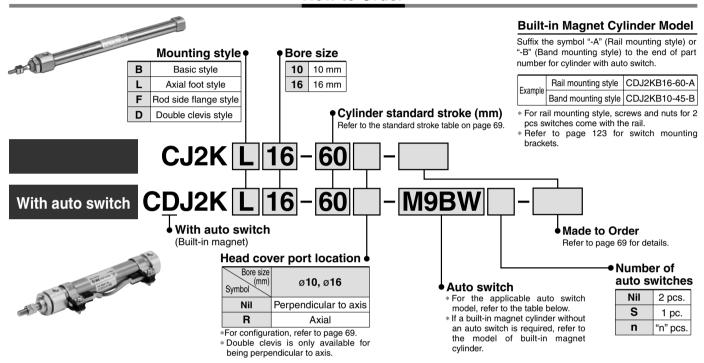
Air Cylinder: Non-rotating Rod Type **Double Acting, Single Rod**

Series CJ2K

Ø10, Ø16

How to Order



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

| | | - | light | Wiring | | Load vo | oltage | Aut | o switch mo | odel | Lea | d wir | e ler | igth | (m) | D | | | | | | | |
|----------|---|------------------|----------------|----------------------------|--------|---------------|--------------|------|---------------|---------|-------|-------|-------|-------|----------|---------------------|------------|----------|---|---|---|---|-----|
| Туре | Special function | Electrical entry | ndicator light | (Output) | | DC | AC | Band | | ounting | 0.5 | 1 | 3 | 5 | None | Pre-wired connector | Applica | ble load | | | | | |
| | | Ontry | jg. | (,-,-, | | | 7.0 | | Perpendicular | In-line | (Nil) | (M) | (L) | (Z) | (N) | | | | | | | | |
| | | | | 3-wire (NPN) | | | | M9N | | _ | • | • | • | | _ | 0 | | | | | | | |
| | | | | o wile (ivi iv) | | 5 V, 12 V | | | F7NV | F79 | • | _ | • | 0 | _ | 0 | IC circuit | | | | | | |
| | | Grommet | | 3-wire (PNP) | | 0 1, 12 1 | | M9P | _ | _ | • | • | • | 0 | _ | 0 | TO GITGUIT | | | | | | |
| _ | | Grommot | | o wile (i ivi) | | | | | F7PV | F7P | • | _ | • | 0 | _ | 0 | | | | | | | |
| 호 | | | | | | | | M9B | _ | _ | • | | • | 0 | | 0 | | | | | | | |
| switch | | | | 2-wire | | 12 V | | _ | F7BV | J79 | | _ | • | 0 | _ | 0 | _ | | | | | | |
| <u>ë</u> | | Connector | Yes | | | | | H7C | J79C | _ | • | _ | • | • | • | _ | Relay, | | | | | | |
| state | | | | 3-wire (NPN) | P) 5 | 24 V | 24 V | 24 V | 24 V | 24 V | | _ | M9NW | _ | _ | • | | • | 0 | _ | 0 | | PLC |
| 9 | Diagnostic indication | | 3-w | 3-wile (IVI IV) | | 5 V, 12 V | | _ | F7NWV | F79W | | _ | • | 0 | - | 0 | IC circuit | t | | | | | |
| Solid | | Grommet | | 3-wire (PNP) | | | | M9PW | _ | _ | • | • | • | 0 | - | 0 | | | | | | | |
| 0) | (2-color indication) | | | O-WILE (I INI) | | | | _ | _ | F7PW | • | _ | | 0 | _ | 0 | | | | | | | |
| | , | diominica | | | | | | M9BW | _ | _ | • | • | • | 0 | _ | 0 | | | | | | | |
| | | | | 2-wire | | | 12 V | 12 V | 12 V | 12 V | 12 V | | _ | F7BWV | J79W | • | _ | | 0 | - | 0 | _ | |
| | Water resistant (2-color indication) | | | | | | | | H7BA | F7BAV | F7BA | _ | _ | • | 0 | _ | 0 | | | | | | |
| | With diagnostic output (2-color indication) | | | 4-wire (NPN) | | 5 V, 12 V | | H7NF | _ | F79F | • | _ | • | 0 | _ | 0 | IC circuit | | | | | | |
| | | | | 3-wire (NPN equivalent) | _ | 5 V | - | A96 | _ | A76H | • | _ | • | _ | - | _ | IC circuit | _ | | | | | |
| 유 | | | Yes | | | _ | 200 V | _ | A72 | A72H | • | _ | • | _ | _ | _ | | | | | | | |
| switch | | Grommet | | | | | 400.1/ | _ | A73 | A73H | • | _ | • | • | _ | _ | l — | | | | | | |
| | | | | | | | 100 V | A93 | _ | _ | • | _ | • | _ | <u> </u> | _ | | Dalass | | | | | |
| Reed | | | No 2-wire | | . 12 V | 100 V or less | A90 | A80 | A80H | • | _ | • | _ | _ | _ | IC circuit | Relay, | | | | | | |
| Œ | | Cannastar | Yes | | 24 V | | _ | C73C | A73C | _ | • | _ | • | • | • | _ | _ | 1 1 20 | | | | | |
| | | Connector | No | | | | 24 V or less | C80C | A80C | _ | • | _ | • | • | • | _ | IC circuit | 1 | | | | | |
| | Diagnostic indication (2-color indication) | Grommet | Yes | | | _ | _ | _ | A79W ** | _ | • | _ | • | _ | 1— | _ | _ | 1 | | | | | |

- * Lead wire length symbols: 0.5 m..... Nil (Example) M9NW
 - 1 m······ M (Example) M9NWM
 - 3 m······ L (Example) M9NWL 5 m····· Z (Example) M9NWZ None N (Example) H7CN
- * Since there are other applicable auto switches than listed, refer to page 123 for details.
 * For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
- * Band mounting style is not available for D-A9 V/M9 V/M9 WV and D-M9 A(V)L types.
- ** "D-A79W" cannot be mounted on bore size ø10 cylinder with air cushion.
- * Solid state auto switches marked with "0" are produced upon receipt of order.

 * D-A9□/M9□/M9□/M/A7□□/A80□/F7□□/J7□□ auto switches are shipped together (not assembled). (However, when D-A9□/M9□/M9□/M9□W types are selected,
- only auto switch mounting brackets are assembled before being shipped.)

 * When D-A9\(\text{V}\)/M9\(\text{V}\)/M9\(\text{W}\) types are mounted on a \(\text{ø}10 \) or \(\text{ø}16 \) rail, order auto switch mounting brackets separately. Refer to page 123 for details.



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

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

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

JIS Symbol

Double acting, Single rod



Head Cover Port Location

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





Made to Order Specifications

(For details, refer to pages 1373 to 1498.)

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

Specifications

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

^{*} No freezing

Standard Stroke

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

 $[\]ast$ Manufacture of intermediate strokes at 1 mm intervals is possible. (Spacers are not used.)

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

| | Mounting style | Basic style | Axial foot style | Rod side flange style | Double clevis * style |
|-----------------------|------------------------|----------------|------------------|-----------------------|-----------------------|
| ird | Mounting nut | • | • | • | - |
| Standard equipment | Rod end nut | • | • | • | • |
| Sts | Clevis pin | _ | _ | _ | • |
| _ | Single knuckle joint | • | • | • | • |
| Option | Double knuckle joint * | • | • | • | • |
| 0 | T-bracket | _ | _ | _ | • |

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

Mounting Bracket Part No.

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

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

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

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

D
-X

Individual

-X□ Technical data



CM2

CJ1

CJP

CJ₂

CG1

MB

MB1 CA2

UAZ

CS1

CS2

Specific Product Precautions

Be sure to read before handling.

Refer to front matters 54 and 55 for Safety Instructions and I pages 3 to 11 for Actuator and Auto Switch Precautions.

Caution on Handling

. Caution

1. During installation, secure the rod cover and tighten by applying an appropriate tightening force to the retaining but or to the rod cover

If the head cover is secured or the head cover is tightened, the cover could rotate, leading to the deviation.

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

ø10: 10.8 to 11.8 N·m, ø16: 20 to 21 N·m

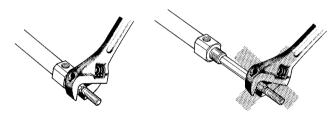
3. In the case of a non-rotating cylinder, do not operate it in such a way that rotational torque would be applied to the piston rod. If rotational torque is applied, the non-rotating guide will become deformed, thus affecting the non-rotating accuracy.

| Allewable retetional terrors (Alms) | ø 10 | ø 16 |
|-------------------------------------|-------------|-------------|
| Allowable rotational torque (N·m) | 0.02 | 0.04 |

4. To screw a bracket onto the threaded portion at the tip of the piston rod, make sure to retract the piston rod entirely, and place a wrench over the flat portion of the rod that protrudes. To tighten, take precautions to prevent the tightening torque from being applied to the non-rotating guide.

5. To remove and install the retaining ring for the knuckle pin or the clevis pin, use an appropriate pair of pliers (tool for installing a type C retaining ring). In particular, use a pair of ultra-mini pliers for removing and installing the retaining ring on the ø10 cylinder.

6. In the case of auto switch rail mounting style, do not remove the rail that is mounted. Because retaining screws extend into the cylinder, this could lead to an air leak.



Mass

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

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

Calculation: (Example) CJ2KL10-45

• Basic mass 24 (ø10) Additional mass ----- 4/15 stroke

Cylinder stroke ----- 45 stroke

• Mounting bracket mass 20 (Axial foot style)

 $24 + 4/15 \times 45 + 20 = 56 g$

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

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

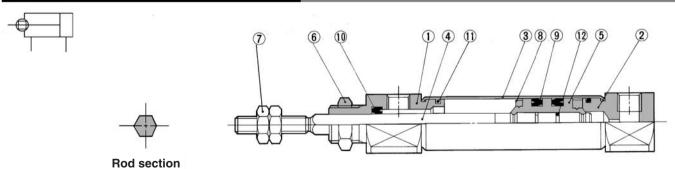
Copper and fluorine-free

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

Specifications

| Action | | Double acting, Single rod | | |
|----------------------------|-------------|--|--|--|
| Maximum operating | pressure | 0.7 MPa | | |
| Minimum operating pressure | | 0.06 MPa | | |
| Cushion | | Rubber bumper (Standard equipment) | | |
| Rod non-rotating | ø 10 | ±1.5° | | |
| accuracy | ø 16 | ±1° | | |
| Standard stroke (m | ım) | Same as standard type. (Refer to page 69.) | | |
| Auto switch | | Mountable (Band mounting style) | | |
| Mounting | | Basic style, Axial foot style, Rod side flange style, Double clevis style | | |

Construction (Not able to disassemble)



Component Parts

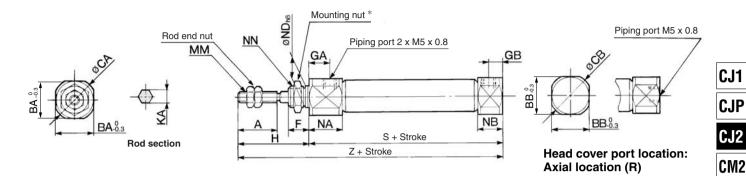
| No. | Description | Material | Note |
|-----|---------------|-----------------|---------------|
| 1 | Rod cover | Aluminum alloy | Anodized |
| 2 | Head cover | Aluminum alloy | Anodized |
| 3 | Cylinder tube | Stainless steel | |
| 4 | Piston rod | Stainless steel | |
| 5 | Piston | Brass | |
| 6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

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

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

Basic Style (B)

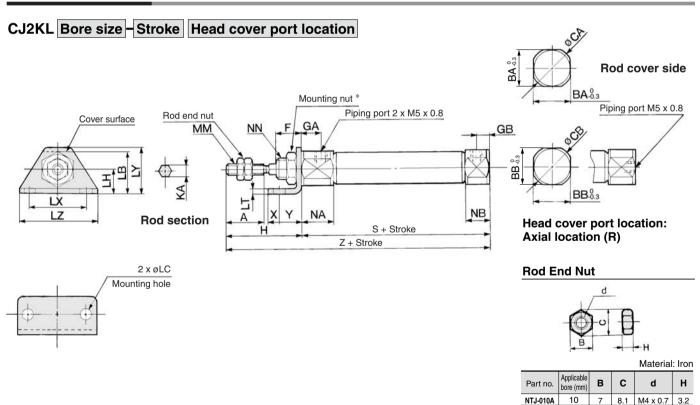
CJ2KB Bore size - Stroke Head cover port location



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

NB NDh8 Bore size (mm) ВВ CA СВ GB KA MM NA NN S Z Α 4.2 10 _0.022 M10 x 1.0 10 15 15 12 17 14 8 8 5 28 M4 x 0.7 12.5 9.5 46 74 M12 x 1.0 16 5 28 75 15 18.3 18.3 20 20 8 8 5.2 M5 x 0.8 12.5 9.5 47

Axial Foot Style (L)



