

# Low Speed Cylinder

## Double Acting, Single Rod

# Series CJ2X

### ø10, ø16

### How to Order

**Bore size**

|    |       |
|----|-------|
| 10 | 10 mm |
| 16 | 16 mm |

**Standard stroke (mm)**

|     |   |
|-----|---|
| ø10 | 15, 30, 45, 60, 75, 100, 125, 150           |
| ø16 | 15, 30, 45, 60, 75, 100, 125, 150, 175, 200 |

\* Intermediate stroke other than above is manufactured upon receipt of order.

**Mounting 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 | CDJ2XB10-45-A |
|         | Band mounting style | CDJ2XB16-60-B |

\* For the rail mounting type, screws and nuts for two auto switches are included in the rail.

**With auto switch**

**CJ2X L 16 - 60**

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

**CDJ2X L 16 - 60 - M9BW - C**

**Auto switch mounting bracket** <sup>Note)</sup>

Note) This symbol is indicated when the D-A9□ or M9□ type auto switch is specified. This mounting bracket does not apply to other auto switches (D-C7□ and H7□, etc.) (Nil)

**Port location on head cover**

|                |                           |
|----------------|---------------------------|
| Bore size (mm) | ø10, ø16                  |
| Symbol         | Nil Perpendicular to axis |
| R              | Axial direction           |

\* For configuration, refer to page 1247.

**Auto switch**

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

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

**Number of auto switches**

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

### Applicable Auto Switches

Refer to pages 1893 to 2007 for further information on auto switches.

| Type                                       | Special function                           | Electrical entry | Indicator light | Wiring (Output)         | Load voltage |           | Auto switch model |         |               |         | Lead wire length (m) |       |       |       | Pre-wired connector | Applicable load |            |
|--|--|------------------|-----------------|-------------------------|--------------|-----------|-------------------|---------|---------------|---------|----------------------|-------|-------|-------|---------------------|-----------------|------------|
|  |  |                  |                 |                         | DC           | AC        | Band mounting     |         | Rail mounting |         | 0.5 (Nil)            | 1 (M) | 3 (L) | 5 (Z) |                     |                 | None (N)   |
|  |  |                  |                 |                         |              |           | Perpendicular     | In-line | Perpendicular | In-line |                      |       |       |       |                     |                 |            |
| Solid state auto switch                    | —  | Grommet          | —               | 3-wire (NPN)            | 5 V, 12 V    | —         | M9NV              | M9N     | —             | —       | ●                    | ●     | ○     | —     | ○                   | IC circuit      |            |
|  |  |                  |                 |                         |              |           | —                 | —       | F7NV          | F7N     | ●                    | ●     | ○     | —     | ○                   |                 |            |
|  |  |                  |                 | M9PV                    |              |           | M9P               | —       | —             | ●       | ●                    | ○     | —     | ○     |                     |                 |            |
|  |  | M9BV             |                 | M9B                     |              |           | —                 | —       | ●             | ●       | ○                    | —     | ○     |       |                     |                 |            |
|  |  | —                |                 | —                       |              |           | F7BV              | F7B     | ●             | ●       | ○                    | —     | ○     |       |                     |                 |            |
|  |  | —                |                 | —                       |              |           | H7C               | J7C     | ●             | ●       | ○                    | ●     | —     |       |                     |                 |            |
|  | Diagnostic indication (2-color indication) | Connector        | Yes             | 24 V                    | 3-wire (NPN) | 5 V, 12 V | —                 | M9NVV   | M9NV          | —       | —                    | ●     | ●     | ○     | —                   | ○               | IC circuit |
|  |  |                  |                 |                         |              |           |                   | —       | —             | F7NVV   | F7NV                 | ●     | ●     | ○     | —                   | ○               |            |
|  |  |                  |                 |                         | M9PWV        |           |                   | M9PW    | —             | —       | ●                    | ●     | ○     | —     | ○                   |                 |            |
|  |  | M9BVV            |                 |                         | M9BV         |           |                   | —       | —             | ●       | ●                    | ○     | —     | ○     |                     |                 |            |
|  |  | —                |                 |                         | —            |           |                   | F7BVV   | F7BV          | ●       | ●                    | ○     | —     | ○     |                     |                 |            |
|  |  | —                |                 |                         | —            |           |                   | H7CV    | J7CV          | ●       | ●                    | ○     | ●     | —     |                     |                 |            |
| Water resistant (2-color indication)       | Grommet                                    | No               | 24 V            | 3-wire (NPN)            | 5 V, 12 V    | —         | M9NAV**           | M9NA**  | —             | —       | ○                    | ○     | ○     | —     | ○                   | IC circuit      |            |
|  |  |                  |                 |                         |              |           | M9PAV**           | M9PA**  | —             | —       | ○                    | ○     | ○     | —     | ○                   |                 |            |
|  |  |                  |                 | M9BAV**                 |              |           | M9BA**            | —       | —             | ○       | ○                    | ○     | —     | ○     |                     |                 |            |
|  | —  |                  |                 | —                       |              |           | —                 | —       | ○             | ○       | ○                    | —     | ○     |       |                     |                 |            |
|  | —  |                  |                 | —                       |              |           | —                 | —       | ○             | ○       | ○                    | —     | ○     |       |                     |                 |            |
|  | —  |                  |                 | —                       |              |           | H7NF              | F79F    | ●             | ●       | ○                    | —     | ○     |       |                     |                 |            |
| Reed auto switch                           | —  | Grommet          | Yes             | 3-wire (NPN equivalent) | 5 V          | —         | A96V              | A96     | —             | —       | ●                    | ●     | —     | —     | ○                   | IC circuit      |            |
|  |  |                  |                 |                         |              |           | —                 | —       | A72           | A72H    | ●                    | ●     | —     | —     | —                   |                 |            |
|  |  |                  |                 | —                       |              |           | 200 V             | A93V    | A93           | A73     | A73H                 | ●     | ●     | ●     | —                   |                 | —          |
|  | —  | 100 V            |                 | A90V                    |              |           | A90               | A80     | A80H          | ●       | ●                    | ●     | —     | —     |                     |                 |            |
|  | —  | 100 V or less    |                 | —                       |              |           | —                 | C73C    | A73C          | ●       | ●                    | ●     | ●     | —     |                     |                 |            |
|  | —  | 24 V or less     |                 | —                       |              |           | —                 | C80C    | A80C          | ●       | ●                    | ●     | ●     | —     |                     |                 |            |
| Diagnostic indication (2-color indication) | Connector                                  | No               | 24 V            | 2-wire                  | 12 V         | —         | —                 | —       | —             | —       | ●                    | ●     | ●     | ●     | —                   | IC circuit      |            |
|  |  |                  |                 |                         |              |           | —                 | —       | —             | —       | ●                    | ●     | ●     | ●     | —                   |                 |            |
|  |  |                  |                 |                         |              |           | —                 | —       | —             | —       | ●                    | ●     | ●     | ●     | —                   |                 |            |
| —  | Grommet                                    | Yes              | 24 V            | 2-wire                  | 12 V         | —         | —                 | —       | —             | —       | ●                    | ●     | —     | —     | IC circuit          |                 |            |
|  |  |                  |                 |                         |              |           | —                 | —       | —             | —       | ●                    | ●     | —     | —     |                     |                 |            |
|  |  |                  |                 |                         |              |           | —                 | —       | —             | —       | ●                    | ●     | —     | —     |                     |                 |            |

