Air Cylinder: Non-rotating Rod Type
Double Acting, Single Rod
Series CJ2K
ø10, ø16

How to Order

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style
D	Double clevis style

Bore size

10	10 mm
16	16 mm

Cylinder standard stroke (mm)
Refer to the standard stroke table on page 69.

CJ2K **L** **16** – **60** ☐ – ☐

With auto switch

CDJ2K **L** **16** – **60** ☐ – **M9BW** ☐ – ☐

With auto switch
(Built-in magnet)

Made to Order
Refer to page 69 for details.

Head cover port location

Symbol \ Bore size (mm)	ø10, ø16
Nil	Perpendicular to axis
R	Axial

∗For configuration, refer to page 69.
∗ Double clevis is only available for being perpendicular to axis.

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

Number of auto switches

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

Built-in Magnet Cylinder Model

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

Example	Rail mounting style	CDJ2KB16-60-A
	Band mounting style	CDJ2KB10-45-B

∗ For rail mounting style, screws and nuts for 2 pcs switches come with the rail.
∗ Refer to page 123 for switch mounting brackets.

Applicable Auto Switch/Refer to pages 1263 to 1371 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model: Band mounting	Auto switch model: Rail mounting Perpendicular	Auto switch model: Rail mounting In-line	Lead wire length (m) 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)	Pre-wired connector	Applicable load	
Solid state switch	——	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	**M9N**	—	—	●	●	●	○	—	○	IC circuit	Relay, PLC
								—	**F7NV**	**F79**	●	—	●	○	—	○		
				3-wire (PNP)				**M9P**	—	—	●	●	●	○	—	○		
								—	**F7PV**	**F7P**	●	—	●	○	—	○		
				2-wire		12 V		**M9B**	—	—	●	●	●	○	—	○	—	
								—	**F7BV**	**J79**	●	—	●	○	—	○		
		Connector						**H7C**	**J79C**	—	●	—	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V, 12 V		**M9NW**	—	—	●	●	●	○	—	○	IC circuit	
								—	**F7NWV**	**F79W**	●	—	●	○	—	○		
				3-wire (PNP)				**M9PW**	—	—	●	●	●	○	—	○		
								—	—	**F7PW**	●	—	●	○	—	○		
				2-wire		12 V		**M9BW**	—	—	●	●	●	○	—	○	—	
								—	**F7BWV**	**J79W**	●	—	●	○	—	○		
	Water resistant (2-color indication)							**H7BA**	**F7BAV**	**F7BA**	—	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)		5 V, 12 V		**H7NF**	—	**F79F**	●	—	●	○	—	○	IC circuit	
Reed switch	——	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	**A96**	—	**A76H**	●	—	●	—	—	—	IC circuit	—
				2-wire	24 V	—	200 V	—	**A72**	**A72H**	●	—	●	—	—	—	—	Relay, PLC
						12 V	100 V	—	**A73**	**A73H**	●	—	●	●	—	—		
								A93	—	—	●	—	●	—	—	—		
			No				100 V or less	**A90**	**A80**	**A80H**	●	—	●	—	—	—	IC circuit	
		Connector	Yes				—	**C73C**	**A73C**	—	●	—	●	●	●	—	—	
			No				24 V or less	**C80C**	**A80C**	—	●	—	●	●	●	—	IC circuit	
	Diagnostic indication (2-color indication)	Grommet	Yes			—	—	—	**A79W** ∗∗	—	●	—	●	—	—	—	—	

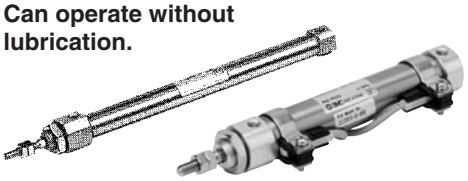
∗ Lead wire length symbols: 0.5 m····· Nil (Example) M9NW
1 m····· M (Example) M9NWM
3 m····· L (Example) M9NWL
5 m····· Z (Example) M9NWZ
None····· N (Example) H7CN

∗ Since there are other applicable auto switches than listed, refer to page 123 for details.
∗ For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
∗ Band mounting style is not available for D-A9□V/M9□V/M9□WV and D-M9□A(V)L types.
∗∗ "D-A79W" cannot be mounted on bore size ø10 cylinder with air cushion.

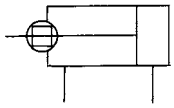
∗ Solid state auto switches marked with "○" are produced upon receipt of order.
∗ D-A9□/M9□/M9□W/A7□□/A80□/F7□□/J7□□ auto switches are shipped together (not assembled). (However, when D-A9□/M9□/M9□W types are selected, only auto switch mounting brackets are assembled before being shipped.)
∗ When D-A9□(V)/M9□(V)/M9□W(V) types are mounted on a ø10 or ø16 rail, order auto switch mounting brackets separately. Refer to page 123 for details.

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

Non-rotating accuracy
ø10: ±1.5°, ø16: ±1°
Can operate without lubrication.



JIS Symbol
Double acting, Single rod



Head Cover Port Location

Either perpendicular to the cylinder axis or in-line with the cylinder axis is available for basic style.

Axial

Perpendicular

Made to Order Specifications
(For details, refer to pages 1373 to 1498.)

Symbol	Specifications
—XA□	Change of rod end shape
—XC3	Special port location
—XC10	Dual stroke cylinder/Double rod type
—XC22	Fluororubber seals
—XC51	With hose nipple

Specifications

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

∗ No freezing

Standard Stroke

(mm)

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

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

Mounting Style and Accessory/For details, refer to page 51.

Mounting style		Basic style	Axial foot style	Rod side flange style	Double clevis ∗ style
Standard equipment	Mounting nut	●	●	●	–
	Rod end nut	●	●	●	●
	Clevis pin	–	–	–	●
Option	Single knuckle joint	●	●	●	●
	Double knuckle joint ∗	●	●	●	●
	T-bracket	–	–	–	●

∗ Pin and retaining ring are shipped together with double clevis and double knuckle joint.

Mounting Bracket Part No.

Mounting bracket	Bore size (mm)	
	10	**16**
Foot bracket	CJ-L016B	CJK-L016B
Flange bracket	CJ-F016B	CJK-F016B
T-bracket ∗	CJ-T010B	CJ-T016B

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

Refer to pages 117 to 123 for cylinders with auto switches.

- Minimum stroke for auto switch mounting
- Proper auto switch mounting position (detection at stroke end) and mounting height
- Operating range
- Switch mounting bracket part no.

⚠ Specific Product Precautions

Be sure to read before handling.
Refer to front matters 54 and 55 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

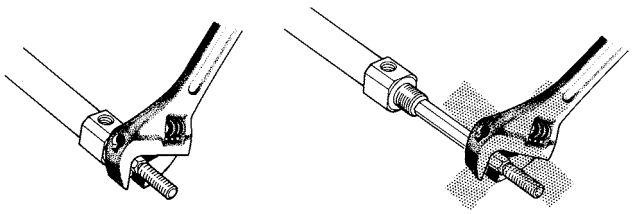
Caution on Handling

⚠Caution

1. During installation, secure the rod cover and tighten by applying an appropriate tightening force to the retaining but or to the rod cover body.
   If the head cover is secured or the head cover is tightened, the cover could rotate, leading to the deviation.
2. Tighten the retaining screws to an appropriate tightening torque within the range given below.
   ø10: 10.8 to 11.8 N·m, ø16: 20 to 21 N·m
3. In the case of a non-rotating cylinder, do not operate it in such a way that rotational torque would be applied to the piston rod. If rotational torque is applied, the non-rotating guide will become deformed, thus affecting the non-rotating accuracy.

Allowable rotational torque (N·m)	ø10	ø16
	0.02	0.04

4. 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.
5. To remove and install the retaining ring for the knuckle pin or the clevis pin, use an appropriate pair of pliers (tool for installing a type C retaining ring). In particular, use a pair of ultra-mini pliers for removing and installing the retaining ring on the ø10 cylinder.
6. In the case of auto switch rail mounting style, do not remove the rail that is mounted. Because retaining screws extend into the cylinder, this could lead to an air leak.



Mass

(g)

Bore size (mm)		10	16
Basic mass *		24	55
Additional mass per each 15 mm of stroke		4	6.5
Mounting bracket mass	Axial foot style	20	20
	Rod side flange style	15	15
	Double clevis style (With pin) *	4	10

* Mounting nut and rod end nut are included in the basic mass.
** Mounting nut is not attached to the double clevis style, so the mounting nut mass is already subtracted.

Calculation: (Example) **CJ2KL10-45**
- Basic mass ····· 24 (ø10)
- Additional mass ····· 4/15 stroke
- Cylinder stroke ····· 45 stroke
- Mounting bracket mass ····· 20 (Axial foot style)

24 + 4/15 x 45 + 20 = 56 g

Copper and Fluorine-free Air Cylinder (For CRT manufacturing process)

20-CJ2K [Mounting style] [Bore size] – [Stroke] [Head cover port location]

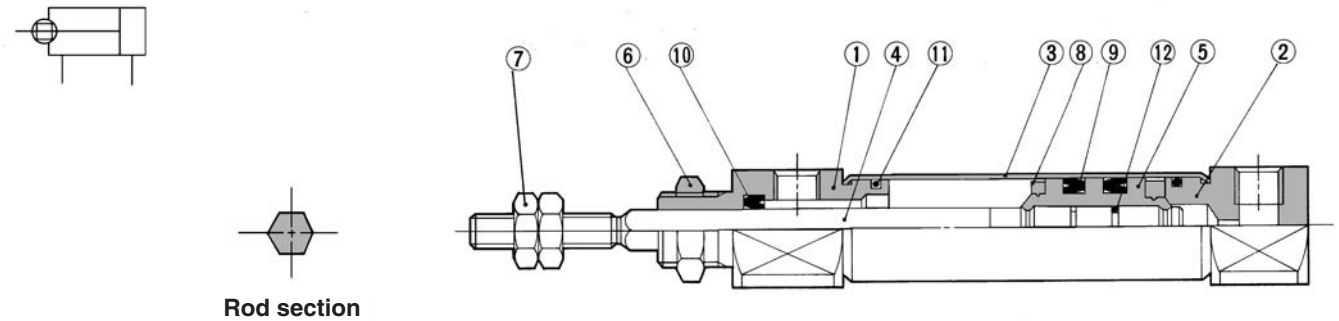
- **Copper and fluorine-free**

Eliminates the effects by copper based ions and fluorine based resins, etc. over the color cathode ray tube.
Making copper based materials into electroless nickel plated treatment or changing them to the non-copper materials in order to prevent copper ions from generating.

Specifications

Action		Double acting, Single rod
Maximum operating pressure		0.7 MPa
Minimum operating pressure		0.06 MPa
Cushion		Rubber bumper (Standard equipment)
Rod non-rotating accuracy	**ø10**	±1.5°
	ø16	±1°
Standard stroke (mm)		Same as standard type. (Refer to page 69.)
Auto switch		Mountable (Band mounting style)
Mounting		Basic style, Axial foot style, Rod side flange style, Double clevis style

Construction (Not able to disassemble)



Rod section

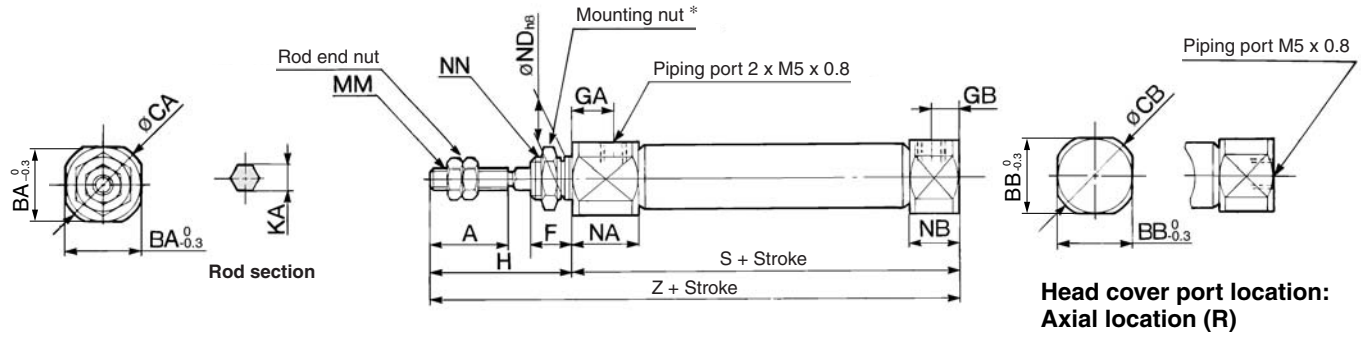
Component Parts

No.	Description	Material	Note
1	**Rod cover**	Aluminum alloy	Anodized
2	**Head cover**	Aluminum alloy	Anodized
3	**Cylinder tube**	Stainless steel	
4	**Piston rod**	Stainless steel	
5	**Piston**	Brass	
6	**Mounting nut**	Brass	Nickel plated

No.	Description	Material	Note
7	**Rod end nut**	Rolled steel	Nickel plated
8	**Bumper**	Urethane	
9	**Piston seal**	NBR	
10	**Rod seal**	NBR	
11	**Tube gasket**	NBR	
12	**Piston gasket**	NBR	

Basic Style (B)

CJ2KB Bore size – Stroke Head cover port location



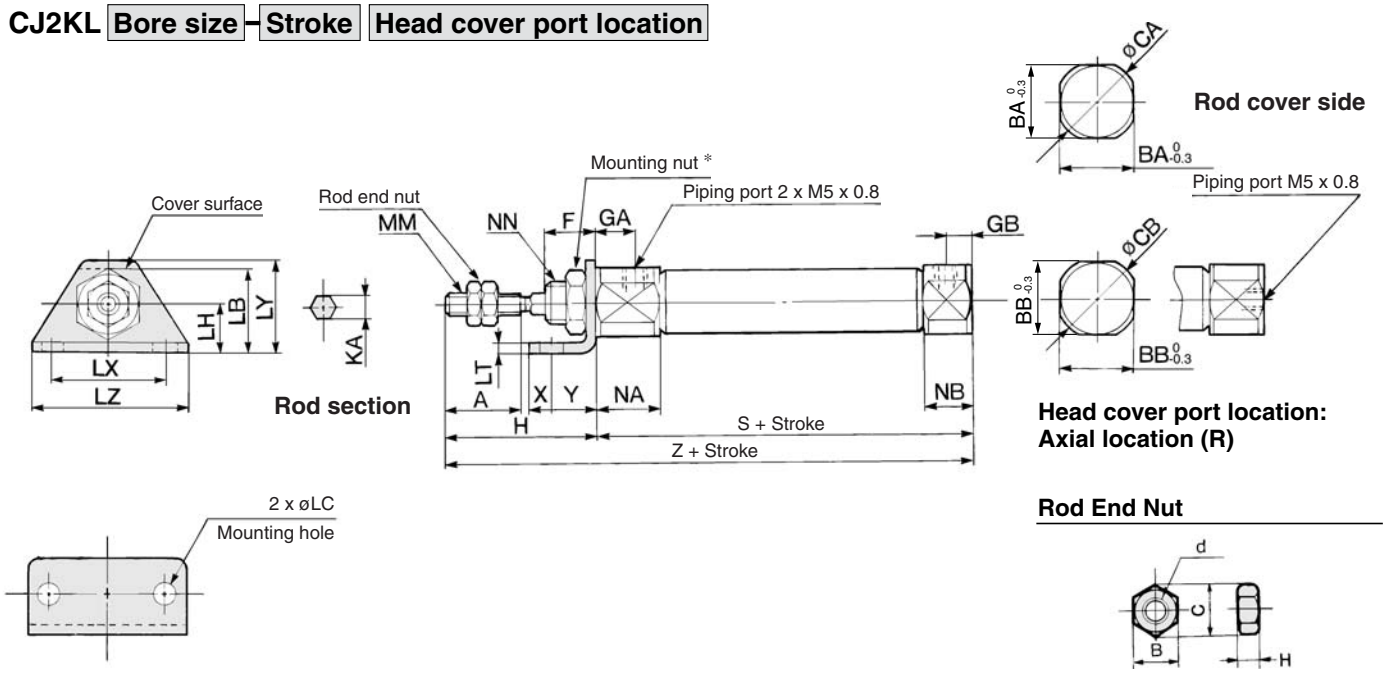
* Refer to page 51 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16)