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

| * I Telel to b | There to page 31 for details of the mountaing hat. (3143-010B for \$10, 3143-010B for \$10) | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|---|------|------|----|----|---|----|----|----|-----|------|-----|----|-----|----|----|----|----------|------|-----|-----------|---|---|----|----|
| Bore size (mm) | Α | ВА | ВВ | CA | СВ | F | GA | GB | Н | KA | LB | LC | LH | LT | LX | LY | LZ | MM | NA | NB | NN | X | Υ | S | Z |
| 10 | 15 | 15 | 12 | 17 | 14 | 8 | 8 | 5 | 28 | 4.2 | 21.5 | 5.5 | 14 | 2.3 | 33 | 25 | 42 | M4 x 0.7 | 12.5 | 9.5 | M10 x 1.0 | 6 | 9 | 46 | 74 |
| 16 | 15 | 18.3 | 18.3 | 20 | 20 | 8 | 8 | 5 | 28 | 5.2 | 23 | 5.5 | 14 | 2.3 | 33 | 25 | 42 | M5 x 0.8 | 12.5 | 9.5 | M12 x 1.0 | 6 | 9 | 47 | 75 |

D-□

CG1

MB

MB1

CA2

CS₁

CS2

-X□ Individual -X□

Technical



9.2 M5 x 0.8

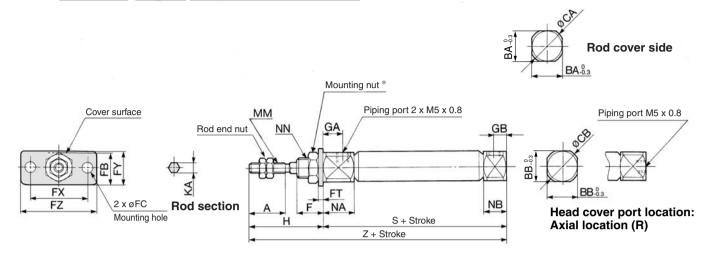
NTJ-015A

16

Series CJ2K

Rod Side Flange Style (F)

CJ2KF Bore size - Stroke | Head cover port location

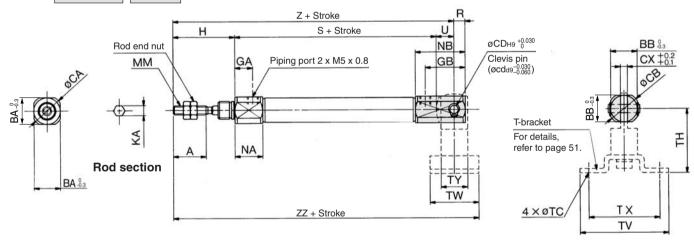


* Refer to page 51 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16)

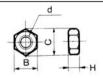
| | | | | | | • | ` | | | | | | | | | | | | | | | (111111) |
|----------------|----|------|------|----|----|---|------|-----|-----|----|----|----|----|----|----|-----|----------|------|-----|-----------|----|----------|
| Bore size (mm) | Α | ВА | BB | CA | СВ | F | FB | FC | FT | FX | FY | FZ | GA | GB | Н | KA | MM | NA | NB | NN | S | Z |
| 10 | 15 | 15 | 12 | 17 | 14 | 8 | 17.5 | 5.5 | 2.3 | 33 | 20 | 42 | 8 | 5 | 28 | 4.2 | M4 x 0.7 | 12.5 | 9.5 | M10 x 1.0 | 46 | 74 |
| 16 | 15 | 18.3 | 18.3 | 20 | 20 | 8 | 19 | 5.5 | 2.3 | 33 | 20 | 42 | 8 | 5 | 28 | 5.2 | M5 x 0.8 | 12.5 | 9.5 | M12 x 1.0 | 47 | 75 |

Double Clevis Style (D)

CJ2KD Bore size - Stroke



Rod End Nut



* Clevis pin and retaining ring are shipped together.

| | | | | Materia | l: Iron |
|----------|----------------------|---|-----|----------|---------|
| Part no. | Applicable bore (mm) | В | С | d | Н |
| NTJ-010A | 10 | 7 | 8.1 | M4 x 0.7 | 3.2 |
| NTJ-015A | 16 | 8 | 9.2 | M5 x 0.8 | 4 |

| Bore size (mm) | Α | ВА | BB | CA | СВ | CD(cd) | CX | GA | GB | Н | KA | MM | NA | NB | R | S | U | Z | ZZ |
|----------------|----|------|------|----|----|--------|-----|----|----|----|-----|----------|------|------|---|----|----|----|----|
| 10 | 15 | 15 | 12 | 17 | 14 | 3.3 | 3.2 | 8 | 18 | 28 | 4.2 | M4 x 0.7 | 12.5 | 22.5 | 5 | 46 | 8 | 82 | 93 |
| 16 | 15 | 18.3 | 18.3 | 20 | 20 | 5 | 6.5 | 8 | 23 | 28 | 5.2 | M5 x 0.8 | 12.5 | 27.5 | 8 | 47 | 10 | 85 | 99 |

(mm)

| T-bracket | Dim | ensi | ons |
|-----------|-----|------|-----|
| | | | |

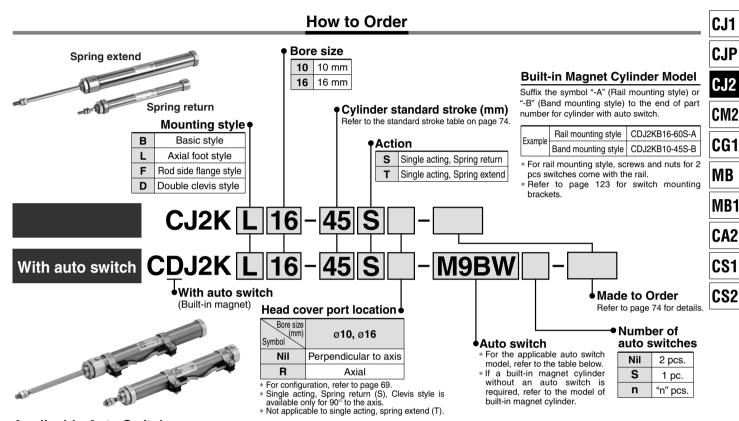
| Bore size (mm) | TC | TH | TV | TW | TX | TY |
|----------------|-----|----|----|----|----|----|
| 10 | 4.5 | 29 | 40 | 22 | 32 | 12 |
| 16 | 5.5 | 35 | 48 | 28 | 38 | 16 |



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

Series CJ2K

ø10, ø16



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

| | | | ig. | \A(: | | Load vo | oltage | Auto | switch mod | el | Lea | d wii | e ler | ngth | (m) | | | |
|--------|---|------------------|-----|----------------------------|------|-----------|---------------|----------|---------------|---------|-------|-------|-------|------|--------------|---------------------|------------|---------------|
| Туре | Special function | Electrical entry | api | Wiring | | D0 | 40 | Band | Rail mo | ounting | 0.5 | 1 | 3 | 5 | None | Pre-wired connector | Applica | ble load |
| ,, | ' | entry | 뺼 | (Output) | | DC | AC | mounting | Perpendicular | In-line | (Nil) | (M) | (L) | (Z) | (N) | CONNECTOR | | |
| | | | | O suine (NIDNI) | | | | M9N | | _ | • | • | • | 0 | I — | 0 | | |
| | | | | 3-wire (NPN) | | 5 V 40 V | | _ | F7NV | F79 | • | _ | • | 0 | _ | 0 | IC circuit | |
| | | 0 | | 3-wire (PNP) | | 5 V, 12 V | | M9P | _ | _ | • | • | • | 0 | <u> </u> | 0 | IC circuit | |
| _ | | Grommet | | 3-wire (PINP) | | | | _ | F7PV | F7P | • | _ | • | 0 | I — | 0 | | |
| 달 | | | | | | | | M9B | _ | _ | • | • | • | 0 | I — | 0 | | |
| switch | | | | 2-wire | | 12 V | | _ | F7BV | J79 | • | _ | • | 0 | I — | 0 | 1 — | |
| ē | | Connector | Yes | | | | | H7C | J79C | _ | • | _ | • | • | • | _ | | Relay, |
| state | | | res | O suine (NIDNI) | 24V | | _ | M9NW | _ | _ | • | | • | 0 | - | 0 | | PLC |
| Ö | | | | 3-wire (NPN) | | 5 V, 12 V | | | F7NWV | F79W | | _ | • | 0 | | 0 | IC circuit | |
| Solid | Diagnostic indication | | | 3-wire (PNP) | | 5 V, 12 V | | M9PW | | _ | | • | • | 0 | — | 0 | IC CITCUIT | |
| (C) | (2-color indication) | Grommet | | 3-WIIE (I IVI) | | | | | _ | F7PW | | _ | • | 0 | - | 0 | | 1 |
| | | Grommet | | | | | | M9BW | | _ | | • | • | 0 | — | 0 | | |
| | | | | 2-wire | | 12 V | | 1 | F7BWV | J79W | | _ | • | 0 | _ | 0 | _ | |
| | Water resistant (2-color indication) | | | | | | | H7BA | F7BAV | F7BA | _ | _ | • | 0 | _ | 0 | | |
| | With diagnostic output (2-color indication) | | | 4-wire (NPN) | | 5 V, 12 V | | H7NF | | F79F | | | • | 0 | _ | 0 | IC circuit | |
| | | | | 3-wire (NPN equivalent) | _ | 5 V | _ | A96 | _ | A76H | • | _ | • | _ | - | _ | IC circuit | _ |
| 유 | | Grommet | Yes | | | _ | 200 V | _ | A72 | A72H | • | _ | • | _ | _ | _ | | |
| switch | | Gioillilet | | | | | 100.1/ | _ | A73 | A73H | • | _ | • | • | _ | _ | - | |
| S | | | | | | | 100 V | A93 | _ | _ | • | _ | • | _ | _ | _ | | Polov |
| Reed | | | No | 2-wire | 041/ | 12 V | 100 V or less | A90 | A80 | A80H | • | _ | • | _ | <u> </u> | l — | IC circuit | Relay, PLC |
| æ | | | Yes | 1 | 24V | | _ | C73C | A73C | _ | • | _ | • | • | | - | _ | FLC |
| | | Connector | No | | | | 24 V or less | C80C | A80C | _ | | _ | • | • | • | _ | IC circuit | 1 |
| | Diagnostic indication (2-color indication) | Grommet | Yes | | | _ | _ | _ | A79W ** | _ | | _ | • | _ | | | _ | 1 |

* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW

1 m...... M (Example) M9NWM 3 m...... L (Example) M9NWL 5 m..... Z (Example) M9NWZ

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

 ** "D-A79W" cannot be mounted on bore size ø10 cylinder with air cushion.

D-□

-X□

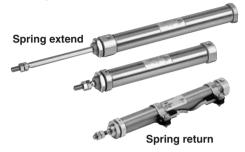
Individual

-X□ Technical

Series CJ2K

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

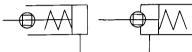
Non-rotating accuracy ø10: ±1.5°, ø16: ±1° Can operate without lubrication.



JIS Symbol

Single acting, Spring return

Single acting, Spring extend





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

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

Specifications

| Bore size (mm) | 10 | 16 | | | | | |
|-------------------------------|---|------------------------------|--|--|--|--|--|
| Action | Single acting, Spring return | Single acting, Spring extend | | | | | |
| Fluid | Д | ir | | | | | |
| Proof pressure | 1 MPa | | | | | | |
| Maximum operating pressure | 0.7 | MPa | | | | | |
| Minimum operating pressure | 0.15 | MPa | | | | | |
| Ambient and fluid temperature | Without auto switch: -10°C to 70°C, With auto switch: -10°C to 60°C | | | | | | |
| Cushion | Rubber bumper (st | andard equipment) | | | | | |
| Lubrication | Not required | d (Non-lube) | | | | | |
| Stroke length tolerance | + | 1.0) | | | | | |
| Rod non-rotating accuracy | ±1.5° ±1° | | | | | | |
| Piston speed | 50 to 750 mm/s | | | | | | |
| Allowable kinetic energy | 0.035 J 0.090 J | | | | | | |

^{*} No freezing

Standard Stroke

| Standard Stroke (mn | | | | | | | | |
|---------------------|-----------------------------------|--|--|--|--|--|--|--|
| Bore size | Standard stroke | | | | | | | |
| 10 | 15, 30, 45, 60 | | | | | | | |
| 16 | 15, 30, 45, 60, 75, 100, 125, 150 | | | | | | | |

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

Spring Force

(N)

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

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

| $\overline{}$ | | | | | |
|-----------------------|------------------------|----------------|------------------|-----------------------|-------------------------|
| | Mounting | Basic style | Axial foot style | Rod side flange style | Double clevis* style |
| rd | Mounting nut | • | • | • | - |
| Standard equipment | Rod end nut | • | • | • | • |
| Ste | Clevis pin | _ | _ | _ | • |
| L | Single knuckle joint | • | • | • | • |
| Option | Double knuckle joint * | • | • | • | • |
| 0 | T-bracket | _ | _ | _ | • |

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

Mounting Bracket Part No.