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

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NV  
 1 m ..... M (Example) M9NWM  
 3 m ..... L (Example) M9NVL  
 5 m ..... Z (Example) M9NVZ

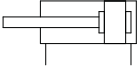
\* Since there are other applicable auto switches than listed, refer to page 1255 for details.  
 \* For details about auto switches with pre-wired connector, refer to pages 1960 and 1961.

\* Solid state auto switches marked with "O" are produced upon receipt of order.  
 \* D-A9□/M9□/M9□W/A7□□/A80□/F7□□/J7□□ auto switches are shipped together (not assembled). (When D-A9□/M9□/M9□W are specified, only auto switch mounting brackets are assembled before shipped).  
 \* D-C7□□/C80□/H7□□ auto switches are assembled at the time of shipment.  
 \* Order auto switch mounting brackets separately when D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V) types are mounted with a rail. Refer to page 1255 for details.



**Symbol**

Double acting, Single rod/Rubber bumper



**⚠ Precautions**

Be sure to read before handling.  
Refer to front matter 39 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

**Mounting**

**⚠ Caution**

- 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.
- Proper tightening torque for mounting thread should be within the range specified. Apply a Loctite® (no. 242 Blue) for mounting thread.

| Bore size (mm) | Proper tightening torque for mounting thread (N·m) (tightening torque for mounting nut) |
|----------------|---|
| 10             | 3.0 to 3.2  |
| 16             | 5.4 to 5.9  |

- To remove and install the retaining ring for the knuckle pin or the clevis pin, use an appropriate pair of pliers (tool for installing a type C retaining ring).  
Especially with  $\phi 10$ , use ultra thin pliers, such as Super Tool Corp., CSM-07A.
- For the auto switch mounting rail, do not remove the pre-equipped rail. Since the mounting thread is drilled through inside a the cylinder, it will result in air leakage.

**Operating Precautions**

**⚠ Warning**

- It might not be able to control by meter-out at a low speed operation.

**⚠ Caution**

- For Series CJ2X, 0.1 N L/min is the values at maximum in terms of its construction and there is internal leakage (ANR).

**Specifications**

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

**Standard Stroke**

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

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

**Mounting Style and Accessory**

| 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.  
●...Supplied with the product.  
○...Please order separately.

**Port Location on Head Cover**

For basic style, the port position in a head cover is available either perpendicular to the axis or in-line with the cylinder axis.