(mm)

Bore size (mm)	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 $^{0}_{-0.022}$	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 $^{0}_{-0.027}$	M12 x 1.0	47	75

Axial Foot Style (L)

CJ2KL Bore size – Stroke Head cover port location



Rod End Nut

Material: Iron

Part no.	Applicable bore (mm)	B	C	d	H
NTJ-010A	10	7	8.1	M4 x 0.7	3.2
NTJ-015A	16	8	9.2	M5 x 0.8	4

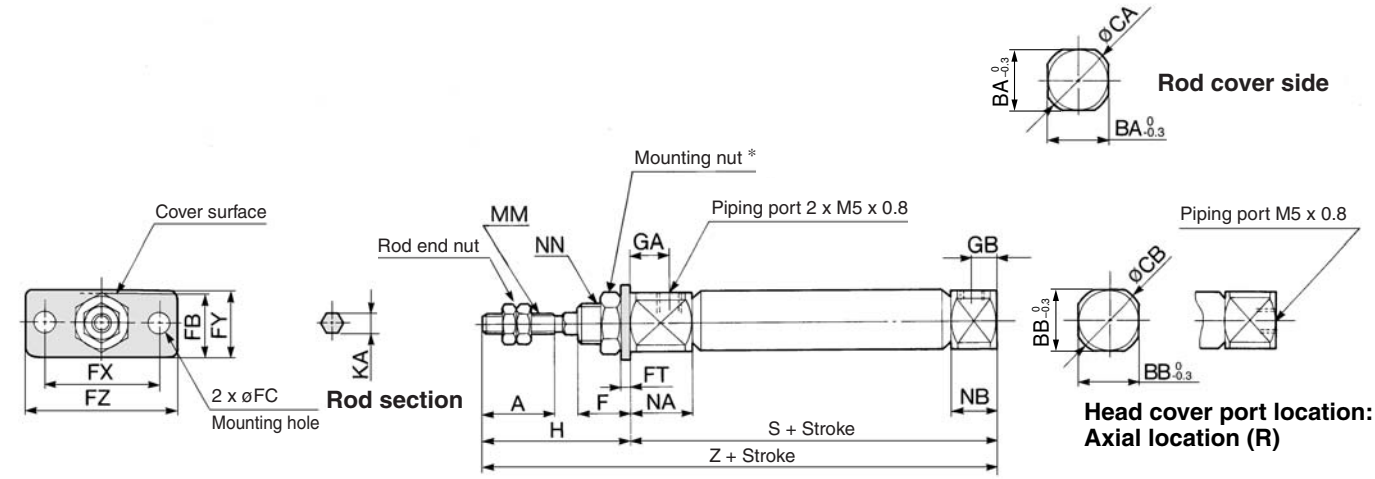
* Refer to page 51 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16)

(mm)

Bore size (mm)	A	BA	BB	CA	CB	F	GA	GB	H	KA	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN	X	Y	S	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	6	9	46	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	6	9	47	75

Rod Side Flange Style (F)

CJ2KF Bore size – Stroke Head cover port location



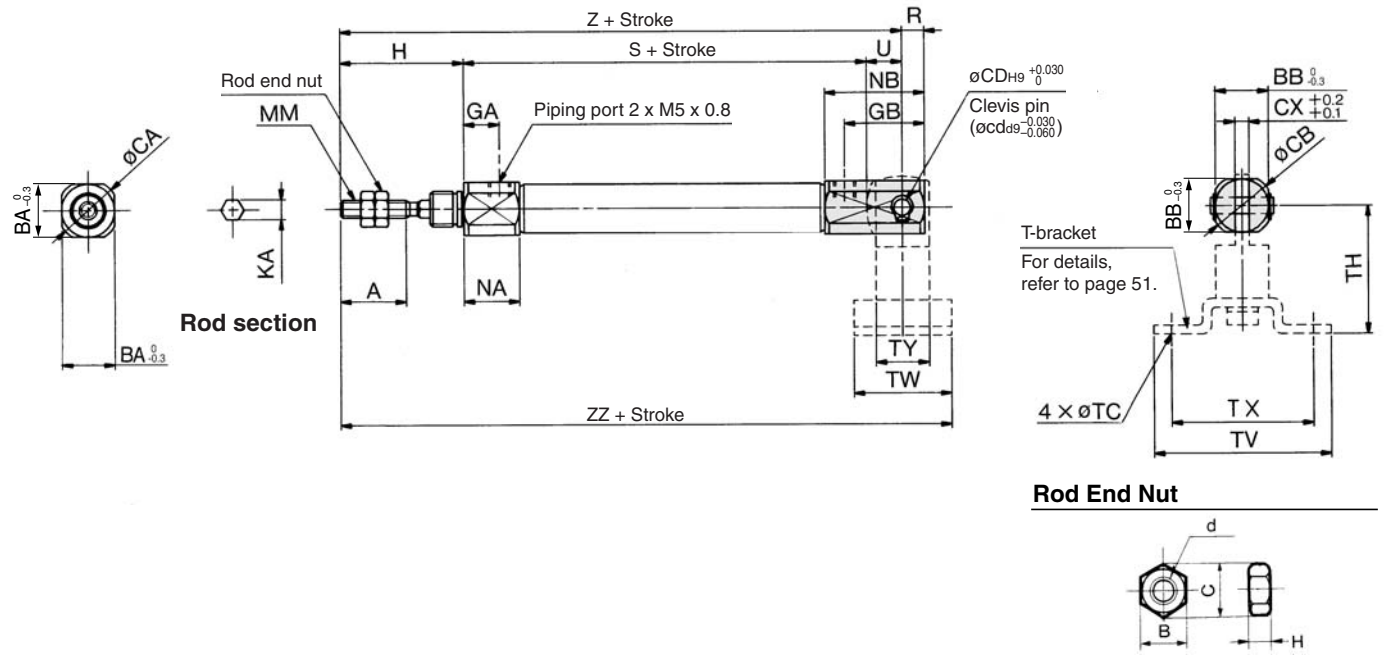
* Refer to page 51 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16)

(mm)

Bore size (mm)	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

Double Clevis Style (D)

CJ2KD Bore size – Stroke



Rod End Nut

Material: Iron

Part no.	Applicable bore (mm)	B	C	d	H
NTJ-010A	**10**	7	8.1	M4 x 0.7	3.2
NTJ-015A	**16**	8	9.2	M5 x 0.8	4

* Clevis pin and retaining ring are shipped together.

Bore size (mm)	A	BA	BB	CA	CB	CD(cd)	CX	GA	GB	H	KA	MM	NA	NB	R	S	U	Z	ZZ
10	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	93
16	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	99

T-bracket Dimensions

(mm)

Bore size (mm)	TC	TH	TV	TW	TX	TY
10	4.5	29	40	22	32	12
16	5.5	35	48	28	38	16

Air Cylinder: Non-rotating Rod Type
Single Acting, Spring Return/Extend
Series CJ2K
ø10, ø16

How to Order

Bore size

10	10 mm
16	16 mm

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style
D	Double clevis style

Cylinder standard stroke (mm)
Refer to the standard stroke table on page 74.

Action

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

Built-in Magnet Cylinder Model

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

Example	Rail mounting style	CDJ2KB16-60S-A
	Band mounting style	CDJ2KB10-45S-B

∗ For rail mounting style, screws and nuts for 2 pcs switches come with the rail.
∗ Refer to page 123 for switch mounting brackets.

CJ2K **L** **16** – **45** **S** ☐ – ☐

With auto switch **CDJ2K** **L** **16** – **45** **S** ☐ – **M9BW** ☐ – ☐

With auto switch
(Built-in magnet)

Made to Order
Refer to page 74 for details.

Head cover port location

Symbol \ Bore size (mm)	ø10, ø16
Nil	Perpendicular to axis
R	Axial

∗ For configuration, refer to page 69.
∗ Single acting, Spring return (S), Clevis style is available only for 90° to the axis.
∗ Not applicable to single acting, spring extend (T).

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

Number of auto switches

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

Applicable Auto Switch/Refer to pages 1263 to 1371 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Band mounting	Rail mounting: Perpendicular	Rail mounting: In-line	Lead wire length (m): 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)	Pre-wired connector	Applicable load	
Solid state switch	——	Grommet	Yes	3-wire (NPN)	24V	5 V, 12 V	—	**M9N**	—	—	●	●	●	○	—	○	IC circuit	Relay, PLC
								—	**F7NV**	**F79**	●	—	●	○	—	○		
				3-wire (PNP)				**M9P**	—	—	●	●	●	○	—	○		
								—	**F7PV**	**F7P**	●	—	●	○	—	○		
				2-wire		12 V		**M9B**	—	—	●	●	●	○	—	○	—	
								—	**F7BV**	**J79**	●	—	●	○	—	○		
		Connector						**H7C**	**J79C**	—	●	—	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V, 12 V		**M9NW**	—	—	●	●	●	○	—	○	IC circuit	
								—	**F7NWV**	**F79W**	●	—	●	○	—	○		
				3-wire (PNP)				**M9PW**	—	—	●	●	●	○	—	○		
								—	—	**F7PW**	●	—	●	○	—	○		
				2-wire		12 V		**M9BW**	—	—	●	●	●	○	—	○	—	
								—	**F7BWV**	**J79W**	●	—	●	○	—	○		
	Water resistant (2-color indication)							**H7BA**	**F7BAV**	**F7BA**	—	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)		5 V, 12 V		**H7NF**	—	**F79F**	●	—	●	○	—	○	IC circuit	
Reed switch	——	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	**A96**	—	**A76H**	●	—	●	—	—	—	IC circuit	—
				2-wire		—	200 V	—	**A72**	**A72H**	●	—	●	—	—	—	—	Relay, PLC
					24V	12 V	100 V	—	**A73**	**A73H**	●	—	●	●	—	—		
								A93	—	—	●	—	●	—	—	—		
			No				100 V or less	**A90**	**A80**	**A80H**	●	—	●	—	—	—	IC circuit	
		Connector	Yes				—	**C73C**	**A73C**	—	●	—	●	●	●	—	—	
			No				24 V or less	**C80C**	**A80C**	—	●	—	●	●	●	—	IC circuit	
	Diagnostic indication (2-color indication)	Grommet	Yes			—	—	—	**A79W** ∗∗	—	●	—	●	—	—	—	—	

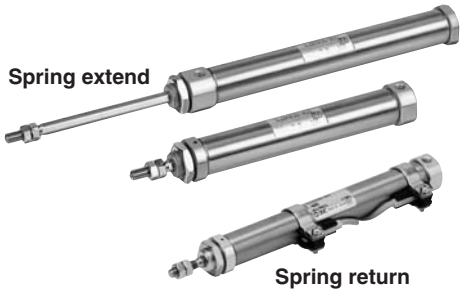
∗ Lead wire length symbols: 0.5 m····· Nil (Example) M9NW
1 m····· M (Example) M9NWM
3 m····· L (Example) M9NWL
5 m····· Z (Example) M9NWZ
None····· N (Example) H7CN

∗ Since there are other applicable auto switches than listed, refer to page 123 for details.
∗ For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
∗ Band mounting style is not available for D-A9□V/M9□V/M9□WV and D-M9□A(V)L types.
∗∗ "D-A79W" cannot be mounted on bore size ø10 cylinder with air cushion.

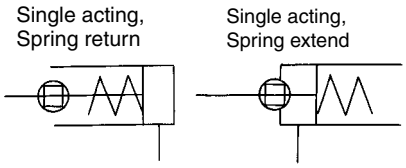
∗ Solid state auto switches marked with "○" are produced upon receipt of order.
∗ D-A9□/M9□/M9□W/A7□□/A80□/F7□□/J7□□ auto switches are shipped together (not assembled). (However, when D-A9□/M9□/M9□W types are selected, only auto switch mounting brackets are assembled before being shipped.)
∗ When D-A9□(V)/M9□(V)/M9□W(V) types are mounted on a ø10 or ø16 rail, order auto switch mounting brackets separately. Refer to page 123 for details.

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

Non-rotating accuracy
ø10: ±1.5°, ø16: ±1°
Can operate without lubrication.



JIS Symbol



Specifications

Bore size (mm)	10	16
Action	Single acting, Spring return/Single acting, Spring extend	
Fluid	Air	
Proof pressure	1 MPa	
Maximum operating pressure	0.7 MPa	
Minimum operating pressure	0.15 MPa	
Ambient and fluid temperature	Without auto switch: −10°C to 70°C, With auto switch: −10°C to 60°C	
Cushion	Rubber bumper (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

∗ No freezing

Standard Stroke (mm)

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

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

Spring Force (N)

Bore size (mm)	Retracted side	Extended side
10	6.86	3.53
16	14.2	6.86

Mounting Style and Accessory /For details, refer to page 44.

Mounting		Basic style	Axial foot style	Rod side flange style	Double clevis* style
Standard equipment	Mounting nut	●	●	●	–
	Rod end nut	●	●	●	●
	Clevis pin	–	–	–	●
Option	Single knuckle joint	●	●	●	●
	Double knuckle joint *	●	●	●	●
	T-bracket	–	–	–	●

∗ Pin and retaining ring are shipped together with double clevis and double knuckle joint.

Mounting Bracket Part No.

Mounting bracket	Bore size (mm)	
	10	**16**
Foot bracket	CJ-L016B	CJK-L016B
Flange bracket	CJ-F016B	CJK-F016B
T-bracket *	CJ-T010B	CJ-T016B

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

Made to Order Specifications

(For details, refer to pages 1380 and 1479.)

Symbol	Specifications
—XA□	Change of rod end shape
—XC51	With hose nipple

⚠ Precautions

Be sure to read before handling.
Refer to front matters 54 and 55 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Refer to pages 117 to 123 for cylinders with auto switches.

- Minimum stroke for auto switch mounting
- Proper auto switch mounting position (detection at stroke end) and mounting height
- Operating range
- Switch mounting bracket part no.

Mass/Spring Return, ( ): Spring Extend

(g)

Bore size (mm)		10	16
Basic mass *	15 stroke	28(28)	63(64)
	30 stroke	35(34)	80(80)
	45 stroke	44(43)	102(100)
	60 stroke	53(51)	124(121)
	75 stroke	—	145(140)
	100 stroke	—	188(178)
	125 stroke	—	224(212)
	150 stroke	—	250(236)
Mounting bracket mass	Axial foot style	20	20
	Rod side flange style	15	15
	Double clevis style * (With pin)	4	10

* Mounting nut and rod end nut are included in the basic mass.
** Mounting nut is not attached to the double clevis style, so the mounting nut mass is already subtracted.