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

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

Precautions

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

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

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



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

Mass/Spring Return, (): Spring Extend

| wass/spri | ng neturn, (): Spring c | zxtena | (g) |
|-----------|----------------------------------|--------|----------|
| | Bore size (mm) | 10 | 16 |
| | 15 stroke | 28(28) | 63(64) |
| | 30 stroke | 35(34) | 80(80) |
| | 45 stroke | 44(43) | 102(100) |
| Basic | 60 stroke | 53(51) | 124(121) |
| mass * | 75 stroke | _ | 145(140) |
| | 100 stroke | _ | 188(178) |
| | 125 stroke | _ | 224(212) |
| | 150 stroke | _ | 250(236) |
| Mounting | Axial foot style | 20 | 20 |
| bracket | Rod side flange style | 15 | 15 |
| mass | Double clevis style * (With pin) | 4 | 10 |

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

Calculation: (Example) CJ2KL10-45S

- Basic mass 44 (ø10-45 stroke)
- Mounting bracket mass ····· 20 (Axial foot style)
 44 + 20 = 64 g

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

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

Copper and fluorine-free

Eliminates the effects by copper based ions and fluorine based resins, etc. over the color cathode ray tube.

Making copper based materials into electroless nickel plated treatment or changing them to the non-copper materials in order to prevent copper ions from generating.

Specifications

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

CJ1

CJP

UJP

CJ2 CM2

CG1

uui

MB

MB1

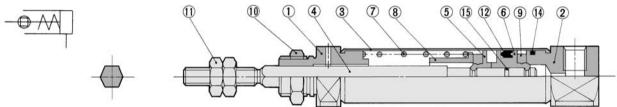
CA2

CS1

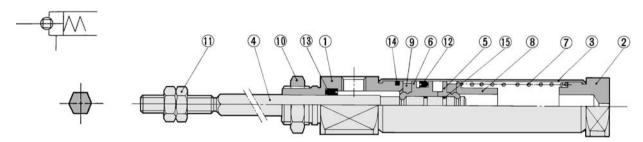
CS2

Construction (Not able to disassemble)

Single acting, Spring return



Single acting, Spring extend



Component Parts

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

| | Description | Material | Note |
|----|---------------|--------------|---------------|
| 9 | Bumper | Urethane | |
| 10 | Mounting nut | Brass | Nickel plated |
| 11 | Rod end nut | Rolled steel | Nickel plated |
| 12 | Piston seal | NBR | |
| 13 | Rod seal | NBR | |
| 14 | Tube gasket | NBR | |
| 15 | Piston gasket | NBR | |

D-□

-X□

Individual -X□

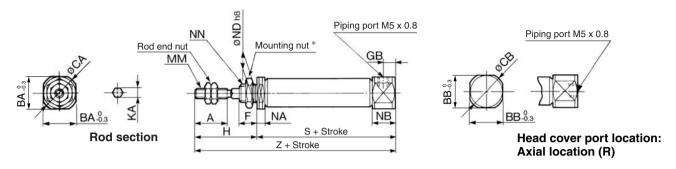
Technical data



Series CJ2K

Single Acting, Spring Return: Basic Style (B)

CJ2KB Bore size - Stroke S Head cover port location



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

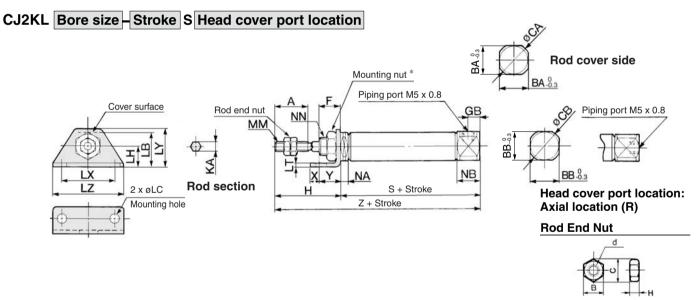
(mm)

| Bore size | Α | BA | BB | CA | СВ | F | GB | Н | KA | MM | NA | NB | NDh8 | NN |
|-----------|----|------|------|----|----|---|----|----|-----|----------|-----|-----|-----------|-----------|
| 10 | 15 | 15 | 12 | 17 | 14 | 8 | 5 | 28 | 4.2 | M4 x 0.7 | 5.5 | 9.5 | 10 _0.022 | M10 x 1.0 |
| 16 | 15 | 18.3 | 18.3 | 20 | 20 | 8 | 5 | 28 | 5.2 | M5 x 0.8 | 5.5 | 9.5 | 12 0 0 0 | M12 x 1.0 |

Dimensions by Stroke

| Bore Symbol | | | | , | 3 | Z | | | | | | | | | | |
|-------------|---------|----------|----------|----------|----------|-----------|------------|------------|---------|----------|----------|----------|----------|-----------|------------|------------|
| | 5 to 15 | 16 to 30 | 31 to 45 | 46 to 60 | 61 to 75 | 76 to 100 | 101 to 125 | 126 to 150 | 5 to 15 | 16 to 30 | 31 to 45 | 46 to 60 | 61 to 75 | 76 to 100 | 101 to 125 | 126 to 150 |
| 10 | 45.5 | 53 | 65 | 77 | _ | _ | _ | _ | 73.5 | 81 | 93 | 105 | _ | _ | _ | _ |
| 16 | 45.5 | 54 | 66 | 78 | 84 | 108 | 126 | 138 | 73.5 | 82 | 94 | 106 | 112 | 136 | 154 | 166 |

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



| | | | | Material | : Iron |
|----------|----------------------|---|-----|----------|--------|
| Part no. | Applicable bore (mm) | В | С | d | Н |
| NTJ-010A | 10 | 7 | 8.1 | M4 x 0.7 | 3.2 |
| NTJ-015A | 16 | 8 | 9.2 | M5 x 0.8 | 4 |

| : | * Refer to page t | Refer to page 51 for details of the mounting nut. (SNJ-016B for Ø10, SNKJ-016B for Ø16) | | | | | | | | | | | | | | | | (mm) | | | | | |
|---|-------------------|---|------|------|----|----|---|----|----|-----|------|-----|----|-----|----|----|----|----------|-----|-----|-----------|---|---|
| ĺ | Bore size | Α | BA | BB | CA | СВ | F | GB | Н | KA | LB | LC | LH | LT | LX | LY | LZ | MM | NA | NB | NN | Х | Υ |
| | 10 | 15 | 15 | 12 | 17 | 14 | 8 | 5 | 28 | 4.2 | 21.5 | 5.5 | 14 | 2.3 | 33 | 25 | 42 | M4 x 0.7 | 5.5 | 9.5 | M10 x 1.0 | 6 | 9 |
| | 16 | 15 | 18.3 | 18.3 | 20 | 20 | 8 | 5 | 28 | 5.2 | 23 | 5.5 | 14 | 2.3 | 33 | 25 | 42 | M5 x 0.8 | 5.5 | 9.5 | M12 x 1.0 | 6 | 9 |

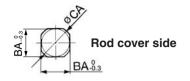
Dimensions by Stroke

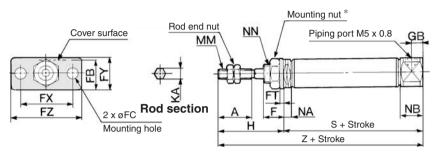
| Bore Strat | | | | S | | | | | Z | | | | | | | | | |
|------------|---------|----------|----------|----------|----------|-----------|------------|------------|---------|----------|----------|----------|----------|-----------|------------|------------|--|--|
| size (mm) | 5 to 15 | 16 to 30 | 31 to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

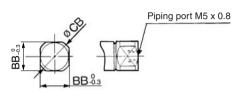


Single Acting, Spring Return: Rod Side Flange Style (F)

CJ2KF Bore size - Stroke S Head cover port location







Head cover port location: Axial location (R)

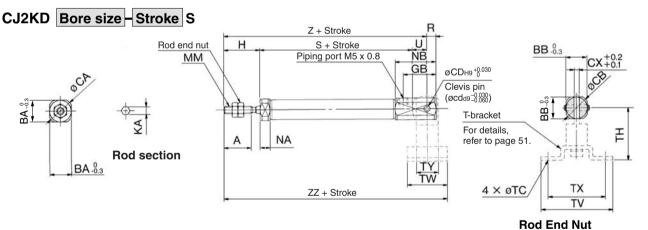
* Refer to page 51 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16)

| * Refer to page 51 | Refer to page 51 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16) (mn | | | | | | | | | | | | | | | (mm) | | | |
|--------------------|---|------|------|----|----|---|------|-----|-----|----|----|----|----|----|-----|----------|-----|-----|-----------|
| Bore size | Α | BA | BB | CA | СВ | F | FB | FC | FT | FX | FY | FZ | GB | Н | KA | MM | NA | NB | NN |
| 10 | 15 | 15 | 12 | 17 | 14 | 8 | 17.5 | 5.5 | 2.3 | 33 | 20 | 42 | 5 | 28 | 4.2 | M4 x 0.7 | 5.5 | 9.5 | M10 x 1.0 |
| 16 | 15 | 18.3 | 18.3 | 20 | 20 | 8 | 19 | 5.5 | 2.3 | 33 | 20 | 42 | 5 | 28 | 5.2 | M5 x 0.8 | 5.5 | 9.5 | M12 x 1.0 |

Dimensions by Stroke

| Bore Symbol | | | | ę | 3 | | | | | | | 7 | <u> </u> | | | |
|-------------|---------|----------|----------|----------|----------|-----------|------------|------------|---------|----------|----------|----------|----------|-----------|------------|------------|
| size (mm) | 5 to 15 | 16 to 30 | 31 to 45 | 46 to 60 | 61 to 75 | 76 to 100 | 101 to 125 | 126 to 150 | 5 to 15 | 16 to 30 | 31 to 45 | 46 to 60 | 61 to 75 | 76 to 100 | 101 to 125 | 126 to 150 |
| 10 | 45.5 | 53 | 65 | 77 | - | - | _ | _ | 73.5 | 81 | 93 | 105 | _ | - | - | _ |
| 16 | 45.5 | 54 | 66 | 78 | 84 | 108 | 126 | 138 | 73.5 | 82 | 94 | 106 | 112 | 136 | 154 | 166 |

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



| * Clevis pin and | retair | ning rii | ng are | snipp | ea tog | getner | | | | | | | | | |
|------------------|--------|----------|--------|-------|--------|------------|-----|----|----|-----|----------|-----|------|---|------|
| | | | | | | | | | | | | | | | (mm) |
| Bore size | Α | ВА | ВВ | CA | СВ | CD (cd) | СХ | GB | Н | KA | MM | NA | NB | R | U |
| 10 | 15 | 12 | 12 | 14 | 14 | 3.3 | 3.2 | 18 | 20 | 4.2 | M4 x 0.7 | 5.5 | 22.5 | 5 | 8 |
| 16 | 15 | 18.3 | 18.3 | 20 | 20 | 5 | 6.5 | 23 | 20 | 5.2 | M5 x 0.8 | 5.5 | 27.5 | 8 | 10 |

| Part no. Applicable bore (mm) B C d H NTJ-010A 10 7 8.1 M4 x 0.7 3.2 NTJ-015A 16 8 9.2 M5 x 0.8 4 | | + | - | - | + - н Material | : Iron |
|---|----------|----------------------|---|-----|-------------------------------|--------|
| | Part no. | Applicable bore (mm) | В | С | d | н |
| NTJ-015A 16 8 9.2 M5 x 0.8 4 | NTJ-010A | 10 | 7 | 8.1 | M4 x 0.7 | 3.2 |
| | NTJ-015A | 16 | 8 | 9.2 | M5 x 0.8 | 4 |

Dimensions by Stroke

| Dimension | s by | Str | оке | | | | | | | | | | | | | | | | | | | | | (mm) |
|------------|---------|----------|----------|----------|----------|-----------|------------|------------|---------|----------|----------|----------|----------|-----------|------------|------------|---------|----------|----------|----------|----------|-----------|------------|------------|
| Bore Stroy | | | | (| 3 | | | | | | | | Z | | | | | | | Z | Z | | | |
| | 5 to 15 | 16 to 30 | 31 to 45 | 46 to 60 | 61 to 75 | 76 to 100 | 101 to 125 | 126 to 150 | 5 to 15 | 16 to 30 | 31 to 45 | 46 to 60 | 61 to 75 | 76 to 100 | 101 to 125 | 126 to 150 | 5 to 15 | 16 to 30 | 31 to 45 | 46 to 60 | 61 to 75 | 76 to 100 | 101 to 125 | 126 to 150 |
| 10 | 45.5 | 53 | 65 | 77 | - | _ | - | _ | 73.5 | 81 | 93 | 105 | _ | _ | _ | - | 84.5 | 92 | 104 | 116 | _ | - | _ | _ |
| 16 | 45.5 | 54 | 66 | 78 | 84 | 108 | 126 | 138 | 75.5 | 84 | 96 | 108 | 114 | 138 | 156 | 168 | 89.5 | 98 | 110 | 122 | 128 | 152 | 170 | 182 |

T-bracket Dimensions

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



D-□

-X□

Individual -X□ Technical

CJ1

CJP

CJ2 CM₂

CG1

MB

MB1

CA2

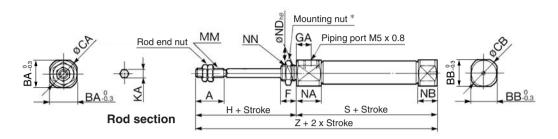
CS₁

CS2

Series CJ2K

Single Acting, Spring Extend: Basic Style (B)

CJ2KB Bore size - Stroke T



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

(mm)

