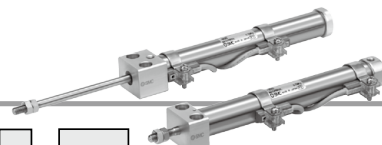


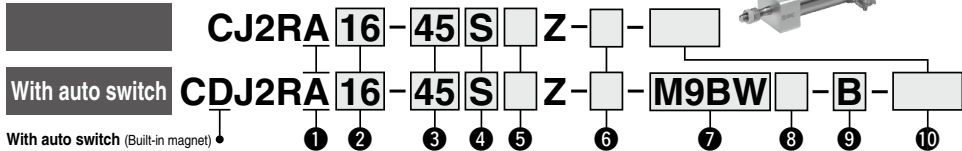
Air Cylinder: Direct Mount Type Single Acting, Spring Return/Extend

CJ2R Series

ø10, ø16



How to Order



1 Mounting

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

2 Bore size

10	10 mm
16	16 mm

3 Cylinder standard stroke [mm]

Refer to "Standard Strokes" on page 124.

4 Action

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

5 Head cover port location

Nil	Perpendicular to axis	
	R	Axial

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

6 Rod end bracket

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

*: Rod end bracket is shipped together with the product, but not assembled.
 **: Refer to page 63 for the double knuckle joint (with one-touch connecting pin).

7 Auto switch

Nil	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.

8 Number of auto switches

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

9 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 148 for auto switch mounting brackets.

10 Made to Order

Refer to page 124 for details.

*: Refer to "Ordering Example of Cylinder Assembly" on page 124.

Applicable Auto Switches/Refer to pages 1575 to 1701 for further information on auto switches.

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

*: 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.)



- CJ1
- CJP
- CJ2**
- JCM
- CM2
- CM3
- CG1
- CG3
- JMB
- MB
- MB1
- CA2
- CS1
- CS2

- D-□
- X□
- Technical Data

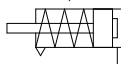
CJ2R Series

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

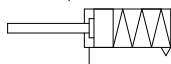


Symbol

Single acting, Spring return, Rubber bumper



Single acting, Spring extend, Rubber bumper



Made to Order: Individual Specifications
(For details, refer to page 150.)

Symbol	Specifications
-X446	PTFE grease

Made to Order

[Click here for details](#)

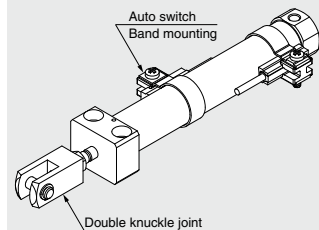
Symbol	Specifications
-XA□	Change of rod end shape
-XC51	With hose nipple
-XC85	Grease for food processing equipment

⚠ Precautions

Refer to page 152 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 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 [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 front matter pages. 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 42 for the list of brackets and page 63 for details about part numbers and dimensions.

Standard	Rod end nut
Option ^{Note 1)}	Single knuckle joint, Double knuckle joint (including a pin and retaining rings), Rod end cap (Flat type, Round type), Double knuckle joint (With one-touch connecting pin)

Note 1) Can be ordered within the cylinder model. Except for the double knuckle joint (with one-touch connecting pin).

Note 2) Stainless steel accessories are also available. Refer to page 63-1 for details.

Spring Reaction Force

Refer to page 1899 (Table (2): Spring Reaction Force).

Refer to pages 142 to 149 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 piping	Basic	Axial piping
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	
	Double knuckle joint (With one-touch connecting pin)	26		22	
	Rod end cap (Flat type)	1		2	
	Rod end cap (Round type)	1		2	

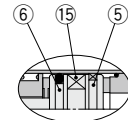
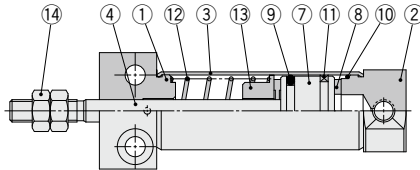
※: Rod end nut is included in the basic weight.

