

Compact Cylinder with Air Cushion

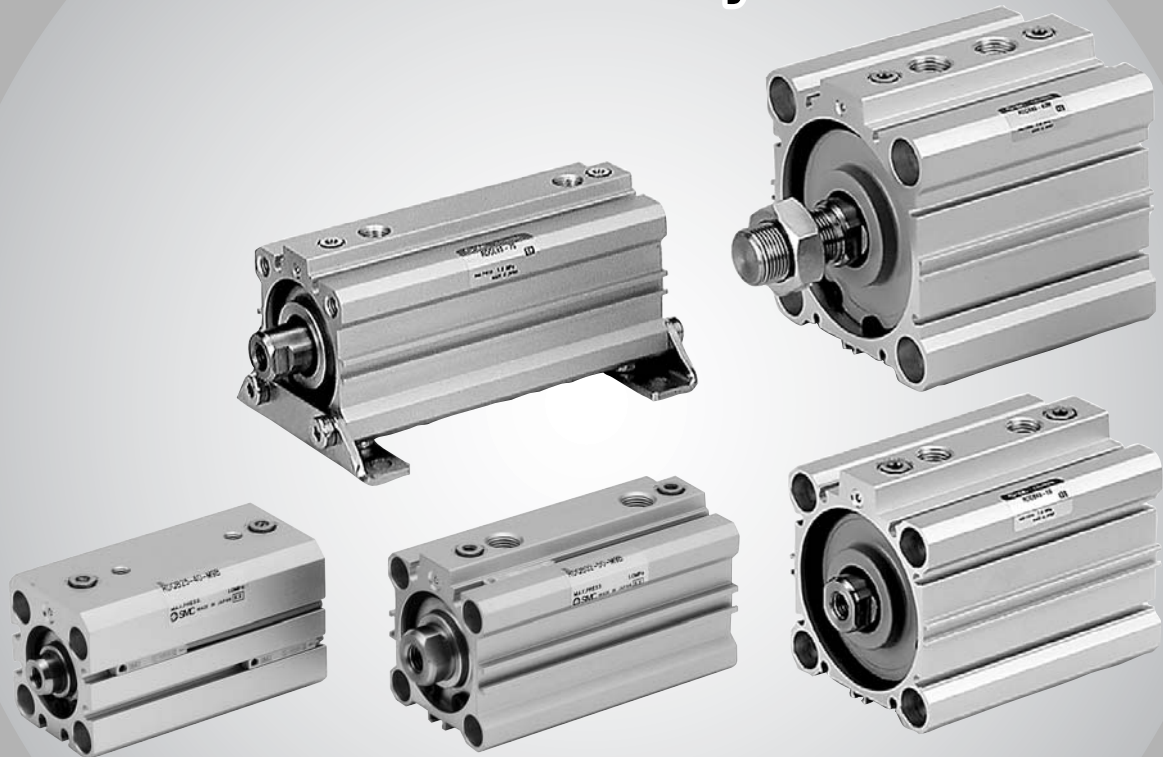
Series RQ

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100



Uses a unique air cushion mechanism with no cushion ring.

The **new standard** for the future
New **Air Cushion Cylinder**



- CUJ
- CU
- CQS
- CQ2
- RQ**
- CQM
- MU

| Model | Mounting | Rod end configuration | Standard stroke | | | | | | | | Auto switch | |
|-----------|---|--|-----------------|----|----|----|----|----|----|-----|-------------|--|
| | | | 15 | 20 | 25 | 30 | 40 | 50 | 75 | 100 | | |
| R(D)Q□20 | <ul style="list-style-type: none"> • Through-hole • Double end tapped • Foot style • Rod side flange style • Head side flange style • Double clevis style | <ul style="list-style-type: none"> • Female thread • Male thread | ● | ● | ● | ● | ● | ● | ● | ● | ● | <ul style="list-style-type: none"> • Direct mounting auto switch (ø20 to ø100) • Rail mounting auto switch (ø32 to ø100) |
| R(D)Q□25 | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| R(D)Q□32 | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| R(D)Q□40 | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| R(D)Q□50 | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| R(D)Q□63 | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| R(D)Q□80 | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| R(D)Q□100 | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | |

*Size ø20 and ø25 have through-holes and double end taps in common.

- D-□
- X□
- Individual -X□
- Technical data

Future new standard for shock elimination,

Employs a new construction for the air cushion mechanism.

Compact Cylinder with Air Cushion

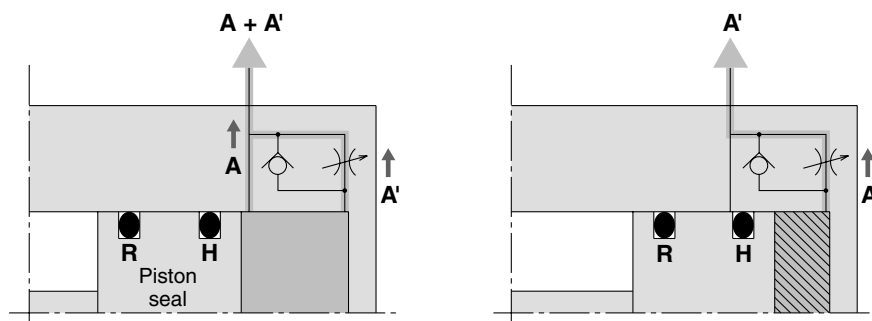
Series RQ



Unique air cushion construction with no cushion ring

Elimination of the cushion ring used in conventional cushion ring type air cushions has made it possible to reduce the overall length of the cylinder. This produces an air cushion cylinder which retains the merits of a compact design.

Working principle

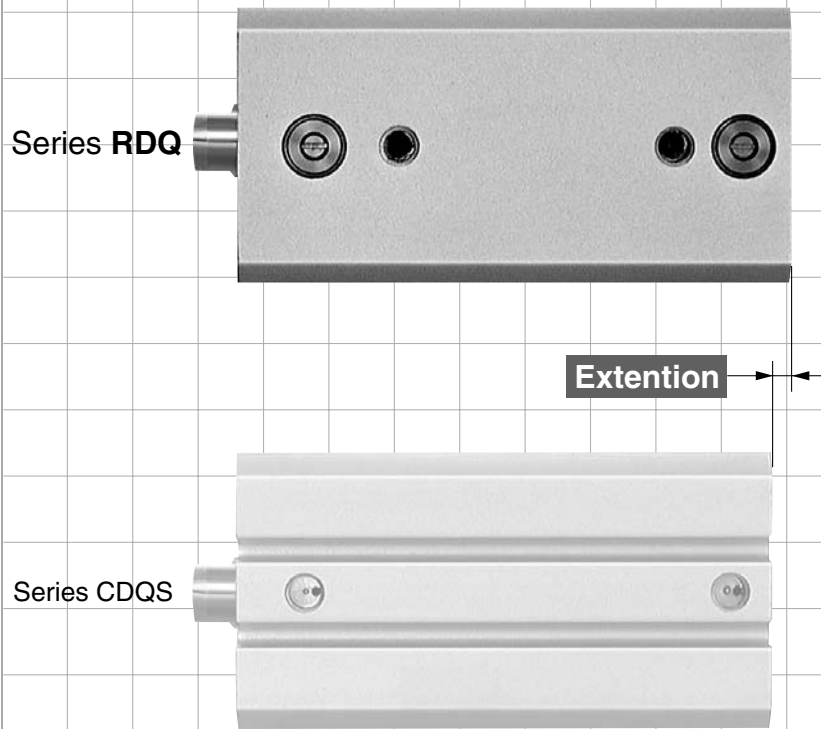


- ① When the piston is retracting, exhaust is discharged from both A and A' until piston seal H passes the air passage A.
- ② After piston seal H has passed the air passage A, exhaust is discharged only from A'. The section marked with diagonal lines becomes a cushioning chamber, and a cushioning effect is achieved.
- ③ When air is supplied for piston extension, the check seal opens and the piston starts with no delay.

noise reduction and improvement in repeatability

Minimal extended dimensions from +2.5mm to 13mm

(Compared with series CDQS/CDQ2 of the same bore size with auto switches)

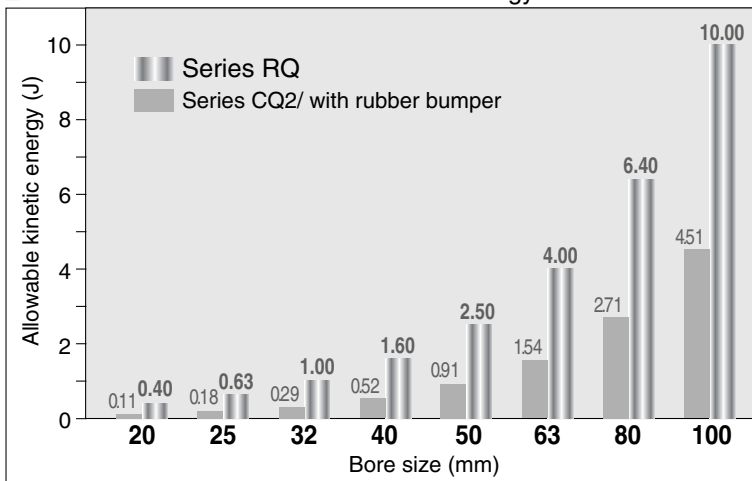


| Series | Bore size | Extended dimension | Comparable cylinder |
|------------|-----------|--------------------|---------------------|
| Series RDQ | 20 | +2.5mm | Series CDQS |
| | 25 | +4mm | |
| | 32 | +4mm | |
| | 40 | +4.5mm | Series CDQ2 |
| | 50 | +9mm | |
| | 63 | +9mm | |
| | 80 | +10mm | |
| 100 | +13mm | | |

Nearly three times the allowable kinetic energy

(Compared to Series CQS/CQ2 with rubber bumper)

Improved energy absorption allows selection of a cylinder that is two sizes smaller for the same kinetic energy.



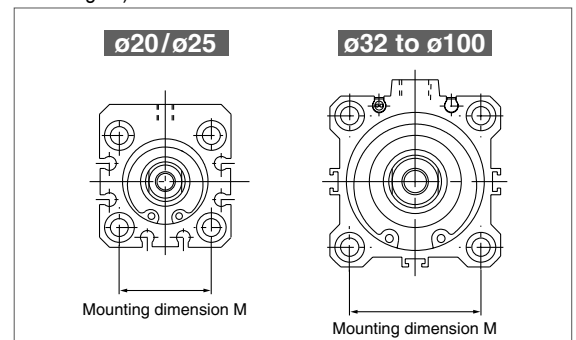
Improved noise reduction (Stroke end impact noise reduced)

- Decrease of 19dB or more (Compared with Series CQ2 without cushion)
- Decrease of 14dB or more (Compared with Series CQ2 with rubber bumper)

Interchangeable mounting

The mounting dimension "M" is the same as the compact cylinder Series CQS/CQ2.

(CQS/CQ2 mounting brackets can be used without any changes.)



Improved repeatability

The piston contact surface at the stroke end is metal, providing improved repeatability for the stopping position as compared with a rubber bumper.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical

data

Compact Cylinder with Air Cushion

Series RQ

ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

How to Order

With auto switch

With auto switch
(Built-in magnet)

Mounting bracket

| | | | |
|----------|-------------------------|----------|------------------------|
| B | Through-hole (Standard) | F | Rod side flange style |
| A | Both ends tapped style | G | Head side flange style |
| L | Foot style | D | Double clevis style |

Note 1) Mounting brackets are packed together when shipped (unassembled).
 Note 2) Since sizes ø20 and ø25 have a body with type B (Through-hole) and type A (Both ends tapped style) in common, there is no type A part number.
 Example) RQA 20-30 does not exist.
 Note 3) Cylinder mounting bolts are not included. Order them separately referring to Mounting Bolts for RQB on page 776.

RQ B 32 - 50 - M9BW

RDQ B 32 - 50 - M9BW

Made to Order
For details, refer to page 775.

Number of auto switches

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

Auto switch

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

* Refer to the table below for the applicable auto switch model.