Calculation: (Example) **CJ2KL10-45S**
- Basic mass ····· 44 (ø10-45 stroke)
- Mounting bracket mass ····· 20 (Axial foot style)

44 + 20 = 64 g

Copper and Fluorine-free Air Cylinder (For CRT manufacturing process)

20-CJ2K | Mounting style | Bore size | Stroke | Action | Head cover port location

• **Copper and fluorine-free**

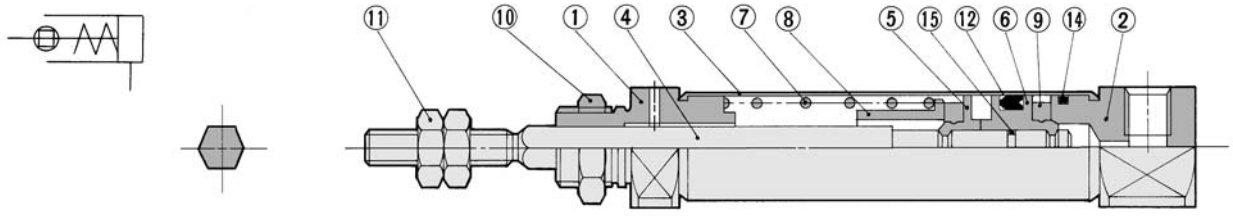
Eliminates the effects by copper based ions and fluorine based resins, etc. over the color cathode ray tube.
Making copper based materials into electroless nickel plated treatment or changing them to the non-copper materials in order to prevent copper ions from generating.

Specifications

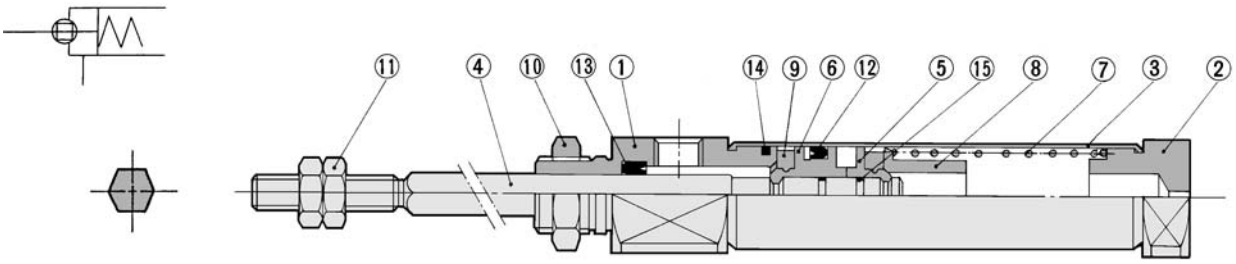
Action	Single acting/Spring return, Spring extend
Fluid	Air
Bore size (mm)	10, 16
Maximum operating pressure	0.7 MPa
Minimum operating pressure	0.15 MPa
Cushion	Rubber bumper (Standard equipment)
Rod non-rotating accuracy	ø10: ±1.5°, ø16: ±1°
Standard stroke (mm)	Same as standard type. (Refer to page 74.)
Auto switch	Mountable (Band mounting style)
Mounting	Basic style, Axial foot style, Rod side flange style, Double clevis style

Construction (Not able to disassemble)

Single acting, Spring return



Single acting, Spring extend



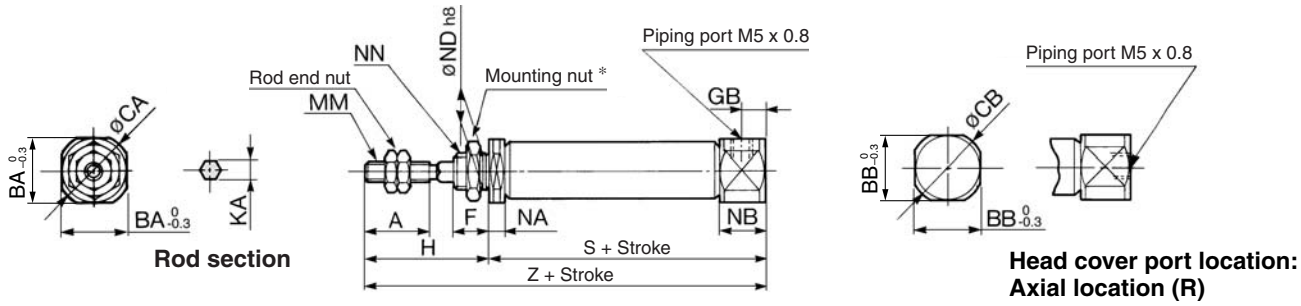
Component Parts

No.	Description	Material	Note
1	**Rod cover**	Aluminum alloy	Anodized
2	**Head cover**	Aluminum alloy	Anodized
3	**Cylinder tube**	Stainless steel	
4	**Piston rod**	Stainless steel	
5	**Piston A**	Brass	
6	**Piston B**	Brass	
7	**Return spring**	Piano wire	Zinc chromated
8	**Spring seat**	Brass	

No.	Description	Material	Note
9	**Bumper**	Urethane	
10	**Mounting nut**	Brass	Nickel plated
11	**Rod end nut**	Rolled steel	Nickel plated
12	**Piston seal**	NBR	
13	**Rod seal**	NBR	
14	**Tube gasket**	NBR	
15	**Piston gasket**	NBR	

Single Acting, Spring Return: Basic Style (B)

CJ2KB Bore size – Stroke S Head cover port location



∗ Refer to page 51 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16)

(mm)

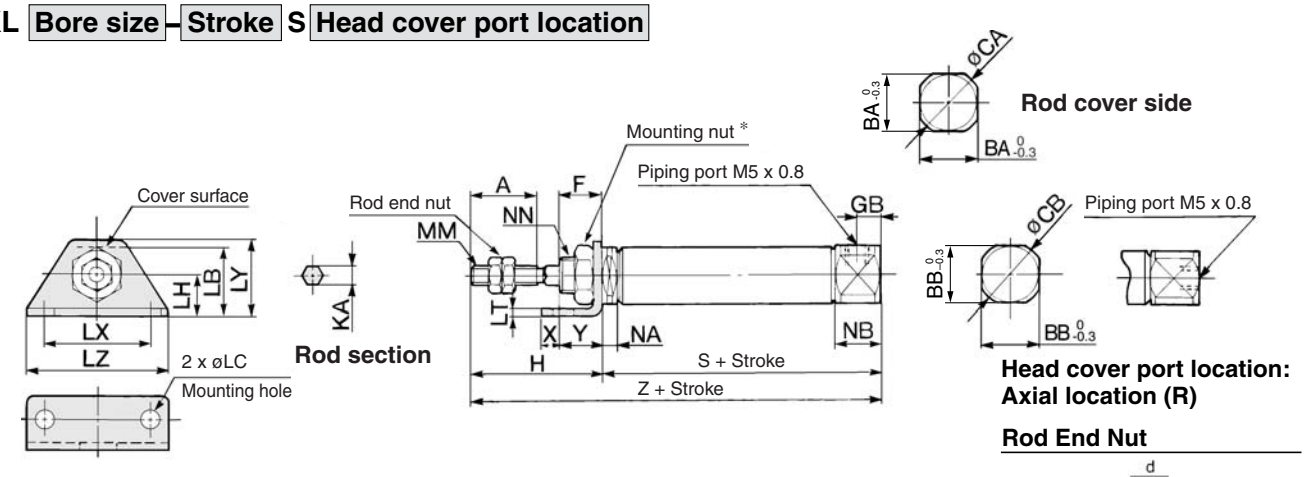
Bore size	A	BA	BB	CA	CB	F	GB	H	KA	MM	NA	NB	NDh8	NN
10	15	15	12	17	14	8	5	28	4.2	M4 x 0.7	5.5	9.5	$10^{\ 0}_{-0.022}$	M10 x 1.0
16	15	18.3	18.3	20	20	8	5	28	5.2	M5 x 0.8	5.5	9.5	$12^{\ 0}_{-0.027}$	M12 x 1.0

Dimensions by Stroke

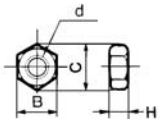
Bore size (mm) \ Symbol / Stroke	S								Z							
	5 to 15	16 to 30	31 to 45	46 to 60	61 to 75	76 to 100	101 to 125	126 to 150	5 to 15	16 to 30	31 to 45	46 to 60	61 to 75	76 to 100	101 to 125	126 to 150
10	45.5	53	65	77	–	–	–	–	73.5	81	93	105	–	–	–	–
16	45.5	54	66	78	84	108	126	138	73.5	82	94	106	112	136	154	166

Single Acting, Spring Return: Axial Foot Style (L)

CJ2KL Bore size – Stroke S Head cover port location



Rod End Nut



Material: Iron

Part no.	Applicable bore (mm)	B	C	d	H
NTJ-010A	10	7	8.1	M4 x 0.7	3.2
NTJ-015A	16	8	9.2	M5 x 0.8	4

∗ Refer to page 51 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16)

(mm)

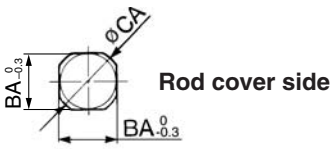
Bore size	A	BA	BB	CA	CB	F	GB	H	KA	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN	X	Y
10	15	15	12	17	14	8	5	28	4.2	21.5	5.5	14	2.3	33	25	42	M4 x 0.7	5.5	9.5	M10 x 1.0	6	9
16	15	18.3	18.3	20	20	8	5	28	5.2	23	5.5	14	2.3	33	25	42	M5 x 0.8	5.5	9.5	M12 x 1.0	6	9

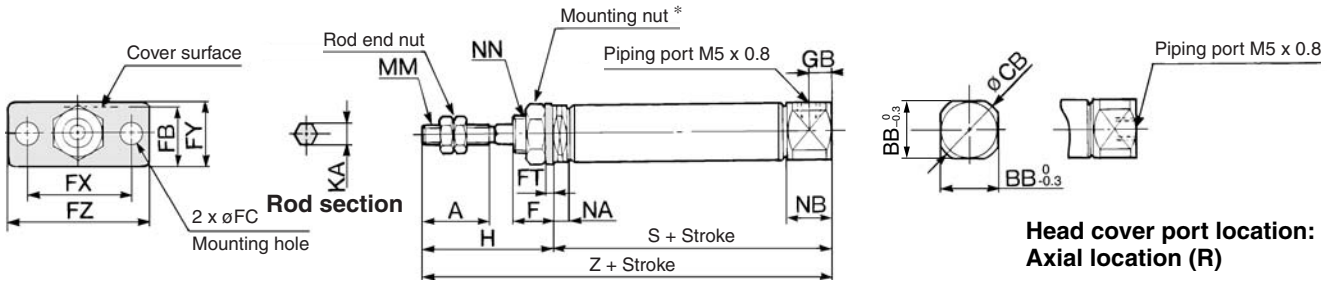
Dimensions by Stroke

Bore size (mm) \ Symbol / Stroke	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	45.5	53	65	77	–	–	–	–	73.5	81	93	105	–	–	–	–
16	45.5	54	66	78	84	108	126	138	73.5	82	94	106	112	136	154	166

Single Acting, Spring Return: Rod Side Flange Style (F)

CJ2KF Bore size – Stroke S Head cover port location





* Refer to page 51 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16)

(mm)

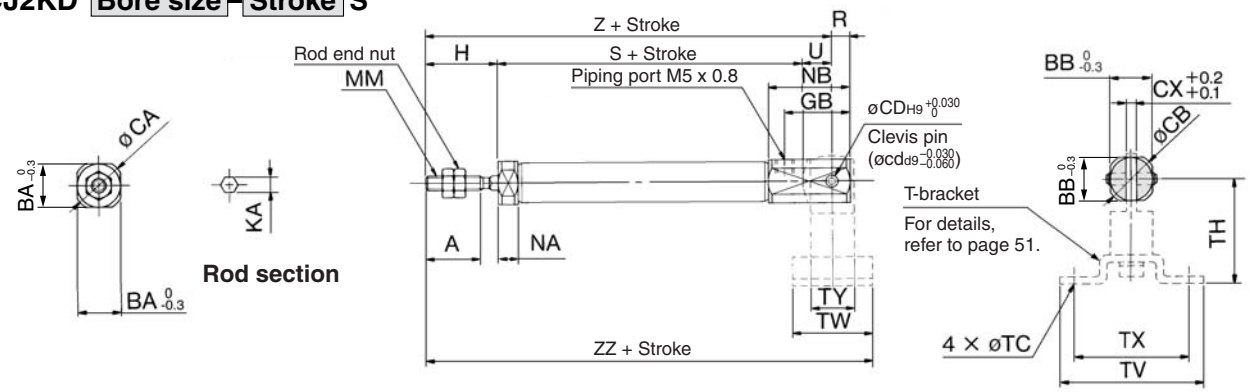
Bore size	A	BA	BB	CA	CB	F	FB	FC	FT	FX	FY	FZ	GB	H	KA	MM	NA	NB	NN
10	15	15	12	17	14	8	17.5	5.5	2.3	33	20	42	5	28	4.2	M4 x 0.7	5.5	9.5	M10 x 1.0
16	15	18.3	18.3	20	20	8	19	5.5	2.3	33	20	42	5	28	5.2	M5 x 0.8	5.5	9.5	M12 x 1.0

Dimensions by Stroke

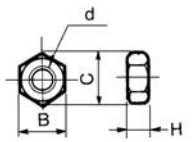
Bore size (mm) \ Stroke	S								Z							
	5 to 15	16 to 30	31 to 45	46 to 60	61 to 75	76 to 100	101 to 125	126 to 150	5 to 15	16 to 30	31 to 45	46 to 60	61 to 75	76 to 100	101 to 125	126 to 150
10	45.5	53	65	77	–	–	–	–	73.5	81	93	105	–	–	–	–
16	45.5	54	66	78	84	108	126	138	73.5	82	94	106	112	136	154	166

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

CJ2KD Bore size – Stroke S



Rod End Nut



Material: Iron

Part no.	Applicable bore (mm)	B	C	d	H
NTJ-010A	**10**	7	8.1	M4 x 0.7	3.2
NTJ-015A	**16**	8	9.2	M5 x 0.8	4

* Clevis pin and retaining ring are shipped together.