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	
	Double knuckle joint (With one-touch connecting pin)	26		22	
	Rod end cap (Flat type)	1		2	
	Rod end cap (Round type)	1		2	

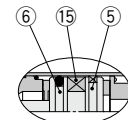
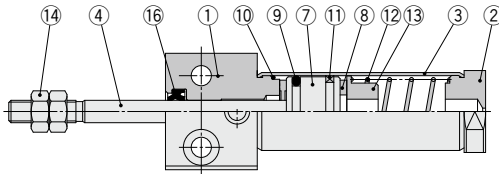
Construction (Not able to disassemble)

Single acting, Spring return



With auto switch

Single acting, Spring extend



With auto switch

Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	
2	Head cover	Aluminum alloy	
3	Cylinder tube	Stainless steel	
4	Piston rod	Stainless steel	
5	Piston A	Aluminum alloy	
6	Piston B	Aluminum alloy	
7	Piston	Aluminum 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	Aluminum alloy	
14	Rod end nut	Rolled steel	
15	Magnet	—	
16	Rod seal	NBR	

CJ1

CJP

CJ2

JCM

GM2

CM3

CG1

CG3

JMB

MB

MB1

CA2

CS1

CS2

D-□

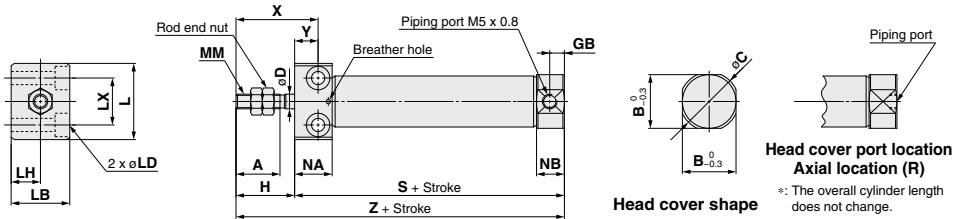
-X□

Technical Data

CJ2R Series

Single Acting: Bottom Mounting

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

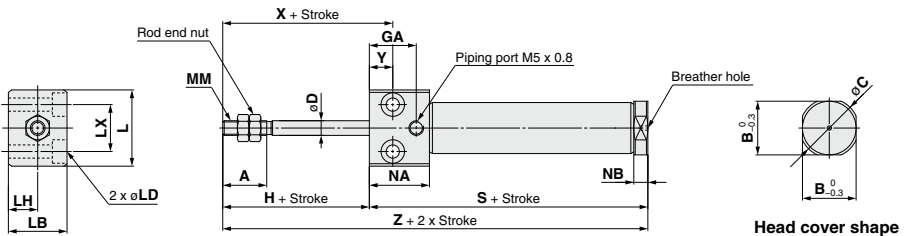


Bore size	A	B	C	D	GB	H	L	LB	LD	LH	LX	MM	NA	NB	X	Y
10	15	12	14	4	5	20	23	16	ø3.5 through, ø6.5 counterbore depth 4	8	12	M4 x 0.7	12.8	9.5	28	8
16	15	18.3	20	5	5	20	26	20	ø4.5 through, ø8 counterbore depth 5	10	16	M5 x 0.8	12.8	9.5	28	8

Dimensions by Stroke: Spring Return

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

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	ø3.5 through, ø6.5 counterbore depth 4	8	12	M4 x 0.7	20.5	4.8	28	8
16	15	18.3	20	5	16	20	26	20	ø4.5 through, ø8 counterbore depth 5	10	16	M5 x 0.8	20.5	4.8	28	8

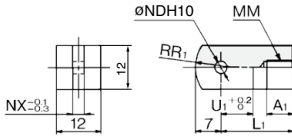
Dimensions by Stroke: Spring Extend

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

CJ2 Series

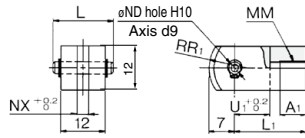
Dimensions of Accessories (Options)

Single Knuckle Joint Material: Rolled steel



Part no.	Applicable bore size	A ₁	L ₁	MM	NDH10	NX	R ₁	U ₁
I-J010C	10	8	21	M4 x 0.7	3.3 ^{+0.048} / ₀	3.1	8	9
I-J016C	16	8	25	M5 x 0.8	5 ^{+0.048} / ₀	6.4	12	14