**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).

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

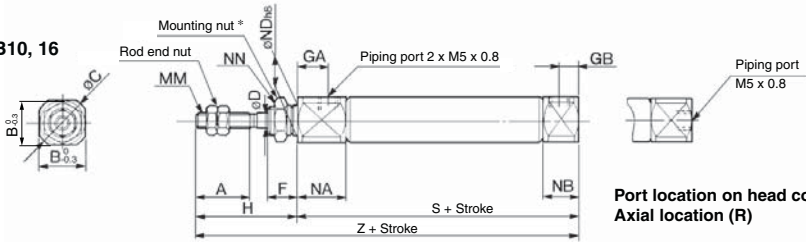
X□

# Series CJ2X

## Basic Style (B)

CJ2XB **Bore size** – **Stroke** **Port location on head cover**

CJ2XB10, 16



Port location on head cover:  
Axial location (R)

\* For details of the mounting nut, refer to page 1250.

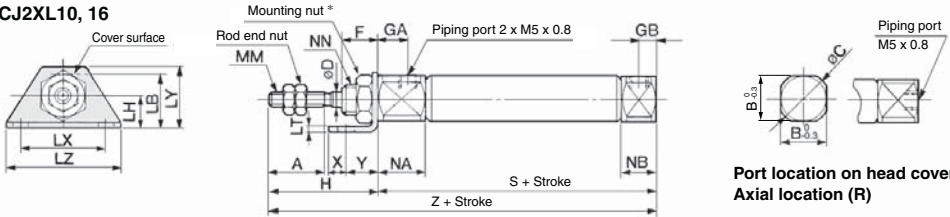
(mm)

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

## Axial Foot Style (L)

CJ2XL **Bore size** – **Stroke** **Port location on head cover**

CJ2XL10, 16



Port location on head cover:  
Axial location (R)

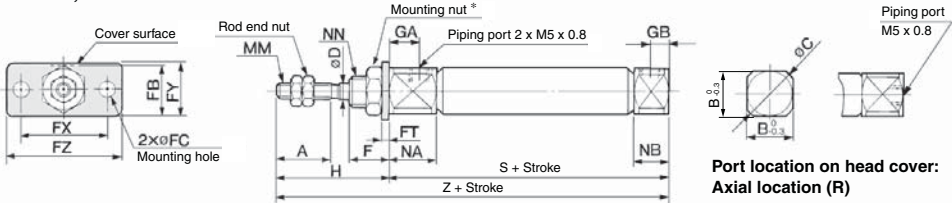
\* For details of the mounting nut, refer to page 1250.

| Bore size (mm) | A  | B    | C  | D | F | GA | GB | H  | LB | LC  | LH | LT  | LX | LY   | LZ | MM       | NA   | NB  | NN        | S  | T | X | Y | Z  |
|----------------|----|------|----|---|---|----|----|----|----|-----|----|-----|----|------|----|----------|------|-----|-----------|----|---|---|---|----|
| 10             | 15 | 12   | 14 | 4 | 8 | 8  | 5  | 28 | 15 | 4.5 | 9  | 1.6 | 24 | 16.5 | 32 | M4 x 0.7 | 12.5 | 9.5 | M8 x 1.0  | 46 | — | 5 | 7 | 74 |
| 16             | 15 | 18.3 | 20 | 5 | 8 | 8  | 5  | 28 | 23 | 6.5 | 14 | 2.3 | 33 | 25   | 42 | M5 x 0.8 | 12.5 | 9.5 | M10 x 1.0 | 47 | — | 6 | 9 | 75 |

**Rod Side Flange Style (F)**

**CJ2XF** Bore size – Stroke Port location on head cover

**CJ2XF10, 16**

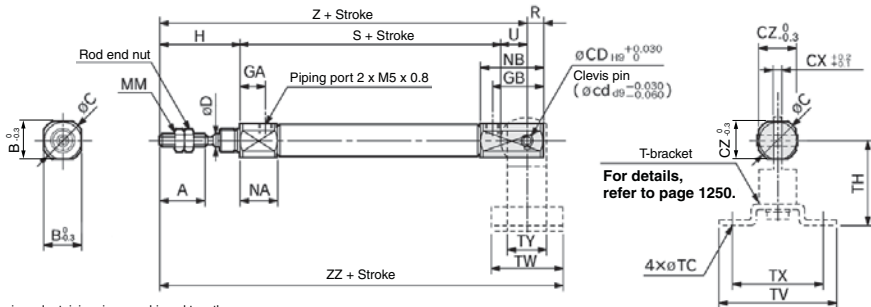


\* For details of the mounting nut, refer to page 1250.