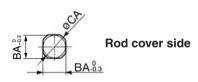
| Bore size | Α | BA | BB | CA | СВ | F | GA | Н | KA | MM | NA | NB | NDh8 | NN |
|-----------|----|------|------|----|----|---|----|----|-----|----------|------|-----|----------|-----------|
| 10 | 15 | 15 | 12 | 17 | 14 | 8 | 8 | 28 | 4.2 | M4 x 0.7 | 12.5 | 5.5 | 10_0.022 | M10 x 1.0 |
| 16 | 15 | 18.3 | 18.3 | 20 | 20 | 8 | 8 | 28 | 5.2 | M5 x 0.8 | 12.5 | 5.5 | 12_0.027 | M12 x 1.0 |

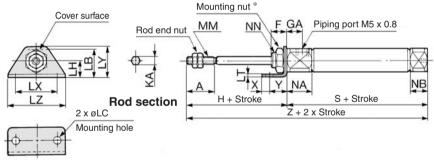
Dimensions by Stroke

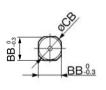
| Bore Symbol | | | | (| S | | | | | | | 7 | Z | | | |
|-------------|---------|----------|----------|----------|----------|-----------|------------|------------|---------|----------|----------|----------|----------|-----------|------------|------------|
| | 5 to 15 | 16 to 30 | 31 to 45 | 46 to 60 | 61 to 75 | 76 to 100 | 101 to 125 | 126 to 150 | 5 to 15 | 16 to 30 | 31 to 45 | 46 to 60 | 61 to 75 | 76 to 100 | 101 to 125 | 126 to 150 |
| 10 | 48.5 | 56 | 68 | 80 | _ | _ | _ | _ | 76.5 | 84 | 96 | 108 | _ | 1 | - | _ |
| 16 | 48.5 | 57 | 69 | 81 | 87 | 111 | 129 | 141 | 76.5 | 85 | 97 | 109 | 115 | 139 | 157 | 169 |

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

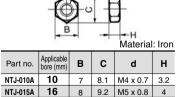












* Refer to page 51 for details of the mounting nut. (SNJ-016B for ø10, SNKJ-016B for ø16) СВ

14

BB CA

20 20

12

18.3 18.3

| เนเ. (อ | O-CNIC | 108 10 | røio, | SINK | J-U 16E | o ior ø | 16) | | | | | | | | | (mm) |
|---------|--------|--------|-------|------|---------|---------|-----|----|------|----|----------|------|-----|-----------|---|------|
| F | GA | Н | KA | LB | LC | LH | LT | LX | LY | LZ | MM | NA | NB | NN | Х | Υ |
| 8 | 8 | 28 | 4.2 | 21.5 | 5.5 | 14 | 2.3 | 33 | 25 | 42 | M4 x 0.7 | 12.5 | 5.5 | M10 x 1.0 | 6 | 9 |
| 0 | 0 | 20 | E 0 | 22 | | 11 | 2.2 | 22 | O.E. | 40 | MENOO | 10 E | E E | M10 v 1 0 | 6 | 0 |

Dimensions by Stroke

Bore size

10

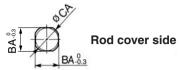
16

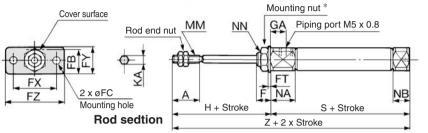
| | , - | | | | | | | | | | | | | | | |
|------------|---------|----------|----------|----------|----------|-----------|------------|------------|---------|----------|----------|----------|----------|-----------|------------|------------|
| Bore Strot | | | | ; | S | | | | | | | | Z | | | |
| size (mm)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



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

CJ2KF Bore size - Stroke T





CM₂ CG₁

MB

MB1

CA₂

CS₁

CS₂

CJ1

CJP

CJ2

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

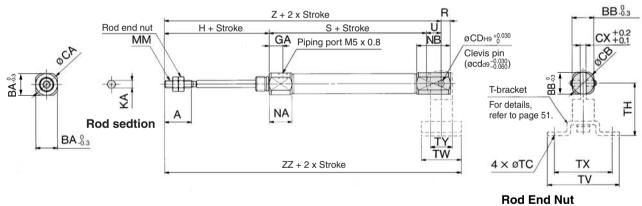
(mm) Bore size BB CA СВ FΒ FC FX FY GA KA MM NN BA FT FZ н NA NB 10 15 12 17 17.5 5.5 2.3 42 8 28 4.2 M4 x 0.7 12.5 5.5 M10 x 1.0 16 15 18.3 18.3 20 20 8 19 5.5 2.3 33 20 42 8 28 5.2 M5 x 0.8 12.5 5.5 M12 x 1.0

Dimensions by Stroke

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

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

CJ2KD Bore size - Stroke T



* Clevis pin and retaining ring are shipped together.

| | | | | | | | | | | | | | | | (mm) |
|-----------|----|------|------|----|----|------------|-----|----|----|-----|----------|------|------|---|------|
| Bore size | Α | BA | BB | CA | СВ | CD (cd) | СХ | GA | Н | KA | MM | NA | NB | R | U |
| 10 | 15 | 15 | 12 | 17 | 14 | 3.3 | 3.2 | 8 | 28 | 4.2 | M4 x 0.7 | 12.5 | 18.5 | 5 | 8 |
| 16 | 15 | 18.3 | 18.3 | 20 | 20 | 5 | 6.5 | 8 | 28 | 5.2 | M5 x 0.8 | 12.5 | 23.5 | 8 | 10 |

H Material: Iron

| Part no. | Applicable bore (mm) | В | С | d | н |
|----------|----------------------|---|-----|----------|----------|
| NTJ-010A | 10 | 7 | 8.1 | M4 x 0.7 | 3.2 |
| NTJ-015A | 16 | 8 | 9.2 | M5 x 0.8 | 4 |
| | | | | | (mm) |

Dimensions by Stroke

| | Symbol S Bore Stroke | | | | | | | | | | | Z | | | | | | | | | ZZ | | | | | | | | |
|----|----------------------|----------|----------|----------|----------|-----------|------------|------------|---------|----------|----------|----------|----------|-----------|------------|------------|---------|----------|----------|----------|----------|-----------|------------|------------|--|--|--|--|--|
| | 5 to 15 | 16 to 30 | 31 to 45 | 46 to 60 | 61 to 75 | 76 to 100 | 101 to 125 | 126 to 150 | 5 to 15 | 16 to 30 | 31 to 45 | 46 to 60 | 61 to 75 | 76 to 100 | 101 to 125 | 126 to 150 | 5 to 15 | 16 to 30 | 31 to 45 | 46 to 60 | 61 to 75 | 76 to 100 | 101 to 125 | 126 to 150 | | | | | |
| 10 | 48.5 | 56 | 68 | 80 | _ | _ | _ | _ | 84.5 | 92 | 104 | 116 | _ | _ | _ | _ | 95.5 | 103 | 115 | 127 | _ | _ | _ | _ | | | | | |
| 16 | 48.5 | 57 | 69 | 81 | 87 | 111 | 129 | 141 | 86.5 | 95 | 107 | 119 | 125 | 149 | 167 | 179 | 100.5 | 109 | 121 | 133 | 139 | 163 | 181 | 193 | | | | | |

T-bracket Dimensions

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

| | | | .00.0 | | | | -X |
|--|------|------|-----------|------|------|------|----------------|
| | | | | | | | ΛL |
| | | | | | | | Individ -X□ |

D-□

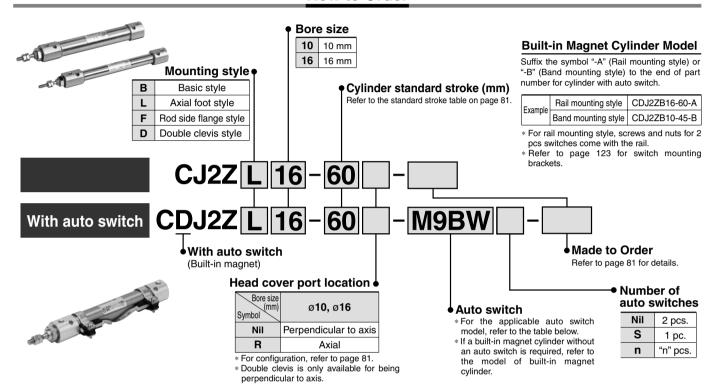
Technical

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

Series CJ2Z

ø10, ø16

How to Order



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

| | | | igi | 140 | | Load vo | oltage | Auto | switch mod | el | Lea | d wii | e ler | ngth | (m) | | | |
|--------|---|------------|-----------------|----------------------------|------|-----------|---------------|----------|---------------|---------|-------|-------|-------|------|----------|---------------------|------------|----------|
| Туре | Special function | Electrical | Indicator light | Wiring | | DC | AC | Band | Rail mo | ounting | 0.5 | 1 | 3 | 5 | None | Pre-wired connector | Applica | ble load |
| | · | entry | 혈 | (Output) | | DC | AC | mounting | Perpendicular | In-line | (Nil) | (M) | (L) | (Z) | (N) | Connector | | |
| | | | | 3-wire (NPN) | | | | M9N | _ | _ | • | • | • | 0 | T- | 0 | | |
| | | | | 3-wire (INPIN) | | 5 V, 12 V | | _ | F7NV | F79 | | _ | • | 0 | - | 0 | IC circuit | |
| | | Grommet | | 3-wire (PNP) | | 3 V, 12 V | | M9P | _ | _ | | • | • | 0 | _ | 0 | IC CIICUII | |
| _ | | Grommet | | 3-WIIE (I INI) | | | | 1 | F7PV | F7P | | | • | 0 | _ | 0 | | |
| switch | | | | | | | | M9B | _ | _ | | • | • | 0 | _ | 0 | | |
| S | | | | 2-wire | | 12 V | | | F7BV | J79 | | _ | • | 0 | _ | 0 | _ | |
| | | Connector | Yes | | | | | H7C | J79C | _ | | _ | • | | | _ | | Relay, |
| state | | | res | 3-wire (NPN) | 24V | | _ | M9NW | _ | | • | • | • | 0 | _ | 0 | | PLC |
| 9 | | | | 3-WITE (INFIN) | | 5 V, 12 V | | | F7NWV | F79W | | _ | • | 0 | _ | | IC circuit | |
| Solid | Diagnostic indication | | | 3-wire (PNP) | | J V, 12 V | | M9PW | _ | _ | • | • | • | 0 | _ | 0 | 10 Circuit | |
| 0) | (2-color indication) | Grommet | | o-wile (i ivi) | | | | _ | _ | F7PW | • | _ | • | 0 | _ | 0 | | |
| | | G. G | | | | | | M9BW | _ | _ | • | • | • | 0 | <u> </u> | 0 | | |
| | |] | | 2-wire | | 12 V | | _ | F7BWV | J79W | | _ | • | 0 | _ | 0 | _ | |
| | Water resistant (2-color indication) | | | | | | | H7BA | F7BAV | F7BA | _ | _ | • | 0 | _ | 0 | | |
| | With diagnostic output (2-color indication) | | | 4-wire (NPN) | | 5 V, 12 V | | H7NF | _ | F79F | • | _ | • | 0 | <u> </u> | 0 | IC circuit | |
| | | | | 3-wire (NPN equivalent) | _ | 5 V | _ | A96 | _ | A76H | • | _ | • | _ | - | _ | IC circuit | _ |
| 유 | | Grommet | Yes | | | _ | 200 V | _ | A72 | A72H | • | _ | • | _ | _ | _ | | |
| switch | | alominet | | | | | 100.1/ | _ | A73 | A73H | | - | • | • | _ | _ | _ | |
| | | | | | | | 100 V | A93 | _ | _ | | _ | • | _ | I — | _ | | Relay, |
| Reed | | | No | 2-wire | 24V | 12 V | 100 V or less | A90 | A80 | A80H | • | _ | • | _ | _ | _ | IC circuit | PLC |
| ď | | Connector | Yes | - | 24 V | | | C73C | A73C | _ | | | • | • | | _ | | |
| | | CONNECTOR | No | | | | 24 V or less | C80C | A80C | _ | • | _ | • | • | • | _ | IC circuit |] |
| | Diagnostic indication (2-color indication) | Grommet | Yes | | | _ | _ | _ | A79W ** | _ | | _ | • | _ | | _ | _ |] |

- * Lead wire length symbols: 0.5 m....... Nil (Example) M9NW 1 m...... M (Example) M9NWM

 - 3 m····· L (Example) M9NWL 5 m···· Z (Example) M9NWZ
 - None N (Example) H7CN
- Since there are other applicable auto switches than listed, refer to page 123 for details
- For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
 Band mounting style is not available for D-A9□V/M9□V/M9□WV and D-M9□A(V)L types.
- ** "D-A79W" cannot be mounted on bore size ø10 cylinder with air cushion.
- * Solid state auto switches marked with "O" are produced upon receipt of order.

 * D-A9□/M9□/M9□W/A7□□/A80□/F7□□/J7□□ auto switches are shipped together (not assembled). (However, when D-A9□/M9□/M9□W types are selected,
- only auto switch mounting brackets are assembled before being shipped.)

 * When D-A9\(\subseteq \text{(V)/M9}\(\subseteq \text{(V) types are mounted on a \pi 10 or \pi 16 rail, order auto switch mounting brackets separately. Refer to page 123 for details.