Body option

| | |
|-----|----------------------------------|
| Nil | Rod end female thread (Standard) |
| M | Rod end male thread |

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 775.

Thread type

| | | |
|-----|----------|-------------|
| Nil | M thread | ø20, 25 |
| | Rc | |
| TN | NPT | ø32 to ø100 |
| TF | G | |

Bore size

| | |
|-----|--------|
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |
| 50 | 50 mm |
| 63 | 63 mm |
| 80 | 80 mm |
| 100 | 100 mm |

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) RDQL40-50

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

| Type | Special function | Electrical entry | Indicator light | Wiring (Output) | Load voltage | | Auto switch model | | Lead wire length (m) | | | | | Pre-wired connector | Applicable load | | | | | | | |
|---|--|------------------|-----------------|---------------------|--------------|-------|-------------------|---------------|----------------------|-------------|-----------|-----------|--------------|---------------------|-----------------|------------|------------|---|---|------------|---|---|
| | | | | | DC | AC | Perpendicular | | In-line | | 0.5 (Nil) | 1 (M) | 3 (L) | | | 5 (Z) | None (N) | | | | | |
| | | | | | | | ø20, ø25 | ø32 to ø100 | ø20, ø25 | ø32 to ø100 | | | | | | | | | | | | |
| Solid state switch | — | Grommet | — | 3-wire (NPN) | 24 V | — | 5 V, 12 V | M9NV | M9N | ● | ● | ○ | — | ○ | IC circuit | | | | | | | |
| | | | | 3-wire (PNP) | | | | M9PV | M9P | ● | ● | ○ | — | ○ | | | | | | | | |
| | | Connector | | 2-wire | M9BV | M9B | ● | ● | ○ | — | ○ | | | | | | | | | | | |
| | | | | — | J79C | — | ● | — | ● | ● | — | — | | | | | | | | | | |
| | Diagnostic indication (2-color indication) | Grommet | Yes | — | 3-wire (NPN) | 24 V | — | 5 V, 12 V | M9NVV | M9NW | ● | ● | ○ | — | ○ | IC circuit | | | | | | |
| | | | | | 3-wire (PNP) | | | | M9PVV | M9PW | ● | ● | ○ | — | ○ | | | | | | | |
| | | | | | 2-wire | M9BVV | M9BW | ● | ● | ○ | — | ○ | — | | | | | | | | | |
| | | | | | 3-wire (NPN) | M9NAV | M9NA | ○ | ○ | ● | ○ | — | | ○ | | | | | | | | |
| | | | | | 3-wire (PNP) | M9PAV | M9PA | ○ | ○ | ● | ○ | — | ○ | | | | | | | | | |
| | | | | | 2-wire | M9BAV | M9BA | ○ | ○ | ● | ○ | — | ○ | | | | | | | | | |
| With diagnostic output (2-color indication) | — | — | 4-wire | 5 V, 12 V | — | — | F79F | — | — | ● | — | ○ | — | ○ | IC circuit | | | | | | | |
| Reed switch | — | Grommet | Yes | 3-wire (NPN equiv.) | 24 V | — | 5 V | — | A96V | A96 | ● | — | ● | — | — | — | IC circuit | | | | | |
| | | | | | | | | | — | A72 | — | A72H | ● | — | ● | — | — | — | — | | | |
| | | | | | | | | | 12 V | 100 V | A93V | A93 | ● | — | ● | — | — | — | — | | | |
| | | Connector | | No | 2-wire | 24 V | — | 100 V or less | — | 5 V, 12 V | — | A90V | A90 | ● | — | ● | — | — | — | IC circuit | | |
| | | | | | | | | | | | | 12 V | — | A73C | — | ● | — | ● | ● | — | — | — |
| | | | | | | | | | | | | 5 V, 12 V | 24 V or less | A80C | — | ● | — | ● | ● | — | — | — |
| 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) J79CN

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

* Besides the models in the above catalog, there are some other auto switches that are applicable. For more information, refer to page 788.

* Refer to pages 1328 and 1329 for the details of auto switches with a pre-wired connector.

* When mounting D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types on a side other than the port side with ø32 to ø50 cylinders, order auto switch mounting brackets separately. Refer to page 788 for details.

* When mounting brackets (foot/flange style) are used, then in some cases auto switches cannot be retrofitted.

Compact Cylinder with Air Cushion *Series RQ*

Specifications



| Bore size (mm) | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
|-------------------------------|--|----|----|----|----|----|----|-----|
| Lubrication | Not required (non-lube) | | | | | | | |
| Fluid | Air | | | | | | | |
| Proof pressure | 1.5 MPa | | | | | | | |
| Maximum operating pressure | 1.0 MPa | | | | | | | |
| Minimum operating pressure | 0.05 MPa | | | | | | | |
| Ambient and fluid temperature | Without auto switch: -10°C to 70°C (No freezing) | | | | | | | |
| | With auto switch: -10°C to 60°C (No freezing) | | | | | | | |
| Rod end thread | Female thread | | | | | | | |
| Stroke length tolerance | +1.0 0 | | | | | | | |
| Mounting | Through-hole | | | | | | | |
| Piston speed | 50 to 500 mm/s | | | | | | | |

Standard Stroke

| Bore size (mm) | Standard stroke (mm) |
|----------------|-----------------------------|
| 20, 25 | 15, 20, 25, 30, 40, 50 |
| 32, 40 | 20, 25, 30, 40, 50, 75, 100 |
| 50, 63 | 30, 40, 50, 75, 100 |
| 80, 100 | 40, 50, 75, 100 |



Made to Order
(For details, refer to pages 1420 and 1470.)

| Symbol | Specifications |
|--------|---|
| -XC4 | With heavy duty scraper |
| -XC35 | With coil scraper (For ø32 to 100 only) |

Allowable kinetic energy

Refer to "Selection" on page 789 regarding the allowable kinetic energy.

Manufacture of Intermediate Stroke

| Description | Exclusive body | |
|--------------|--|--------------|
| Part no. | Refer to "How to Order" for standard model | |
| Method | Available in stroke increments of 1mm, using an exclusive body for the specified stroke. | |
| Stroke range | Bore size | Stroke range |
| | 20, 25 | 16 to 49 |
| | 32, 40 | 21 to 99 |
| | 50, 63 | 31 to 99 |
| Example | 80, 100 | 41 to 99 |
| | Part no.: RQB32-47 A special tube is manufactured for a 47mm stroke. | |

Effective Cushion Length

| Bore size (mm) | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
|-------------------------------|-----|-----|-----|-----|-----|----|-----|-----|
| Effective cushion length (mm) | 5.8 | 6.1 | 6.6 | 6.6 | 7.1 | 7 | 7.5 | 8 |

Mounting Bracket Part No.

| Bore size (mm) | Foot ^{Note 1)} | Flange | Double clevis ^{Note 3)} |
|----------------|-------------------------|----------|----------------------------------|
| 20 | CQS-L020 | CQS-F020 | CQS-D020 |
| 25 | CQS-L025 | CQS-F025 | CQS-D025 |
| 32 | CQ-L032 | CQ-F032 | CQ-D032 |
| 40 | CQ-L040 | CQ-F040 | CQ-D040 |
| 50 | CQ-L050 | CQ-F050 | CQ-D050 |
| 63 | CQ-L063 | CQ-F063 | CQ-D063 |
| 80 | CQ-L080 | CQ-F080 | CQ-D080 |
| 100 | CQ-L100 | CQ-F100 | CQ-D100 |

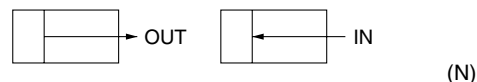
Note 1) When ordering foot brackets, order 2 pieces per cylinder.

Note 2) The following parts are included with each bracket.

Foot/Flange : Body mounting bolts.

Double clevis: Clevis pins, type C retaining ring for axis, and Body mounting bolts.

Theoretical Output



| Bore size (mm) | Operating direction | Operating pressure (MPa) | | |
|----------------|---------------------|--------------------------|------|------|
| | | 0.3 | 0.5 | 0.7 |
| 20 | IN | 71 | 118 | 165 |
| | OUT | 94 | 157 | 220 |
| 25 | IN | 113 | 189 | 264 |
| | OUT | 147 | 245 | 344 |
| 32 | IN | 181 | 302 | 422 |
| | OUT | 241 | 402 | 563 |
| 40 | IN | 317 | 528 | 739 |
| | OUT | 377 | 628 | 880 |
| 50 | IN | 495 | 825 | 1150 |
| | OUT | 589 | 982 | 1370 |
| 63 | IN | 841 | 1400 | 1960 |
| | OUT | 935 | 1560 | 2180 |
| 80 | IN | 1360 | 2270 | 3170 |
| | OUT | 1510 | 2510 | 3520 |
| 100 | IN | 2140 | 3570 | 5000 |
| | OUT | 2360 | 3930 | 5500 |

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

Series RQ

Mass

Basic Mass

(g)

| Bore size (mm) | Standard stroke (mm) | | | | | | | |
|----------------|----------------------|-----|-----|-----|------|------|------|------|
| | 15 | 20 | 25 | 30 | 40 | 50 | 75 | 100 |
| 20 | 141 | 156 | 171 | 186 | 216 | 245 | — | — |
| 25 | 203 | 221 | 239 | 258 | 294 | 331 | — | — |
| 32 | — | 271 | 291 | 312 | 353 | 394 | 496 | 598 |
| 40 | — | 390 | 413 | 436 | 482 | 528 | 643 | 758 |
| 50 | — | — | — | 731 | 803 | 875 | 1055 | 1235 |
| 63 | — | — | — | 940 | 1019 | 1099 | 1297 | 1495 |
| 80 | — | — | — | — | 1819 | 1950 | 2278 | 2606 |
| 100 | — | — | — | — | 2859 | 3038 | 3483 | 3928 |

Additional Mass

(g)

| Bore size (mm) | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
|--|-------------|-----|-----|-----|-----|-----|------|------|
| Magnet | 5 | 6 | 11 | 13 | 14 | 22 | 24 | 35 |
| Both ends tapped style | — | — | 6 | 6 | 6 | 19 | 45 | 45 |
| Rod end male thread | Male thread | 6 | 12 | 26 | 27 | 53 | 120 | 175 |
| | Nut | 4 | 8 | 17 | 17 | 32 | 49 | 116 |
| Foot style (including bolt) | 159 | 181 | 143 | 155 | 243 | 324 | 696 | 1062 |
| Rod side flange style (including bolt) | 143 | 180 | 180 | 214 | 373 | 559 | 1056 | 1365 |
| Head side flange style (including bolt) | 137 | 171 | 165 | 198 | 348 | 534 | 1017 | 1309 |
| Double clevis style (including pin, retaining ring and bolt) | 92 | 127 | 151 | 196 | 393 | 554 | 1109 | 1887 |

Calculation example) RQD32-20M

| | | |
|--------------------|---------------------|-------------|
| • Basic mass | : RQB32-20 | 271 g |
| • Additional mass: | Double end tapped | 6 g |
| | Rod end male thread | 43 g |
| | Double clevis | 151 g |
| | | <hr/> 471 g |

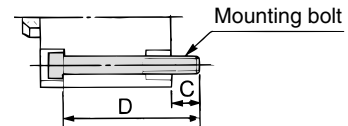
Mounting Bolts for R(D)QB

Through-hole type mounting bolts for R(D)QB are available.

How to order: Add "Bolt" in front of the bolts to be used.

Example) Bolt M5 x 50L 4 pcs.