(mm)

Bore size	A	BA	BB	CA	CB	CD (cd)	CX	GB	H	KA	MM	NA	NB	R	U
10	15	12	12	14	14	3.3	3.2	18	20	4.2	M4 x 0.7	5.5	22.5	5	8
16	15	18.3	18.3	20	20	5	6.5	23	20	5.2	M5 x 0.8	5.5	27.5	8	10

Dimensions by Stroke

(mm)

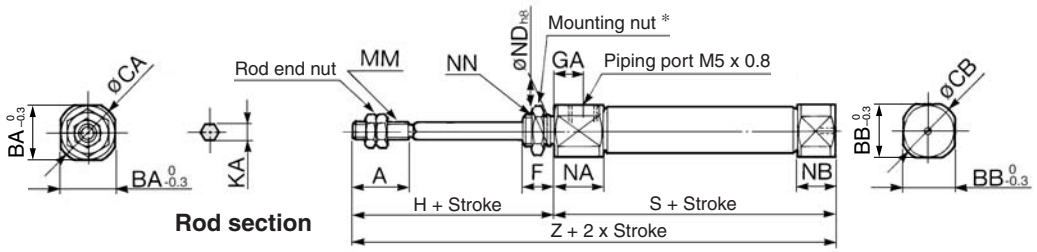
Bore size (mm) \ Stroke	S								Z								ZZ							
	5 to 15	16 to 30	31 to 45	46 to 60	61 to 75	76 to 100	101 to 125	126 to 150	5 to 15	16 to 30	31 to 45	46 to 60	61 to 75	76 to 100	101 to 125	126 to 150	5 to 15	16 to 30	31 to 45	46 to 60	61 to 75	76 to 100	101 to 125	126 to 150
10	45.5	53	65	77	–	–	–	–	73.5	81	93	105	–	–	–	–	84.5	92	104	116	–	–	–	–
16	45.5	54	66	78	84	108	126	138	75.5	84	96	108	114	138	156	168	89.5	98	110	122	128	152	170	182

T-bracket Dimensions

Bore size (mm)	TC	TH	TV	TW	TX	TY
10	4.5	29	40	22	32	12
16	5.5	35	48	28	38	16

Single Acting, Spring Extend: Basic Style (B)

CJ2KB Bore size – Stroke T



* Refer to page 51 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16)

(mm)

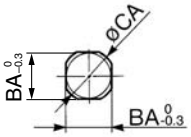
Bore size	A	BA	BB	CA	CB	F	GA	H	KA	MM	NA	NB	NDh8	NN
10	15	15	12	17	14	8	8	28	4.2	M4 x 0.7	12.5	5.5	$10^{0}_{-0.022}$	M10 x 1.0
16	15	18.3	18.3	20	20	8	8	28	5.2	M5 x 0.8	12.5	5.5	$12^{0}_{-0.027}$	M12 x 1.0

Dimensions by Stroke

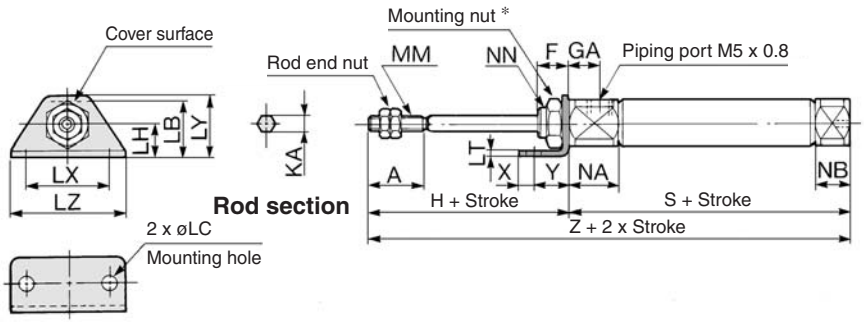
Bore size (mm) \ Symbol / Stroke	S								Z							
	5 to 15	16 to 30	31 to 45	46 to 60	61 to 75	76 to 100	101 to 125	126 to 150	5 to 15	16 to 30	31 to 45	46 to 60	61 to 75	76 to 100	101 to 125	126 to 150
10	48.5	56	68	80	–	–	–	–	76.5	84	96	108	–	–	–	–
16	48.5	57	69	81	87	111	129	141	76.5	85	97	109	115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

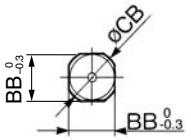
Single Acting, Spring Extend: Axial Foot Style (T)

CJ2KL Bore size – Stroke T

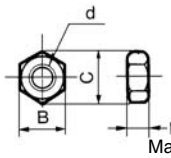


Rod cover side





Rod End Nut



Material: Iron

Part no.	Applicable bore (mm)	B	C	d	H
NTJ-010A	**10**	7	8.1	M4 x 0.7	3.2
NTJ-015A	**16**	8	9.2	M5 x 0.8	4

* Refer to page 51 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16)

(mm)

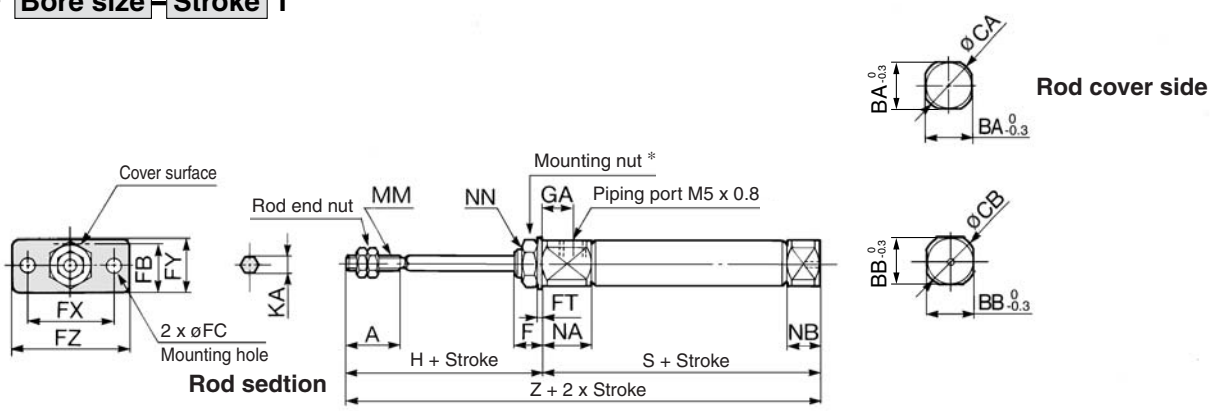
Bore size	A	BA	BB	CA	CB	F	GA	H	KA	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN	X	Y
10	15	15	12	17	14	8	8	28	4.2	21.5	5.5	14	2.3	33	25	42	M4 x 0.7	12.5	5.5	M10 x 1.0	6	9
16	15	18.3	18.3	20	20	8	8	28	5.2	23	5.5	14	2.3	33	25	42	M5 x 0.8	12.5	5.5	M12 x 1.0	6	9

Dimensions by Stroke

Bore size (mm) \ Symbol / Stroke	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	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

Single Acting, Spring Extend: Rod Side Flange Style (F)

CJ2KF Bore size – Stroke T



* Refer to page 51 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16)

(mm)

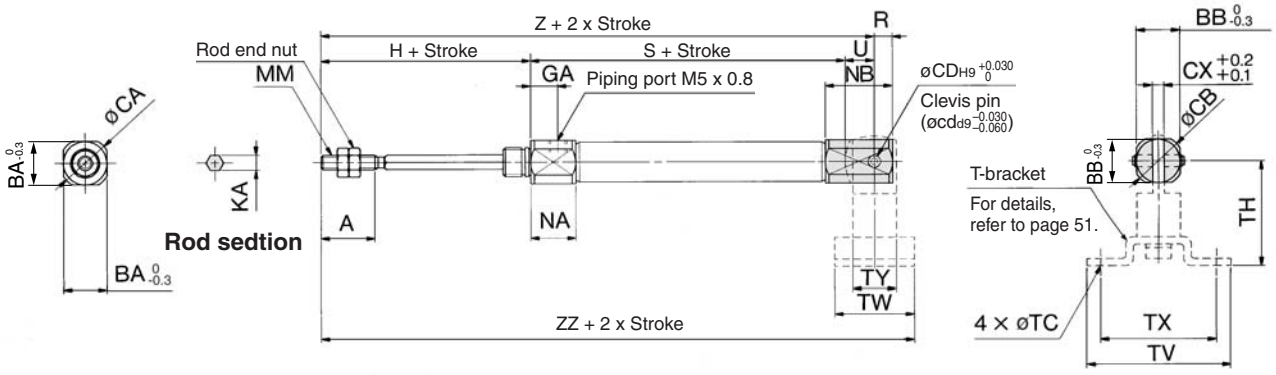
Bore size	A	BA	BB	CA	CB	F	FB	FC	FT	FX	FY	FZ	GA	H	KA	MM	NA	NB	NN
10	15	15	12	17	14	8	17.5	5.5	2.3	33	20	42	8	28	4.2	M4 x 0.7	12.5	5.5	M10 x 1.0
16	15	18.3	18.3	20	20	8	19	5.5	2.3	33	20	42	8	28	5.2	M5 x 0.8	12.5	5.5	M12 x 1.0

Dimensions by Stroke

Bore size (mm) \ Symbol / Stroke	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	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

Single Acting, Spring Extend/Double Clevis Style (D)

CJ2KD Bore size – Stroke T

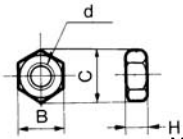


* Clevis pin and retaining ring are shipped together.

(mm)

Bore size	A	BA	BB	CA	CB	CD (cd)	CX	GA	H	KA	MM	NA	NB	R	U
10	15	15	12	17	14	3.3	3.2	8	28	4.2	M4 x 0.7	12.5	18.5	5	8
16	15	18.3	18.3	20	20	5	6.5	8	28	5.2	M5 x 0.8	12.5	23.5	8	10

Rod End Nut



Material: Iron

Part no.	Applicable bore (mm)	B	C	d	H
NTJ-010A	**10**	7	8.1	M4 x 0.7	3.2
NTJ-015A	**16**	8	9.2	M5 x 0.8	4

Dimensions by Stroke

(mm)

Bore size (mm) \ Symbol / Stroke	S								Z								ZZ							
	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	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	48.5	56	68	80	–	–	–	–	84.5	92	104	116	–	–	–	–	95.5	103	115	127	–	–	–	–
16	48.5	57	69	81	87	111	129	141	86.5	95	107	119	125	149	167	179	100.5	109	121	133	139	163	181	193

T-bracket Dimensions

Bore size (mm)	TC	TH	TV	TW	TX	TY
10	4.5	29	40	22	32	12
16	5.5	35	48	28	38	16

Air Cylinder: Built-in Speed Controller Type
Double Acting, Single Rod
Series CJ2Z
ø10, ø16

How to Order

Bore size

10	10 mm
16	16 mm

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style
D	Double clevis style

Cylinder standard stroke (mm)
Refer to the standard stroke table on page 81.

Built-in Magnet Cylinder Model

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

Example	Rail mounting style	CDJ2ZB16-60-A
	Band mounting style	CDJ2ZB10-45-B

* For rail mounting style, screws and nuts for 2 pcs switches come with the rail.
* Refer to page 123 for switch mounting brackets.

	CJ2Z	**L**	**16**	–	**60**		–		
With auto switch	CDJ2Z	**L**	**16**	–	**60**		–	**M9BW**		–	

With auto switch
(Built-in magnet)

Made to Order
Refer to page 81 for details.

Head cover port location

Symbol \ Bore size (mm)	ø10, ø16
Nil	Perpendicular to axis
R	Axial

* For configuration, refer to page 81.
* Double clevis is only available for being perpendicular to axis.

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

Number of auto switches

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

Applicable Auto Switch/Refer to pages 1263 to 1371 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Band mounting	Auto switch model: Rail mounting Perpendicular	Auto switch model: Rail mounting In-line	Lead wire length (m) 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)	Pre-wired connector	Applicable load	
Solid state switch	——	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	**M9N**	—	—	●	●	●	○	—	○	IC circuit	Relay, PLC
							—	**F7NV**	**F79**	●	—	●	○	—	○		
				3-wire (PNP)			**M9P**	—	—	●	●	●	○	—	○		
							—	**F7PV**	**F7P**	●	—	●	○	—	○		
				2-wire	12 V		**M9B**	—	—	●	●	●	○	—	○	—	
							—	**F7BV**	**J79**	●	—	●	○	—	○		
		Connector					**H7C**	**J79C**	—	●	—	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	5 V, 12 V		**M9NW**	—	—	●	●	●	○	—	○	IC circuit	
							—	**F7NWV**	**F79W**	●	—	●	○	—	○		
				3-wire (PNP)			**M9PW**	—	—	●	●	●	○	—	○		
							—	—	**F7PW**	●	—	●	○	—	○		
				2-wire	12 V		**M9BW**	—	—	●	●	●	○	—	○	—	
							—	**F7BWV**	**J79W**	●	—	●	○	—	○		
	Water resistant (2-color indication)						**H7BA**	**F7BAV**	**F7BA**	—	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)	5 V, 12 V		**H7NF**	—	**F79F**	●	—	●	○	—	○	IC circuit	
Reed switch	——	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	**A96**	—	**A76H**	●	—	●	—	—	—	IC circuit	—
				2-wire	—	200 V	—	—	**A72**	**A72H**	●	—	●	—	—	—		Relay, PLC
					24V	12 V	100 V	—	**A73**	**A73H**	●	—	●	●	—	—	—	
								A93	—	—	●	—	●	—	—	—		
			No				100 V or less	**A90**	**A80**	**A80H**	●	—	●	—	—	—	IC circuit	
		Connector	Yes				—	**C73C**	**A73C**	—	●	—	●	●	●	—	—	
			No				24 V or less	**C80C**	**A80C**	—	●	—	●	●	●	—	IC circuit	
	Diagnostic indication (2-color indication)	Grommet	Yes			—	—	—	**A79W** **	—	●	—	●	—	—	—	—	

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

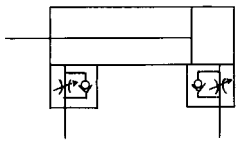
* Since there are other applicable auto switches than listed, refer to page 123 for details.
* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
* Band mounting style is not available for D-A9□V/M9□V/M9□WV and D-M9□A(V)L types.
** "D-A79W" cannot be mounted on bore size ø10 cylinder with air cushion.

* Solid state auto switches marked with "○" are produced upon receipt of order.
* D-A9□/M9□/M9□W/A7□□/A80□/F7□□/J7□□ auto switches are shipped together (not assembled). (However, when D-A9□/M9□/M9□W types are selected, only auto switch mounting brackets are assembled before being shipped.)
* When D-A9□(V)/M9□(V)/M9□W(V) types are mounted on a ø10 or ø16 rail, order auto switch mounting brackets separately. Refer to page 123 for details.

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

JIS Symbol

Double acting, Single rod



Made to Order Specifications
(For details, refer to pages 1380 and 1479.)

Symbol	Specifications
—XA□	Change of rod end shape
—XC51	With hose nipple

⚠ Precautions

Refer to page 44 before handling.

Specifications

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

∗ No freezing

Standard Stroke

(mm)

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

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

Mounting Style and Accessory/For details, refer to page 51.

Mounting		Basic style	Axial foot style	Rod side flange style	Double clevis∗ style
Standard equipment	Mounting nut	●	●	●	–
	Rod end nut	●	●	●	●
	Clevis pin	–	–	–	●
Option	Single knuckle joint	●	●	●	●
	Double knuckle joint ∗	●	●	●	●
	T-bracket	–	–	–	●

∗ Pin and retaining ring are shipped together with double clevis and double knuckle joint.

Head Cover Port Location

Either perpendicular to the cylinder axis or in-line with the cylinder axis is available for basic style.

Axial

Perpendicular

Refer to pages 117 to 123 for cylinders with auto switches.

- Minimum stroke for auto switch mounting
- Proper auto switch mounting position (detection at stroke end) and mounting height
- Operating range
- Switch mounting bracket part no.

Mass

(g)

Bore size (mm)		10	16
Basic mass *		40	73
Additional mass per each 15 mm of stroke		4	6.5
Mounting bracket mass	Axial foot style	8	20
	Rod side flange style	5	15
	Double clevis style * (With pin)	4	10

* Mounting nut and rod end nut are included in the basic mass.
** Mounting nut is not attached to the double clevis style, so the mounting nut mass is already subtracted.