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

**Double Clevis Style (D)**

**CJ2XD** Bore size – Stroke



\* Clevis pin and retaining ring are shipped together.

| Bore size (mm) | A  | B    | C  | CD (cd) | CX  | CZ   | D | GA | GB | H  | MM       | NA   | NB   | R | S  | U  | Z  | ZZ |
|----------------|----|------|----|---------|-----|------|---|----|----|----|----------|------|------|---|----|----|----|----|
| 10             | 15 | 12   | 14 | 3.3     | 3.2 | 12   | 4 | 8  | 18 | 28 | M4 x 0.7 | 12.5 | 22.5 | 5 | 46 | 8  | 82 | 93 |
| 16             | 15 | 18.3 | 20 | 5       | 6.5 | 18.3 | 5 | 8  | 23 | 28 | M5 x 0.8 | 12.5 | 27.5 | 8 | 47 | 10 | 85 | 99 |

**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 |

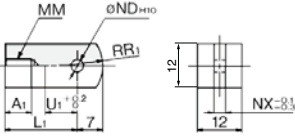
- REA
- REB
- REC
- Y
- X
- MQ
- RHC
- RZQ

- D-□
- X□

# Series CJ2X

# Accessory Bracket Dimensions

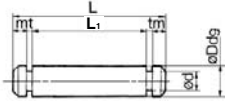
## Single Knuckle Joint (mm)



Material: Rolled steel

| Part no. | Applicable bore | A <sub>1</sub> | L  | MM       | ND <sup>H10</sup>                  | NX  | R <sub>1</sub> | U <sub>1</sub> |
|----------|-----------------|----------------|----|----------|------------------------------------|-----|----------------|----------------|
| I-J010B  | 10              | 8              | 21 | M4 x 0.7 | 3.3 <sup>+0.048</sup> <sub>0</sub> | 3.1 | 8              | 9              |
| I-J016B  | 16              | 8              | 25 | M5 x 0.8 | 5 <sup>+0.048</sup> <sub>0</sub>   | 6.4 | 12             | 14             |

## Clevis Pin (mm)

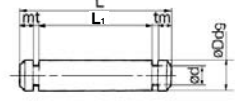


Material: Stainless steel

| Part no. | Applicable bore | Dd9                                     | d   | L    | L <sub>1</sub> | m   | t   | Applicable retaining ring |
|----------|-----------------|---|-----|------|----------------|-----|-----|---------------------------|
| CD-J010  | 10              | 3.3 <sup>+0.030</sup> <sub>-0.060</sub> | 3   | 15.2 | 12.2           | 1.2 | 0.3 | Type C 3.2                |
| CD-Z015  | 16              | 5 <sup>+0.030</sup> <sub>-0.060</sub>   | 4.8 | 22.7 | 18.3           | 1.5 | 0.7 | Type C 5                  |

\* Retaining rings are packaged with clevis pins.

## Knuckle Pin (mm)

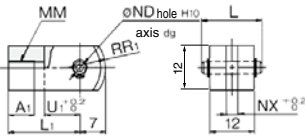


Material: Stainless steel

| Part no. | Applicable bore | Dd9                                     | d   | L    | L <sub>1</sub> | m   | t   | Applicable retaining ring |
|----------|-----------------|---|-----|------|----------------|-----|-----|---------------------------|
| CD-J010  | 10              | 3.3 <sup>+0.030</sup> <sub>-0.060</sub> | 3   | 15.2 | 12.2           | 1.2 | 0.3 | Type C 3.2                |
| IY-J015  | 16              | 5 <sup>+0.030</sup> <sub>-0.060</sub>   | 4.8 | 16.6 | 12.2           | 1.5 | 0.7 | Type C 5                  |

\* For size  $\phi 10$ , clevis pin is diverted.  
\* Retaining rings are packaged with knuckle pins.

## Double Knuckle Joint (mm)



Material: Rolled steel

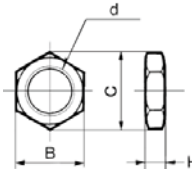
| Part no. | Applicable bore | A <sub>1</sub> | L    | L <sub>1</sub> | MM       |
|----------|-----------------|----------------|------|----------------|----------|
| Y-J010B  | 10              | 8              | 15.2 | 21             | M4 x 0.7 |
| Y-J016B  | 16              | 11             | 16.6 | 21             | M5 x 0.8 |

| Part no. | ND <sub>as</sub>                        | ND <sub>ms</sub>                   | NX  | R <sub>1</sub> | U <sub>1</sub> |
|----------|---|------------------------------------|-----|----------------|----------------|
| Y-J010B  | 3.3 <sup>+0.030</sup> <sub>-0.060</sub> | 3.3 <sup>+0.048</sup> <sub>0</sub> | 3.2 | 8              | 10             |
| Y-J016B  | 5 <sup>+0.030</sup> <sub>-0.060</sub>   | 5 <sup>+0.048</sup> <sub>0</sub>   | 6.5 | 12             | 10             |

\* Knuckle pin and retaining ring are shipped together.