Material: Chromium molybdenum steel
Surface treatment: Nickel plated

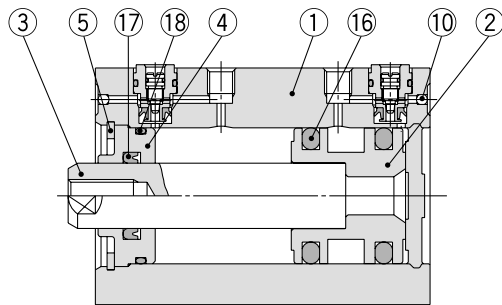


| Cylinder model | C | D | Mounting bolt size |
|----------------|-----|-----|--------------------|
| R(D)QB20-15 | 9 | 50 | M5 x 50L |
| -20 | | 55 | x 55L |
| -25 | | 60 | x 60L |
| -30 | | 65 | x 65L |
| -40 | | 75 | x 75L |
| -50 | | 85 | x 85L |
| R(D)QB25-15 | 9.5 | 55 | M5 x 55L |
| -20 | | 60 | x 60L |
| -25 | | 65 | x 65L |
| -30 | | 70 | x 70L |
| -40 | | 80 | x 80L |
| -50 | | 90 | x 90L |
| R(D)QB32-20 | 10 | 60 | M5 x 60L |
| -25 | | 65 | x 65L |
| -30 | | 70 | x 70L |
| -40 | | 80 | x 80L |
| -50 | | 90 | x 90L |
| -75 | | 115 | x 115L |
| -100 | | 140 | x 140L |

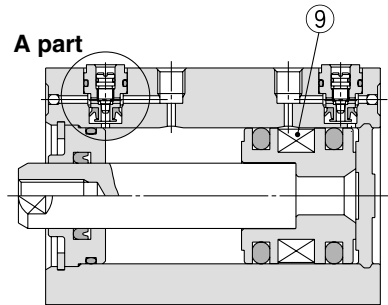
| Cylinder model | C | D | Mounting bolt size |
|----------------|------|-----|--------------------|
| R(D)QB40-20 | 8 | 65 | M5 x 65L |
| -25 | | 70 | x 70L |
| -30 | | 75 | x 75L |
| -40 | | 85 | x 85L |
| -50 | | 95 | x 95L |
| -75 | | 120 | x 120L |
| -100 | | 145 | x 145L |
| R(D)QB50-30 | 13.5 | 85 | M6 x 85L |
| -40 | | 95 | x 95L |
| -50 | | 105 | x 105L |
| -75 | | 130 | x 130L |
| -100 | | 155 | x 155L |
| R(D)QB63-30 | 15.5 | 90 | M8 x 90L |
| -40 | | 100 | x 100L |
| -50 | | 110 | x 110L |
| -75 | | 135 | x 135L |
| -100 | | 160 | x 160L |
| R(D)QB80-40 | 15 | 105 | M10 x 105L |
| -50 | | 115 | x 115L |
| -75 | | 140 | x 140L |
| -100 | | 165 | x 165L |
| R(D)QB100-40 | 17.5 | 120 | M10 x 120L |
| -50 | | 130 | x 130L |
| -75 | | 155 | x 155L |
| -100 | | 180 | x 180L |

Construction

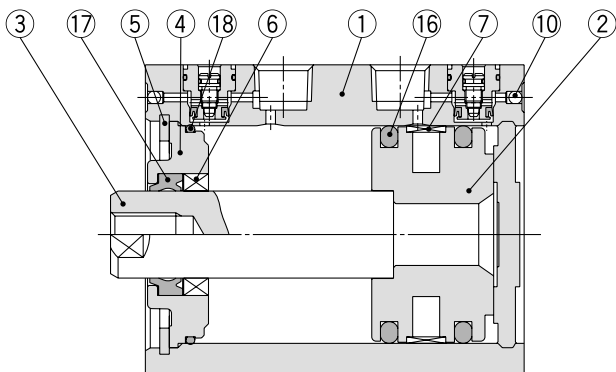
ø20 to ø40



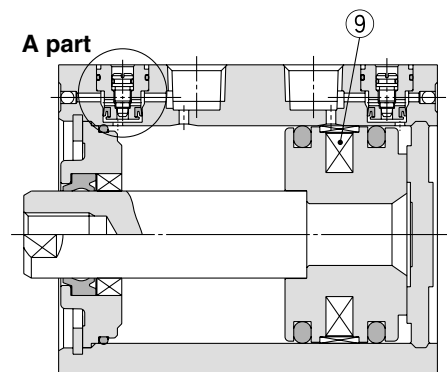
With auto switch (Built-in magnet)



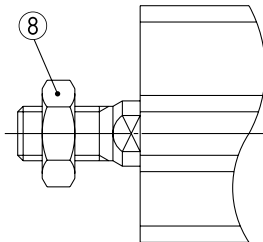
ø50 to ø100



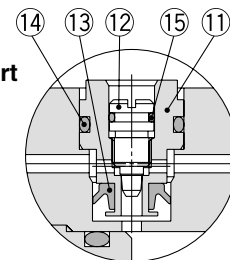
With auto switch (Built-in magnet)



M: Rod end male thread



Details of A part



Component Parts

| No. | Description | Material | Note |
|-----|---------------------|----------------------------------|---------------------------------|
| 1 | Cylinder tube | Aluminum alloy | Hard anodized |
| 2 | Piston | Aluminum alloy | Chromated |
| 3 | Piston rod | Stainless steel | ø20, ø25 |
| | | Carbon steel | ø32 to ø100, Hard chrome plated |
| 4 | Collar | Aluminum alloy | ø20 to ø40, Anodized |
| | | Aluminum alloy casted | ø50 to ø100, Chromated, Painted |
| 5 | Retaining ring | Carbon tool steel | Phosphate coating |
| 6 | Bushing | Bearing alloy | ø50 to ø100 |
| 7 | Wear ring | Resin | ø63 to ø100 |
| 8 | Rod end nut | Carbon steel | Nickel plated |
| 9 | Magnet | — | |
| 10 | Steel ball | High carbon chrome bearing steel | |
| 11 | Check seal retainer | Brass | Electroless nickel plated |
| 12 | Cushion needle | Stainless steel | |
| 13 | Check seal | NBR | |
| 14 | Check gasket | NBR | |
| 15 | Needle gasket | NBR | |
| 16 | Piston seal | NBR | |
| 17 | Rod seal | NBR | |
| 18 | Tube gasket | NBR | |

Replacement Parts/Seal Kit

| Bore size (mm) | Part no. | Contents |
|----------------|-----------|-------------------------------|
| 20 | RQB20-PS | Set of nos. above 16, 17, 18. |
| 25 | RQB25-PS | |
| 32 | RQB32-PS | |
| 40 | RQB40-PS | |
| 50 | RQB50-PS | |
| 63 | RQB63-PS | |
| 80 | RQB80-PS | |
| 100 | RQB100-PS | |

* Seal kit includes 16, 17 and 18. Order the seal kit, based on each bore size.

* Since the seal kit does not include a grease pack, order it separately.

Grease pack part no.: GR-S-010 (10 g)

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

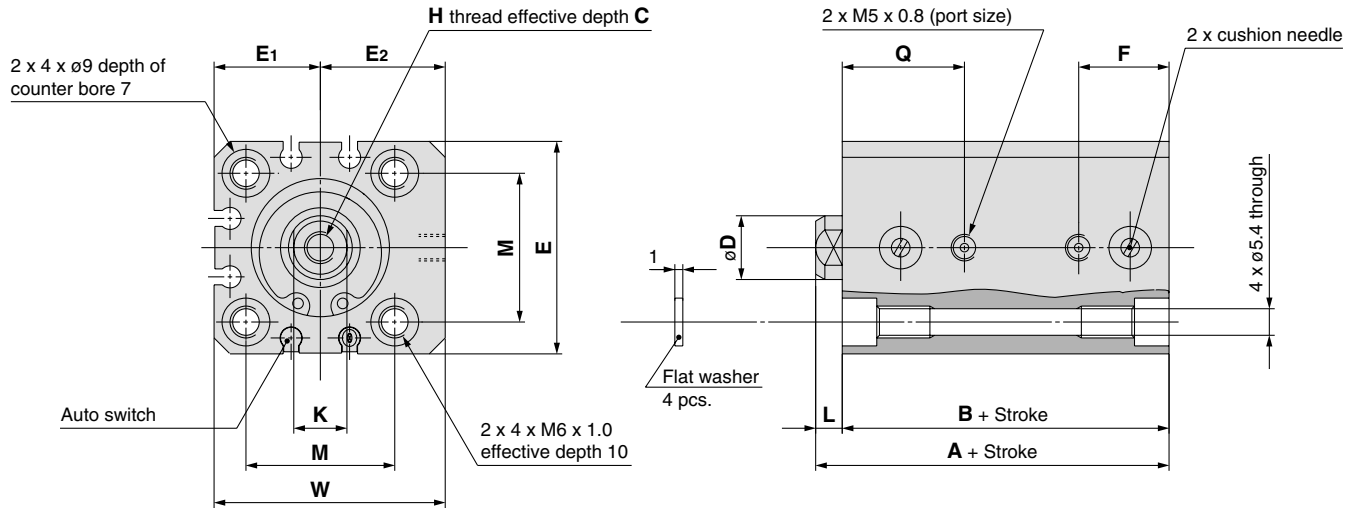
Technical data

Series RQ

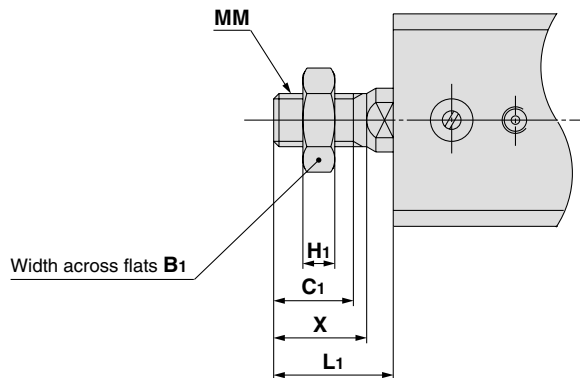
Dimensions: $\phi 20$, $\phi 25$

* For the auto switch mounting position and its mounting height, refer to page 786.

Basic style (Through-hole/Both ends tapped common): RQB/RDQB



Rod end male thread



Rod End Male Thread

| Bore size (mm) | B ₁ | H ₁ | C ₁ | X | MM | L ₁ |
|----------------|----------------|----------------|----------------|------|------------|----------------|
| 20 | 13 | 5 | 12 | 14 | M8 x 1.25 | 18.5 |
| 25 | 17 | 6 | 15 | 17.5 | M10 x 1.25 | 22.5 |

Basic Style

| Bore size (mm) | Stroke range (mm) | A | B | C | D | E | E ₁ | E ₂ | F | H | K | L | M | Q | W |
|----------------|-------------------|------|------|----|----|----|----------------|----------------|------|----------|----|-----|------|----|------|
| 20 | 15 to 50 | 36.5 | 32 | 7 | 10 | 36 | 18 | 21 | 15.5 | M5 x 0.8 | 8 | 4.5 | 25.5 | 21 | 39 |
| 25 | 15 to 50 | 41.5 | 36.5 | 12 | 12 | 40 | 20 | 23.5 | 17 | M6 x 1.0 | 10 | 5 | 28 | 23 | 43.5 |

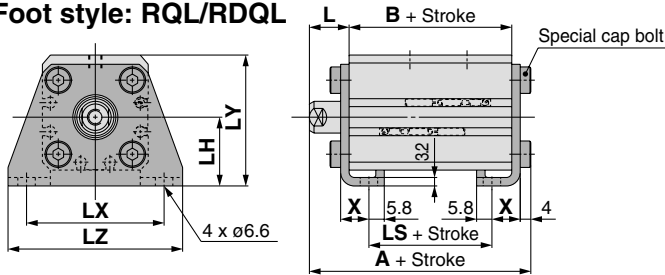
* Refer to page 784 for details on rod end nut and accessories.



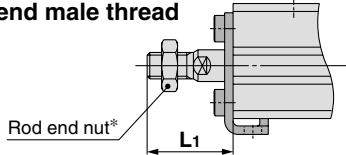
• Add the stroke to calculate the length of intermediate strokes.