Calculation: (Example) **CJ2ZL10-45**

- Basic mass ····· 40 (ø10)
- Additional mass ····· 4/15 stroke
- Cylinder stroke ····· 45 stroke
- Mounting bracket mass ····· 8 (Axial foot style)

40 + 4/15 x 45 + 8 = 60 g

Copper and Fluorine-free Air Cylinder (For CRT manufacturing process)

20-CJ2Z Mounting style | Bore size – Stroke | Head cover port location

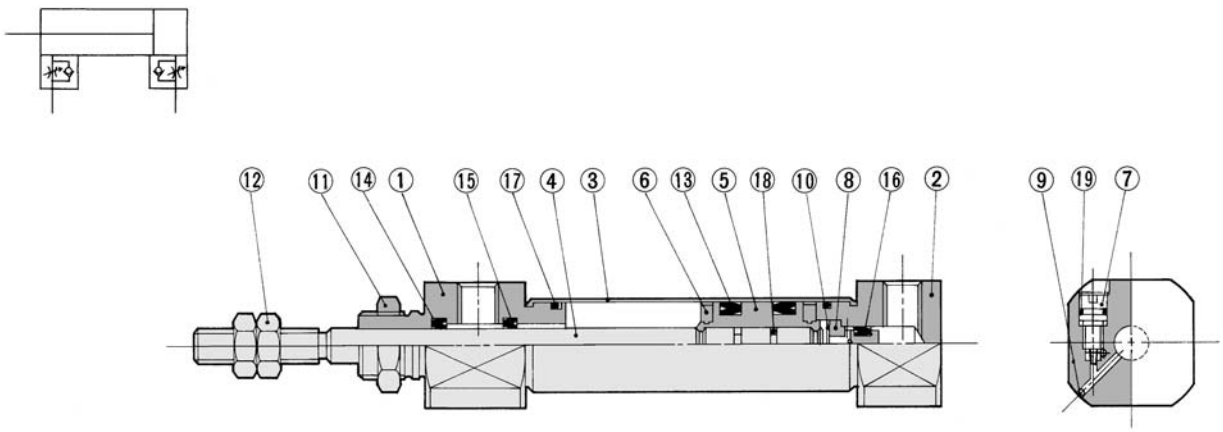
- **Copper and fluorine-free**

Eliminates the effects by copper based ions and fluorine based resins, etc. over the color cathode ray tube.
Making copper based materials into electroless nickel plated treatment or changing them to the non-copper materials in order to prevent copper ions from generating.

Specifications

Action	Double acting, Single rod
Bore size (mm)	10, 16
Maximum operating pressure	0.7 MPa
Minimum operating pressure	0.06 MPa
Cushion	Rubber bumper (Standard equipment)
Standard stroke (mm)	Same as standard type. (Refer to page 81.)
Auto switch	Mountable (Band mounting style)
Mounting	Basic style, Axial foot style, Rod side flange style, Double clevis style

Construction (Not able to disassemble)



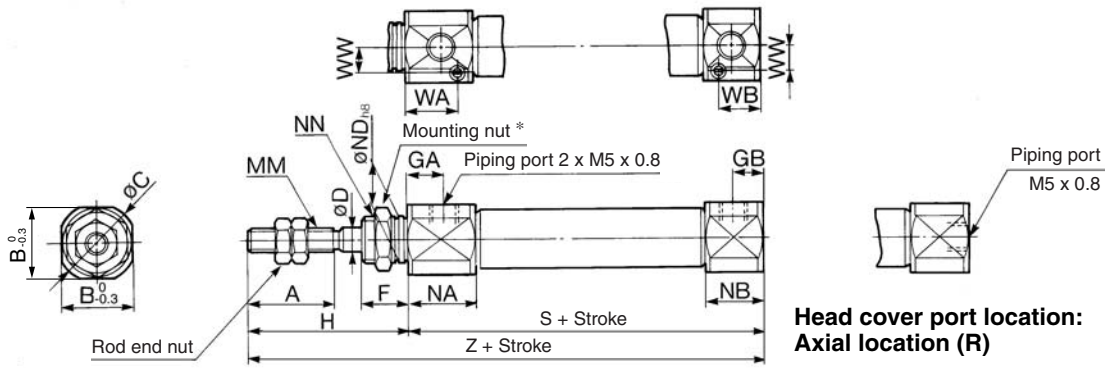
Component Parts

No.	Description	Material	Note
1	**Rod cover**	Aluminum alloy	Anodized
2	**Head cover**	Aluminum alloy	Anodized
3	**Cylinder tube**	Stainless steel	
4	**Piston rod**	Stainless steel	
5	**Piston**	Brass	
6	**Bumper**	Urethane	
7	**Speed controller needle**	Stainless steel	
8	**Check packing sleeve**	Brass	
9	**Steel balls**	Bearing steel	
10	**Retaining ring**	Carbon tool steel	Black zinc chromated

No.	Description	Material	Note
11	**Mounting nut**	Brass	Nickel plated
12	**Rod end nut**	Rolled steel	Nickel plated
13	**Piston seal**	NBR	
14	**Rod seal**	NBR	
15	**Check seal A**	NBR	
16	**Check seal B**	NBR	
17	**Tube gasket**	NBR	
18	**Piston gasket**	NBR	
19	**Needle seal**	NBR	

Basic Style (B)

CJ2ZB Bore size – Stroke Head cover port location



Head cover port location: Axial location (R)

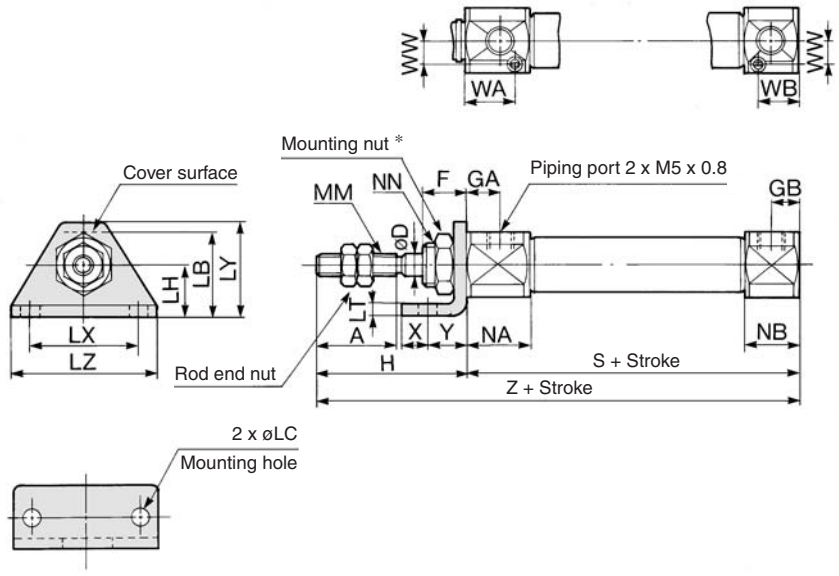
∗ For details of the mounting nut, refer to page 51.

(mm)

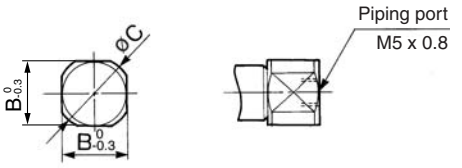
Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	NDh8	NN	WA	WB	WW	S	Z
10	15	15	17	4	8	7.5	6.5	28	M4 x 0.7	21	18	8 $^{0}_{-0.022}$	M8 x 1.0	14.5	13.5	4.5	63	91
16	15	18.3	20	5	8	7.5	6.5	28	M5 x 0.8	21	18	10 $^{0}_{-0.022}$	M10 x 1.0	14.5	13.5	5.5	64	92

Axial Foot Style (L)

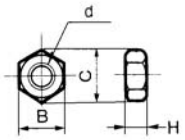
CJ2ZL Bore size – Stroke Head cover port location



Head cover port location: Axial location (R)



Rod End Nut



Material: Iron

Part no.	Applicable bore (mm)	B	C	d	H
NTJ-010A	**10**	7	8.1	M4 x 0.7	3.2
NTJ-015A	**16**	8	9.2	M5 x 0.8	4

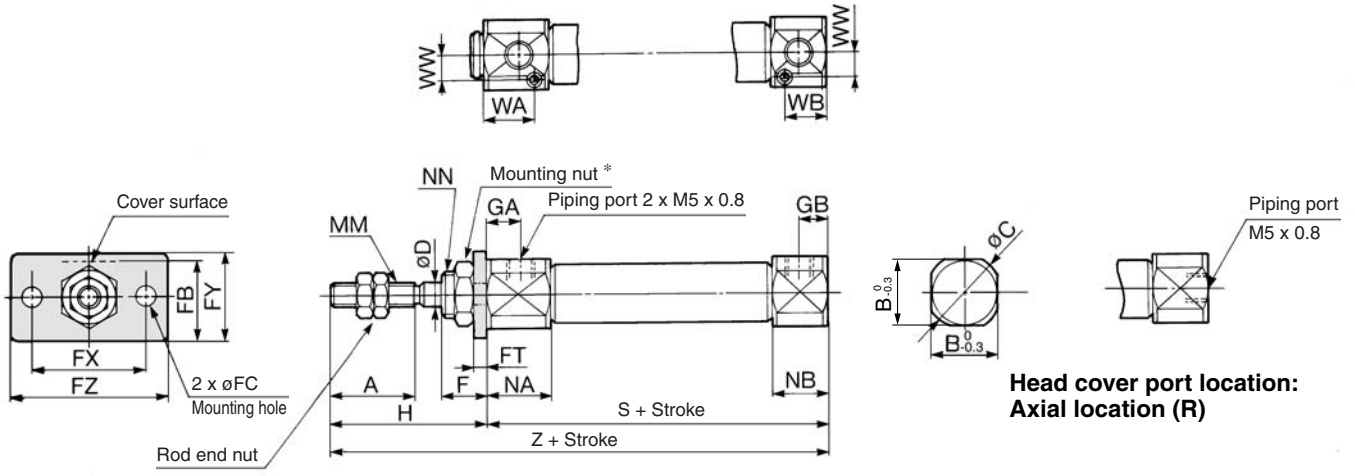
∗ For details of the mounting nut, refer to page 51.

(mm)

Bore size	A	B	C	D	F	GA	GB	H	LB	LC	LH	LT	LX	LY	LZ	MM	NA	NB	NN	S	WA	WB	WW	X	Y	Z
10	15	15	17	4	8	7.5	6.5	28	16.5	4.5	9	1.6	24	16.5	32	M4 x 0.7	21	18	M8 x 1.0	63	14.5	13.5	4.5	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	64	14.5	13.5	5.5	6	9	92

Rod Side Flange Style (F)

CJ2ZF Bore size – Stroke Head cover port location



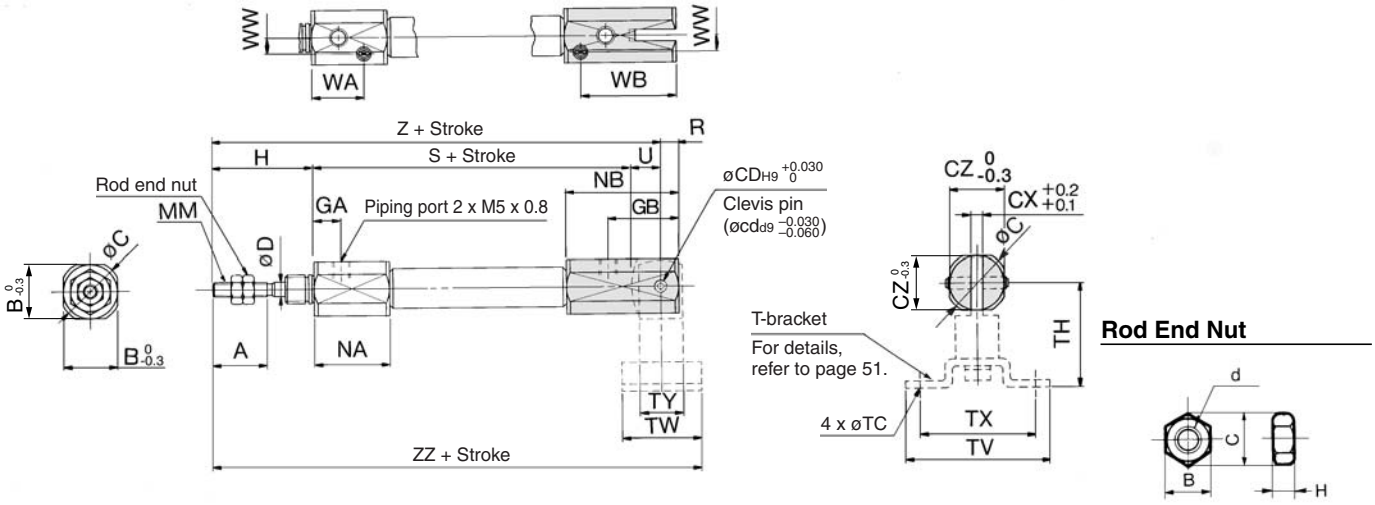
* For details of the mounting nut, refer to page 51.

(mm)

Bore size	A	B	C	D	F	FB	FC	FT	FX	FY	FZ	GA	GB	H	MM	NA	NB	NN	WA	WB	WW	S	Z
10	15	15	17	4	8	14.5	4.5	1.6	24	14	32	7.5	6.5	28	M4 x 0.7	21	18	M8 x 1.0	14.5	13.5	4.5	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	14.5	13.5	5.5	64	92

Double Clevis Style (D)

CJ2ZD Bore size – Stroke



Rod End Nut

Material: Iron

Part no.	Applicable bore (mm)	B	C	d	H
NTJ-010A	**10**	7	8.1	M4 x 0.7	3.2
NTJ-015A	**16**	8	9.2	M5 x 0.8	4

* Clevis pin and retaining ring are shipped together.

(mm)

Bore size	A	B	C	CD (cd)	CX	CZ	D	GA	GB	H	MM	NA	NB	R	S	U	WA	WB	WW	Z	ZZ
10	15	15	17	3.3	3.2	15	4	7.5	19.5	28	M4 x 0.7	21	31	5	63	8	14.5	26.5	4.5	99	110
16	15	18.3	20	5	6.5	18.3	5	7.5	24.5	28	M5 x 0.8	21	36	8	64	10	14.5	31.5	5.5	102	116

T-bracket Dimensions

(mm)

Bore size	TC	TH	TV	TW	TX	TY
10	4.5	29	40	22	32	12
16	5.5	35	48	28	38	16

Air Cylinder: Built-in Speed Controller Type
Double Acting, Double Rod
Series CJ2ZW
ø10, ø16

How to Order

Bore size

10	10 mm
16	16 mm

Cylinder standard stroke (mm)
Refer to the standard stroke table on page 86.

Mounting style

B	Basic style
L	Foot style
F	Flange style

Built-in Magnet Cylinder Model
Suffix the symbol "-A" (Rail mounting style) or "-B" (Band mounting style) to the end of part number for cylinder with auto switch.

Example	Rail mounting style	CDJ2ZWB16-60-A
	Band mounting style	CDJ2ZWB10-45-B

* For rail mounting style, screws and nuts for 2 pcs switches come with the rail.
* Refer to page 123 for switch mounting brackets.

CJ2ZW L 16 – 45 – ☐

With auto switch

CDJ2ZW L 16 – 45 – M9BW ☐ – ☐

With auto switch
(Built-in magnet)

Made to Order
Refer to page 86 for details.