Double Knuckle Joint Material: Rolled steel

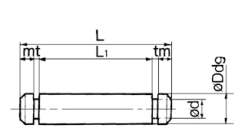


Part no.	Applicable bore size	A ₁	L	L ₁	MM
Y-J010C	10	8	15.2	21	M4 x 0.7
Y-J016C	16	11	16.6	21	M5 x 0.8

Part no.	NDd9	NDH10	NX	R ₁	U ₁
Y-J010C	3.3 ^{+0.030} / _{-0.060}	3.3 ^{+0.048} / ₀	3.2	8	10
Y-J016C	5 ^{+0.030} / _{-0.060}	5 ^{+0.048} / ₀	6.5	12	10

**: A knuckle pin and retaining rings are included.

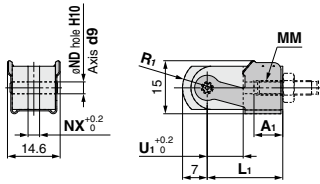
Knuckle Pin Material: Stainless steel



Part no.	Applicable bore size	Dd9	d	L	L ₁	m	t	Included retaining ring
CD-J010	10	3.3 ^{+0.030} / _{-0.060}	3	15.2	12.2	1.2	0.3	Type C 3.2
IY-J015	16	5 ^{+0.030} / _{-0.060}	4.8	16.6	12.2	1.5	0.7	Type C 5

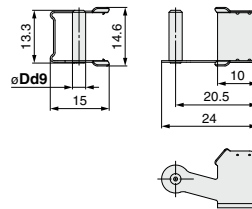
**: For ø10, a clevis pin is diverted.
**: Retaining rings are included with a knuckle pin.

Double Knuckle Joint (With One-touch Connecting Pin)



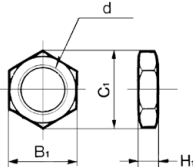
Part no.	Applicable bore size	A ₁	L ₁	MM	NDd9	NDH10	NX	R ₁	U ₁
Y-J10	10	8	21	M4 x 0.7	3.3 ^{+0.030} / _{-0.060}	3.3 ^{+0.048} / ₀	3.2	8	10
Y-J16	16	11	21	M5 x 0.8	5 ^{+0.030} / _{-0.060}	5 ^{+0.048} / ₀	6.5	12	10

One-touch Connecting Pin for Double Knuckle Joint Material: Stainless steel



Part no.	Applicable bore size	Dd9
IY-J10	10	3.3 ^{+0.030} / _{-0.060}
IY-J16	16	5 ^{+0.030} / _{-0.060}

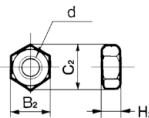
Mounting Nut Material: Carbon steel



Part no.	Applicable bore size	B ₁	C ₁	d	H ₁
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 ø16 non-rotating type. (Use SNJ-016C for ø10 non-rotating type.)

Rod End Nut Material: Carbon steel



Part no.	Applicable bore size	B ₂	C ₂	d	H ₂
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

CJ1

CJP

CJ2

JCM

CM2

CM3

CG1

CG3

JMB

MB

MB1

CA2

CS1

CS2

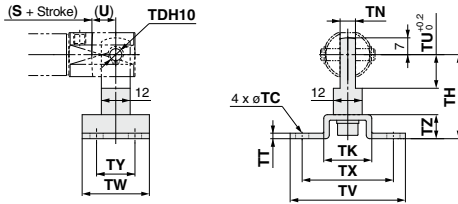
D-□

-X□

Technical Data

CJ2 Series

Pivot Bracket (T-bracket)



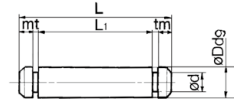
Part no.	Applicable bore size	TC	TDH10	TH	TK	TN	TT	TU	TV	TW	TX	TY	TZ
CJ-T010C	10	4.5	3.3 ^{+0.048} ₀	29	18	3.1	2	9	40	22	32	12	8
CJ-T016C	16	5.5	5 ^{+0.048} ₀	35	20	6.4	2.3	14	48	28	38	16	10

*: 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 60.

