equipped in the head side. (After the stroke is adjusted, with cushion on both sides is altered to single-sided, with cushion.)

### Applicable Series

Description	Model	Action	Note
Standard type	CJ2	Double acting, Single rod	Except with air cushion, double-side bossed, double clevis, double foot, head flange.

### How to Order

Standard model no.	-XC8
Adjustable stroke cylinder/ Adjustable extension type	



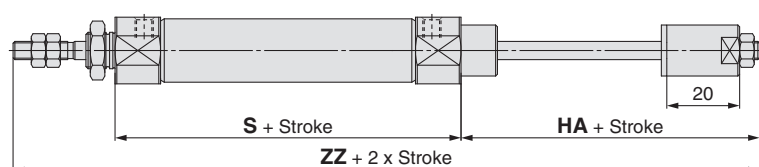
### Specifications

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.

### Dimensions (Dimensions other than below are the same as standard type.)



Bore size	Applicable stroke	HA	S	ZZ
10	15 to 150	37	49	114
16	15 to 200	37	50	115

\*: Dimensions except mentioned above are the same as standard type.

## 7 Adjustable Stroke Cylinder/Adjustable Retraction Type

Symbol  
**-XC9**

The retracting stroke of the cylinder can be adjusted by the adjusting bolt.

### Applicable Series

Description	Model	Action	Note
Standard type	CJ2	Double acting, Single rod	Except double-side bossed, double clevis, double foot, head flange.
Non-rotating rod type	CJ2K	Double acting, Single rod	Except double-side bossed, double clevis, double foot, head flange.
Direct mount type	CJ2R	Double acting, Single rod	
Direct mount, Non-rotating rod type	CJ2RK	Double acting, Single rod	

### How to Order

Standard model no. **-XC9**

Adjustable stroke cylinder/  
Adjustable retraction type



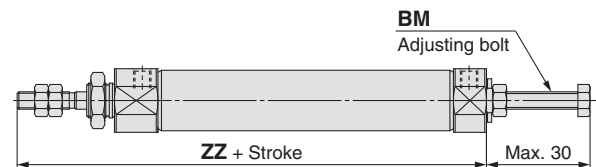
### Specifications

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 pressurised.  
If it is adjusted in the pressurised 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.

## 8 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.

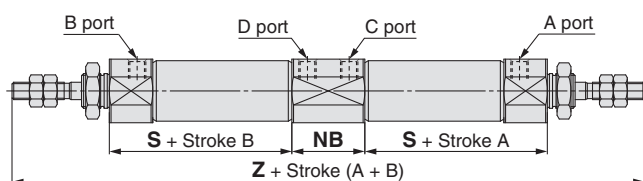
### Applicable Series

Description	Model	Action	Note
Standard type	CJ2	Double acting, Single rod	Except with air cushion, rod end bracket and pivot bracket
Non-rotating rod type	CJ2K	Double acting, Single rod	Except rod end bracket and pivot bracket

### How to Order

CJ2 **Mounting** **Bore size** - **Stroke A** + **Stroke B** **Z** - **XC10**  
Dual stroke cylinder/Double rod type

### 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 strokes A and B 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.

## 9 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

Description	Model	Action	Note
Standard type	CJ2	Double acting, Single rod	Except with air cushion

### Specifications: Same as standard type

※: Please contact SMC for each manufacturable stroke length.



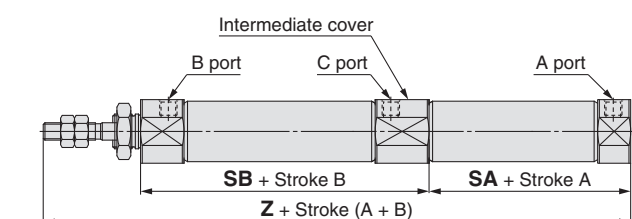
### How to Order

CJ2 **Mounting** **Bore size** - **Stroke A** + **Stroke B - A** Z - **Pivot bracket** **Rod end bracket** - **XC11**  
Dual stroke cylinder/Single rod type