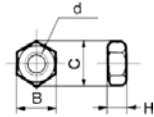
## Mounting Nut (mm)



Material: Brass

| Part no. | Applicable bore | B  | C    | d         | H |
|----------|-----------------|----|------|-----------|---|
| SNJ-010B | 10              | 11 | 12.7 | M8 x 1.0  | 4 |
| SNJ-016B | 16              | 14 | 16.2 | M10 x 1.0 | 4 |

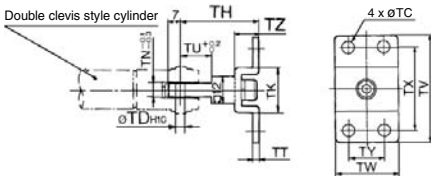
## Rod End Nut (mm)



Material: Iron

| Part no. | Applicable bore | 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   |

## T-bracket (mm)

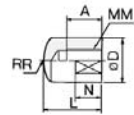
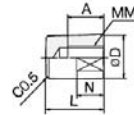


| Part no. | Applicable bore | TC  | TD <sup>H10</sup>                  | TH | TK | TN  | TT  | TU | TV | TW | TX | TY | TZ |
|----------|-----------------|-----|------------------------------------|----|----|-----|-----|----|----|----|----|----|----|
| CJ-T010B | 10              | 4.5 | 3.3 <sup>+0.048</sup> <sub>0</sub> | 29 | 18 | 3.1 | 2   | 9  | 40 | 22 | 32 | 12 | 8  |
| CJ-T016B | 16              | 5.5 | 5 <sup>+0.048</sup> <sub>0</sub>   | 35 | 20 | 6.4 | 2.3 | 14 | 48 | 28 | 38 | 16 | 10 |

\* T-bracket includes a T-bracket base, single knuckle joint, hexagon socket head cap screw and spring washer.

## Rod End Cap (mm)

Flat type/CJ-CF□□□ Round type/CJ-CR□□□



Material: Polyacetal

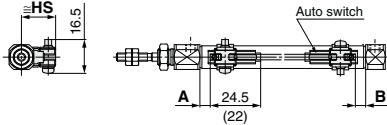
| Part no.  |            | Applicable bore | A  | D  | L  | MM       | N | R  | W  |
|-----------|------------|-----------------|----|----|----|----------|---|----|----|
| Flat type | Round type |                 |    |    |    |          |   |    |    |
| CJ-CF010  | CJ-CR010   | 10              | 8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

# Auto Switch Mounting 1

## Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

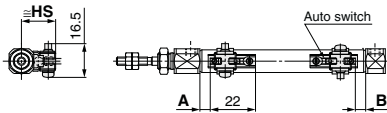
Reed auto switch  
<Band mounting style>

D-A9□



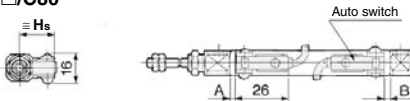
( ): Values for D-A96  
A and B are the dimensions from the end of the head cover/  
rod cover to the end of the auto switch.

D-A9□V

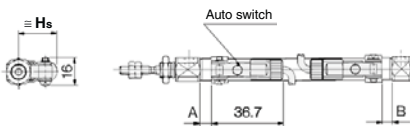


A and B are the dimensions from the end of the head cover/  
rod cover to the end of the auto switch.

D-C7□/C80



D-C73C□/C80C

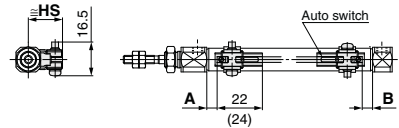


Solid state auto switch  
<Band mounting style>

D-M9□

D-M9□W

D-M9□A

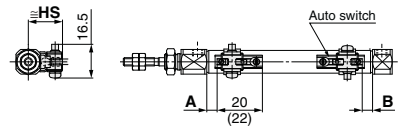


( ): Values for D-M9□A  
A and B are the dimensions from the end of the head cover/  
rod cover to the end of the auto switch.

D-M9□V

D-M9□MV

D-M9□AV

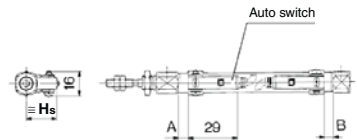


( ): Values for D-M9□AV  
A and B are the dimensions from the end of the head cover/  
rod cover to the end of the auto switch.

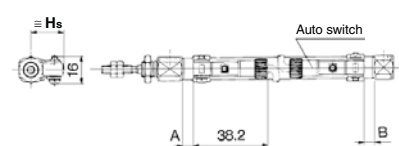
D-H7□

D-H7□W

D-H7NF



D-H7C



REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

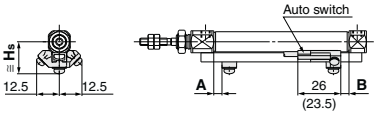
-X□

# Auto Switch Mounting 2

## Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

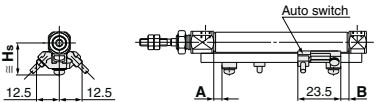
### Reed auto switch <Rail mounting style>