Number of auto switches

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

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

Applicable Auto Switch/Refer to pages 1263 to 1371 for further information on auto switches.

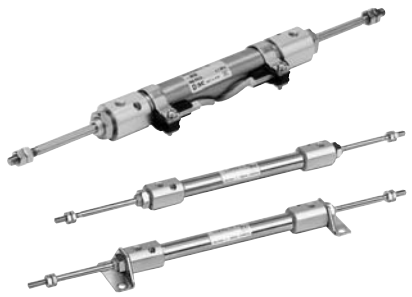
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Band mounting	Auto switch model: Rail mounting, Perpendicular	Auto switch model: Rail mounting, In-line	Lead wire length (m): 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)	Pre-wired connector	Applicable load	
Solid state switch	——	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	M9N	—	—	●	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)			—	F7NV	F79	●	—	●	○	—	○		
							M9P	—	—	●	●	●	○	—	○		
							—	F7PV	F7P	●	—	●	○	—	○		
				2-wire	12 V		M9B	—	—	●	●	●	○	—	○	—	
							—	F7BV	J79	●	—	●	○	—	○		
		Connector					H7C	J79C	—	●	—	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	24 V	—	M9NW	—	—	●	●	●	○	—	○	IC circuit	
					5 V, 12 V		—	F7NWV	F79W	●	—	●	○	—	○		
				3-wire (PNP)			M9PW	—	—	●	●	●	○	—	○		
							—	—	F7PW	●	—	●	○	—	○		
				2-wire	12 V		M9BW	—	—	●	●	●	○	—	○	—	
							—	F7BWV	J79W	●	—	●	○	—	○		
	Water resistant (2-color indication)						H7BA	F7BAV	F7BA	—	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)	5 V, 12 V		H7NF	—	F79F	●	—	●	○	—	○	IC circuit	
Reed switch	——	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	A96	—	A76H	●	—	●	—	—	—	IC circuit	—
				2-wire	—	200 V	—	A72	A72H	●	—	●	—	—	—	—	Relay, PLC
					24 V	100 V	—	A73	A73H	●	—	●	●	—	—		
							A93	—	—	●	—	●	—	—	—		
			No			100 V or less	A90	A80	A80H	●	—	●	—	—	—	IC circuit	
		Connector	Yes			—	C73C	A73C	—	●	—	●	●	●	—	—	
			No			24 V or less	C80C	A80C	—	●	—	●	●	●	—	IC circuit	
	Diagnostic indication (2-color indication)	Grommet	Yes		—	—	—	A79W **	—	●	—	●	—	—	—	—	

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

* Since there are other applicable auto switches than listed, refer to page 123 for details.
* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
* Band mounting style is not available for D-A9□V/M9□V/M9□WV and D-M9□A(V)L types.
** "D-A79W" cannot be mounted on bore size ø10 cylinder with air cushion.

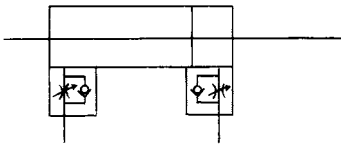
* Solid state auto switches marked with "○" are produced upon receipt of order.
* D-A9□/M9□/M9□W/A7□□/A80□/F7□□/J7□□ auto switches are shipped together (not assembled). (However, when D-A9□/M9□/M9□W types are selected, only auto switch mounting brackets are assembled before being shipped.)
* When D-A9□(V)/M9□(V)/M9□W(V) types are mounted on a ø10 or ø16 rail, order auto switch mounting brackets separately. Refer to page 123 for details.

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



JIS Symbol

Double acting, Double rod



Made to Order Specifications

(For details, refer to pages 1380 and 1479.)

Symbol	Specifications
—XA□	Change of rod end shape
—XC51	With hose nipple

⚠ Precautions

Refer to page 44 before handling.

Specifications

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

∗ No freezing

Standard Stroke (mm)

Bore size	Standard stroke
10	15, 30, 45, 60
16	15, 30, 45, 60

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

Mounting Style and Accessory/For details, refer to page 51.

Mounting		Basic style	Foot style	Flange style
Standard equipment	Mounting nut	●	●	●
	Rod end nut	●	●	●
Option	Single knuckle joint	●	●	●
	Double knuckle joint ∗	●	●	●

∗ Knuckle pin and retaining ring are shipped together with double knuckle joint.

Mounting Bracket Part No.

Mounting bracket	Bore size (mm)	
	10	**16**
Foot bracket	CJ-L010B	CJ-L016B
Flange bracket	CJ-F010B	CJ-F016B

Refer to pages 117 to 123 for cylinders with auto switches.

- Minimum stroke for auto switch mounting
- Proper auto switch mounting position (detection at stroke end) and mounting height
- Operating range
- Switch mounting bracket part no.

Mass

(g)

Bore size (mm)		10	16
Basic mass *		50	85
Additional mass per each 15 mm of stroke		6	9
Mounting bracket mass	Foot style	16	40
	Flange style	5	15

* Rod end nut are included in the basic mass.

Calculation: (Example)

CJ2ZWL10-45

- Basic mass 50 (ø10)
- Additional mass ..... 6/15 stroke
- Cylinder stroke ..... 45 stroke
- Mounting bracket mass ..... 16 (Axial foot style)

50 + 6/15 x 45 + 16 = 84 g

Copper and Fluorine-free Air Cylinder (For CRT manufacturing process)

20-CJ2ZW Mounting style | Bore size – Stroke | Head cover port location

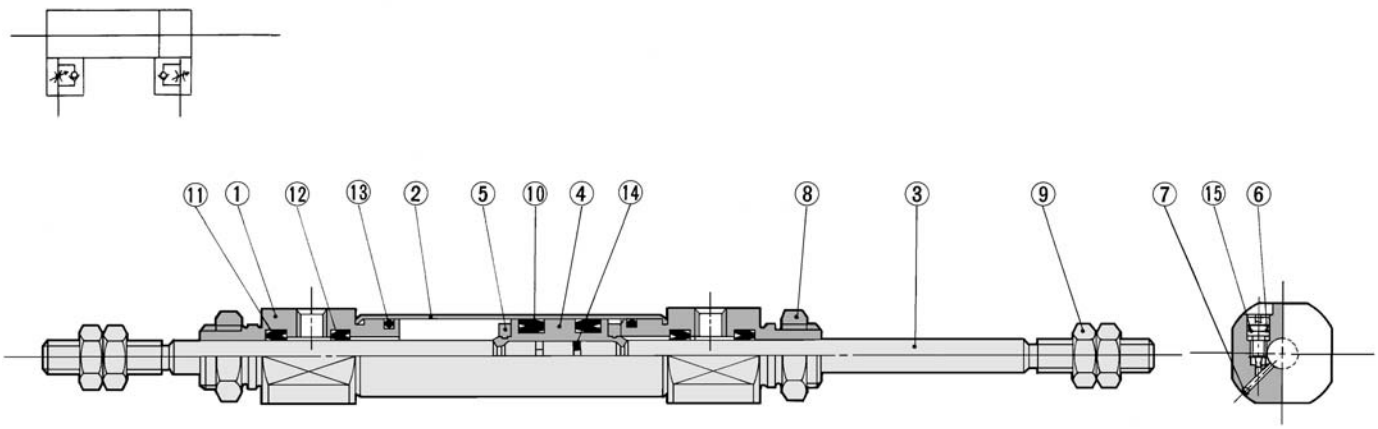
- **Copper and fluorine-free**

Eliminates the effects by copper based ions and fluorine based resins, etc. over the color cathode ray tube.
Making copper based materials into electroless nickel plated treatment or changing them to the non-copper materials in order to prevent copper ions from generating.

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)	15, 30, 45, 60
Auto switch	Mountable (Band mounting style)
Mounting	Basic style, Foot style, Flange style

Construction (Not able to disassemble)



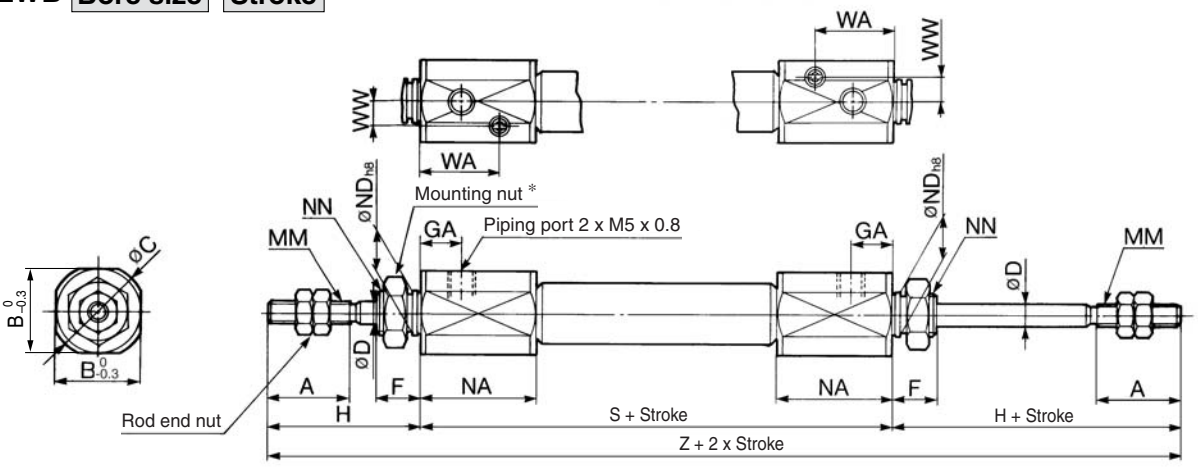
Component Parts

No.	Description	Material	Note
1	**Rod cover**	Aluminum alloy	Anodized
2	**Cylinder tube**	Stainless steel	
3	**Piston rod**	Stainless steel	
4	**Piston**	Brass	
5	**Bumper**	Urethane	
6	**Speed controller needle**	Stainless steel	
7	**Steel balls**	Bearing steel	
8	**Mounting nut**	Brass	Nickel plated

No.	Description	Material	Note
9	**Rod end nut**	Rolled steel	Nickel plated
10	**Piston seal**	NBR	
11	**Rod seal**	NBR	
12	**Check seal**	NBR	
13	**Tube gasket**	NBR	
14	**Piston gasket**	NBR	
15	**Needle seal**	NBR	

Basic Style (B)

CJ2ZWB Bore size – Stroke



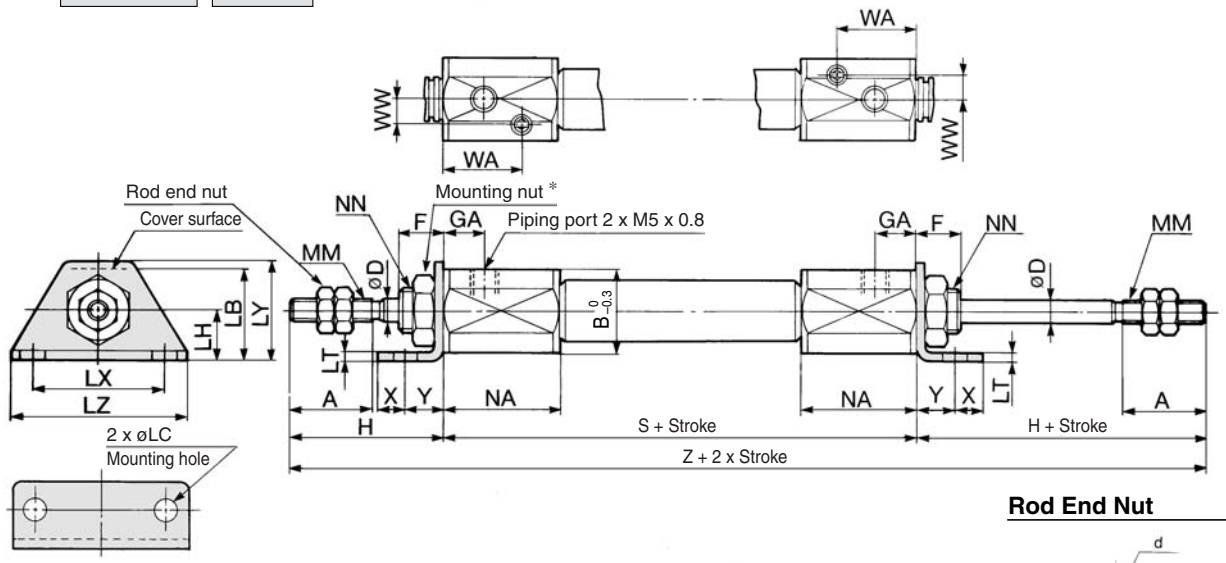
∗ For details of the mounting nut, refer to page 51.

(mm)

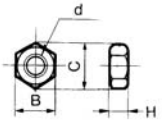
Bore size	A	B	C	D	F	GA	H	MM	NA	NDh8	NN	S	WA	WW	Z
10	15	15	17	4	8	7.5	28	M4 x 0.7	21	8 $^{0}_{-0.022}$	M8 x 1.0	66	14.5	4.5	122
16	15	18.3	20	5	8	7.5	28	M5 x 0.8	21	10 $^{0}_{-0.022}$	M10 x 1.0	67	14.5	5.5	123

Foot Style (L)

CJ2ZWL Bore size – Stroke



Rod End Nut



Material: Iron

Part no.	Applicable bore (mm)	B	C	d	H
NTJ-010A	**10**	7	8.1	M4 x 0.7	3.2
NTJ-015A	**16**	8	9.2	M5 x 0.8	4

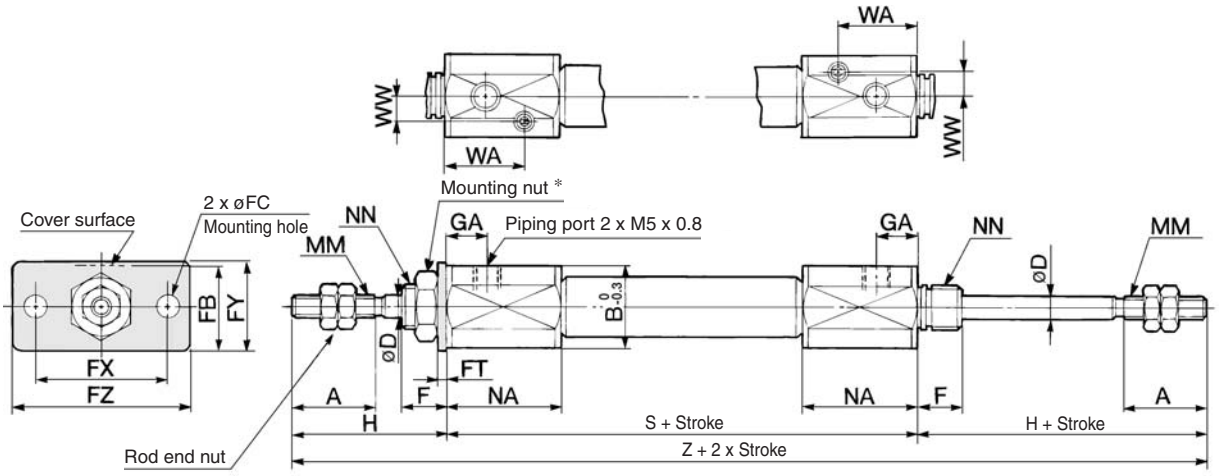
∗ For details of the mounting nut, refer to page 51.