### 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

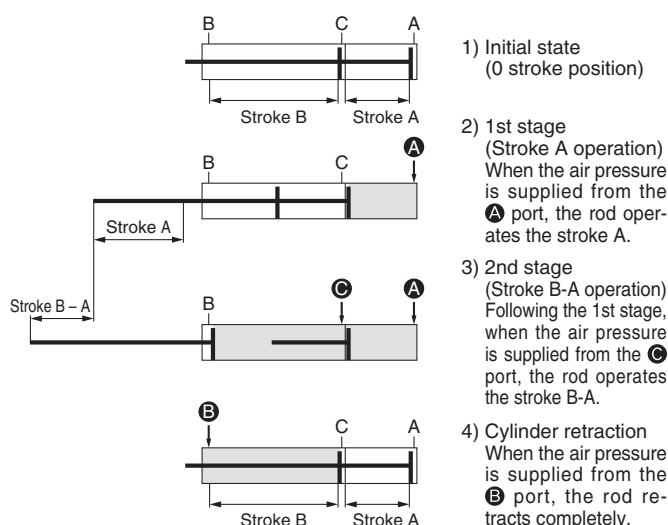
※: Dimensions except mentioned above are the same as standard type.

※: 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.

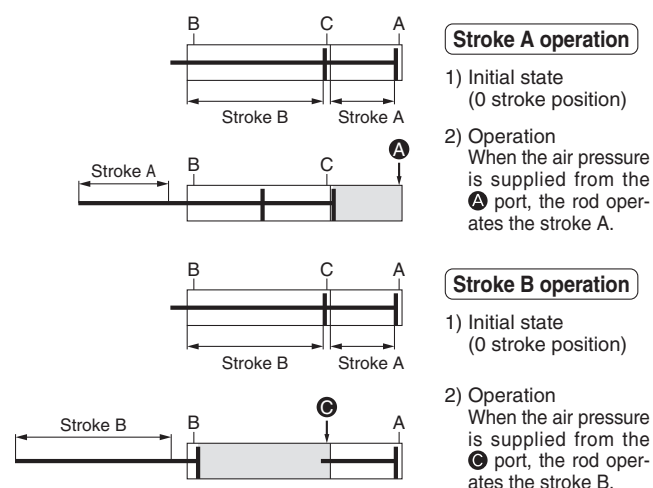
Solid state auto switch: D-H7□, D-H7C, D-H7□W, D-H7NF, D-H7BA  
Reed auto switch: D-C7□, D-C80, D-C73C, D-C80C, D-A80, D-A9□, D-A9□V, D-A79W, D-A73

※: The maximum manufacturable stroke of this cylinder is 150 mm for both A and B.

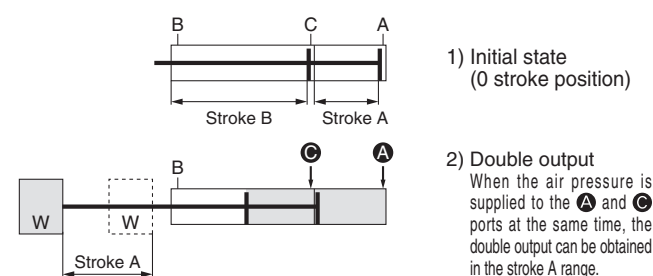
### Functional description of dual stroke cylinder



### Stroke A or Stroke B operation can be made individually.



### Double output is possible.



## 10 Fluororubber Seal

Symbol  
**-XC22**

### Applicable Series

Description	Model	Action	Note
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*1: -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

\*1: Please contact SMC, as the type of chemical and the operating temperature may not allow the use of this product.

\*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.