Clevis Pin

Material: Stainless steel



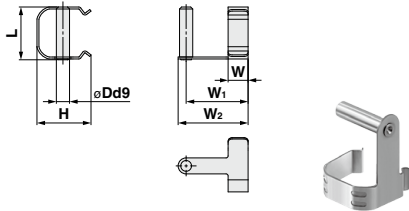
Part no.	Applicable bore size	Dd9	d	L	L ₁	m	t	Included retaining ring
CD-J010	10	3.3 ^{+0.030} _{-0.060}	3	15.2	12.2	1.2	0.3	Type C 3.2
CD-Z015	16	5 ^{+0.030} _{-0.060}	4.8	22.7	18.3	1.5	0.7	Type C 5
CD-JA010*	10	3.3 ^{+0.030} _{-0.060}	3	18.2	15.2	1.2	0.3	Type C 3.2

*: For ø10 double clevis type, with air cushion and built-in speed controller.

*: Retaining rings are included with a clevis pin.

One-touch Connecting Pin for Double Clevis

Material: Stainless steel



Part no.	Applicable bore size	Dd9	H	L	W
CD-J10	10	3.3 ^{+0.030} _{-0.060}	13.4	13.2	4
CD-J16	16	5 ^{+0.030} _{-0.060}	18.2	19.5	5

Part no.	W ₁	W ₂	Note
CD-J10	12	15	Cannot be mounted on cylinders with air cushion, or rail mounting type auto switches.
CD-J16	15	18	

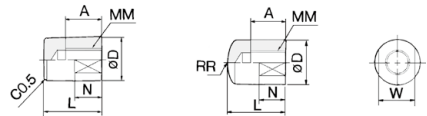
*: Please pay attention to the applicable cylinder.

Rod End Cap

Material: Polyacetal

Flat type/CJ-CF□□□

Round type/CJ-CR□□□



Part no.	Applicable bore size	A	D	L	MM	N	R	W	
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

Mounting Brackets, Rod End Brackets, and Nut Material: Stainless Steel

Part No. (Dimensions: Same as standard type)

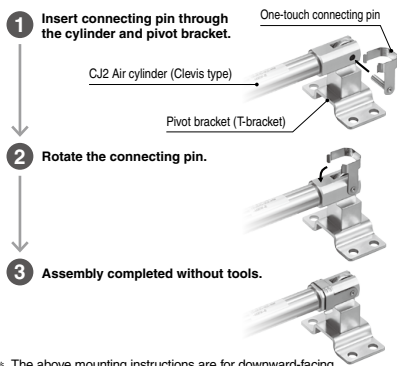
Bore size [mm]	Foot	Flange	Single knuckle joint	Double knuckle joint*	Mounting nut	Rod end nut
10	—	—	I-J010SUS	Y-J010SUS	—	NTJ-010SUS
16	CJ-L016SUS	CJ-F016SUS	I-J016SUS	Y-J016SUS	SNJ-016SUS	NTJ-016SUS

*: A knuckle pin and retaining rings are shipped together.

Precautions

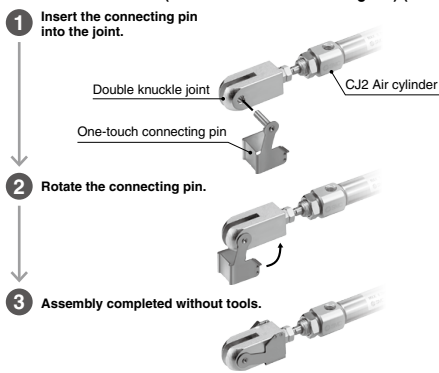
Assembly Procedures

1. Double Clevis (With One-touch Connecting Pin) (CD-J□)



* The above mounting instructions are for downward-facing ports. Refer to the following for upward-facing ports.

2. Double Knuckle Joint (With One-touch Connecting Pin) (IV-J□)



How to Mount the Double Clevis (With One-touch Connecting Pin)

When connecting a double clevis cylinder to a pivot bracket (T-bracket), it is recommended that the pivot bracket (T-bracket) and the cylinder be connected with the one-touch connecting pin first, before fastening the pivot bracket.