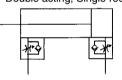
Air Cylinder: Built-in Speed Controller Type Double Acting, Single Rod Series CJ2Z

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



JIS Symbol

Double acting, Single rod





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

| Symbol | Specifications |
|--------------|-------------------------|
| — XA□ | Change of rod end shape |
| VC51 | With hoos nipple |



Specifications

| Bore size (mm) | 10 | 16 | | | |
|-------------------------------|------------------------------------|------------------------------------|--|--|--|
| Action | Double actin | g, Single rod | | | |
| Fluid | A | ir | | | |
| Proof pressure | 1 N | 1Pa | | | |
| Maximum operating pressure | 0.7 I | MPa | | | |
| Minimum operating pressure | 0.06 | MPa | | | |
| Ambient and fluid temperature | Without auto switch: -10°C to 70°C | C, With auto switch: -10°C to 60°C | | | |
| Cushion | Rubber | bumper | | | |
| Lubrication | Not required | d (Non-lube) | | | |
| Stroke length tolerance | +1 | .0 | | | |
| Speed controller | Bui | lt-in | | | |
| Piston speed | 50 to 75 | 60 mm/s | | | |
| Allowable kinetic energy | 0.035 J 0.090 J | | | | |

^{*} No freezing

Standard Stroke

Bore size

10

16

(mm)

CA2

CJ1

CJP

CJ₂

CM₂

CG1

MB

MB1

CS₁ CS₂

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

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

| | Mounting | Basic style | Axial foot style | Rod side flange style | Double clevis* style |
|-----------------------|------------------------|----------------|------------------|-----------------------|----------------------|
| ırd | Mounting nut | • | • | • | _ |
| Standard equipment | Rod end nut | • | • | • | • |
| Sta | Clevis pin | - | _ | - | • |
| L L | Single knuckle joint | • | • | • | • |
| Option | Double knuckle joint * | • | • | • | • |
| | T-bracket | _ | _ | _ | • |

Standard stroke

15, 30, 45, 60, 75, 100, 125, 150, 175, 200

15, 30, 45, 60, 75, 100, 125, 150

Head Cover Port Location

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





Axial

Perpendicular

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

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

D-□

Individual -X□

-X□

Technical



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

Series CJ2Z

Mass

(a)

| Mass | 1400 | | | | | | | |
|--------------|--|----|----|--|--|--|--|--|
| | Bore size (mm) | 10 | 16 | | | | | |
| Basic mass | Basic mass * | | | | | | | |
| Additional m | Additional mass per each 15 mm of stroke | | | | | | | |
| Mounting | Axial foot style | 8 | 20 | | | | | |
| bracket | Rod side flange style | 5 | 15 | | | | | |
| mass | Double clevis style * (With pin) | 4 | 10 | | | | | |

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

Calculation: (Example) CJ2ZL10-45

- Basic mass 40 (ø10) Additional mass 4/15 stroke Cylinder stroke ----- 45 stroke
- Mounting bracket mass 8 (Axial foot style) $40 + 4/15 \times 45 + 8 = 60 \text{ g}$

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

20-CJ2Z Mounting style Bore size - Stroke

Copper and fluorine-free

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

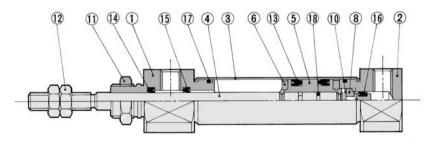


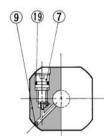
Specifications

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

Construction (Not able to disassemble)







Component Parts

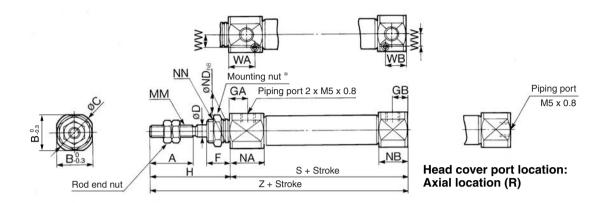
| No. | Description | Material | Note |
|-----|-------------------------|-------------------|----------------------|
| _1 | Rod cover | Aluminum alloy | Anodized |
| 2 | Head cover | Aluminum alloy | Anodized |
| 3 | Cylinder tube | Stainless steel | |
| 4 | Piston rod | Stainless steel | |
| 5 | Piston | Brass | |
| 6 | Bumper | Urethane | |
| 7 | Speed controller needle | Stainless steel | |
| 8 | Check packing sleeve | Brass | |
| 9 | Steel balls | Bearing steel | |
| 10 | Retaining ring | Carbon tool steel | Black zinc chromated |

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

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

Basic Style (B)

CJ2ZB Bore size - Stroke Head cover port location



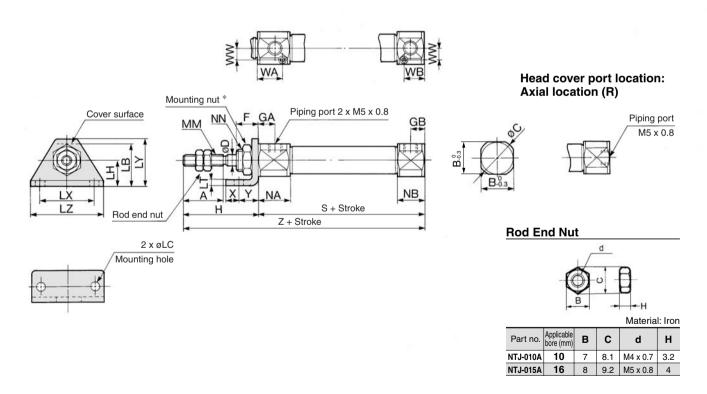
* For details of the mounting nut, refer to page 51.

MB (mm) NDh8 D GA GB Н MM NA NB NN WA WB ww S Ζ MB1

Bore size Α В С 10 15 15 17 4 8 7.5 6.5 28 M4 x 0.7 21 18 8 -0.022 M8 x 1.0 14.5 13.5 4.5 63 91 15 18.3 20 5 8 7.5 6.5 28 M5 x 0.8 21 18 10 -0.022 M10 x 1.0 14.5 13.5 5.5 64 92

Axial Foot Style (L)

CJ2ZL Bore size - Stroke Head cover port location



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

| - or dotaile of the meaning had, rote to page on | | | | | | | | | | | | | | | | | (111111) | | | | | | | | | |
|--|----|------|----|---|---|-----|-----|----|------|-----|----|-----|----|------|----|----------|----------|----|-----------|----|------|------|-----|---|---|----|
| Bore size | Α | В | С | D | F | GA | GB | Н | LB | LC | LH | LT | LX | LY | LZ | MM | NA | NB | NN | S | WA | WB | ww | X | Υ | Z |
| 10 | 15 | 15 | 17 | 4 | 8 | 7.5 | 6.5 | 28 | 16.5 | 4.5 | 9 | 1.6 | 24 | 16.5 | 32 | M4 x 0.7 | 21 | 18 | M8 x 1.0 | 63 | 14.5 | 13.5 | 4.5 | 5 | 7 | 91 |
| 16 | 15 | 18.3 | 20 | 5 | 8 | 7.5 | 6.5 | 28 | 23 | 5.5 | 14 | 2.3 | 33 | 25 | 42 | M5 x 0.8 | 21 | 18 | M10 x 1.0 | 64 | 14.5 | 13.5 | 5.5 | 6 | 9 | 92 |



-X□

CJ1

CJP

CJ₂

CM₂

CG1

CA2

CS₁

CS₂

Individual -X — Technical

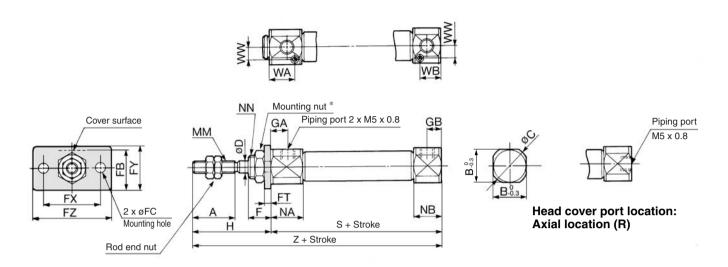




Series CJ2Z

Rod Side Flange Style (F)

CJ2ZF Bore size - Stroke Head cover port location



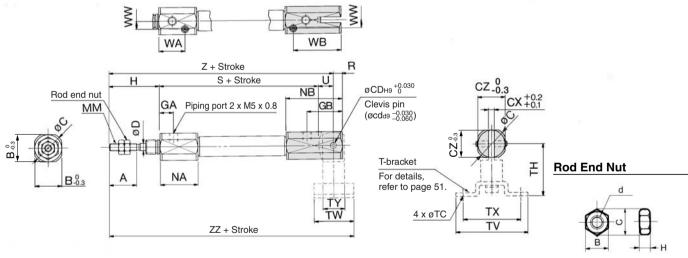
* For details of the mounting nut, refer to page 51.

(mm)

| Bore size | Α | В | С | D | F | FB | FC | FT | FX | FY | FZ | GA | GB | Н | MM | NA | NB | NN | WA | WB | ww | S | Z |
|-----------|----|------|----|---|---|------|-----|-----|----|----|----|-----|-----|----|----------|----|----|-----------|------|------|-----|----|----|
| 10 | 15 | 15 | 17 | 4 | 8 | 14.5 | 4.5 | 1.6 | 24 | 14 | 32 | 7.5 | 6.5 | 28 | M4 x 0.7 | 21 | 18 | M8 x 1.0 | 14.5 | 13.5 | 4.5 | 63 | 91 |
| 16 | 15 | 18.3 | 20 | 5 | 8 | 19 | 5.5 | 2.3 | 33 | 20 | 42 | 7.5 | 6.5 | 28 | M5 x 0.8 | 21 | 18 | M10 x 1.0 | 14.5 | 13.5 | 5.5 | 64 | 92 |

Double Clevis Style (D)

CJ2ZD Bore size - Stroke



Material: Iron Applicable bore (mm) Part no. В С d н NTJ-010A 10 8.1 M4 x 0.7 3.2 NTJ-015A 8 9.2 M5 x 0.8 16 4

* Clevis pin and retaining ring are shipped together.

(mm)

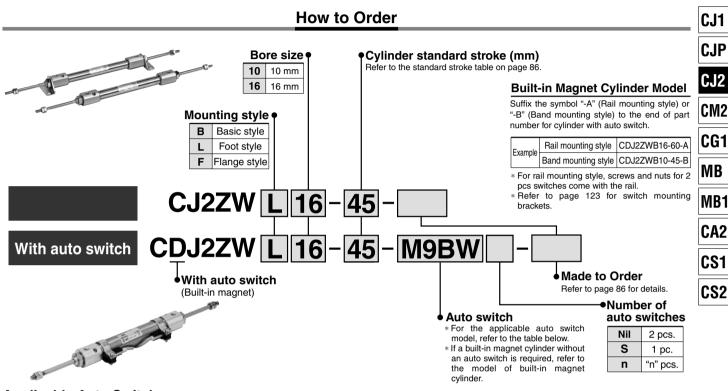
| Olovio piii o | Closed pill directioning mily and chilipped together. | | | | | | | | | | | | | | | | | | | | |
|---------------|---|------|----|------|-----|------|---|-----|------|----|----------|----|----|---|----|----|------|------|-----|-----|-----|
| Bore size | Α | В | С | (cd) | СХ | CZ | D | GA | GB | Н | MM | NA | NB | R | S | U | WA | WB | ww | Z | ZZ |
| 10 | 15 | 15 | 17 | 3.3 | 3.2 | 15 | 4 | 7.5 | 19.5 | 28 | M4 x 0.7 | 21 | 31 | 5 | 63 | 8 | 14.5 | 26.5 | 4.5 | 99 | 110 |
| 16 | 15 | 18.3 | 20 | 5 | 6.5 | 18.3 | 5 | 7.5 | 24.5 | 28 | M5 x 0.8 | 21 | 36 | 8 | 64 | 10 | 14.5 | 31.5 | 5.5 | 102 | 116 |

| T-bracket Dimensions (mn | | | | | | | | | | | |
|--------------------------|-----|----|----|----|----|----|--|--|--|--|--|
| Bore size | TC | TH | TV | TW | TX | TY | | | | | |
| 10 | 4.5 | 29 | 40 | 22 | 32 | 12 | | | | | |
| 16 | 5.5 | 35 | 48 | 28 | 38 | 16 | | | | | |