## 11 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

Description	Model	Action	Note
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	
		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

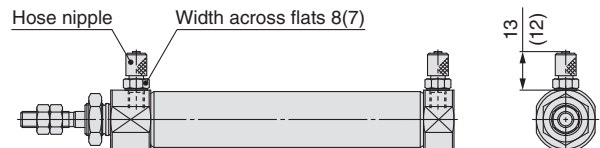
Standard model no.	- XC51	H4
	With hose nipple	Hose nipple type
H4	Ø 4/2.5 with restrictor	
H6	Ø 6/4 with restrictor	
MH4	Ø 4/2.5 without restrictor	
MH6	Ø 6/4 without restrictor	

### Specifications: Same as standard type

### Applicable Hose Nipple Type

Symbol	Applicable bore size [mm]	Function	Hose nipple part no.
H4	Ø 4/2.5	With a fixed orifice (Ø 0.8)	CJ-5H-4
H6	Ø 6/4		CJ-5H-6
MH4	Ø 4/2.5	Without fixed orifice	M-5H-4
MH6	Ø 6/4		M-5H-6

### Dimensions (Dimensions other than below are the same as standard type.)



\*: The above figure shows the Ø 6/4 hose nipple mounting dimensions.  
The dimensions in ( ) show those for the Ø 4/2.5 hose nipple.

## 12 Grease for Food Processing Equipment

Symbol  
**-XC85**

Food grade grease (certified by NSF-H1) is used as lubricant.

### Applicable Series

Description	Model	Action	Note
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 the raw materials and materials of food products, semi-finished food products and food products that make direct or indirect contact in a normal processing process.

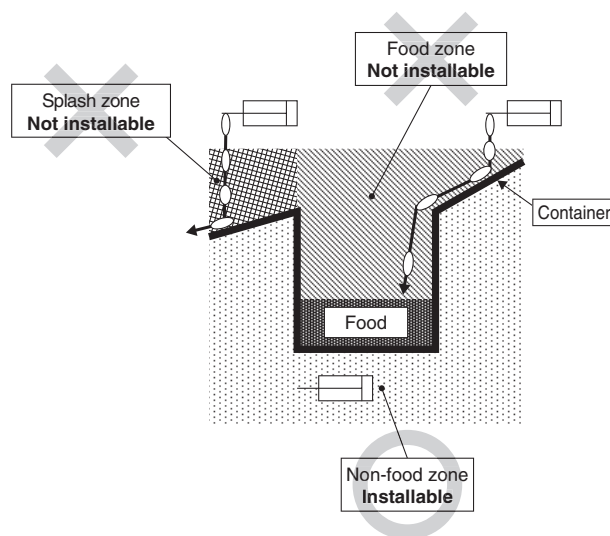
**Splash zone**.....An area where a portion of food products accidentally splash and stick under the intended operating conditions. An environment where food products that enter this area do not return to the food product contact portion again, and are not used as food products.

#### Installable zone

**Non-food zone**...Other environments including the food splash zone, except for the food contact portions.

### Specifications

<b>Ambient temperature range</b>	With auto switch: -10 °C to 60 °C Without auto switch: -10 °C to 70 °C (No freezing)
<b>Seals material</b>	Nitrile rubber
<b>Grease</b>	Grease for food
<b>Auto switch</b>	Mountable
<b>Dimensions</b>	Same as standard type
<b>Specifications other than above</b>	Same as standard type



- \*: Avoid using this product in the food zone. (Refer to the figure above.)
- \*: 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.
- \*: Operate without lubrication from a pneumatic system lubricator.
- \*: Use the following grease pack for the maintenance work.  
**GR-H-010** (Grease: 10 g)
- \*: Please contact SMC for details on the maintenance intervals for this cylinder, which differ from those of the standard cylinder.

## 13 PTFE Grease

Symbol  
**-X446**

### Applicable Series

Description	Model	Action	Note
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)

### 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.

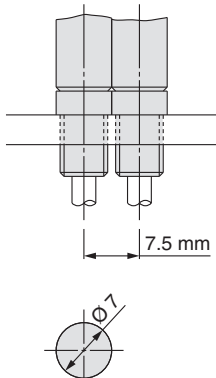
## 14 Short Pitch Mounting/Single Acting, Spring Return

Symbol  
**-X773**

Mounting pitch is shortened when cylinders are used in parallel.

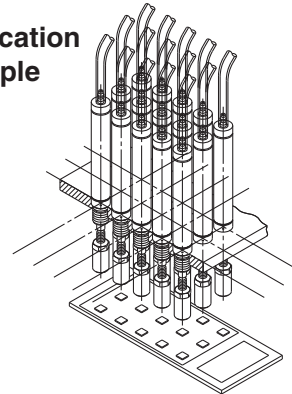
■ Changes rod cover and head cover dimensions to  $\varnothing 7$ .