D-A9□

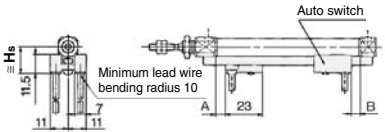


( ): Values for D-A96

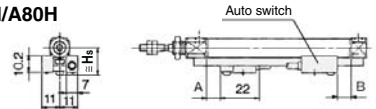
D-A9□V



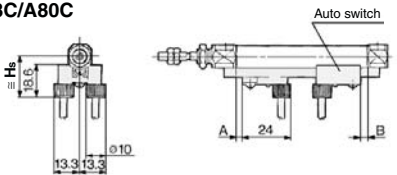
D-A7□/A80



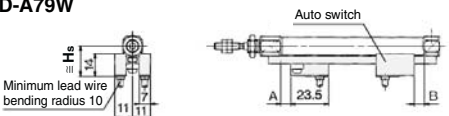
D-A7□H/A80H



D-A73C/A80C

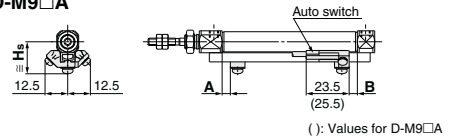


D-A79W



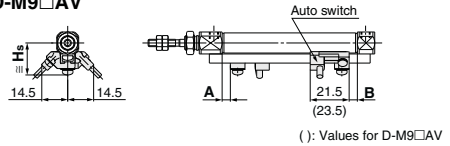
### Solid state auto switch <Rail mounting style>

D-M9□  
D-M9□W  
D-M9□A



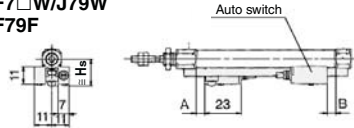
( ): Values for D-M9□A

D-M9□V  
D-M9□WV  
D-M9□AV

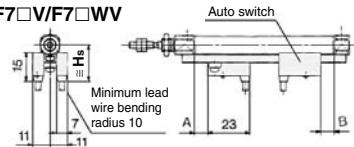


( ): Values for D-M9□AV

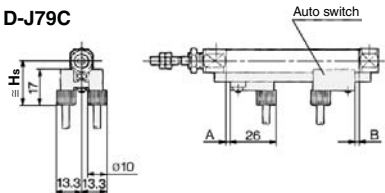
D-F7□/J79  
D-F7□W/J79W  
D-F79F



D-F7□V/F7□WV



D-J79C



**Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height**

**Auto Switch Proper Mounting Position**

(mm)

| Auto switch model<br>Bore size (mm) | Band mounting   |     |   |     |                                    |     |                                    |     | Rail mounting   |     |   |     |                |     |  |     |        |     |        |     |
|-------------------------------------|-----------------|-----|---|-----|------------------------------------|-----|------------------------------------|-----|-----------------|-----|---|-----|----------------|-----|--|-----|--------|-----|--------|-----|
|                                     | D-A9□<br>D-A9□V |     | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□A<br>D-M9□AV |     | D-C7□<br>D-C80<br>D-C73C<br>D-C80C |     | D-H7□<br>D-H7C<br>D-H7NF<br>D-H7□W |     | D-A9□<br>D-A9□V |     | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□A<br>D-M9□AV |     | D-A7□<br>D-A80 |     | D-A7□H/A80H<br>D-A73C/A80C<br>D-F7□/J79<br>D-F7□W/J79W<br>D-F7□V/F7□WV<br>D-F79F<br>D-J79C |     | D-F7NT |     | D-A79W |     |
|                                     | A               | B   | A   | B   | A                                  | B   | A                                  | B   | A               | B   | A   | B   | A              | B   | A  | B   | A      | B   | A      | B   |
| 10                                  | 2               | 2   | 6   | 6   | 2.5                                | 2.5 | 1.5                                | 1.5 | 0.5             | 0.5 | 4.5   | 4.5 | 3              | 3   | 3.5  | 3.5 | 8.5    | 8.5 | 0.5    | 0.5 |
| 16                                  | 2.5             | 2.5 | 6.5   | 6.5 | 3                                  | 3   | 2                                  | 2   | 1               | 1   | 5   | 5   | 3.5            | 3.5 | 4  | 4   | 9      | 9   | 1      | 1   |

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

**Auto Switch Mounting Height**

(mm)

| Auto switch model<br>Bore size (mm) | Band mounting                      |    |  |      |   | Rail mounting |                  |       |                |    |   |    |   |    |                  |                   |        |        |
|-------------------------------------|------------------------------------|----|--|------|---|---------------|------------------|-------|----------------|----|---|----|---|----|------------------|-------------------|--------|--------|
|                                     | D-A9□<br>D-M9□<br>D-M9□W<br>D-M9□A |    | D-M9□V<br>D-M9□WV<br>D-M9□AV<br>D-A9□V |      | D-C7□<br>D-C80<br>D-H7□<br>D-H7□W<br>D-H7NF |               | D-C73C<br>D-C80C | D-H7C | D-A7□<br>D-A80 |    | D-A9□<br>D-A9□V<br>D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV |    | D-A7□H/A80H<br>D-F7□/J79<br>D-F7□W/J79W<br>D-F79F<br>D-F7NT |    | D-A73C<br>D-A80C | D-F7□V<br>D-F7□WV | D-J79C | D-A79W |
|                                     | Hs                                 | Hs | Hs                                     | Hs   | Hs  | Hs            | Hs               | Hs    | Hs             | Hs | Hs  | Hs | Hs  | Hs | Hs               | Hs                | Hs     | Hs     |
| 10                                  | 17                                 | 18 | 17                                     | 19.5 | 20  | 16.5          | 17.5             | 17.5  | 23.5           | 20 | 23  | 19 |   |    |                  |                   |        |        |
| 16                                  | 20.5                               | 21 | 20.5                                   | 23   | 23.5  | 19.5          | 21               | 20.5  | 26.5           | 23 | 26  | 22 |   |    |                  |                   |        |        |