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

Series CJ2ZW

ø10, ø16



| | | | ig | Wiring | | Load vo | oltage | Auto | o switch mo | odel | Lead wire length (m) | | | | | D | | |
|-----------------------|---|------------------|-----------------|----------------------------|-----------|-----------|---------------|----------|---------------|---------|----------------------|-------------|-----|-----|------|---------------------|------------|----------|
| ype | Special function | Electrical entry | Indicator light | (Output) | | DC | AC | Band | Rail mo | ounting | 0.5 | 1 | 3 | 5 | None | Pre-wired connector | Applica | ble load |
| | | Cittiy | 휼 | (Gatpat) | | | AC | mounting | Perpendicular | In-line | (Nil) | (M) | (L) | (Z) | (N) | connector | | |
| | | | | 3-wire (NPN) | | | | M9N | _ | _ | • | • | • | 0 | _ | 0 | | |
| | | | | O-WIIG (IVI IV) | | 5 V, 12 V | | _ | F7NV | F79 | • | <u> —</u> | • | 0 | _ | 0 | IC circuit | |
| | | Grommet | | 3-wire (PNP) | | 5 V, 12 V | | M9P | _ | | • | • | • | 0 | _ | 0 | 10 diredit | |
| _ | | Grommor | | | | | | _ | F7PV | F7P | • | <u> </u> | | | _ | 0 | | |
| SWITCH | | | | | | | | M9B | _ | | • | • | • | 0 | _ | 0 | | |
| Š | | | | 2-wire | | 12 V | | _ | F7BV J79 | | • - | • | 0 | _ | 0 | — | | |
| <u></u> | | Connector | Yes | | | | | H7C | J79C | | • | <u> — </u> | • | • | • | _ | | Relay |
| Diagnostic indication | | | | 3-wire (NPN) | 24 V | | _ | M9NW | _ | _ | | • | • | 0 | _ | 0 | | PLC |
| | | | O WIIC (IVI IV) | | 5 V, 12 V | | | F7NWV | F79W | • | <u> — </u> | • | 0 | _ | 0 | IC circuit | | |
| | Diagnostic indication | | | 3-wire (PNP) | | J V, 12 V | | M9PW | _ | | • | • | • | 0 | _ | 0 | 10 circuit | |
| " | (2-color indication) | Grommet | | 5-wile (FIVI) | | | | _ | _ | F7PW | • | <u> — </u> | • | 0 | _ | 0 | | |
| | | Grommor | | | | 12 V | | M9BW | _ | | • | • | | 0 | _ | 0 | | |
| | | | | 2-wire | | | | _ | F7BWV | J79W | • | <u> — </u> | • | 0 | _ | 0 | _ | |
| | Water resistant (2-color indication) | | | | | | | H7BA | F7BAV | F7BA | - | - | • | 0 | _ | 0 | | |
| | With diagnostic output (2-color indication) | | | 4-wire (NPN) | | 5 V, 12 V | | H7NF | _ | F79F | • | <u> — </u> | • | 0 | _ | 0 | IC circuit | |
| | | | | 3-wire (NPN equivalent) | _ | 5 V | _ | A96 | _ | A76H | • | - | • | - | _ | _ | IC circuit | _ |
| switch | | | Yes | | 1 | | 200 V | _ | A72 | A72H | • | 1- | • | | _ | _ | | |
| ⋚ | Grom | Grommet | | | | | 400.1/ | _ | A73 | A73H | • | 1— | • | • | _ | _ | — | |
| 0 | | | | | | | 100 V | A93 | _ | _ | • | 1- | • | _ | _ | _ | | Relay |
| Leec | | | No | 2-wire | | 12 V | 100 V or less | A90 | A80 | A80H | • | 1— | • | _ | _ | _ | IC circuit | PLC |
| | | Connector | Yes | | 24 V | | _ | C73C | A73C | _ | • | 1- | • | • | • | _ | _ | PLC |
| | | Connector | No | | | | 24 V or less | C80C | A80C | _ | • | 1- | • | • | • | _ | IC circuit | |
| | Diagnostic indication (2-color indication) | Grommet | Yes | 1 | | _ | _ | _ | A79W ** | _ | • | 1— | | _ | _ | _ | _ | |

- * Lead wire length symbols: 0.5 m....... Nil (Example) M9NW 1 m...... M (Example) M9NWM
 - 3 m······ L (Example) M9NWL 5 m····· Z (Example) M9NWZ
 - None N (Example) H7CN
- * Since there are other applicable auto switches than listed, refer to page 123 for details.
- For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
 Band mounting style is not available for D-A9□V/M9□V/M9□WV and D-M9□A(V)L types.
- ** "D-A79W" cannot be mounted on bore size ø10 cylinder with air cushion.
- * Solid state auto switches marked with "○" are produced upon receipt of order.
 * D-A9□/M9□/M9□W/A7□□/A80□/F7□□/J7□□ auto switches are shipped together (not assembled). (However, when D-A9□/M9□/M9□W types are selected,
- only auto switch mounting brackets are assembled before being shipped.)

 * When D-A9 \(\text{V} \) \(\text{M9} \(\text{V} \) \(\text{M9} \) \(\text{W} \) types are mounted on a \(\text{ø} 10 \) or \(\text{ø} 16 \) rail, order auto switch mounting brackets separately. Refer to page 123 for details.

D-□

-X□ Individual

-X□ Technical

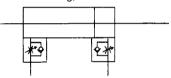
Series CJ2ZW

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



JIS Symbol

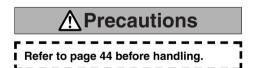
Double acting, Double rod





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

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



Specifications

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

^{*} No freezing

Standard Stroke

(mm)

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

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

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

| | Mounting | Basic style | Foot style | Flange style |
|-----------|------------------------|-------------|------------|--------------|
| Standard | Mounting nut | • | • | • |
| equipment | Rod end nut | • | • | • |
| Option | Single knuckle joint | • | • | • |
| Ориоп | Double knuckle joint * | • | • | • |

^{*} Knuckle pin and retaining ring are shipped together with double knuckle joint.

Mounting Bracket Part No.

| Mounting bracket | Bore siz | ze (mm) |
|------------------|----------|----------|
| Mounting bracket | 10 | 16 |
| Foot bracket | CJ-L010B | CJ-L016B |
| Flange bracket | CJ-F010B | CJ-F016B |

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

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



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

Mass

| ivia55 | | | (9) |
|-------------------------|-------------------|----|-----|
| Bore size | (mm) | 10 | 16 |
| Basic mass * | | 50 | 85 |
| Additional mass per eac | h 15 mm of stroke | 6 | 9 |
| Mounting | Foot style | 16 | 40 |
| bracket mass | Flange style | 5 | 15 |

* Rod end nut are included in the basic mass.

Calculation: (Example)

CJ2ZWL10-45

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

 $50 + 6/15 \times 45 + 16 = 84 g$

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

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

Copper and fluorine-free

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



| Specifications | |
|----------------------------|---------------------------------------|
| Action | Double acting, Double rod |
| Bore size (mm) | 10, 16 |
| Maximum operating pressure | 0.7 MPa |
| Minimum operating pressure | 0.1 MPa |
| Cushion | Rubber bumper |
| Standard stroke (mm) | 15, 30, 45, 60 |
| Auto switch | Mountable (Band mounting style) |
| Mounting | Basic style, Foot style, Flange style |

CJ1

CJP

CJ₂

CM₂

CG1

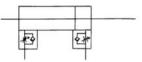
MB

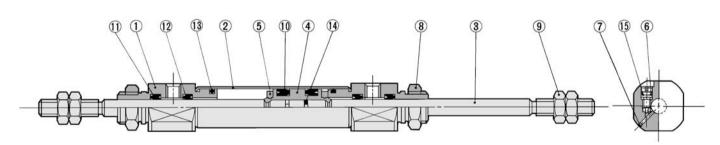
MB1 CA2

CS₁

CS₂

Construction (Not able to disassemble)





Component Parts

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

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

D-□

Individual -X□

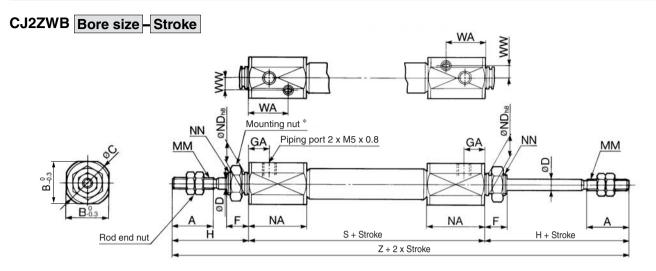
-X□

Technical



Series CJ2ZW

Basic Style (B)

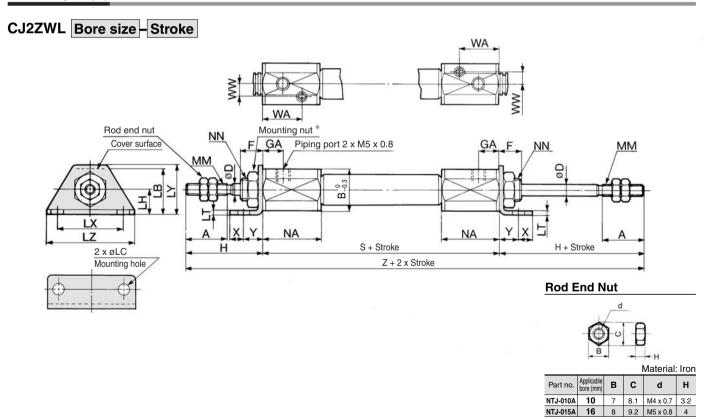


 \ast For details of the mounting nut, refer to page 51.

(mm)

| Bore size | Α | В | C | D | F | GA | Н | MM | NA | NDh8 | NN | S | WA | ww | Z |
|-----------|----|------|----|---|---|-----|----|----------|----|-----------|-----------|----|------|-----|-----|
| 10 | 15 | 15 | 17 | 4 | 8 | 7.5 | 28 | M4 x 0.7 | 21 | 8 0 | M8 x 1.0 | 66 | 14.5 | 4.5 | 122 |
| 16 | 15 | 18.3 | 20 | 5 | 8 | 7.5 | 28 | M5 x 0.8 | 21 | 10 -0.022 | M10 x 1.0 | 67 | 14.5 | 5.5 | 123 |

Foot Style (L)



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

(mm)

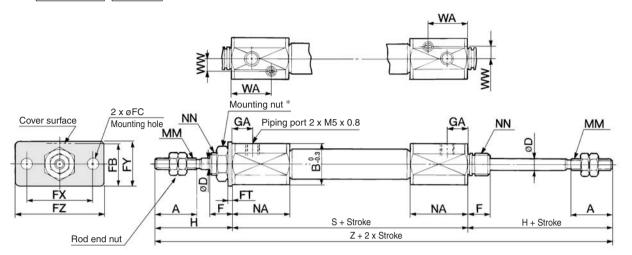
| Bore size | Α | В | D | F | LB | LC | LH | LT | LX | LY | LZ | GA | Н | MM | NA | NN | S | WA | ww | Х | Υ | Z |
|-----------|----|------|---|---|------|-----|----|-----|----|------|----|-----|----|----------|----|-----------|----|------|-----|---|---|-----|
| 10 | 15 | 15 | 4 | 8 | 16.5 | 4.5 | 9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



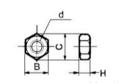
Air Cylinder: Built-in Speed Controller Type Double Acting, Double Rod Series CJ2ZW

Flange Style (F)

CJ2ZWF Bore size - Stroke



Rod End Nut



 Material: Iron

 Part no.
 Applicable bore (mm)
 B
 C
 d
 H

 NTJ-010A
 10
 7
 8.1
 M4 x 0.7
 3.2

 NTJ-015A
 16
 8
 9.2
 M5 x 0.8
 4

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

| | | | | | | | | | | | | | | | | | | | (111111) |
|-----------|----|------|---|---|------|-----|-----|----|----|----|-----|----|----------|----|-----------|----|------|-----|----------|
| Bore size | Α | В | D | F | FB | FC | FT | FX | FY | FZ | GA | Н | MM | NA | NN | S | WA | ww | Z |
| 10 | 15 | 15 | 4 | 8 | 14.5 | 4.5 | 1.6 | 24 | 14 | 32 | 7.5 | 28 | M4 x 0.7 | 21 | M8 x 1.0 | 66 | 14.5 | 4.5 | 122 |
| 16 | 15 | 18.3 | 5 | 8 | 19 | 5.5 | 2.3 | 33 | 20 | 42 | 7.5 | 28 | M5 x 0.8 | 21 | M10 x 1.0 | 67 | 14.5 | 5.5 | 123 |