(mm)

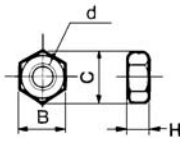
Bore size	A	B	D	F	LB	LC	LH	LT	LX	LY	LZ	GA	H	MM	NA	NN	S	WA	WW	X	Y	Z
10	15	15	4	8	16.5	4.5	9	1.6	24	16.5	32	7.5	28	M4 x 0.7	21	M8 x 1.0	66	14.5	4.5	5	7	122
16	15	18.3	5	8	23	5.5	14	2.3	33	25	42	7.5	28	M5 x 0.8	21	M10 x 1.0	67	14.5	5.5	6	9	123

Flange Style (F)

CJ2ZWF Bore size – Stroke



Rod End Nut



Material: Iron

Part no.	Applicable bore (mm)	B	C	d	H
NTJ-010A	10	7	8.1	M4 x 0.7	3.2
NTJ-015A	16	8	9.2	M5 x 0.8	4

* For details of the mounting nut, refer to page 51.

(mm)

Bore size	A	B	D	F	FB	FC	FT	FX	FY	FZ	GA	H	MM	NA	NN	S	WA	WW	Z
10	15	15	4	8	14.5	4.5	1.6	24	14	32	7.5	28	M4 x 0.7	21	M8 x 1.0	66	14.5	4.5	122
16	15	18.3	5	8	19	5.5	2.3	33	20	42	7.5	28	M5 x 0.8	21	M10 x 1.0	67	14.5	5.5	123

Air Cylinder: Low Friction Type
Double Acting, Single Rod
Series CJ2Q
ø10, ø16

How to Order

Bore size

10	10 mm
16	16 mm

Cylinder standard stroke (mm)
Refer to the standard stroke table on page 91.

Mounting style

B	Basic style
L	Axial foot style
F	Rod side flange style
D	Double clevis style

Built-in Magnet Cylinder Model

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

Example	Rail mounting style	CDJ2QB16-60-A
	Band mounting style	CDJ2QB10-45-B

∗ For rail mounting style, screws and nuts for 2 pcs switches come with the rail.
∗ Refer to page 123 for switch mounting brackets.

CJ2Q L 16 – 60 □ – □

With auto switch **CDJ2Q L 16 – 60 □ – M9BW □ – □**

With auto switch
(Built-in magnet)

Head cover port location

Symbol \ Bore size (mm)	ø10, ø16
Nil	Perpendicular to axis
R	Axial

∗ For configuration, refer to page 92.
∗ Double clevis is only available for being perpendicular to axis.

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

Made to Order
Refer to page 91 for details.

Number of auto switches

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

Applicable Auto Switch/Refer to pages 1263 to 1371 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Band mounting	Auto switch model: Rail mounting Perpendicular	Auto switch model: Rail mounting In-line	Lead wire length (m) 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)	Pre-wired connector	Applicable load	
Solid state switch	——	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	**M9N**	—	—	●	●	●	○	—	○	IC circuit	Relay, PLC
							—	**F7NV**	**F79**	●	—	●	○	—	○		
				3-wire (PNP)			**M9P**	—	—	●	●	●	○	—	○		
							—	**F7PV**	**F7P**	●	—	●	○	—	○		
				2-wire	12 V		**M9B**	—	—	●	●	●	○	—	○	—	
							—	**F7BV**	**J79**	●	—	●	○	—	○		
		Connector					**H7C**	**J79C**	—	●	—	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	24 V	—	**M9NW**	—	—	●	●	●	○	—	○	IC circuit	
					5 V, 12 V		—	**F7NWV**	**F79W**	●	—	●	○	—	○		
				3-wire (PNP)			**M9PW**	—	—	●	●	●	○	—	○		
							—	—	**F7PW**	●	—	●	○	—	○		
				2-wire	12 V		**M9BW**	—	—	●	●	●	○	—	○	—	
							—	**F7BWV**	**J79W**	●	—	●	○	—	○		
	Water resistant (2-color indication)						**H7BA**	**F7BAV**	**F7BA**	—	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)	5 V, 12 V		**H7NF**	—	**F79F**	●	—	●	○	—	○	IC circuit	
Reed switch	——	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	**A96**	—	**A76H**	●	—	●	—	—	—	IC circuit	—
				2-wire	—	200 V	—	**A72**	**A72H**	●	—	●	—	—	—	—	Relay, PLC
					24 V	100 V	—	**A73**	**A73H**	●	—	●	●	—	—	—	
							A93	—	—	●	—	●	—	—	—		
			No			100 V or less	**A90**	**A80**	**A80H**	●	—	●	—	—	—	IC circuit	
		Connector	Yes			—	**C73C**	**A73C**	—	●	—	●	●	●	—	—	
			No			24 V or less	**C80C**	**A80C**	—	●	—	●	●	●	—	IC circuit	
	Diagnostic indication (2-color indication)	Grommet	Yes		—	—	—	**A79W**	—	●	—	●	—	—	—	—	

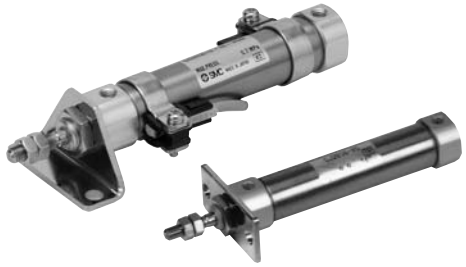
∗ Lead wire length symbols: 0.5 m····· Nil (Example) M9NW
1 m····· M (Example) M9NWM
3 m····· L (Example) M9NWL
5 m····· Z (Example) M9NWZ

∗ Since there are other applicable auto switches than listed, refer to page 123 for details.
∗ For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
∗ Band mounting style is not available for D-A9□V□/M9□V□/M9□WV□ and D-M9□A(V)L types.

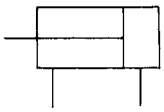
∗ Solid state auto switches marked with "○" are produced upon receipt of order.
∗ D-A9□/M9□/M9□W/A7□□/A80□/F7□□/J7□□ auto switches are shipped together (not assembled). (However, when D-A9□/M9□/M9□W types are selected, only auto switch mounting brackets are assembled before being shipped.)
∗ When D-A9□(V)/M9□(V)/M9□W(V) types are mounted on a ø10 or ø16 rail, order auto switch mounting brackets separately. Refer to page 123 for details.

Specially designed to keep friction of the piston to a minimum. Suitable for contact-pressure control requiring smooth operation at low pressures.

Low sliding resistance
Minimum operating pressure: 0.03 MPa



JIS Symbol
Double acting, Single rod



Made to Order **Made to Order Specifications**
(For details, refer to pages 1380 and 1479.)

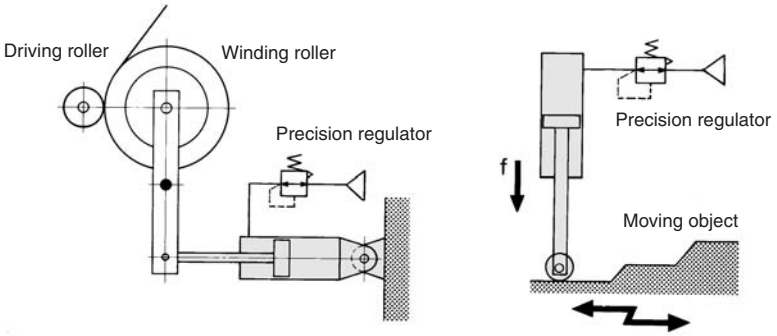
Symbol	Specifications
—XA□	Change of rod end shape
—XC51	With hose nipple

⚠Precautions

Refer to page 44 before handling.

Application Example

Low friction cylinder is used in combination with precision regulator (Series IR).



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	0.03 MPa	
Ambient and fluid temperature	Without auto switch: −10°C to 70°C, With auto switch: −10°C to 60°C *	
Cushion	Rubber bumper	
Lubrication	Not applicable	
Stroke length tolerance	$^{+1.0}_{0}$	
Piston speed	50 to 750 mm/s	
Allowable kinetic energy	0.035 J	0.090 J

* No freezing

Standard Stroke

(mm)

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

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

Refer to pages 117 to 123 for cylinders with an auto switch.

- Minimum stroke for auto switch mounting
- Proper auto switch mounting position (detection at stroke end) and mounting height
- Operating range
- Switch mounting bracket part no.

Mounting Style and Accessory/For details, refer to page 51.

Mounting		Basic style	Axial foot style	Rod side flange style	Double * clevis style
Standard equipment	Mounting nut	●	●	●	–
	Rod end nut	●	●	●	●
	Clevis pin	–	–	–	●
Option	Single knuckle joint	●	●	●	●
	Double knuckle joint *	●	●	●	●
	T-bracket	–	–	–	●

* Pin and retaining ring are shipped together with double clevis and double knuckle joint.

Mounting Bracket Part No.

Mounting bracket	Bore size (mm)	
	10	**16**
Foot bracket	CJ-L010B	CJ-L016B
Flange bracket	CJ-F010B	CJ-F016B
T-bracket *	CJ-T010B	CJ-T016B

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

Mass

(g)

Bore size (mm)		**10**	**16**
Basic mass *		24	55
Additional mass per each 15 mm of stroke		4	6.5
Mounting bracket mass	Axial foot style	8	20
	Rod side flange style	5	15
	Double clevis style (With pin) **	4	10

* Mounting nut and rod end nut are included in the basic mass.
** Mounting nut is not attached to the double clevis style, so the mounting nut mass is already subtracted.

Calculation: (Example) **CJ2QL10-45**
- Basic mass ····· 24 (ø10)
- Additional mass ····· 4/15 stroke
- Cylinder stroke····· 45 stroke
- Mounting bracket mass ····· 8 (Axial foot style)

24 + 4/15 x 45 + 8 = 44 g

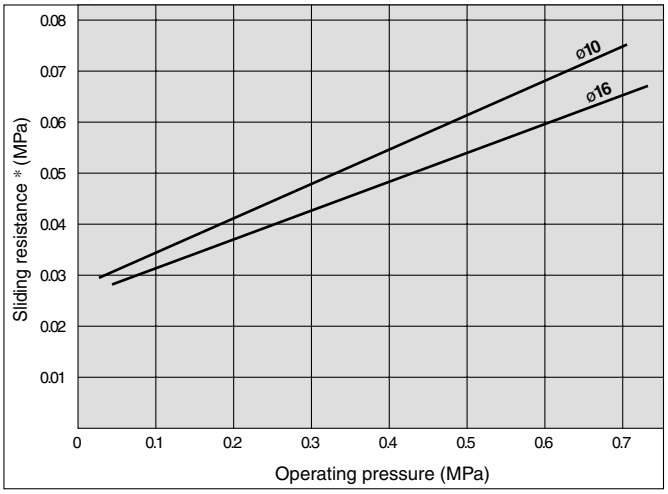
Head Cover Port Location

Either perpendicular to the cylinder axis or in-line with the cylinder axis is available for basic style.

Axial

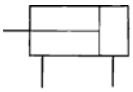
Perpendicular

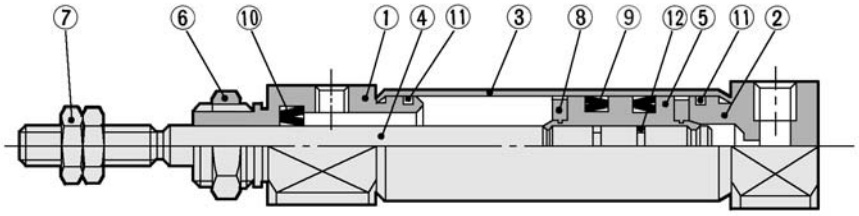
Sliding Resistance of the Low Friction Side



* Conversion into the cylinder operating pressure:

Construction (Not able to disassemble)





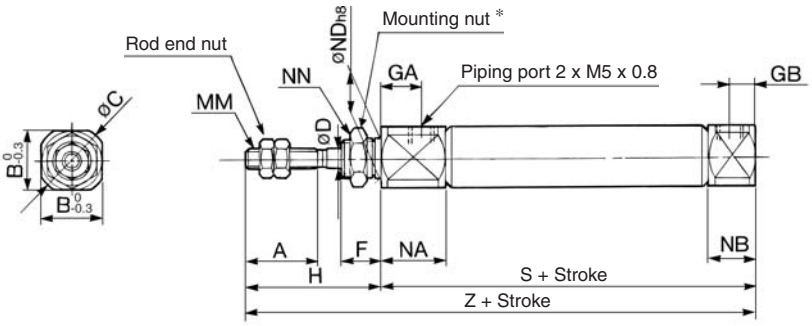
Component Parts

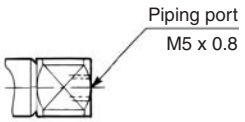
No.	Description	Material	Note
1	**Rod cover**	Aluminum alloy	Anodized
2	**Head cover**	Aluminum alloy	Anodized
3	**Cylinder tube**	Stainless steel	
4	**Piston rod**	Stainless steel	
5	**Piston**	Brass	
6	**Mounting nut**	Brass	Nickel plated

No.	Description	Material	Note
7	**Rod end nut**	Rolled steel	Nickel plated
8	**Bumper**	Urethane	
9	**Piston seal**	NBR	For low friction
10	**Rod seal**	NBR	For low friction
11	**Tube gasket**	NBR	
12	**Piston gasket**	NBR	

Basic Style (B)

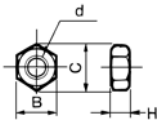
CJ2QB **Bore size** – **Stroke** **Head cover port location**





Head cover port location:
Axial location (R)

Rod End Nut



Material: Iron

Part no.	Applicable bore (mm)	B	C	d	H
NTJ-010A	10	7	8.1	M4 x 0.7	3.2
NTJ-015A	16	8	9.2	M5 x 0.8	4

∗ For details of the mounting nut, refer to page 51.

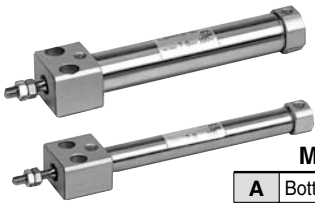
(mm)

Bore size	A	B	C	D	F	GA	GB	H	MM	NA	NB	ND	NN	S	Z
10	15	12	14	4	8	8	5	28	M4 x 0.7	12.5	9.5	$8^{\ 0}_{-0.022}$	M8 x 1.0	46	74
16	15	18.3	20	5	8	8	5	28	M5 x 0.8	12.5	9.5	$10^{\ 0}_{-0.022}$	M10 x 1.0	47	75

For dimensions of each mounting bracket, refer to pages 48 to 50.

Air Cylinder: Direct Mount Type
Double Acting, Single Rod
Series CJ2R
ø10, ø16

How to Order



Bore size

10	10 mm
16	16 mm

Cylinder standard stroke (mm)
Refer to the standard stroke table on page 95.

Mounting style

A	Bottom mounting style

Built-in Magnet Cylinder Model

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

Example	Rail mounting style	CDJ2RA16-60-A
	Band mounting style	CDJ2RA10-45-B

∗ For rail mounting style, screws and nuts for 2 pcs switches come with the rail.
∗ Refer to page 123 for switch mounting brackets.

CJ2RA 16 – 60 □ – □

With auto switch **CDJ2RA 16 – 60 □ – M9BW □ – □**

With auto switch
(Built-in magnet)

Head cover port location

Symbol \ Bore size (mm)	ø10, ø16
Nil	Perpendicular to axis
R	Axial

∗ For configuration, refer to page 95.