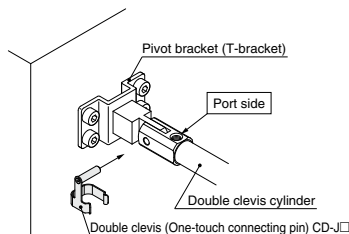
When connecting the cylinder after the pivot bracket (T-bracket) has been fastened, mount the cylinder according to the following procedure.

⚠ Warning

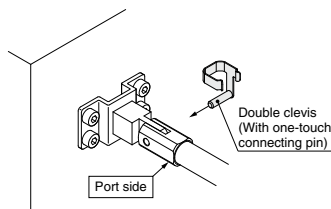
For assembling the clevis type to the pivot bracket, refer to the figure below.

1. Insert the double clevis (One-touch connecting pin) from the direction in the figure.

When port is facing upward

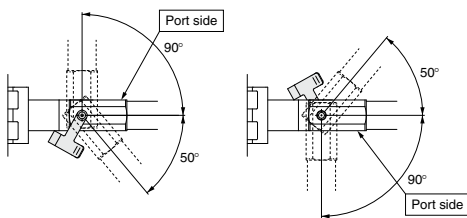


When port is facing downward

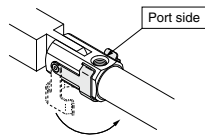


⚠ Warning

* Perform the mounting within the following range.



2. Push the one-touch connecting pin into the cylinder body (Double clevis) until it clicks and is firmly fastened.



* Attach the double knuckle joint within 180° (±90° from center). Other mounting methods are the same as the above.

CJ1

CJP

CJ2

JCM

CM2

CM3

CG1

CG3

JMB

MB

MB1

CA2

CS1

CS2

D-□

-X□

Technical Data

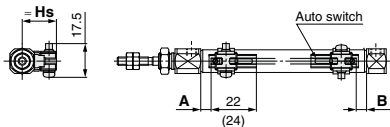
Auto Switch Mounting

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

Solid state auto switch

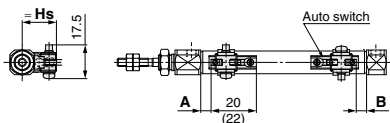
<Band mounting>

- D-M9□
- D-M9□W
- D-M9□A



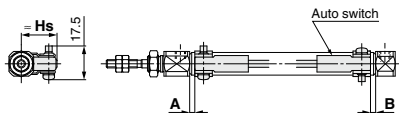
() : Dimension of the D-M9□A.
A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

- 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.

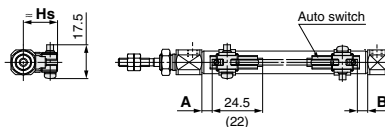
- D-H7□
- D-H7□W
- D-H7BA
- D-H7NF
- D-H7C



Reed auto switch

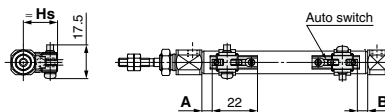
<Band mounting>

- D-A9□



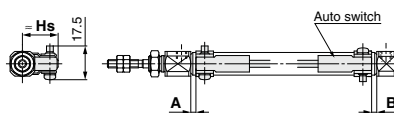
() : Dimension of the D-A96.
A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

- 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.

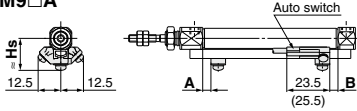
- D-C7□/C80
- D-C73C□/C80C



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

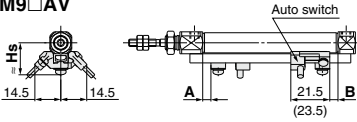
<Rail mounting>

D-M9□
D-M9□W
D-M9□A



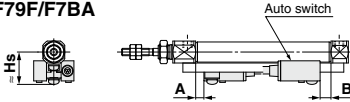
() : Dimension of the D-M9□A.

D-M9□V
D-M9□WV
D-M9□AV

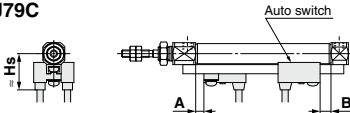


() : Dimension of the D-M9□AV.