D-□

CJ1

CJP

CJ2

CM₂

CG1

MB

MB1

CA2

CS1

CS2

-X□ Technical

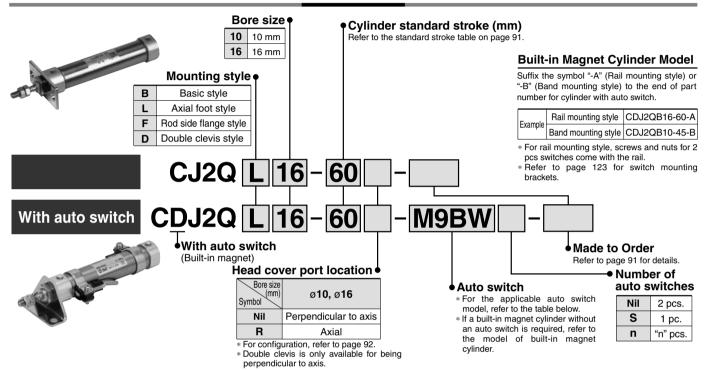
Individual



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

ø10, ø16

How to Order



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

| | | | ndicator light | Wiring | | Load vo | oltage | Aut | o switch mo | odel | Lea | d wir | e ler | ngth | (m) | | | |
|--------|---|------------|-----------------|----------------------------|-----------|-----------|---------------|----------|---------------|---------|-------|-------|-------|------|--------|---------------------|------------|----------|
| Туре | Special function | Electrical | ator | (Output) | | DC | AC | Band | Rail mo | ounting | 0.5 | 1 | 3 | 5 | IINone | Pre-wired connector | Applica | ble load |
| | | entry | igi Bi | (Output) | | DC | AC | mounting | Perpendicular | In-line | (Nil) | (M) | (L) | (Z) | (N) | COTTRICCTO | | |
| | | | | 3-wire (NPN) | | | | M9N | _ | _ | • | • | • | 0 | _ | 0 | | |
| | | | | 5-wire (INPIN) | | 5 V, 12 V | | _ | F7NV | F79 | • | _ | • | 0 | - | 0 | IC circuit | |
| | | Grommet | | 3-wire (PNP) | | J V, 12 V | | M9P | | _ | • | • | • | 0 | _ | 0 | io circuit | |
| | | Gioinnet | | o-wire (i ivi) | | | | _ | F7PV | F7P | • | _ | • | 0 | - | 0 | | |
| tch | | | | | | | | M9B | _ | _ | • | • | • | 0 | _ | 0 | | |
| switch | | | | 2-wire | | 12 V | | | F7BV | J79 | • | _ | • | 0 | _ | 0 | _ | |
| | | Connector | Yes | | | | | H7C | J79C | _ | • | _ | • | • | • | _ | | Relay, |
| state | | | | 3-wire (NPN) | 24 V | | - | M9NW | _ | _ | • | • | • | 0 | _ | 0 | | PLC |
| id | | | o wile (IVI IV) | | 5 V, 12 V | | _ | F7NWV | F79W | • | _ | • | 0 | | 0 | IC circuit | | |
| Solid | Diagnostic indication | | | 3-wire (PNP) | | 5 V, 12 V | | M9PW | _ | _ | • | • | • | 0 | _ | 0 | | |
| ٠, | (2-color indication) | Grommet | | | | | | _ | _ | F7PW | • | _ | • | 0 | | 0 | | |
| | | | | | | | | M9BW | _ | _ | • | • | • | 0 | _ | 0 | | |
| | | | | 2-wire | | 12 V | | | F7BWV | J79W | • | _ | • | 0 | | 0 | _ | |
| | Water resistant (2-color indication) | | | | | | | H7BA | F7BAV | F7BA | _ | _ | • | 0 | _ | 0 | | |
| | With diagnostic output (2-color indication) | | | 4-wire (NPN) | | 5 V, 12 V | | H7NF | _ | F79F | • | _ | • | 0 | _ | 0 | IC circuit | |
| | | | | 3-wire (NPN equivalent) | _ | 5 V | _ | A96 | _ | A76H | • | _ | • | _ | - | _ | IC circuit | _ |
| ch | | | Yes | | | _ | 200 V | _ | A72 | A72H | • | _ | • | _ | _ | _ | | |
| switch | | Grommet | | | | | 100 V | _ | A73 | A73H | • | _ | • | • | _ | _ | _ | |
| d s | | | | | | | 100 V | A93 | _ | _ | • | _ | • | _ | _ | _ | | Relay, |
| Reed | | | No | 2-wire | 24 V | 12 V | 100 V or less | A90 | A80 | A80H | • | _ | • | _ | _ | _ | IC circuit | PLC |
| œ | | Connector | Yes | | 24 V | | _ | C73C | A73C | _ | • | _ | • | • | • | _ | _ | PLC |
| | | CONTROLO | No | | | | 24 V or less | C80C | A80C | _ | • | _ | • | • | • | _ | IC circuit | |
| | Diagnostic indication (2-color indication) | Grommet | Yes | | | | _ | _ | A79W | _ | • | _ | • | _ | I — | _ | _ |] |

- * Since there are other applicable auto switches than listed, refer to page 123 for details.
- * For details about auto switches with pre-wired connector, refer to pages 1328 and 1329.
 * Band mounting style is not available for D-A9□V□/M9□V□/M9□WV□ and D-M9□A(V)L types.
- * Lead wire length symbols: 0.5 m······· Nil (Example) M9NW

 1 m······ M (Example) M9NWM

 3 m····· L (Example) M9NWL

 5 m····· Z (Example) M9NWZ
- * Solid state auto switches marked with "O" are produced upon receipt of order.

 * D-A9□/M9□/M9□/MA80□/F7□□/J7□□ auto switches are shipped together (not assembled). (However, when D-A9□/M9□/M9□/M9□/W types are selected, only auto switch mounting brackets are assembled before being shipped.)



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

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

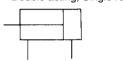
Low sliding resistance

Minimum operating pressure: 0.03 MPa



JIS Symbol

Double acting, Single rod





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

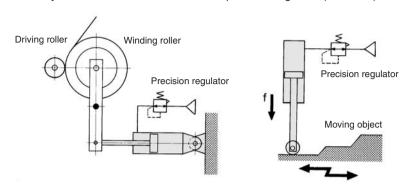
| Symbol | Specifications |
|--------------|-------------------------|
| — XA□ | Change of rod end shape |
| —XC51 | With hose nipple |



Refer to page 44 before handling.

Application Example

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



Specifications

| Bore size (mm) | 10 | 16 | | | | |
|-------------------------------|---|----------|--|--|--|--|
| Action | Double acting, Single rod | | | | | |
| Fluid | A | ir | | | | |
| Proof pressure | 1 N | 1Pa | | | | |
| Maximum operating pressure | 0.7 | MPa | | | | |
| Minimum operating pressure | 0.03 MPa | | | | | |
| Ambient and fluid temperature | Without auto switch: -10°C to 70°C, With auto switch: -10°C to 60°C * | | | | | |
| Cushion | Rubber | bumper | | | | |
| Lubrication | Not ap | plicable | | | | |
| Stroke length tolerance | +1 | .0 | | | | |
| Piston speed | 50 to 750 mm/s | | | | | |
| Allowable kinetic energy | 0.035 J | 0.090 J | | | | |

^{*} No freezing

Standard Stroke

| Otaniaa e | ti Oito (iii | 111) |
|-----------|--|------|
| Bore size | Standard stroke | |
| 10 | 15, 30, 45, 60, 75, 100, 125, 150 | |
| 16 | 15, 30, 45, 60, 75, 100, 125, 150, 175, 200 | |

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

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

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

CJ1

CJP

CJ2 CM₂

CG1

MB

MB1

CA2

CS1

CS₂



Technical





Series CJ2Q

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

| | | | ,,, | -, р | 9 |
|-----------------------|------------------------|----------------|------------------|-----------------------------|-----------------------|
| | Mounting | Basic style | Axial foot style | Rod side flange style | Double * clevis style |
| ent | Mounting nut | • | • | • | _ |
| Standard equipment | Rod end nut | • | • | • | • |
| Sta | Clevis pin | _ | _ | _ | • |
| _ | Single knuckle joint | • | • | • | • |
| Option | Double knuckle joint * | • | • | • | • |
| 0 | T-bracket | _ | _ | _ | • |

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

Mounting Bracket Part No.

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

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

Mass

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

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

Calculation: (Example) CJ2QL10-45

- Basic mass 24 (ø10) Additional mass ----- 4/15 stroke
- Cylinder stroke----- 45 stroke • Mounting bracket mass ······ 8 (Axial foot style)

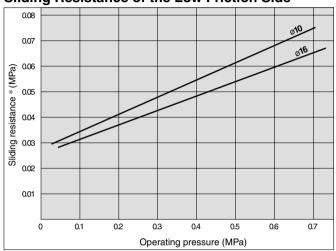
 $24 + 4/15 \times 45 + 8 = 44 g$

Head Cover Port Location

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



Sliding Resistance of the Low Friction Side

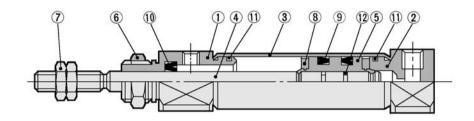


^{*} Conversion into the cylinder operating pressure:

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

Construction (Not able to disassemble)





No.

8

9

10

11

Description

Rod end nut

Piston seal

Tube gasket

Piston gasket

Bumper

Rod seal

CJ1

CJP

CJ₂

CM₂

CG1

MB

Note

Nickel plated

For low friction

For low friction

MB1

CA2

CS₁

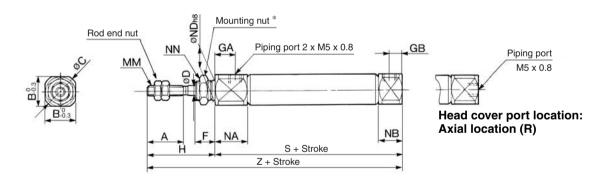
CS2

Component Parts

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

Basic Style (B)

CJ2QB Bore size - Stroke Head cover port location



Rod End Nut

Material

Rolled steel

Urethane

NBR

NBR

NBR

NBR



Material: Iron

| Part no. | Applicable bore (mm) | В | С | d | Н |
|----------|-------------------------|---|-----|----------|-----|
| NTJ-010A | 10 | 7 | 8.1 | M4 x 0.7 | 3.2 |
| NTJ-015A | 16 | 8 | 9.2 | M5 x 0.8 | 4 |

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

| * For details of | the mo | unting n | ut, refer | to page | 51. | | | | | | | | | | (mm) |
|------------------|--------|----------|-----------|---------|-----|----|----|----|----------|------|-----|-----------|-----------|----|------|
| Bore size | Α | В | С | D | F | GA | GB | Н | MM | NA | NB | ND | NN | S | Z |
| 10 | 15 | 12 | 14 | 4 | 8 | 8 | 5 | 28 | M4 x 0.7 | 12.5 | 9.5 | 8 -0.022 | M8 x 1.0 | 46 | 74 |
| 16 | 15 | 18.3 | 20 | 5 | 8 | 8 | 5 | 28 | M5 x 0.8 | 12.5 | 9.5 | 10 -0.022 | M10 x 1.0 | 47 | 75 |

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

D-□

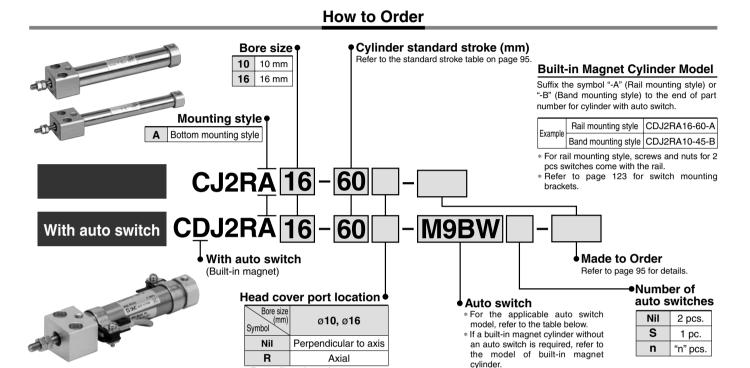
Individual

Technical



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

ø10, ø16



* For configuration, refer to page 95.

| | | | | | | Load vo | | | on on auto so switch mo | | Lea | d wir | e ler | ngth | (m) | | | |
|----------|---|------------|-----------------|----------------------------|-------|-----------|---------------|----------|-------------------------|------|-------|-------|-------|------|-------------|---------------------|------------|---------------|
| Туре | Special function | Electrical | Indicator light | Wiring | | | Ŭ | Band | Rail mounting | | 0.5 | 1 | 3 | 5 | Nama | Pre-wired connector | Applica | ble load |
| | | entry | igi igi | (Output) | | DC | AC | mounting | Perpendicular | | (Nil) | (M) | (L) | (Z) | (N) | COLLIGECTOL | | |
| | | | | 3-wire (NPN) | | | | M9N | _ | _ | • | • | • | 0 | I | 0 | | |
| | | | | 3-wire (INFIN) | | 5 V, 12 V | | _ | F7NV | F79 | | | • | 0 | - | 0 | IC circuit | _{i+} |
| | | Grommet | | 3-wire (PNP) | | 3 V, 12 V | | M9P | _ | _ | • | • | • | 0 | - | 0 | io dicuit | |
| _ | | GIOIIIIIEL | | 3-wile (Fivi) | | | | | F7PV | F7P | • | _ | • | 0 | <u> — </u> | 0 | | |
| switch | | | | | | | | M9B | _ | | • | • | • | 0 | - | 0 | | |
| Š | | | | 2-wire | | 12 V | | | F7BV | J79 | • | _ | | 0 | <u> — </u> | 0 | _ | |
| | | Connector | Yes | | | | | H7C | J79C | | • | _ | • | • | • | _ | | Relay, |
| state | | | | 3-wire (NPN) | 24 V | 5 V, 12 V | _ | M9NW | _ | | | | • | 0 | <u> -</u> | 0 | | PLC |
| <u>ق</u> | Diagnostic indication | | | 5 mm5 (NI N) | | | | | F7NWV | F79W | • | _ | • | 0 | \circ | 0 | IC circuit | t |
| Solid | | | | 3-wire (PNP) | | | | M9PW | _ | | • | • | • | 0 | <u> — </u> | 0 | 10 diredit | |
| ٠, | (2-color indication) | Grommet | | o wile (i ivi) | | | | | _ | F7PW | • | _ | • | 0 | - | 0 | | |
| | | | | | | | | M9BW | _ | | • | • | • | 0 | <u> — </u> | 0 | | |
| | | | | 2-wire | | 12 V | | | F7BWV | J79W | • | _ | • | 0 | <u> -</u> | 0 | _ | |
| | Water resistant (2-color indication) | | | | | | | H7BA | F7BAV | F7BA | _ | _ | • | 0 | <u> </u> - | 0 | | _ |
| | With diagnostic output (2-color indication) | | | 4-wire (NPN) | | 5 V, 12 V | | H7NF | _ | F79F | • | _ | • | 0 | <u> -</u> | 0 | IC circuit | |
| | | | | 3-wire (NPN equivalent) | _ | 5 V | _ | A96 | _ | A76H | • | _ | • | - | - | _ | IC circuit | _ |
| | | | Yes | | | _ | 200 V | | A72 | A72H | • | _ | • | - | | _ | | |
| switch | | Grommet | | | | | 100 V | _ | A73 A73H ● — ● | • | 1- | _ |] — | | | | | |
| | | | | | | | 100 V | A93 | _ | _ | • | _ | • | I — | I — | _ | | Dolow |
| Reed | | | No | 2-wire | 24.1/ | 12 V | 100 V or less | A90 | A80 | A80H | • | _ | • | _ | I- | _ | IC circuit | Relay, |
| Œ | | Connector | Yes | | 24 V | '- ' | _ | C73C | A73C | _ | • | _ | • | • | • | _ | _ |] |
| | | COLLICCTOL | No | | | | 24 V or less | C80C | A80C | _ | • | _ | • | • | • | _ | IC circuit |] |
| | Diagnostic indication (2-color indication) | Grommet | Yes |] | | _ | _ | | A79W | _ | | _ | | _ | I — | _ | _ |] |