Mounting Bracket Dimensions

Foot style: RQL/RDQL



Rod end male thread



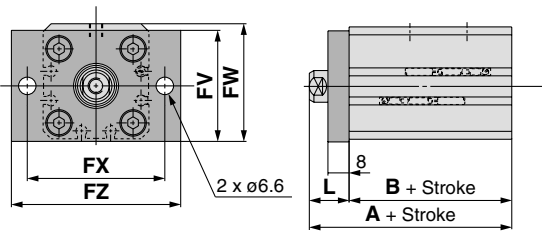
Foot Style

| Bore size (mm) | Stroke range (mm) | A | B | LS | L |
|----------------|-------------------|------|------|------|------|
| 20 | 15 to 50 | 53.7 | 32 | 20 | 14.5 |
| 25 | 15 to 50 | 58.7 | 36.5 | 21.5 | 15 |

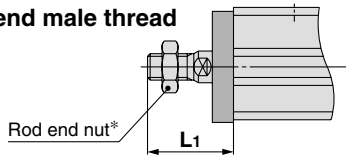
| Bore size (mm) | L1 | LH | LX | LY | LZ | X |
|----------------|------|----|----|------|----|------|
| 20 | 28.5 | 24 | 48 | 45 | 62 | 9.2 |
| 25 | 32.5 | 26 | 52 | 49.5 | 66 | 10.7 |

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod side flange style: RQF/RDQF



Rod end male thread



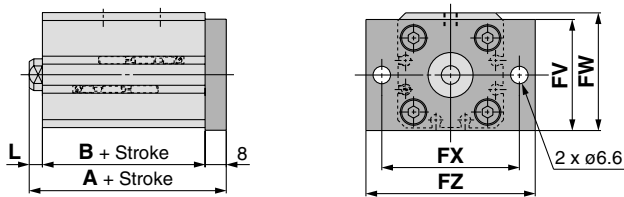
Rod Side Flange Style

| Bore size (mm) | Stroke range (mm) | A | B | L |
|----------------|-------------------|------|------|------|
| 20 | 15 to 50 | 46.5 | 32 | 14.5 |
| 25 | 15 to 50 | 51.5 | 36.5 | 15 |

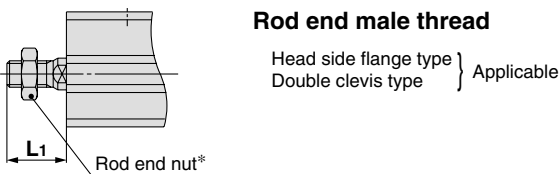
| Bore size (mm) | L1 | FV | FW | FX | FZ |
|----------------|------|----|------|----|----|
| 20 | 28.5 | 39 | 40.5 | 48 | 60 |
| 25 | 32.5 | 42 | 44.5 | 52 | 64 |

Flange material: Carbon steel
Surface treatment: Nickel plated

Head side flange style: RQG/RDQG



Rod end male thread



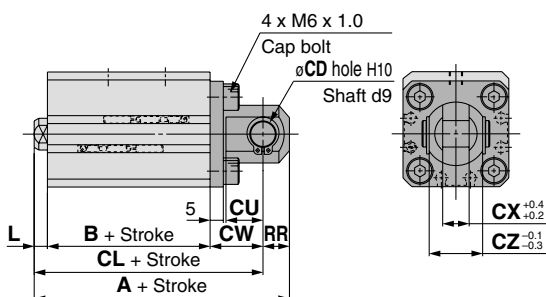
Head Side Flange Style

| Bore size (mm) | Stroke range (mm) | A | L | L1 |
|----------------|-------------------|------|-----|------|
| 20 | 15 to 50 | 44.5 | 4.5 | 18.5 |
| 25 | 15 to 50 | 49.5 | 5 | 22.5 |

* All dimensions but A, L and L1 are identical to those of the rod side flange style.

Flange material: Carbon steel
Surface treatment: Nickel plated

Double clevis style: RQD/RDQD



Double Clevis Style

| Bore size (mm) | Stroke range (mm) | A | B | CL | CD | CU |
|----------------|-------------------|------|------|------|----|----|
| 20 | 15 to 50 | 63.5 | 32 | 54.5 | 8 | 12 |
| 25 | 15 to 50 | 71.5 | 36.5 | 61.5 | 10 | 14 |

| Bore size (mm) | CW | CX | CZ | L | L1 | RR |
|----------------|----|----|----|-----|------|----|
| 20 | 18 | 8 | 16 | 4.5 | 18.5 | 9 |
| 25 | 20 | 10 | 20 | 5 | 22.5 | 10 |

* Double clevis pins and retaining rings are included in the package.
* Refer to page 784 for details on rod end nut and accessories.

Double clevis bracket material: Carbon steel
Surface treatment: Nickel plated

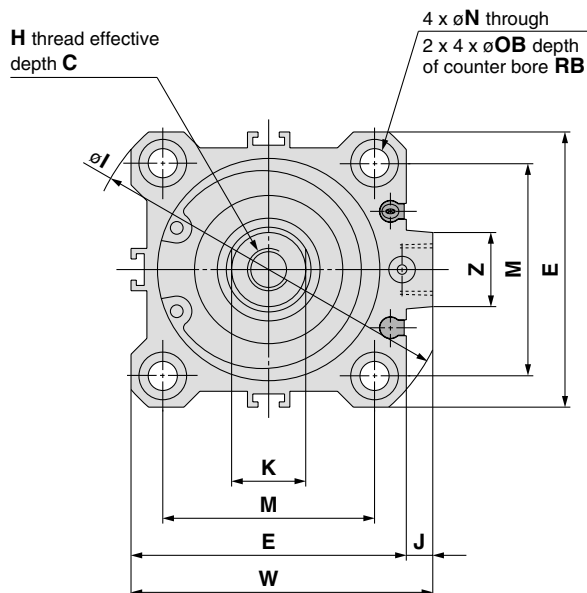
Series RQ

Dimensions: $\phi 32$, $\phi 40$, $\phi 50$

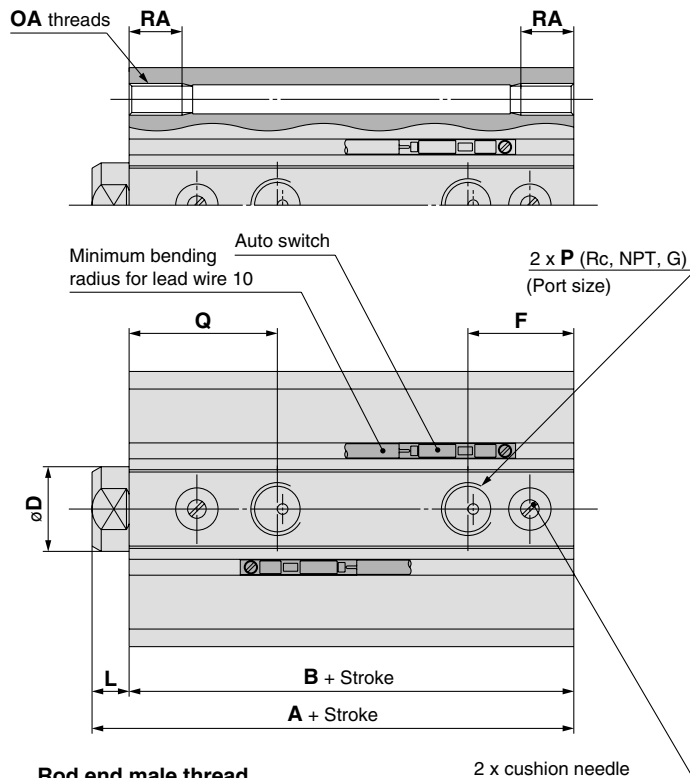
* For the auto switch mounting position and its mounting height, refer to pages 786 to 787.

Basic style (Through-hole): RQB/RDQB

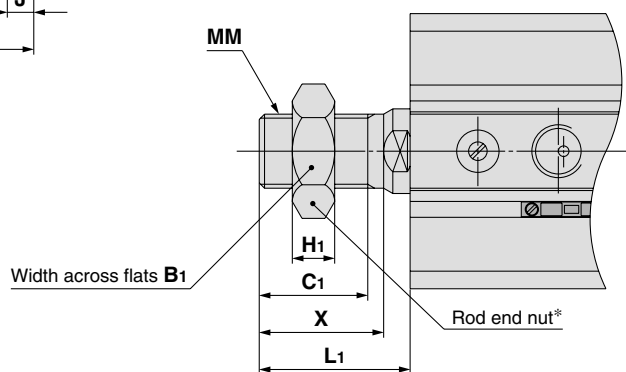
| Double end tapped | | |
|-------------------|-----------|----|
| Bore size (mm) | OA | RA |
| 32 | M6 x 1.0 | 10 |
| 40 | M6 x 1.0 | 10 |
| 50 | M8 x 1.25 | 14 |



Both ends tapped style: RQA/RDQA



Rod end male thread



Rod End Male Thread

| Bore size (mm) | B ₁ | H ₁ | C ₁ | X | MM | L ₁ |
|----------------|----------------|----------------|----------------|------|-----------|----------------|
| 32 | 22 | 8 | 20.5 | 23.5 | M14 x 1.5 | 28.5 |
| 40 | 22 | 8 | 20.5 | 23.5 | M14 x 1.5 | 28.5 |
| 50 | 27 | 11 | 26 | 28.5 | M18 x 1.5 | 33.5 |

Basic Style

| Bore size (mm) | Stroke range (mm) | A | B | C | D | E | F | H | I | J | K | L | M | N |
|----------------|-------------------|------|------|----|----|----|------|-----------|----|-----|----|---|----|-----|
| 32 | 20 to 100 | 44 | 37 | 13 | 16 | 45 | 18.5 | M8 x 1.25 | 60 | 4.5 | 14 | 7 | 34 | 5.5 |
| 40 | 20 to 100 | 51 | 44 | 13 | 16 | 52 | 20 | M8 x 1.25 | 69 | 5 | 14 | 7 | 40 | 5.5 |
| 50 | 30 to 100 | 57.5 | 49.5 | 15 | 20 | 64 | 28.5 | M10 x 1.5 | 86 | 7 | 17 | 8 | 50 | 6.6 |

| Bore size (mm) | OB | P | Q | RB | W | Z |
|----------------|----|-----|------|----|------|----|
| 32 | 9 | 1/8 | 23 | 7 | 49.5 | 14 |
| 40 | 9 | 1/8 | 28 | 7 | 57 | 14 |
| 50 | 11 | 1/4 | 31.5 | 8 | 71 | 19 |

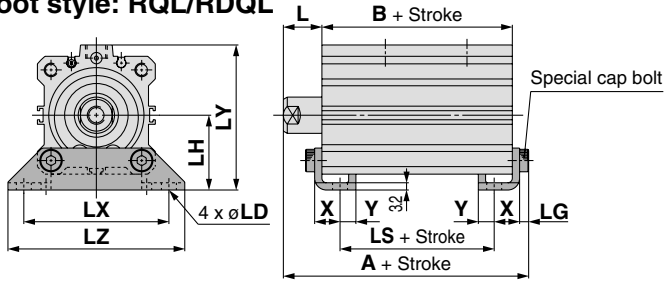
* Refer to page 784 for details on rod end nut and accessories.



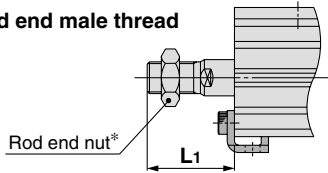
• Add the stroke to calculate the length of intermediate strokes.