D-F7□/J79
D-F7□W/J79W
D-F79F/F7BA

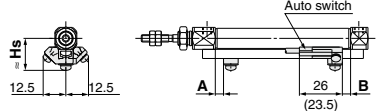


D-F7□V/F7□WV
D-F7BAV
D-J79C



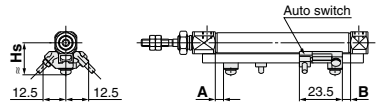
<Rail mounting>

D-A9□

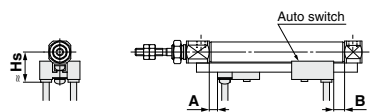


() : Dimension of the D-A9□.

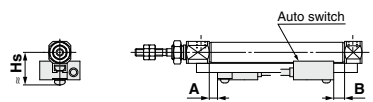
D-A9□V



D-A7□/A80
D-A73C/A80C
D-A79W



D-A7□H/A80H



CJ1
CJP
CJ2
JCM
CM2
CM3
CG1
CG3
JMB
MB
MB1
CA2
CS1
CS2

D-□
-X□
Technical Data

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 [] are for bore size ø6 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
Bore size	Hs	Hs	Hs	Hs	Hs
6	15	16	15	18	17.5
10	17	18	17	20	19.5
16	20.5	21	20.5	23.5	23

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
Bore size	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□	6	—	12	21	25	39	—	—	—	—	5.5
	D-M9□W/M9□WV	10	—	13	20.5	32.5	44.5	—	—	—	—	6
	D-M9□A/M9□AV	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
	D-A9□	6	—	8	17	21	35	—	—	—	—	1.5
		10	—	9	16.5	28.5	40.5	—	—	—	—	2
	D-A9□V	6	—	8.5	17	29	41	47	71	89	101	2.5
		10	—	9	16.5	28.5	40.5	—	—	—	—	2
	D-H7□/H7C	6	—	7.5	16.5	20.5	34.5	—	—	—	—	1
		10	—	8.5	16	28	40	—	—	—	—	1.5
	D-H7□W/H7BA	6	—	8	16.5	28.5	40.5	46.5	70.5	88.5	100.5	2
		16	—	8	16.5	28.5	40.5	46.5	70.5	88.5	100.5	2
	D-C7□/C80	6	—	8.5	17.5	21.5	35.5	—	—	—	—	2
		10	—	9.5	17	29	41	—	—	—	—	2.5
	D-C73C	6	—	9	17.5	29.5	41.5	47.5	71.5	89.5	101.5	3
		16	—	9	17.5	29.5	41.5	47.5	71.5	89.5	101.5	3
	D-M9□	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□W/M9□WV	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-M9□V	10	—	7.5	15	27	39	—	—	—	—	0.5
		16	—	7	15.5	27.5	39.5	45.5	69.5	87.5	99.5	1
	D-A9□	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-A9□V	10	—	7.5	15	27	39	—	—	—	—	0.5	
	16	—	7	15.5	27.5	39.5	45.5	69.5	87.5	99.5	1	
D-F7□/F7□V	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-J79/J79C	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-A7□H/A80H	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-A73C/A80C	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-F7□W/J79W	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-F7□WV/F79F	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-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.