- REA
- REB
- REC
- C□Y
- C□X**
- MQ
- RHC
- RZQ

- D-□
- X□



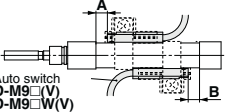
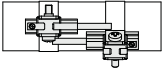
# Auto Switch Mounting 3

## Minimum Auto Switch Mounting Stroke

|                      |   | (mm)                       |                       |                       |   |  |
|----------------------|---|----------------------------|-----------------------|-----------------------|---|--|
| Auto switch mounting | Auto switch model                       | No. of auto switch mounted |                       |                       |   |  |
|                      |   | 1 pc.                      | 2 pcs.                |                       | n pcs. (n: No. of auto switch)  |  |
|                      |   |                            | Different surfaces    | Same surface          | Different surfaces  | Same surface   |
| Band mounting        | D-M9□/M9□W<br>D-M9□A/A9□                | 10                         | 15 <sup>Note 1)</sup> | 45 <sup>Note 1)</sup> | $15 + 35 \frac{(n-2)}{2}$<br><small>(n = 2, 4, 6...)</small> <sup>Note 4)</sup> | $45 + 15 (n-2)$<br><small>(n = 2, 3, 4, 5...)</small>              |
|                      | D-M9□V                                  | 5                          | 15 <sup>Note 1)</sup> | 35                    | $15 + 35 \frac{(n-2)}{2}$<br><small>(n = 2, 4, 6...)</small> <sup>Note 4)</sup> | $35 + 25 (n-2)$<br><small>(n = 2, 3, 4, 5...)</small>              |
|                      | D-M9□WV<br>D-M9□AV                      | 10                         | 15 <sup>Note 1)</sup> | 35                    | $15 + 35 \frac{(n-2)}{2}$<br><small>(n = 2, 4, 6...)</small> <sup>Note 4)</sup> | $35 + 25 (n-2)$<br><small>(n = 2, 3, 4, 5...)</small>              |
|                      | D-A9□V                                  | 5                          | 10                    | 35                    | $10 + 35 \frac{(n-2)}{2}$<br><small>(n = 2, 4, 6...)</small> <sup>Note 4)</sup> | $35 + 25 (n-2)$<br><small>(n = 2, 3, 4, 5...)</small>              |
|                      | D-C7□<br>D-C80                          | 10                         | 15                    | 50                    | $15 + 40 \frac{(n-2)}{2}$<br><small>(n = 2, 4, 6...)</small> <sup>Note 4)</sup> | $50 + 20 (n-2)$<br><small>(n = 2, 3, 4, 5...)</small>              |
|                      | D-H7□/H7□W<br>D-H7NF                    | 10                         | 15                    | 60                    | $15 + 45 \frac{(n-2)}{2}$<br><small>(n = 2, 4, 6...)</small> <sup>Note 4)</sup> | $60 + 22.5 (n-2)$<br><small>(n = 2, 3, 4, 5...)</small>            |
|                      | D-C73C<br>D-C80C<br>D-H7C               | 10                         | 15                    | 65                    | $15 + 50 \frac{(n-2)}{2}$<br><small>(n = 2, 4, 6...)</small> <sup>Note 4)</sup> | $50 + 27.5 (n-2)$<br><small>(n = 2, 3, 4, 5...)</small>            |
| Rail mounting        | D-M9□V                                  | 5                          | —                     | 5                     | —   | $10 + 10 (n-2)$<br><small>(n = 4, 6...)</small> <sup>Note 5)</sup> |
|                      | D-A9□V                                  | 5                          | —                     | 10                    | —   | $10 + 15 (n-2)$<br><small>(n = 4, 6...)</small> <sup>Note 5)</sup> |
|                      | D-M9□<br>D-A9□                          | 10 (5)                     | —                     | 10                    | —   | $15 + 15 (n-2)$<br><small>(n = 4, 6...)</small> <sup>Note 5)</sup> |
|                      | D-M9□WV<br>D-M9□AV                      | 10                         | —                     | 15                    | —   | $15 + 15 (n-2)$<br><small>(n = 4, 6...)</small> <sup>Note 5)</sup> |
|                      | D-M9□W<br>D-M9□A                        | 15 (10)                    | —                     | 15                    | —   | $20 + 15 (n-2)$<br><small>(n = 4, 6...)</small> <sup>Note 5)</sup> |
|                      | D-A7□/A80<br>D-A7□H/A80H<br>D-A73C/A80C | 5                          | —                     | 10                    | —   | $15 + 10 (n-2)$<br><small>(n = 4, 6...)</small> <sup>Note 5)</sup> |
|                      | D-A7□H<br>D-A80H                        | 5                          | —                     | 10                    | —   | $15 + 15 (n-2)$<br><small>(n = 4, 6...)</small> <sup>Note 5)</sup> |
|                      | D-A79W                                  | 10                         | —                     | 15                    | —   | $10 + 15 (n-2)$<br><small>(n = 4, 6...)</small> <sup>Note 5)</sup> |
|                      | D-F7□<br>D-J79                          | 5                          | —                     | 5                     | —   | $15 + 15 (n-2)$<br><small>(n = 4, 6...)</small> <sup>Note 5)</sup> |
|                      | D-F7□V<br>D-J79C                        | 5                          | —                     | 5                     | —   | $10 + 10 (n-2)$<br><small>(n = 4, 6...)</small> <sup>Note 5)</sup> |
|                      | D-F7□W/J79W<br>D-F79F<br>D-F7NT         | 10                         | —                     | 15                    | —   | $15 + 20 (n-2)$<br><small>(n = 4, 6...)</small> <sup>Note 5)</sup> |
|                      | D-F7□WV                                 | 10                         | —                     | 15                    | —   | $10 + 15 (n-2)$<br><small>(n = 4, 6...)</small> <sup>Note 5)</sup> |