Mounting Bracket Dimensions

Foot style: RQL/RDQL



Rod end male thread



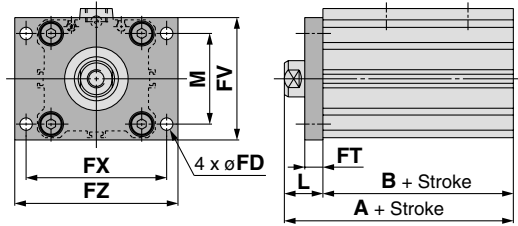
Foot Style

| Bore size (mm) | Stroke range (mm) | A | B | LS | L | L ₁ | LD |
|----------------|-------------------|------|------|------|----|----------------|-----|
| 32 | 20 to 100 | 61.2 | 37 | 21 | 17 | 38.5 | 6.6 |
| 40 | 20 to 100 | 68.2 | 44 | 28 | 17 | 38.5 | 6.6 |
| 50 | 30 to 100 | 75.7 | 49.5 | 26.5 | 18 | 43.5 | 9 |

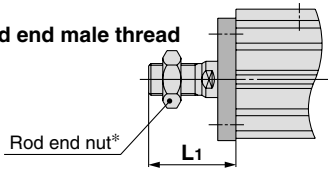
| Bore size (mm) | LG | LH | LX | LY | LZ | X | Y |
|----------------|----|----|----|----|----|------|-----|
| 32 | 4 | 30 | 57 | 57 | 71 | 11.2 | 5.8 |
| 40 | 4 | 33 | 64 | 64 | 78 | 11.2 | 7 |
| 50 | 5 | 39 | 79 | 78 | 95 | 14.7 | 8 |

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod side flange style: RQF/RDQF



Rod end male thread



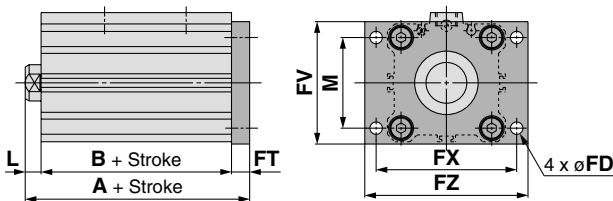
Rod Side Flange Style

| Bore size (mm) | Stroke range (mm) | A | B | FD | FT | FV |
|----------------|-------------------|------|------|-----|----|----|
| 32 | 20 to 100 | 54 | 37 | 5.5 | 8 | 48 |
| 40 | 20 to 100 | 61 | 44 | 5.5 | 8 | 54 |
| 50 | 30 to 100 | 67.5 | 49.5 | 6.6 | 9 | 67 |

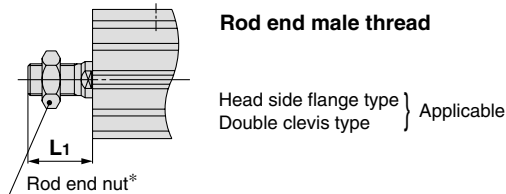
| Bore size (mm) | FX | FZ | L | L ₁ | M |
|----------------|----|----|----|----------------|----|
| 32 | 56 | 65 | 17 | 38.5 | 34 |
| 40 | 62 | 72 | 17 | 38.5 | 40 |
| 50 | 76 | 89 | 18 | 43.5 | 50 |

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head side flange style: RQG/RDQG



Rod end male thread

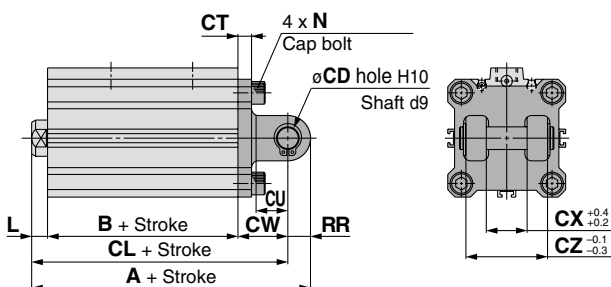


Head Side Flange Style

| Bore size (mm) | Stroke range (mm) | A | L | L ₁ |
|----------------|-------------------|------|---|----------------|
| 32 | 20 to 100 | 52 | 7 | 28.5 |
| 40 | 20 to 100 | 59 | 7 | 28.5 |
| 50 | 30 to 100 | 66.5 | 8 | 33.5 |

* All dimensions but A, L and L₁ are identical to those of the rod side flange style. Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Double clevis style: RQD/RDQD



Double Clevis Style

| Bore size (mm) | Stroke range (mm) | A | B | CL | CD | CT | CU |
|----------------|-------------------|------|------|------|----|----|----|
| 32 | 20 to 100 | 74 | 37 | 64 | 10 | 5 | 14 |
| 40 | 20 to 100 | 83 | 44 | 73 | 10 | 6 | 14 |
| 50 | 30 to 100 | 99.5 | 49.5 | 85.5 | 14 | 7 | 20 |

| Bore size (mm) | CW | CX | CZ | L | L ₁ | N | RR |
|----------------|----|----|----|---|----------------|-----------|----|
| 32 | 20 | 18 | 36 | 7 | 28.5 | M6 x 1.0 | 10 |
| 40 | 22 | 18 | 36 | 7 | 28.5 | M6 x 1.0 | 10 |
| 50 | 28 | 22 | 44 | 8 | 33.5 | M8 x 1.25 | 14 |

* Double clevis pins and retaining rings are included in the package.
* Refer to page 784 for details on rod end nut and accessories.

Double clevis bracket material: Cast iron
Surface treatment: Painted

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual
-X□

Technical
data

Series RQ

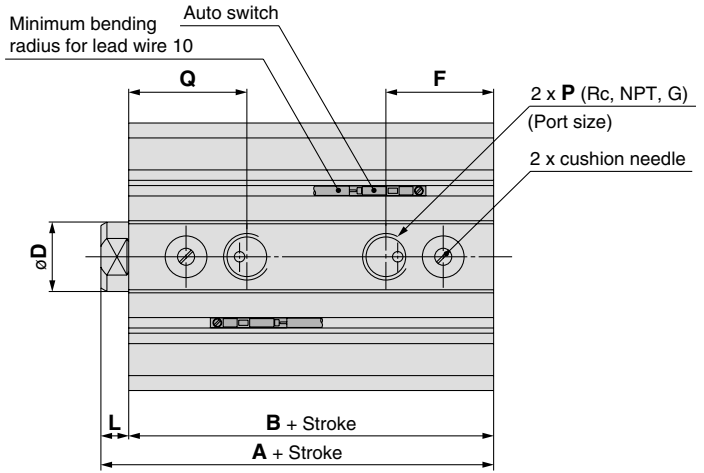
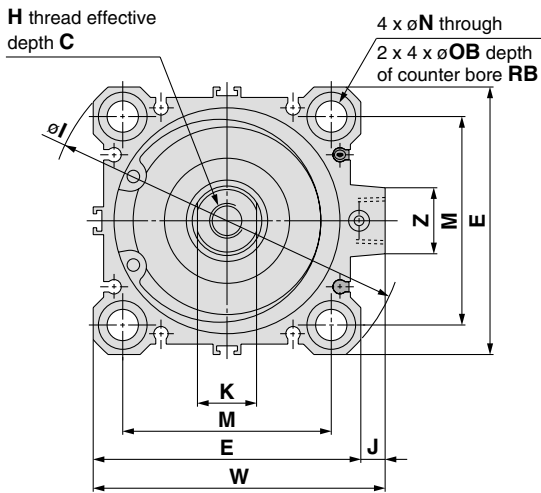
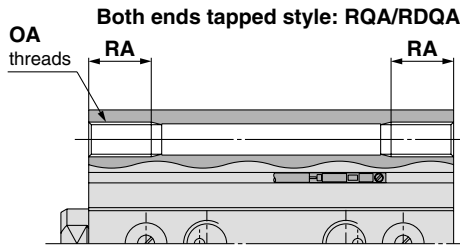
Dimensions: $\phi 63$ to $\phi 100$

* For the auto switch mounting position and its mounting height, refer to pages 786 to 787.

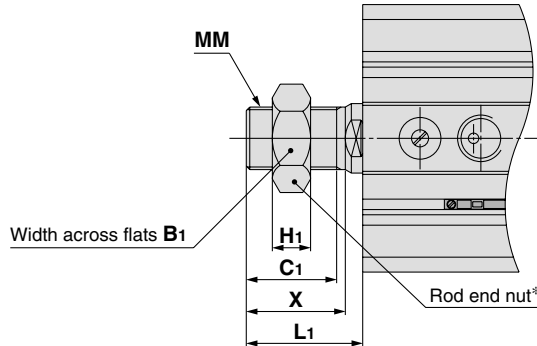
Basic style (Through-hole)

Both Ends Tapped Style mm

| Bore size (mm) | OA | RA |
|----------------|------------|----|
| 63 | M10 x 1.5 | 18 |
| 80 | M12 x 1.75 | 22 |
| 100 | M12 x 1.75 | 22 |



Rod end male thread



Rod End Male Thread mm

| Bore size (mm) | B1 | H1 | C1 | X | MM | L1 |
|----------------|----|----|------|------|-----------|------|
| 63 | 27 | 11 | 26 | 28.5 | M18 x 1.5 | 33.5 |
| 80 | 32 | 13 | 32.5 | 35.5 | M22 x 1.5 | 43.5 |
| 100 | 41 | 16 | 32.5 | 35.5 | M26 x 1.5 | 43.5 |

Basic Style

| Bore size (mm) | Stroke range (mm) | A | B | C | D | E | F | H | I | J | K | L | M | N | OB | P |
|----------------|-------------------|------|------|----|----|-----|------|-----------|-----|-----|----|----|----|----|------|-----|
| 63 | 30 to 100 | 63 | 55 | 15 | 20 | 77 | 31 | M10 x 1.5 | 103 | 7 | 17 | 8 | 60 | 9 | 14 | 1/4 |
| 80 | 40 to 100 | 73.5 | 63.5 | 21 | 25 | 98 | 35.5 | M16 x 2.0 | 132 | 6 | 22 | 10 | 77 | 11 | 17.5 | 3/8 |
| 100 | 40 to 100 | 88 | 76 | 27 | 30 | 117 | 40 | M20 x 2.5 | 156 | 6.5 | 27 | 12 | 94 | 11 | 17.5 | 3/8 |

| Bore size (mm) | Q | RB | W | Z |
|----------------|----|------|-------|----|
| 63 | 34 | 10.5 | 84 | 19 |
| 80 | 39 | 13.5 | 104 | 26 |
| 100 | 43 | 13.5 | 123.5 | 26 |

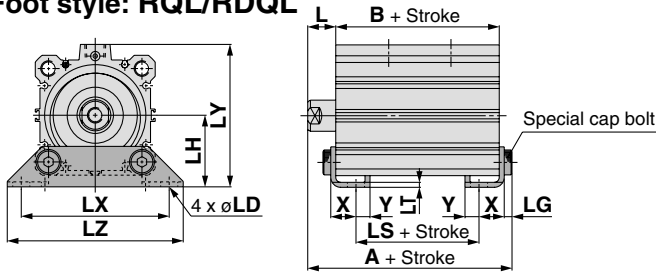
* Refer to page 784 for details on rod end nut and accessories.



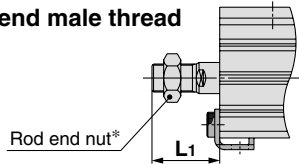
• Add the stroke to calculate the length of intermediate strokes.