- CJ1
- CJP
- CJ2**
- JCM
- CM2
- CM3
- CG1
- CG3
- JMB
- MB
- MB1
- CA2
- CS1
- CS2

D-□
-X□
Technical Data

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

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

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

Auto switch model	Bore size	A	B dimensions										
			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	—	—	—	—	
	D-A9□	16	6.5	12.5	12.5	21	33	45	51	75	93	105	
		6	1.5	—	8	17	21	35	—	—	—	—	
	D-A9□V	10	2	—	9	16.5	28.5	40.5	—	—	—	—	
		16	2.5	—	8.5	17	29	41	47	71	89	101	
	D-H7□/H7C	6	1.5	8	8	17	21	35	—	—	—	—	
		10	2	9	9	16.5	28.5	40.5	—	—	—	—	
	D-H7□W/H7BA	16	2.5	8.5	8.5	17	29	41	47	71	89	101	
		6	1	—	7.5	16.5	20.5	34.5	—	—	—	—	
	D-H7NF	10	1.5	—	8.5	16	28	40	—	—	—	—	
		16	2	—	8	16.5	28.5	40.5	46.5	70.5	88.5	100.5	
	D-C7□/C80	6	2	—	8.5	17.5	21.5	35.5	—	—	—	—	
		10	2.5	—	9.5	17	29	41	—	—	—	—	
	D-C73C	16	3	—	9	17.5	29.5	41.5	47.5	71.5	89.5	101.5	
D-C80C		10	4.5	—	11.5	19	31	43	—	—	—	—	
	Rail mounting	D-M9□	D-M9□W/M9□WV	16	5	—	11	19.5	31.5	43.5	49.5	73.5	91.5
D-M9□A/M9□AV			10	4.5	11.5	11.5	19	31	43	—	—	—	—
D-M9□V		16	5	—	11	19.5	31.5	43.5	49.5	73.5	91.5	103.5	
		10	4.5	11.5	11.5	19	31	43	—	—	—	—	
D-A9□		16	1	—	7	15.5	27.5	39.5	45.5	69.5	87.5	99.5	
		10	0.5	7.5	7.5	15	27	39	—	—	—	—	
D-A9□V		16	1	7	7	15.5	27.5	39.5	45.5	69.5	87.5	99.5	
		10	0.5	7.5	7.5	15	27	39	—	—	—	—	
D-F7□/F7□V		D-J79/J79C	10	3.5	10.5	10.5	18	30	42	—	—	—	—
		D-A7□H/A80H	16	4	10	10	18.5	30.5	42.5	48.5	72.5	90.5	102.5
D-A73C/A80C		D-F7□W/J79W	10	3.5	—	10.5	18	30	42	—	—	—	—
		D-F7□WV/F79F	16	4	—	10	18.5	30.5	42.5	48.5	72.5	90.5	102.5
D-F7BA/F7BAV		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	

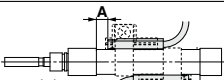
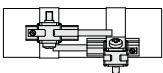
*: In the actual setting, adjust them after confirming the auto switch performance.

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 144.</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 types other than those mentioned in *1.



CJ1
CJP
CJ2
JCM
CM2
CM3
CG1
CG3
JMB
MB
MB1
CA2
CS1
CS2

D-□
-X□
Technical Data

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				
		<ul style="list-style-type: none"> c Switch bracket (Resin) f Transparent blue (Nylon)*1 e White (PBT) g Black (PBT) 		
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 page 1682 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 pages 1575 to 1701 for the detailed specifications.

Type	Mounting	Model	Electrical entry	Features	Applicable bore size
Solid state	Band mounting	D-H7A1/H7A2/H7B	Grommet (In-line)	—	ø6 to ø16
		D-H7NW/H7PW/H7BW		Diagnostic indication (2-color indicator)	
		D-F79/F7P/J79		—	
	Rail mounting	D-F79W/F7PW/J79W	Grommet (Perpendicular)	Diagnostic indication (2-color indicator)	ø10, ø16
		D-F7NV/F7PV/F7BV		—	
		D-F7NWW/F7BWW		Diagnostic indication (2-color indicator)	
Reed	Band mounting	D-C73/C76	Grommet (In-line)	—	ø6 to ø16
		D-C80		Without indicator light	
	Rail mounting	D-A73H/A76H	Grommet (Perpendicular)	—	ø10, ø16
		D-A80H		Without indicator light	
		D-A73		—	
		D-A80		Without indicator light	
		D-A80		Without indicator light	

*: With pre-wired connector is also available for solid state auto switches. For details, refer to pages 1648 and 1649.

*: Normally closed (NC = b contact) solid state auto switches (D-M9□E(V)) are also available. For details, refer to page 1592-1.

CJ1

CJP

CJ2

JCM

CM2

CM3

CG1

CG3

JMB

MB

MB1

CA2

CS1

CS2

D-□

-X□

Technical Data



1 PTFE Grease

Symbol

-X446

Applicable Series

Description	Model	Action	Note
Standard type	CJ2	Double acting, Single rod	
		Single acting (Spring return/extend)	
Non-rotating rod type	CJ2W	Double acting, Double rod	
		Double acting, Single rod	
Built-in speed controller type	CJ2K	Double acting, Single rod	
		Single acting (Spring return/extend)	
Direct mount type	CJ2Z	Double acting, Single rod	
		Double acting, Double rod	
Direct mount, Non-rotating rod type	CJ2ZW	Double acting, Single rod	
		Single acting (Spring return/extend)	

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)

How to Order

Standard model no.