Note 4) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.  
 Note 5) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.  
 However, the minimum even number is 4. So, 4 is used for the calculation when "n" is 1 to 3.

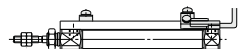
Note 1) Auto switch mounting

| Auto switch model   | With 2 auto switches  |  |
|---|---|--|
|   | Different surfaces <sup>Note 1)</sup>   | Same surface <sup>Note 1)</sup>        |
|  <p>Auto switch<br/>D-M9□(V)<br/>D-M9□W(V)<br/>D-M9□A(V)</p> <p>The proper auto switch mounting position is 5.5 mm inward from the switch holder edge.<br/>                     The above A and B indicate values for band mounting in the table of page 1253.</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 <sup>Note 2)</sup>  | Less than 55 stroke <sup>Note 2)</sup> |
| D-A90/A93   | —   | Less than 50 stroke <sup>Note 2)</sup> |

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

Note 3) The dimensions stated in ( ) shows the minimum stroke for the auto switch mounting when the auto switch does not project from the end surface of the cylinder body and hinder the lead wire bending space. (Refer to the figure below.)

These contents apply to the rail mounting with one or two auto switches.



## Operating Range

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

\* Since this is a guideline including hysteresis, not meant to be guaranteed.  
 (Assuming approximately ±30% dispersion.)  
 There may be the case it will vary substantially depending on an ambient environment.

## Auto Switch Mounting Bracket/Part No.

| Auto switch mounting | Auto switch model  | Bore size  |                                       |
|----------------------|--|--|---------------------------------------|
|                      |  | φ10  | φ16                                   |
| Band mounting        | D-A9□<br>D-M9□<br>D-M9□W   | Note 1), Note 2)<br>① BJ2-010 ② BJ3-1  | Note 1), Note 2)<br>① BJ2-016 ② BJ3-1 |
|                      |  |  |                                       |
|                      |  | ① BJ2-□□□: A set of a and b in the figure.<br>② BJ□-1: A set of c and d in the figure.<br>BJ4-1 (Switch bracket: White)<br>BJ5-1 (Switch bracket: Transparent) |                                       |
| Rail mounting        | D-C7□/C80<br>D-C73C/C80C<br>D-H7□/H7□W<br>D-H7NF                             | BJ2-010  | BJ2-016                               |
|                      |  | Note 3)<br>BQ2-012   | Note 3)<br>BQ2-012                    |
| Rail mounting        | D-A9□<br>D-A9□V<br>D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□A<br>D-M9□AV |  |                                       |

Note 1) Two kinds of auto switch mounting brackets are used as a set.

Note 2) Auto switch mounting brackets are shipped together with cylinders.

Note 3) When mounting a compact auto switch on the φ10 or φ16 rail mounting type, order auto switch mounting bracket shown in the table above. Order it separately from the cylinder.

Example  
 CDJ2BX10-60-A ..... 1 unit  
 D-M9BWV ..... 2 pcs.  
 BQ2-012 ..... 2 pcs.

Note 4) For the D-M9□A (V) type auto switch, do not install the switch bracket on the indicator light.

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted. For detailed specifications, refer to pages 1893 to 2007.

| Auto switch type   | Model              | Electrical entry (Direction) | Features                                   |
|--------------------|--------------------|------------------------------|--|
| <b>Reed</b>        | D-C73, C76         | Grommet (in-line)            | —  |
|                    | D-C80              |                              | Without indicator light                    |
| <b>Solid state</b> | D-H7A1, H7A2, H7B  |                              | —  |
|                    | D-H7NW, H7PW, H7BW |                              | Diagnostic indication (2-color indication) |

\* With pre-wired connector is available for solid state auto switches. For details, refer to pages 1960 to 1961.

\* Normally closed (NC = b contact), solid state auto switches (D-F9G, F9H type) are also available. For details, refer to page 1911.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□