Mounting Bracket Dimensions

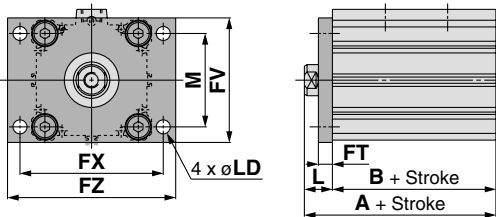
Foot style: RQL/RDQL



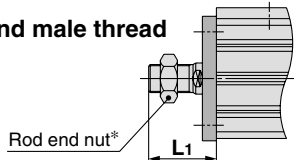
Rod end male thread



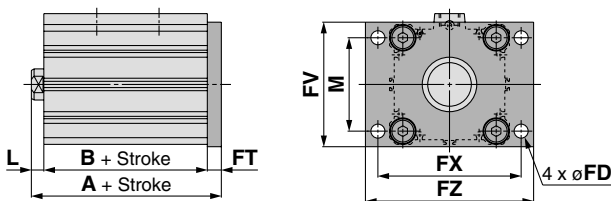
Rod side flange style: RQF/RDQF



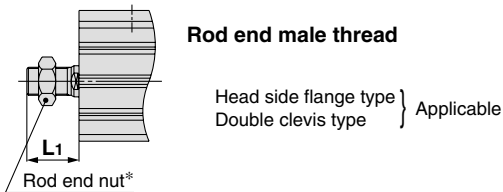
Rod end male thread



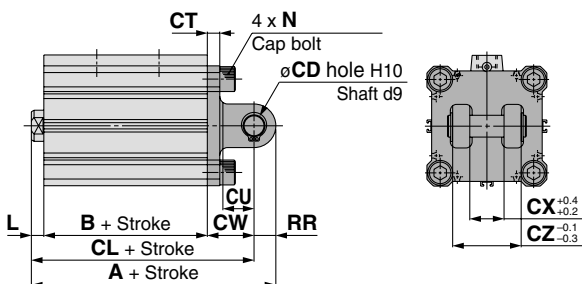
Head side flange style: RQG/RDQG



Rod end male thread



Double clevis style: RQD/RDQD



Foot Style

| Bore size (mm) | Stroke range (mm) | A | B | LS | L | L1 | LD | LG | LH | LT |
|----------------|-------------------|------|------|------|----|------|----|----|----|-----|
| 63 | 30 to 100 | 81.2 | 55 | 29 | 18 | 43.5 | 11 | 5 | 46 | 3.2 |
| 80 | 40 to 100 | 95 | 63.5 | 33.5 | 20 | 53.5 | 13 | 7 | 59 | 4.5 |
| 100 | 40 to 100 | 111 | 76 | 42 | 22 | 53.5 | 13 | 7 | 71 | 6 |

| Bore size (mm) | LX | LY | LZ | X | Y |
|----------------|-----|------|-----|------|------|
| 63 | 95 | 91.5 | 113 | 16.2 | 9 |
| 80 | 118 | 114 | 140 | 19.5 | 11 |
| 100 | 137 | 136 | 162 | 23 | 12.5 |

Foot bracket material: Carbon steel
Surface treatment: Nickel plated

Rod Side Flange Style

| Bore size (mm) | Stroke range (mm) | A | B | FD | FT | FV | FX | FZ | L | L1 | M |
|----------------|-------------------|------|------|----|----|-----|-----|-----|----|------|----|
| 63 | 30 to 100 | 73 | 55 | 9 | 9 | 80 | 92 | 108 | 18 | 43.5 | 60 |
| 80 | 40 to 100 | 83.5 | 63.5 | 11 | 11 | 99 | 116 | 134 | 20 | 53.5 | 77 |
| 100 | 40 to 100 | 98 | 76 | 11 | 11 | 117 | 136 | 154 | 22 | 53.5 | 94 |

Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Head Side Flange Style

| Bore size (mm) | Stroke range (mm) | A | L | L1 |
|----------------|-------------------|------|----|------|
| 63 | 30 to 100 | 72 | 8 | 33.5 |
| 80 | 40 to 100 | 84.5 | 10 | 43.5 |
| 100 | 40 to 100 | 99 | 12 | 43.5 |

* All dimensions but A, L and L1 are identical to those of the rod side flange style. Flange bracket material: Carbon steel
Surface treatment: Nickel plated

Double Clevis Style

| Bore size (mm) | Stroke range (mm) | A | B | CL | CD | CT | CU | CW | CX | CZ | L |
|----------------|-------------------|-------|------|-------|----|----|----|----|----|----|----|
| 63 | 30 to 100 | 107 | 55 | 93 | 14 | 8 | 20 | 30 | 22 | 44 | 8 |
| 80 | 40 to 100 | 129.5 | 63.5 | 111.5 | 18 | 10 | 27 | 38 | 28 | 56 | 10 |
| 100 | 40 to 100 | 155 | 76 | 133 | 22 | 13 | 31 | 45 | 32 | 64 | 12 |

| Bore size (mm) | L1 | N | RR |
|----------------|------|------------|----|
| 63 | 33.5 | M10 x 1.5 | 14 |
| 80 | 43.5 | M12 x 1.75 | 18 |
| 100 | 43.5 | M12 x 1.75 | 22 |

* Double clevis pins and retaining rings are included in the package.
* Refer to page 784 for details on rod end nut and accessories.

Double clevis bracket material: Cast iron
Surface treatment: Painted

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

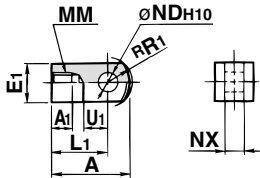
Technical data

Accessory Bracket Dimensions

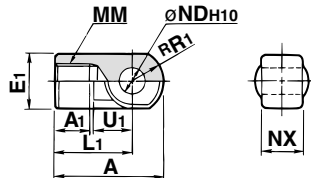
Single Knuckle Joint

For I-G02, I-G03

For I-G04, I-G05
I-G08, I-G10



Material: Carbon steel
Surface treatment: Nickel plated



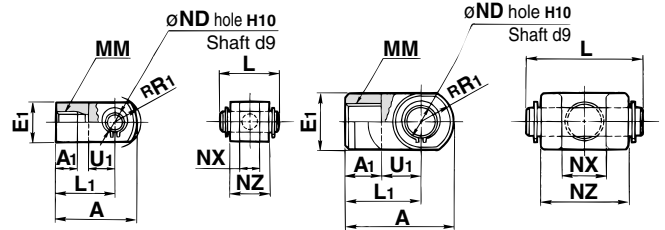
Material: Cast iron
Surface treatment: Nickel plated

| Part no. | Applicable bore size (mm) | A | A1 | E1 | L1 | MM | RR1 | U1 | ND | NX |
|----------|---------------------------|----|------|-----|----|------------|------|------|-----------------------------------|------------------------------------|
| I-G02 | 20 | 34 | 8.5 | □16 | 25 | M8 x 1.25 | 10.3 | 11.5 | 8 ^{+0.058} ₀ | 8 ^{-0.2} _{-0.4} |
| I-G03 | 25 | 41 | 10.5 | □20 | 30 | M10 x 1.25 | 12.8 | 14 | 10 ^{+0.058} ₀ | 10 ^{-0.2} _{-0.4} |
| I-G04 | 32, 40 | 42 | 14 | ∅22 | 30 | M14 x 1.5 | 12 | 14 | 10 ^{+0.058} ₀ | 18 ^{-0.3} _{-0.5} |
| I-G05 | 50, 63 | 56 | 18 | ∅28 | 40 | M18 x 1.5 | 16 | 20 | 14 ^{+0.070} ₀ | 22 ^{-0.3} _{-0.5} |
| I-G08 | 80 | 71 | 21 | ∅38 | 50 | M22 x 1.5 | 21 | 27 | 18 ^{+0.070} ₀ | 28 ^{-0.3} _{-0.5} |
| I-G10 | 100 | 79 | 21 | ∅44 | 55 | M26 x 1.5 | 24 | 31 | 22 ^{+0.084} ₀ | 32 ^{-0.3} _{-0.5} |

Double Knuckle Joint

For Y-G02, Y-G03

For Y-G04, Y-G05
Y-G08, Y-G10



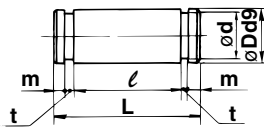
Material: Carbon steel
Surface treatment: Nickel plated

Material: Cast iron
Surface treatment: Nickel plated

| Part no. | Applicable bore size (mm) | A | A1 | E1 | L1 | MM | RR1 | U1 | ND | NX | NZ | L | Applicable pin no. |
|----------|---------------------------|----|------|-----|----|------------|------|------|-----------------------------------|------------------------------------|----|------|--------------------|
| Y-G02 | 20 | 34 | 8.5 | □16 | 25 | M8 x 1.25 | 10.3 | 11.5 | 8 ^{+0.058} ₀ | 8 ^{+0.4} _{-0.2} | 16 | 21 | IY-G02 |
| Y-G03 | 25 | 41 | 10.5 | □20 | 30 | M10 x 1.25 | 12.8 | 14 | 10 ^{+0.058} ₀ | 10 ^{+0.4} _{-0.2} | 20 | 25.6 | IY-G03 |
| Y-G04 | 32, 40 | 42 | 16 | ∅22 | 30 | M14 x 1.5 | 12 | 14 | 10 ^{+0.058} ₀ | 18 ^{+0.5} _{-0.3} | 36 | 41.6 | IY-G04 |
| Y-G05 | 50, 63 | 56 | 20 | ∅28 | 40 | M18 x 1.5 | 16 | 20 | 14 ^{+0.070} ₀ | 22 ^{+0.5} _{-0.3} | 44 | 50.6 | IY-G05 |
| Y-G08 | 80 | 71 | 23 | ∅38 | 50 | M22 x 1.5 | 21 | 27 | 18 ^{+0.070} ₀ | 28 ^{+0.5} _{-0.3} | 56 | 64 | IY-G08 |
| Y-G10 | 100 | 79 | 24 | ∅44 | 55 | M26 x 1.5 | 24 | 31 | 22 ^{+0.084} ₀ | 32 ^{+0.5} _{-0.3} | 64 | 72 | IY-G10 |

* Knuckle pin and retaining ring are included.

Knuckle Pin (Common with double clevis pin)

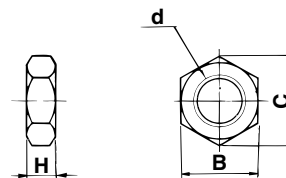


Material: Carbon steel
mm

| Part no. | Applicable bore size (mm) | D | L | d | ℓ | m | t | Retaining ring |
|----------|---------------------------|--|------|------|------|------|------|--------------------|
| IY-G02 | 20 | 8 ^{-0.040} _{-0.076} | 21 | 7.6 | 16.2 | 1.5 | 0.9 | C8 type for pivot |
| IY-G03 | 25 | 10 ^{-0.040} _{-0.076} | 25.6 | 9.6 | 20.2 | 1.55 | 1.15 | C10 type for pivot |
| IY-G04 | 32,40 | 10 ^{-0.040} _{-0.076} | 41.6 | 9.6 | 36.2 | 1.55 | 1.15 | C10 type for pivot |
| IY-G05 | 50,63 | 14 ^{-0.050} _{-0.093} | 50.6 | 13.4 | 44.2 | 2.05 | 1.15 | C14 type for pivot |
| IY-G08 | 80 | 18 ^{-0.050} _{-0.093} | 64 | 17 | 56.2 | 2.55 | 1.35 | C18 type for pivot |
| IY-G10 | 100 | 22 ^{-0.065} _{-0.117} | 72 | 21 | 64.2 | 2.55 | 1.35 | C22 type for pivot |

* Type C retaining rings for axis are included.

Rod End Nut



Material: Carbon steel
Surface treatment: Nickel plated
mm

| Part no. | Applicable bore size (mm) | d | H | B | C |
|----------|---------------------------|------------|----|----|------|
| NT-02 | 20 | M8 x 1.25 | 5 | 13 | 15.0 |
| NT-03 | 25 | M10 x 1.25 | 6 | 17 | 19.6 |
| NT-04 | 32, 40 | M14 x 1.5 | 8 | 22 | 25.4 |
| NT-05 | 50, 63 | M18 x 1.5 | 11 | 27 | 31.2 |
| NT-08 | 80 | M22 x 1.5 | 13 | 32 | 37.0 |
| NT-10 | 100 | M26 x 1.5 | 16 | 41 | 47.3 |

Simple Joint: $\phi 32$ to $\phi 100$



Joint And Mounting Bracket (Type A, Type B) Part No.

YA - 03

• **Mounting bracket**

| | |
|-----------|-------------------------|
| YA | Type A mounting bracket |
| YB | Type B mounting bracket |
| YU | Joint |

• **Applicable air cylinder bore**

| | |
|-----------|------------------------|
| 03 | For $\phi 32, \phi 40$ |
| 05 | For $\phi 50, \phi 63$ |
| 08 | $\phi 80$ |
| 10 | $\phi 100$ |

Allowable Eccentricity

| Bore size (mm) | 32 | 40 | 50 | 63 | 80 | 100 |
|------------------------|---------|----|----|-----------|----|---------|
| Eccentricity tolerance | ± 1 | | | ± 1.5 | | ± 2 |
| Backlash | 0.5 | | | | | |

<Ordering>

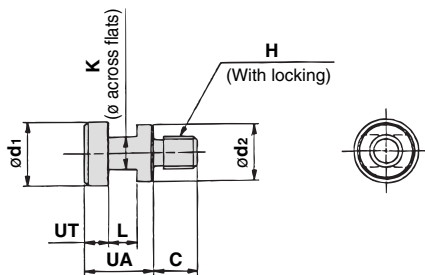
- Joints are not included with the A or B type mounting brackets. Order them separately.