- X446

PTFE grease ●

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.

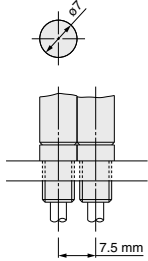
Symbol

-X773

2 Short Pitch Mounting/Single Acting, Spring Return

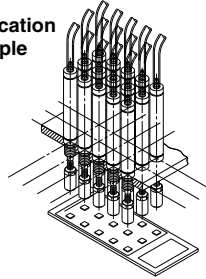
Mounting pitch is shortened when cylinders are used in parallel.

- Changes rod cover and head cover dimensions to $\phi 7$.
- 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

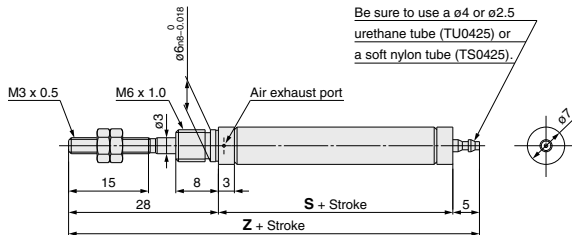
- Short pitch mounting/
Single acting, spring return



Specifications

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

Dimensions



	[mm]			
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

1. When mounting a cylinder, make sure that the air exhaust port on the rod cover is not blocked.
2. 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.

CJ1

CJP

CJ2

JCM

CM2

CM3

CG1

CG3

JMB

MB

MB1

CA2

CS1

CS2

D-□

-X□

Technical Data

3 Double Clevis (With One-touch Connecting Pin)

With pivot bracket (T-bracket) and one-touch connecting pin
Not necessary to order a bracket for the applicable cylinder separately.

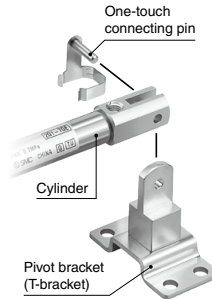
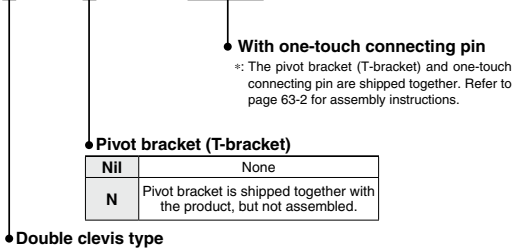
Applicable Series

Applicable Cylinders (Double Clevis Type)

Series	Bore size [mm]	Type	Model	Action	Note
CJ2D	10, 16	Standard	CJ2D	Double acting, Single rod	Cannot be mounted on cylinders with air cushion, or rail mounting type auto switches.
			CJ2D	Single acting, Single rod (Spring return/extend)	
		Non-rotating rod type	CJ2KD	Double acting, Single rod	
			CJ2KD	Single acting, Single rod (Spring return/extend)	

How to Order

Example) **CDJ2D10-60Z-N-M9BW-B-X2838**

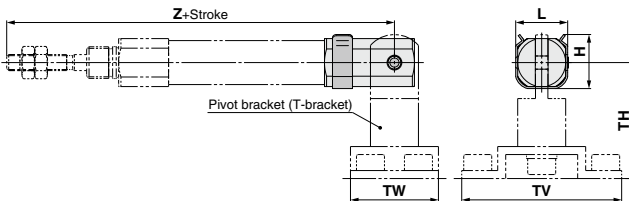


Specifications: Same as standard type

Dimensions

CJ2D $\frac{10}{16}$ - Stroke Z - (N) - X2838

*: Refer to page 63-2 for assembly procedures and mounting methods.



Applicable bore size	[mm]					
	H	L	TH	TV	TW	Z
10	13.4	13.2	29	40	22	82
16	18.2	19.5	35	48	28	85

*: The pivot bracket (T-bracket) is the same as the standard type. Refer to page 63-1 for details.