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

Made to Order
Refer to page 95 for details.

Number of auto switches

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

Applicable Auto Switch/Refer to pages 1263 to 1371 for further information on auto switches.

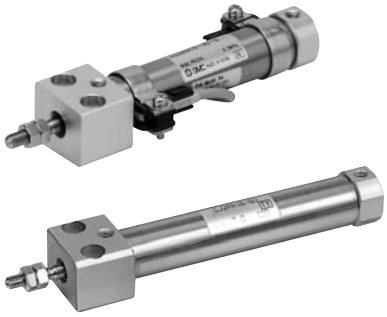
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Band mounting	Auto switch model: Rail mounting: Perpendicular	Auto switch model: Rail mounting: In-line	Lead wire length (m): 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)	Pre-wired connector	Applicable load	
Solid state switch	——	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	**M9N**	—	—	●	●	●	○	—	○	IC circuit	Relay, PLC
							—	**F7NV**	**F79**	●	—	●	○	—	○		
				3-wire (PNP)			**M9P**	—	—	●	●	●	○	—	○		
							—	**F7PV**	**F7P**	●	—	●	○	—	○		
				2-wire	12 V		**M9B**	—	—	●	●	●	○	—	○	—	
							—	**F7BV**	**J79**	●	—	●	○	—	○		
		Connector					**H7C**	**J79C**	—	●	—	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	5 V, 12 V		**M9NW**	—	—	●	●	●	○	—	○	IC circuit	
							—	**F7NWV**	**F79W**	●	—	●	○	—	○		
				3-wire (PNP)			**M9PW**	—	—	●	●	●	○	—	○		
							—	—	**F7PW**	●	—	●	○	—	○		
				2-wire	12 V		**M9BW**	—	—	●	●	●	○	—	○	—	
							—	**F7BWV**	**J79W**	●	—	●	○	—	○		
	Water resistant (2-color indication)						**H7BA**	**F7BAV**	**F7BA**	—	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)	5 V, 12 V		**H7NF**	—	**F79F**	●	—	●	○	—	○	IC circuit	
Reed switch	——	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	**A96**	—	**A76H**	●	—	●	—	—	—	IC circuit	—
				2-wire	—	200 V	—	**A72**	**A72H**	●	—	●	—	—	—	—	Relay, PLC
					24 V	12 V	100 V	—	**A73**	**A73H**	●	—	●	●	—	—	
								A93	—	—	●	—	●	—	—	—	
			No				100 V or less	**A90**	**A80**	**A80H**	●	—	●	—	—	—	IC circuit
		Connector	Yes				—	**C73C**	**A73C**	—	●	—	●	●	●	—	—
			No				24 V or less	**C80C**	**A80C**	—	●	—	●	●	●	—	IC circuit
	Diagnostic indication (2-color indication)	Grommet	Yes		—	—	—	—	**A79W**	—	●	—	●	—	—	—	—

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

∗ Since there are other applicable auto switches than listed, refer to page 123 for details.
∗ For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
∗ Band mounting style is not available for D-A9□V□/M9□V□/M9□WV□ and D-M9□A(V)L types.

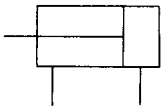
∗ Solid state auto switches marked with "○" are produced upon receipt of order.
∗ D-A9□/M9□/M9□W/A7□□/A80□/F7□□/J7□□ auto switches are shipped together (not assembled). (However, when D-A9□/M9□/M9□W types are selected, only auto switch mounting brackets are assembled before being shipped.)
∗ When D-A9□(V)/M9□(V)/M9□W(V) types are mounted on a ø10 or ø16 rail, order auto switch mounting brackets separately. Refer to page 123 for details.

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



JIS Symbol

Double acting, Single rod



Made to Order Specifications
(For details, refer to pages 1380, 1462 and 1479.)

Symbol	Specifications
—XA□	Change of rod end shape
—XC22	Fluororubber seals
—XC51	With hose nipple

⚠ Precautions

Refer to page 44 before handling.

Specifications

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

* No freezing

Standard Stroke

(mm)

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

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

Head Cover Port Location

Either perpendicular to the cylinder axis or in-line with the cylinder axis is available for basic style.

Axial

Perpendicular

Refer to pages 117 to 123 for cylinders with auto switches.

- Minimum stroke for auto switch mounting
- Proper auto switch mounting position (detection at stroke end) and mounting height
- Operating range
- Switch mounting bracket part no.

Mass

(g)

Bore size (mm)	10	16
Basic mass *	36	71.5
Additional mass per each 15 mm of stroke	4	6.5

* Rod end nut is included in the basic mass.

Calculation: (Example) **CJ2RA10-45**

- Basic mass ····· 36 (ø10)
- Additional mass ····· 4/15 stroke
- Cylinder stroke ····· 45 stroke

36 + 4/15 x 45 = 48 g

Clean Series

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

• **Clean Series**

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

Specifications

Action	Double acting, Single rod
Bore size (mm)	10, 16
Maximum operating pressure	0.7 MPa
Minimum operating pressure	0.08 MPa
Cushion	Rubber bumper
Standard stroke (mm)	Same as the standard. (Refer to page 95.)
Auto switch	Mountable (Band mounting style)
Mounting	Bottom mounting style

For details, specifications about the Clean Series, refer to the separate catalog "Pneumatic Clean Series".

Copper and Fluorine-free Air Cylinder (For CRT manufacturing process)

20-CJ2RA | Bore size | – | Stroke | Head cover port location

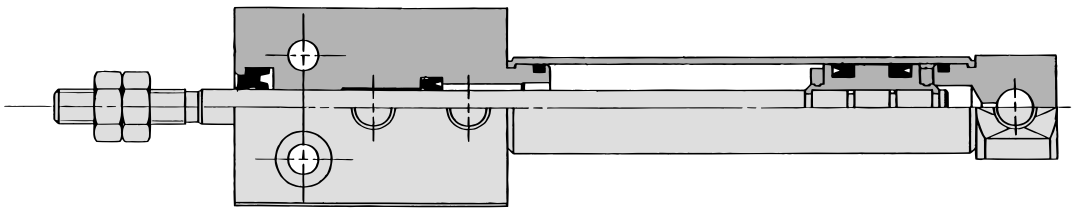
• **Copper and fluorine-free**

Eliminates the effects by copper based ions and fluorine based resins, etc. over the color cathode ray tube.
Making copper based materials into electroless nickel plated treatment or changing them to the non-copper materials in order to prevent copper ions from generating.

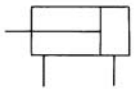
Specifications

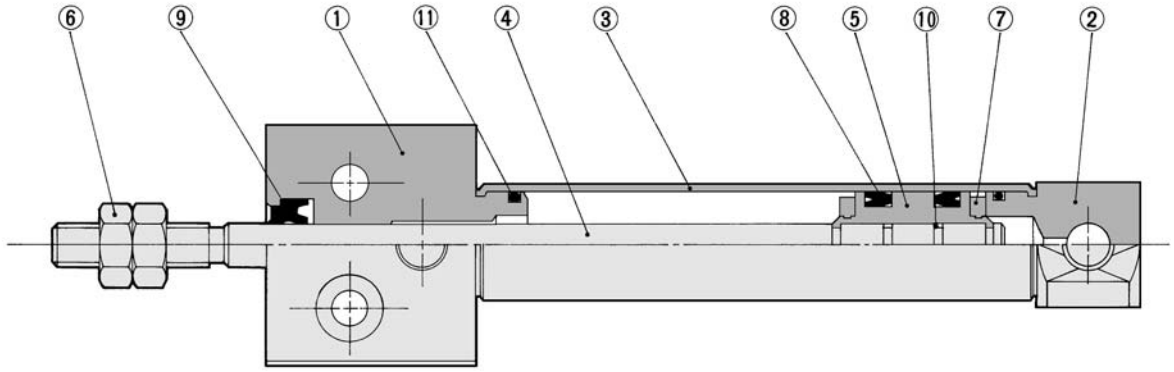
Bore size (mm)	10, 16
Action	Double acting, Single rod
Maximum operating pressure	0.7 MPa
Minimum operating pressure	0.06 MPa
Cushion	Rubber bumper (Standard equipment)
Standard stroke (mm)	Same as standard type. (Refer to page 95.)
Auto switch	Mountable (Band mounting style)
Mounting	Bottom mounting style

10-CJ2RA (Clean series) Construction (Not able to disassemble)



Construction (Not able to disassemble)





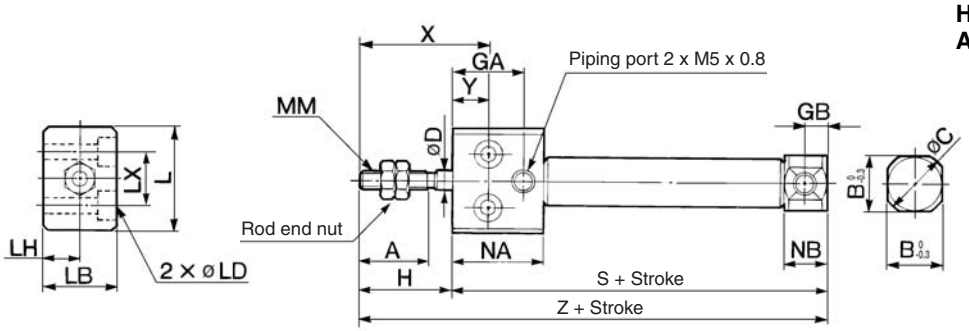
Component Parts

No.	Description	Material	Note
1	**Rod cover**	Aluminum alloy	Anodized
2	**Head cover**	Aluminum alloy	Anodized
3	**Cylinder tube**	Stainless steel	
4	**Piston rod**	Stainless steel	
5	**Piston**	Brass	
6	**Rod end nut**	Rolled steel	Nickel plated

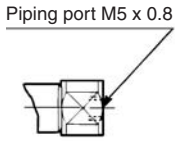
No.	Description	Material	Note
7	**Bumper**	Urethane	
8	**Piston seal**	NBR	
9	**Rod seal**	NBR	
10	**Piston gasket**	NBR	
11	**Tube gasket**	NBR	

Bottom Mounting Style

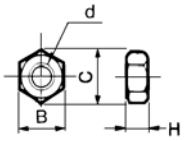
CJ2RA **Bore size** – **Stroke** **Head cover port location**



Head cover port location: Axial location (R)



Rod End Nut



Material: Iron

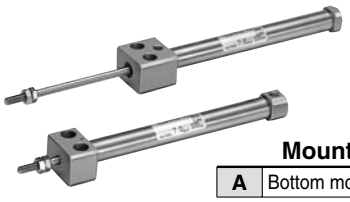
Part no.	Applicable bore (mm)	B	C	d	H
NTJ-010A	10	7	8.1	M4 x 0.7	3.2
NTJ-015A	16	8	9.2	M5 x 0.8	4

(mm)

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

Air Cylinder: Direct Mount Type
Single Acting, Spring Return/Extend
Series CJ2R
ø10, ø16

How to Order



Bore size

10	10 mm
16	16 mm

Cylinder standard stroke (mm)
Refer to the standard stroke table on page 99.

Mounting style

A	Bottom mounting style

Action

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

Built-in Magnet Cylinder Model

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

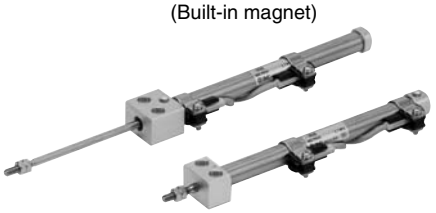
Example	Rail mounting style	CDJ2RA16-60S-A
	Band mounting style	CDJ2RA10-45S-B

* For rail mounting style, screws and nuts for 2 pcs switches come with the rail.
* Refer to page 123 for switch mounting brackets.

CJ2RA 16 – 45 S □ – □

With auto switch **CDJ2RA 16 – 45 S □ – M9BW □ – □**

With auto switch
(Built-in magnet)



Head cover port location

Symbol \ Bore size (mm)	ø10, ø16
Nil	Perpendicular to axis
R	Axial

* For configuration, refer to page 99.
* Not applicable to single acting, spring extend (T).

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

Number of auto switches

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

Made to Order
Refer to page 99 for details.

Applicable Auto Switch/Refer to pages 1263 to 1371 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model: Band mounting	Auto switch model: Rail mounting: Perpendicular	Auto switch model: Rail mounting: In-line	Lead wire length (m): 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)	Pre-wired connector	Applicable load	
Solid state switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	**M9N**	—	—	●	●	●	○	—	○	IC circuit	Relay, PLC
							—	**F7NV**	**F79**	●	—	●	○	—	○		
				3-wire (PNP)			**M9P**	—	—	●	●	●	○	—	○		
							—	**F7PV**	**F7P**	●	—	●	○	—	○		
				2-wire	12 V		**M9B**	—	—	●	●	●	○	—	○	—	
							—	**F7BV**	**J79**	●	—	●	○	—	○		
		Connector					**H7C**	**J79C**	—	●	—	●	●	●	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	24 V, 5 V, 12 V	—	**M9NW**	—	—	●	●	●	○	—	○	IC circuit	
							—	**F7NWV**	**F79W**	●	—	●	○	—	○		
				3-wire (PNP)			**M9PW**	—	—	●	●	●	○	—	○		
							—	—	**F7PW**	●	—	●	○	—	○		
				2-wire	12 V		**M9BW**	—	—	●	●	●	○	—	○	—	
							—	**F7BWV**	**J79W**	●	—	●	○	—	○		
	Water resistant (2-color indication)						**H7BA**	**F7BAV**	**F7BA**	—	—	●	○	—	○		
	With diagnostic output (2-color indication)			4-wire (NPN)	5 V, 12 V		**H7NF**	—	**F79F**	●	—	●	○	—	○	IC circuit	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	**A96**	—	**A76H**	●	—	●	—	—	—	IC circuit	—
				2-wire		—	200 V	—	**A72**	**A72H**	●	—	●	—	—	—	—	Relay, PLC
					24 V	12 V	100 V	—	**A73**	**A73H**	●	—	●	●	—	—	
								A93	—	—	●	—	●	—	—	—	
			No				100 V or less	**A90**	**A80**	**A80H**	●	—	●	—	—	—	IC circuit
		Connector	Yes				—	**C73C**	**A73C**	—	●	—	●	●	●	—	—
			No				24 V or less	**C80C**	**A80C**	—	●	—	●	●	●	—	IC circuit
	Diagnostic indication (2-color indication)	Grommet	Yes			—	—	—	**A79W**	—	●	—	●	—	—	—	—

* Lead wire length symbols: 0.5 m····· Nil (Example) M9NW
  1 m····· M (Example) M9NWM
  3 m····· L (Example) M9NWL
  5 m····· Z (Example) M9NWZ
  None····· N (Example) H7CN
* Since there are other applicable auto switches than listed, refer to page 123 for details.
* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
* Band mounting style is not available for D-A9□V□/M9□V□/M9□WV□ and D-M9□A(V)L types.

* Solid state auto switches marked with "○" are produced upon receipt of order.
* D-A9□/M9□/M9□W/A7□□/A80□/F7□□/J7□□ auto switches are shipped together (not assembled). (However, when D-A9□/M9□/M9□W types are selected, only auto switch mounting brackets are assembled before being shipped.)
* When D-A9□(V)/M9□(V)/M9□W(V) types are mounted on a ø10 or ø16 rail, order auto switch mounting brackets separately. Refer to page 123 for details.