(Example)

- Bore size $\phi 40$ Part no.
- Type A mounting bracket YA-03
- Joint YU-03

Joint and Mounting Bracket (A and B Types) Part No.

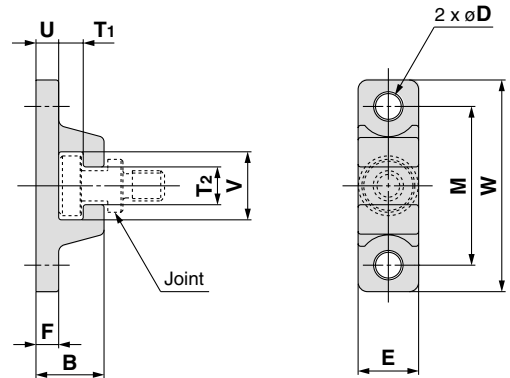
| Bore size (mm) | Joint | Applicable mounting bracket | |
|----------------|-------|-----------------------------|-------------------------|
| | | Type A mounting bracket | Type B mounting bracket |
| 32, 40 | YU-03 | YA-03 | YB-03 |
| 50, 63 | YU-05 | YA-05 | YB-05 |
| 80 | YU-08 | YA-08 | YB-08 |
| 100 | YU-10 | YA-10 | YB-10 |



Material: Chrome molybdenum steel (Nickel plated)

| Part no. | Applicable bore size (mm) | UA | C | d ₁ | d ₂ | H | K | L | UT | Mass (g) |
|----------|---------------------------|----|----|----------------|----------------|-----------|----|----|----|----------|
| YU-03 | 32, 40 | 17 | 11 | 15.8 | 14 | M8 x 1.25 | 8 | 7 | 6 | 25 |
| YU-05 | 50, 63 | 17 | 13 | 19.8 | 18 | M10 x 1.5 | 10 | 7 | 6 | 40 |
| YU-08 | 80 | 22 | 20 | 24.8 | 23 | M16 x 2 | 13 | 9 | 8 | 90 |
| YU-10 | 100 | 26 | 26 | 29.8 | 28 | M20 x 2.5 | 14 | 11 | 10 | 160 |

Type A Mounting Bracket

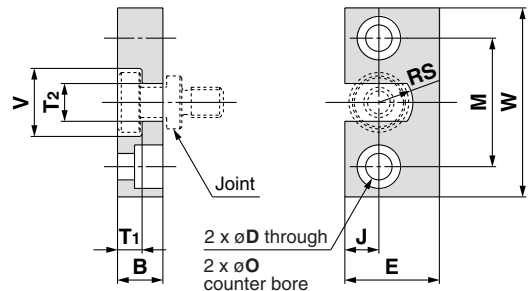


Material: Chrome molybdenum steel (Nickel plated)
mm

| Part no. | Bore size (mm) | B | D | E | F | M | T ₁ | T ₂ |
|----------|----------------|----|-----|----|----|----|----------------|----------------|
| YA-03 | 32, 40 | 18 | 6.8 | 16 | 6 | 42 | 6.5 | 10 |
| YA-05 | 50, 63 | 20 | 9 | 20 | 8 | 50 | 6.5 | 12 |
| YA-08 | 80 | 26 | 11 | 25 | 10 | 62 | 8.5 | 16 |
| YA-10 | 100 | 31 | 14 | 30 | 12 | 76 | 10.5 | 18 |

| Part no. | Bore size (mm) | U | V | W | Mass (g) |
|----------|----------------|----|----|-----|----------|
| YA-03 | 32, 40 | 6 | 18 | 56 | 55 |
| YA-05 | 50, 63 | 8 | 22 | 67 | 100 |
| YA-08 | 80 | 10 | 28 | 83 | 195 |
| YA-10 | 100 | 12 | 36 | 100 | 340 |

Type B Mounting Bracket



Material: Stainless steel
mm

| Part no. | Bore size (mm) | B | D | E | J | M | O |
|----------|----------------|----|----|----|----|----|----------------|
| YB-03 | 32, 40 | 12 | 7 | 25 | 9 | 34 | 11.5 depth 7.5 |
| YB-05 | 50, 63 | 12 | 9 | 32 | 11 | 42 | 14.5 depth 8.5 |
| YB-08 | 80 | 16 | 11 | 38 | 13 | 52 | 18 depth 12 |
| YB-10 | 100 | 19 | 14 | 50 | 17 | 62 | 21 depth 14 |

| Part no. | Bore size (mm) | T ₁ | T ₂ | V | W | RS | Mass (g) |
|----------|----------------|----------------|----------------|----|----|----|----------|
| YB-03 | 32, 40 | 6.5 | 10 | 18 | 50 | 9 | 80 |
| YB-05 | 50, 63 | 6.5 | 12 | 22 | 60 | 11 | 120 |
| YB-08 | 80 | 8.5 | 16 | 28 | 75 | 14 | 230 |
| YB-10 | 100 | 10.5 | 18 | 36 | 90 | 18 | 455 |

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual -X□

Technical data

Series RQ

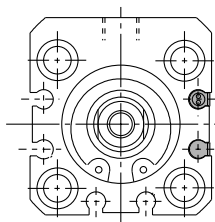
Minimum Auto Switch Mounting Stroke

| No. of auto switch mounted | D-A9□ D-A9□V D-M9□ D-M9□V | D-M9□W D-M9□WV D-M9□AL D-M9□AVL | D-A7□/A80 D-A73C/A80C D-A7□H/A80H D-F7□/J79 | D-F7□V D-J79C D-F7□WV D-F7BAVL | D-A79W | D-F7□W D-J79W D-F7BAL | D-F7NTL D-F79F |
|----------------------------|------------------------------------|--|--|---|--------|-----------------------------|-------------------|
| | 1 pc. | | 15 | 15 | | 15 | 20 |
| 2 pcs. | | 15 | 15 | | 20 | 20 | |

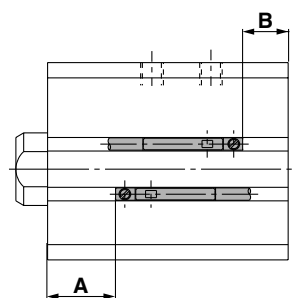
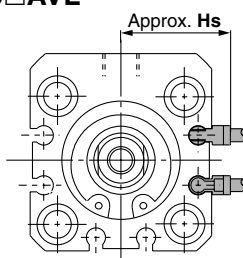
Proper Auto Switch Mounting Position (Detection at stroke end) and Its Mounting Height

ø20/ø25

D-A9□
D-M9□
D-M9□W
D-M9□AL

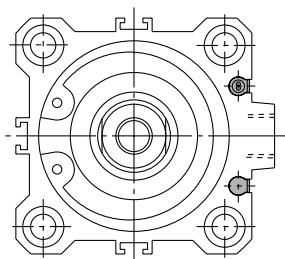


D-A9□V
D-M9□V
D-M9□WV
D-M9□AVL

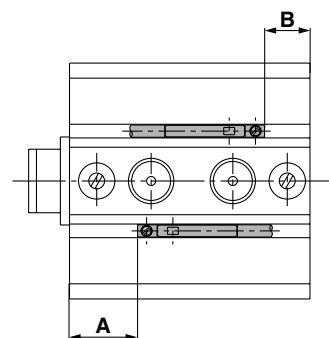
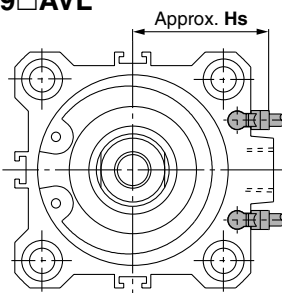


ø32 to ø100

D-A9□
D-M9□
D-M9□W
D-M9□AL



D-A9□V
D-M9□V
D-M9□WV
D-M9□AVL



Proper Auto Switch Mounting Positions (mm)

| Auto switch model | D-A9□ D-A9□V | | D-M9□ D-M9□V D-M9□W | D-M9□WV D-M9□AL D-M9□AVL |
|-------------------|-----------------|------|---------------------------|--------------------------------|
| | A | B | A | B |
| 20 | 9.5 | 3 | 13.5 | 7 |
| 25 | 11 | 5.5 | 15 | 9.5 |
| 32 | 12.5 | 4.5 | 16.5 | 8.5 |
| 40 | 17 | 7 | 21 | 11 |
| 50 | 17 | 12.5 | 21 | 16.5 |
| 63 | 19.5 | 15.5 | 23.5 | 19.5 |
| 80 | 24.5 | 19 | 28.5 | 23 |
| 100 | 31 | 25 | 35 | 29 |

Auto Switch Mounting Height (mm)

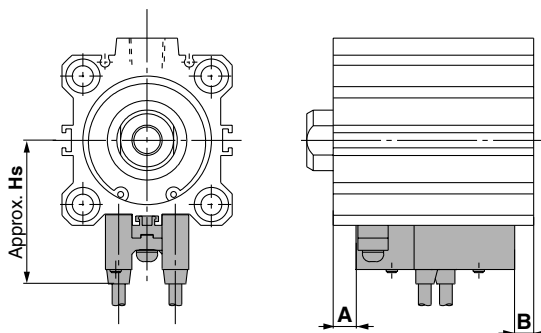
| Auto switch model | D-A9□V | | D-M9□V D-M9□WV D-M9□AVL |
|-------------------|--------|--|-------------------------------|
| | Hs | | Hs |
| 20 | 22.5 | | 24.5 |
| 25 | 24.5 | | 26.5 |
| 32 | 27 | | 29 |
| 40 | 30.5 | | 32.5 |
| 50 | 36.5 | | 38.5 |
| 63 | 40 | | 42 |
| 80 | 50 | | 52 |
| 100 | 60 | | 62 |

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

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

ø32 to ø100

- | | |
|--------|----------|
| D-A7□ | D-F7NTL |
| D-A80 | D-F7BAL |
| D-A7□H | D-A73C |
| D-A80H | D-A80C |
| D-F7□ | D-J79C |
| D-J79 | D-A79W |
| D-F7□W | D-F7□V |
| D-J79W | D-F7□WV |
| D-F79F | D-F7BAVL |



Proper Auto Switch Mounting Position

(mm)

| Auto switch model | D-A73 D-A80 | | D-A72/A7□H D-A80H/A73C D-A80C/F7□ D-F7□V/F79F D-J79/J79C D-F7□W D-F7□WV D-J79W D-F79F | | D-A79W | | D-F7NTL | |
|-------------------|----------------|------|---|------|--------|------|---------|------|
| | A | B | A | B | A | B | A | B |
| Bore size | | | | | | | | |
| 20 | — | — | — | — | — | — | — | — |
| 25 | — | — | — | — | — | — | — | — |
| 32 | 13.5 | 5.5 | 14 | 6 | 11 | 3 | 19 | 11 |
| 40 | 18 | 8 | 18.5 | 8.5 | 15.5 | 5.5 | 23.5 | 13.5 |
| 50 | 18 | 13.5 | 18.5 | 14 | 15.5 | 11 | 23.5 | 19 |
| 63 | 20.5 | 16.5 | 21 | 17 | 18 | 14 | 26 | 22 |
| 80 | 25.5 | 20 | 26 | 20.5 | 23 | 17.5 | 31 | 25.5 |
| 100 | 32 | 26 | 32.5 | 26.5 | 29.5 | 23.5 | 37.5 | 31.5 |

Auto Switch Mounting Height

(mm)

| Auto switch model | D-A7□ D-A80 | | D-A7□H D-A80H D-F7□ D-J79 D-F7□W D-J79W D-F7BAL D-F79F D-F7NTL | | D-A73C D-A80C | D-F7□V D-F7□WV D-F7BAVL | D-J79C | D-A79W |
|-------------------|----------------|------|--|------|------------------|-------------------------------|--------|--------|
| | Hs | Hs | Hs | Hs | Hs | Hs | Hs | Hs |
| Bore size | | | | | | | | |
| 20 | — | — | — | — | — | — | — | — |
| 25 | — | — | — | — | — | — | — | — |
| 32 | 31.5 | 32.5 | 38.5 | 35 | 38 | 34 | | |
| 40 | 35 | 36 | 42 | 38.5 | 41.5 | 37.5 | | |
| 50 | 41 | 42 | 48 | 44.5 | 47.5 | 43.5 | | |
| 63 | 47.5 | 48.5 | 54.5 | 51 | 54 | 50 | | |
| 80 | 57.5 | 58.5 | 64.5 | 61 | 64 | 60 | | |
| 100 | 67.5 | 68.5 | 74.5 | 71 | 74 | 70 | | |

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

Operating Range

(mm)

| Auto switch model | Bore size | | | | | | | |
|---|-----------|----|-----|-----|-----|------|-----|------|
| | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
| D-A9□/A9□V | 10 | 10 | 9.5 | 9.5 | 9.5 | 11.5 | 9 | 11.5 |
| D-M9□/M9□V D-M9□W/M9□WV D-M9□AL/M9□AVL | 5.5 | 6 | 6 | 6 | 7 | 9.5 | 10 | 11 |
| D-A7□/A80 D-A7□H/A80H D-A73C/A80C | — | — | 12 | 11 | 10 | 12 | 12 | 13 |
| D-A79W | — | — | 13 | 14 | 14 | 16 | 15 | 17 |
| D-F7□/F7□V D-J79/J79C/J79W D-F7□W/F7□WV D-F79F/F7BAL D-F7BAVL/F7NTL | — | — | 6 | 6 | 6 | 6.5 | 6.5 | 7 |

* Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed (assuming approximately ±30% dispersion). It may vary substantially depending on an ambient environment.