■ Shortens the full length with a head cover integrated with a barb fitting.



\*: Directly mounted with cylinder mounting screws

Application  
example



Verification of push  
button actuation for  
mobile phones etc.

### Applicable Series

Description	Model	Action	Note
Standard type	CJ2	Single acting (Spring return)	

### How to Order

CJ2B6 - **Stroke** SU4Z - X773

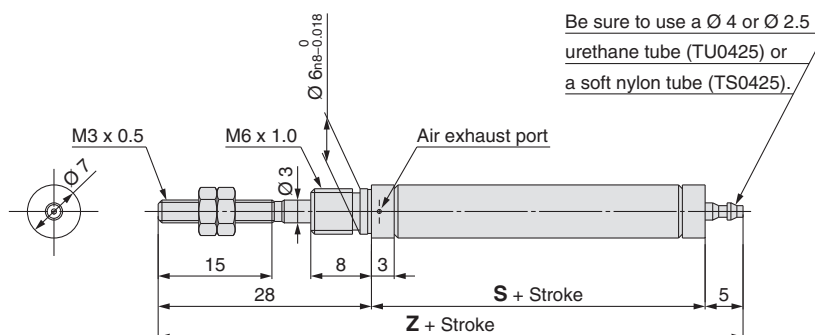
• Short pitch mounting/  
Single acting, spring return



### Specifications

Bore size [mm]	6
Action	Single acting, Spring return
Operating pressure range	0.2 to 0.7 MPa
Port size	With $\varnothing 4$ barb fitting (For soft tube)
Connecting port location	Head cover/Axial direction
Stroke [mm]	5 to 60
Auto switch	None

### Dimensions



Stroke	5 to 15	16 to 30	31 to 45	46 to 60
S	30.5	39.5	43.5	57.5
Z	63.5	72.5	76.5	90.5

Note

- When mounting a cylinder, make sure that the air exhaust port on the rod cover is not blocked.
- When mounting a cylinder, apply thread locking adhesive on the threaded part and hold the external diameter of the rod cover with a needle-nose pliers or regular pliers.





## Specific Product Precautions

Be sure to read this before handling. Refer to the 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.smc.eu>

### 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 cover on the tightening side and tighten by applying an appropriate tightening force to the retaining nut or to the cover on the tightening side.

If the cover on the opposite side of the tightening side is secured or tightened, the cover could rotate, leading to the deviation.

2. Tighten the retaining screws to an appropriate tightening torque within the range given below.

Ø 6: 2.1 to 2.5 N·m, Ø 10: 5.9 to 6.4 N·m

Ø 16: 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 Ø 10 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 type.

#### <Precautions on the single acting cylinder>

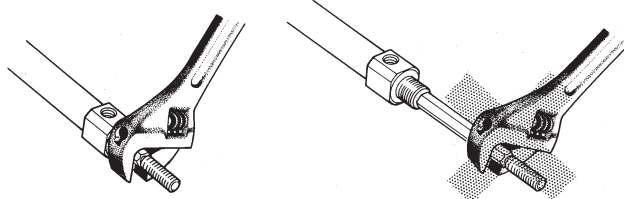
- 1) Do not operate it in such a way that a load would be applied during the retraction of the piston rod of the spring return style, or during the extension of the piston rod of the spring extend style. The spring that is built into the cylinder provides only enough force to retract the piston rod. 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.  
Ø 10: 10.8 to 11.8 N·m, Ø 16: 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]	Ø 10	Ø 16
	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

- 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 catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
- 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.
- Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**
  - 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.
  - 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.
  - Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.
- Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
  - Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
  - 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 catalogue.
  - An application which could have negative effects on people, property, or animals requiring special safety analysis.
  - 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.

## 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

- 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.
- 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.
- Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue 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

- The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
- 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.

### Caution

- 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.

### Caution

**SMC products are not intended for use as instruments for legal metrology.**  
Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

## Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

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