- * Lead wire length symbols: 0.5 m....... Nil (Example) M9NWM

 1 m....... M (Example) M9NWM

 3 m...... L (Example) M9NWL

 5 m...... Z (Example) M9NWZ
- * Since there are other applicable auto switches than listed, refer to page 123 for details.
- For details about auto switches with pre-wired connector, refer to pages 1328 and 1329
- * Band mounting style is not available for D-A9□V□/M9□V□/M9□WV□ and D-M9□A(V)L types.
- * Solid state auto switches marked with "0" are produced upon receipt of order.

 * D-A9□/M9□/M9□/M/2□/A80□/F7□□/J7□□ auto switches are shipped together (not assembled). (However, when D-A9□/M9□/M9□/W types are selected, only auto switch mounting brackets are assembled before being shipped.)
- * When D-A9 (V)/M9 (V)/M9 (W) types are mounted on a o10 or o16 rail, order auto switch mounting brackets separately. Refer to page 123 for details.

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

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



JIS Symbol

Double acting, Single rod





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

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



Refer to page 44 before handling.

Specifications

| Bore size (mm) | 10 | 16 | | | | | | |
|-------------------------------|---|---------|--|--|--|--|--|--|
| Action | Double acting, Single rod | | | | | | | |
| Fluid | A | ir | | | | | | |
| Proof pressure | 1 N | IPa | | | | | | |
| Maximum operating pressure | 0.71 | MРа | | | | | | |
| Minimum operating pressure | 0.06 MPa | | | | | | | |
| Ambient and fluid temperature | Without auto switch: -10°C to 70°C, With auto switch: -10°C to 60°C | | | | | | | |
| Cushion | Rubber | bumper | | | | | | |
| Lubrication | Not required (Non-lube) | | | | | | | |
| Stroke length tolerance | +1.0 0 | | | | | | | |
| Piston speed | 50 to 750 mm/s | | | | | | | |
| Allowable kinetic energy | 0.035 J | 0.090 J | | | | | | |

^{*} No freezing

Standard Stroke

Bore size Standard stroke

10 15, 30, 45, 60, 75, 100, 125, 150

16 15, 30, 45, 60, 75, 100, 125, 150, 175, 200

Head Cover Port Location

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





Axial Perpendicular

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

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

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

^{*} Rod end nut is included in the basic mass.

Calculation: (Example) CJ2RA10-45

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



Technical

CJ1

CJP

CJ₂

CM₂

CG1

MB

MB1

CA2

CS₁

CS₂





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

Series CJ2R

Clean Series

10-CJ2RA Bore size - Stroke Head cover port location

Clean Series

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

Specifications

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

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

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

20-CJ2RA Bore size - Stroke Head cover port location

• Copper and fluorine-free

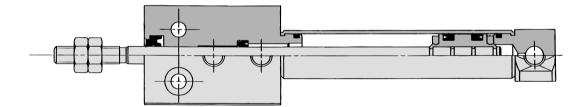
Eliminates the effects by copper based ions and fluorine based resins, etc. over the color cathode ray tube.

Making copper based materials into electroless nickel plated treatment or changing them to the non-copper materials in order to prevent copper ions from generating.

Specifications

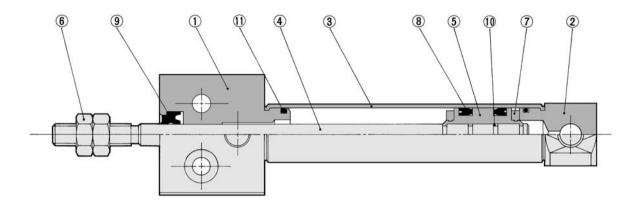
| Bore size (mm) | 10, 16 |
|----------------------------|--|
| Action | Double acting, Single rod |
| Maximum operating pressure | 0.7 MPa |
| Minimum operating pressure | 0.06 MPa |
| Cushion | Rubber bumper (Standard equipment) |
| Standard stroke (mm) | Same as standard type. (Refer to page 95.)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

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



Construction (Not able to disassemble)





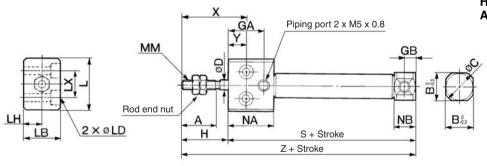
Component Parts

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

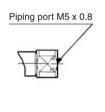
| No. | Description | Material | Note |
|-----|---------------|----------|------|
| 7 | Bumper | Urethane | |
| 8 | Piston seal | NBR | |
| 9 | Rod seal | NBR | |
| 10 | Piston gasket | NBR | |
| 11 | Tube gasket | NBR | |
| | | | |

Bottom Mounting Style

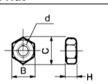
CJ2RA Bore size - Stroke Head cover port location



Head cover port location: Axial location (R)



Rod End Nut



| | | | | Materia | l: Iron |
|----------|----------------------|---|-----|----------|---------|
| Part no. | Applicable bore (mm) | В | С | d | Н |
| NTJ-010A | 10 | 7 | 8.1 | M4 x 0.7 | 3.2 |
| NTJ-015A | 16 | 8 | 9.2 | M5 x 0.8 | 4 |
| | | | | | |

| | | | | | | | | | | | | | | | | | | | (mm) |
|-----------|----|------|----|---|----|----|----|----|----|--------------------------------|----|----|----------|------|-----|----|---|----|------|
| Bore size | Α | В | С | D | GA | GB | Н | L | LB | LD | LH | LX | MM | NA | NB | Х | Υ | S | Z |
| 10 | 15 | 12 | 14 | 4 | 16 | 5 | 20 | 23 | 16 | ø3.5, ø6.5 counterbore depth 4 | 8 | 12 | M4 x 0.7 | 20.5 | 9.5 | 28 | 8 | 54 | 74 |
| 16 | 15 | 18.3 | 20 | 5 | 16 | 5 | 20 | 26 | 20 | ø4.5, ø8 counterbore depth 5 | 10 | 16 | M5 x 0.8 | 20.5 | 9.5 | 28 | 8 | 55 | 75 |

D-□

-X□ Individual

Technical

CJ1 CJP

CJ2

CM2

CG1

MB

MB1

CA2

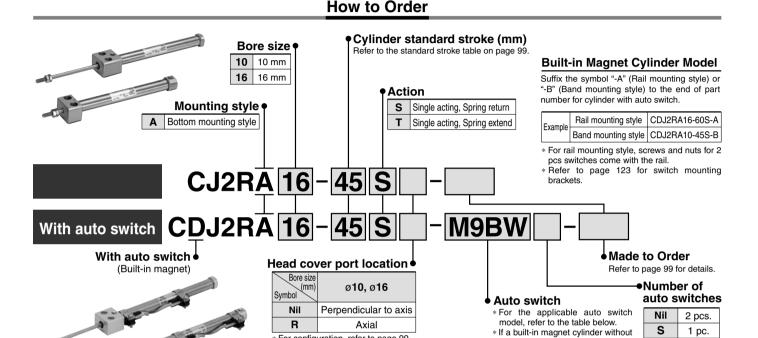
CS1

CS2

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

Series CJ2R

ø10, ø16



* For configuration, refer to page 99.

* Not applicable to single acting,

spring extend (T).

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

| | | | ight | Wiring | | Load vo | oltage | Aut | o switch mo | odel | Lea | d wir | e ler | ngth | (m) | | | | |
|----------|---|------------------|----------------|----------------------------|------|-----------|---------------|----------|-----------------------|---------|----------|-------|-------|------|-------|------------|------------|----------|--|
| Туре | Special function | Electrical entry | ndicator light | (Output) | | DC | AC | Band | Rail mo | ounting | 0.5 | 1 | 3 | | Inone | | Applica | ble load | |
| | | entry | Indic | (Output) | | DC | AC | mounting | Perpendicular In-line | | (Nil) | (M) | (L) | (Z) | (N) | COTITIONIO | | | |
| | | | | 3-wire (NPN) | | | | M9N | _ | - | | • | • | 0 | - | 0 | | | |
| | | | | 3-WIIE (INFIN) | | 5 V, 12 V | | _ | F7NV | F79 | • | _ | • | 0 | - | 0 | IC circuit | | |
| | | Grommet | | 3-wire (PNP) | | 3 V, 12 V | | M9P | | I | • | • | • | 0 | - | 0 | ic circuit | | |
| | | Gioiiiiiet | | 3-wile (i ivi) | | | | _ | F7PV | F7P | • | _ | • | 0 | - | 0 | | | |
| tc | | | | | | | | M9B | _ | 1 | • | • | • | 0 | - | 0 | | | |
| switch | | | | 2-wire | | 12 V | | _ | F7BV | J79 | • | _ | • | 0 | - | 0 | _ | | |
| ė | | Connector | Yes | | | | | H7C | J79C | I | • | _ | • | | | _ | | Relay, | |
| state | | | | 3-wire (NPN) | 24 V | | _ [| M9NW | _ | 1 | • | • | • | 0 | _ | 0 | | PLC | |
| <u>0</u> | Diagnostic indication | | | O-WIIG (INI IN) | | 5 V, 12 V | | _ | F7NWV | F79W | • | _ | • | 0 | _ | 0 | IC circuit | | |
| Solid | | | | 3-wire (PNP) | | J V, 12 V | | M9PW | _ | | • | • | • | 0 | _ | 0 | 10 circuit | | |
| 0, | (2-color indication) | Grommet | | 5-wile (Fivi) | | | | _ | _ | F7PW | • | _ | • | 0 | _ | 0 | | | |
| | | | | | | | | | M9BW | _ | _ | • | • | • | 0 | _ | 0 | | |
| | | | | 2-wire | | 12 V | | | F7BWV | J79W | • | - | • | 0 | _ | 0 | _ | | |
| | Water resistant (2-color indication) | | | | | | | H7BA | F7BAV | F7BA | <u> </u> | _ | • | 0 | _ | 0 | | | |
| | With diagnostic output (2-color indication) | | | 4-wire (NPN) | | 5 V, 12 V | | H7NF | _ | F79F | • | _ | • | 0 | _ | 0 | IC circuit | | |
| | | | | 3-wire (NPN equivalent) | _ | 5 V | _ | A96 | _ | A76H | • | _ | • | - | - | _ | IC circuit | _ | |
| 등 | | | Yes | | | _ | 200 V | _ | A72 | A72H | • | _ | • | _ | - | _ | | | |
| switch | | Grommet | | | | | 100 V | | A73 | A73H | • | _ | • | • | _ | _ |] — | | |
| | | | | | | | 100 V | A93 | _ | _ | • | _ | • | I — | _ | _ | | Relay, | |
| Reed | | | No | 2-wire | 24 V | 12 V | 100 V or less | A90 | A80 | A80H | • | _ | • | T- | _ | _ | IC circuit | PLC | |
| Œ | | Connector | Voc | | 24 V | | _ | C73C | A73C | _ | • | _ | • | • | • | _ | _ | 0 | |
| | | OUTITIEULUI | No | | | | 24 V or less | C80C | A80C | | • | _ | • | • | • | _ | IC circuit | | |
| | Diagnostic indication (2-color indication) | Grommet | Yes |] | | _ | _ | _ | A79W | - | • | _ | • | - | _ | _ | _ |] | |

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

an auto switch is required, refer to

the model of built-in magnet

"n" pcs.

n

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

* D-A9□/M9□W/A7□□/A80□/F7□□/J7□□ auto switches are shipped together (not assembled). (However, when D-A9□/M9□/M9□W types are selected,

only auto switch mounting brackets are assembled before being shipped.

* When D-A9 \(\text{V} \) \(\text{M9} \(\text{V} \) \(\text{V} \) ypes are mounted on a \(\sigma 10 \) or \(\sigma 16 \) rail, order auto switch mounting brackets separately. Refer to page 123 for details.