* Auto switch mounting brackets BQ2-012 are not used for sizes over ø32 of D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types. The above values indicate the operating range when mounted with the conventional auto switch installation groove.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

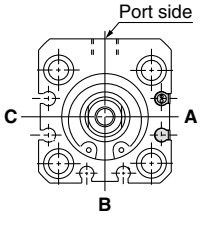
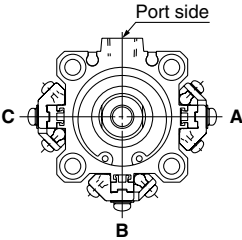
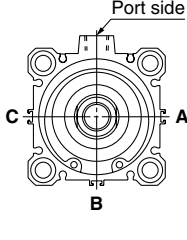
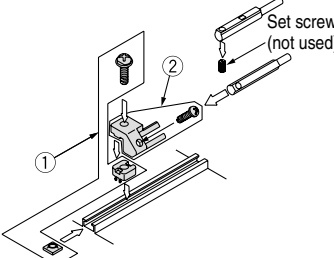
D-□

-X□

Individual
-X□

Technical
data

Auto Switch Mounting Bracket: Part No.

| Auto switch mounting surface | Bore size (mm) | | |
|--|---|---|--|
| | ø20, ø25 | ø32, ø40, ø50 | ø63, ø80, ø100 |
| |  |  |  |
| Auto switch model | Auto switch mounting surface | Auto switch mounting surface | Auto switch mounting surface |
| | A, B, C sides | Port side | A, B, C sides |
| D-A9□ D-A9□V D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL | Auto switch mounting bracket not required. | Auto switch mounting bracket not required. | <ol style="list-style-type: none"> ① BQ-2 ② BQ2-012 Two kinds of auto switch mounting brackets are used as a set.  |
| | Auto switch mounting bracket not required. | Auto switch mounting bracket not required. | Auto switch mounting bracket not required. |

Note 1) For each cylinder series, when a compact auto switch is mounted on the three sides (A, B and C above) other than the port side of bore sizes ø32 to ø50, the auto switch mounting brackets above are required. Order them separately from cylinders.

Order example
 RDQB32-50-M9BW.....1
 BQ-2.....2 pcs.
 BQ2-012.....2 pcs.

Note 2) When shipping cylinders, auto switch mounting brackets and auto switches are shipped together.

| Auto switch model | Bore size (mm) | | | | | |
|---|----------------|----|------|----|----|-----|
| | 32 | 40 | 50 | 63 | 80 | 100 |
| D-A7□/A80 D-A73C/A80C D-A7□H/A80H D-A79W D-F7□/J79 D-F7□V D-J79C D-F7□W/J79W D-F7□WV D-F7BAL/F7BAVL D-F79F/F7NTL | | | | | | |
| | | | BQ-2 | | | |

Note 3) When shipping auto cylinders, auto switch mounting brackets and auto switches are shipped together.

[Mounting screw set made of stainless steel]

The following set of mounting screws made of stainless steel (including nuts) is available. Use it in accordance with the operating environment. (Please order BQ-2 separately, since auto switch spacers (for BQ-2) are not included.)

BBA2: For D-A7/A8/F7/J7 types

Water resistant auto switches D-F7BAL/F7BAVL are mounted on the cylinder with the stainless steel screws above when shipped. When an auto switch is shipped independently, BBA2 is attached.

Note 4) Refer to page 1361 for the details of BBA2 screws.

Note 5) When D-M9□A(V)L type is mounted on a side other than ø32, ø40 and ø50 port sides, order auto switch mounting brackets BQ2-012S and BQ-2, and a stainless steel screw set BBA2.

Auto Switch Mounting Bracket Mass

| Mounting bracket part no. | Mass (g) |
|---------------------------|----------|
| BQ-2 | 1.5 |
| BQ2-012 | 5 |

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted.

Other Applicable Auto Switches Refer to pages 1263 to 1371 for further information on auto switches.

| Type | Model | Electrical entry (Fetching direction) | Features |
|-------------------------|--------------------|---------------------------------------|--|
| Reed auto switch | D-A73 | Grommet (perpendicular) | — |
| | D-A80 | | Without indicator light |
| | D-A73H, A76H | Grommet (in-line) | — |
| | D-A80H | | Without indicator light |
| Solid state auto switch | D-F7NV, F7PV, F7BV | Grommet (perpendicular) | — |
| | D-F7NWW, F7BWV | | Diagnostic indication (2-color indication) |
| | D-F7BAVL | | Water resistance (2-color indication) |
| | D-F79, F7P, J79 | Grommet (in-line) | — |
| | D-F79W, F7PW, J79W | | Diagnostic indication (2-color indication) |
| | D-F7BAL | | Water resistance (2-color indication) |
| D-F7NTL | | With timer | |

* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1328 and 1329 for details.

* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H types) are also available. Refer to page 1290 for details.

* D-A7/A8/F7/J7 types cannot be mounted on ø20 and ø25.



Series RQ Specific Product Precautions

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

Installation and Removal of Retaining Ring

⚠ Caution

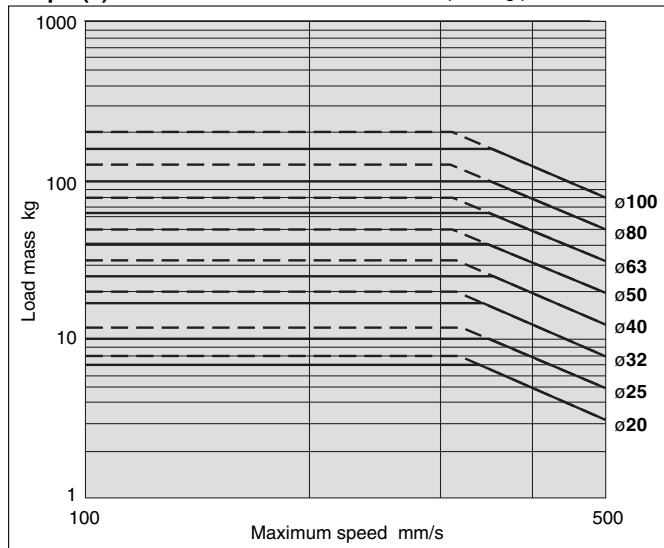
1. Use appropriate pliers (Type C retaining ring installing tool) for installation and removal.
2. Even when using appropriate pliers (Type C retaining ring installing tool), proceed with caution as there is a danger of the retaining ring flying off the end of the pliers (Type C retaining ring installing tool) and causing human injury or damage to nearby equipment. After installation, confirm that the retaining ring is securely seated into the retaining ring groove before supplying air.

Selection

⚠ Caution

1. Operate the cylinder to the stroke end.
When the stroke is restricted by an external stopper or a clamped work piece, satisfactory cushioning and noise reduction may not be achieved.
2. Strictly observe the limiting ranges for load mass and maximum speed (Graph (1)). Also, the limiting ranges are based on operation of the cylinder to the stroke end and proper adjustment of the cushion needle.
If operated beyond the limiting ranges, excessive impact will occur and this may cause damage to equipment.

Graph (1)



3. Adjust the cushion needle to reduce excessive kinetic energy from the piston impact at the stroke end by absorbing enough kinetic energy during the cushion stroke.

If the piston impacts the stroke end with excessive kinetic energy (values in Table 1 or more), an excessive impact will occur and this may cause damage to equipment.

Table (1) Allowable Kinetic Energy At Piston Impact Unit: [J]

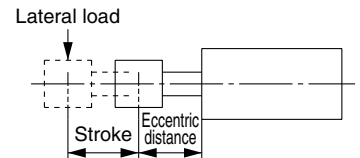
| | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
|--------------------------|---------------|------|------|------|------|------|------|------|
| Piston speed | 50 to 500mm/s | | | | | | | |
| Allowable kinetic energy | 0.055 | 0.09 | 0.15 | 0.26 | 0.46 | 0.77 | 1.30 | 2.27 |

Selection

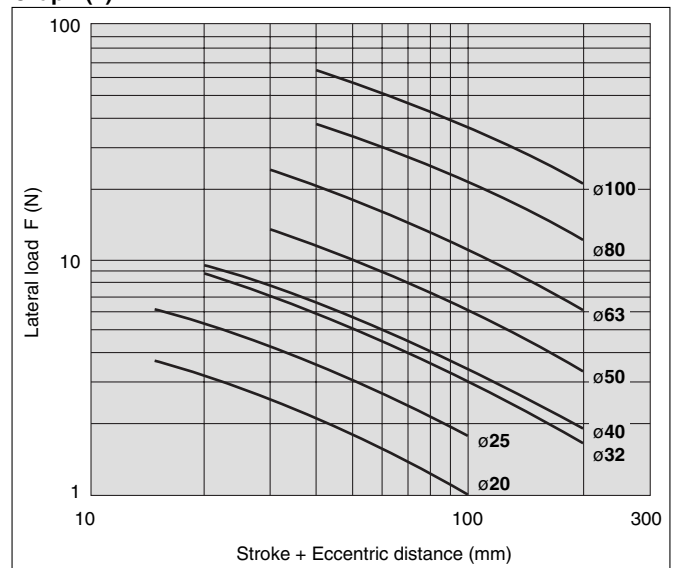
⚠ Caution

4. Strictly observe the limiting ranges for the piston rod lateral load (Graph (2)).

If operated beyond the limiting ranges, this may cause the equipment life to be reduced or damage to equipment may occur.



Graph (2)



Cushion Needle Adjustment

⚠ Caution

1. Readjust with a Cushion Needle

When the product is shipped, the cushion needle is open 1/4 to 1/2 turn from the fully closed position. Readjust the position depending on the load or operating speed before using.

Note that the needle must be fully closed first, and then gradually reopened when adjusting.

2. Keep the adjustment range for the cushion needle between the closed position and the rotations shown below.

| | Rotations |
|-------------|-----------------------|
| ø20 to ø100 | 2.5 rotations or less |

Use a 3 mm flat head watchmakers screw driver to adjust the cushion needle. The adjustment range for the cushion needle must be between the closed position and the open position ranges above. A retaining mechanism prevents the cushion needle from coming out, however, it may spring out during operation if it is rotated beyond the ranges shown above.

CUJ

CU

CQS

CQ2

RQ

CQM

MU

D-□

-X□

Individual

-X□

Technical

data