



Rotary Actuator: Angle Adjustable Type Rack & Pinion Style

Series CRA1□□U

Size: 50, 63, 80, 100

* Angle adjusting mechanism is provided as standard.

How to Order

Without auto switch

CRA1 **B** **S** **U** **50** — **90**

With auto switch

CDRA1 **B** **S** **U** **50** — **90** — **J59 W** **S**

Built-in magnet

Mounting style

| | |
|-----------|--------------|
| B | Basic style |
| L* | Foot style |
| F | Flange style |

* For part numbers, refer to the tables below.

Shaft type

| | | |
|----------|----------|---------------------------------|
| Standard | S | Single shaft |
| | W | Double shaft |
| Option | X | Single shaft with four chamfers |
| | Y | Double shaft key |
| | Z | Double shaft with four chamfers |

Size

| |
|------------|
| 50 |
| 63 |
| 80 |
| 100 |

Rotating angle

| | | |
|----------|------------|------|
| Standard | 90 | 90° |
| | 180 | 180° |
| Option | 100 | 100° |
| | 190 | 190° |

Number of auto switches

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

Auto switch

* For the applicable auto switch model, refer to the table below.
* Auto switches are shipped together (but not assembled).

Angle adjustable type

Applicable Auto Switch/Refer to page 11-11-1 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-wire connector | Applicable load | | | | | |
|----------------------------|--------------------------------|------------------|-----------------|---------------------|--------------|-----------|-------------------|------------------------|-----------|-------|--------------------|-----------------|------------|------------|---|---|------------|
| | | | | | DC | AC | | 0.5 (Nil) | 3 (L) | 5 (Z) | | | | | | | |
| Reed switch | — | Grommet | Yes | 3-wire (NPN equiv.) | — | 5 V | A56 | ● | ● | — | — | IC circuit | Relay, PLC | | | | |
| | | | | 2-wire | | 24 V | | 12 V | — | ● | | ● | | ● | — | — | |
| | Diagnosis indication (2-color) | | | — | — | — | — | 100 V, 200 V | A54 | ● | ● | ● | | — | — | | |
| | | | | | | | | — | A59 W | ● | ● | — | | — | — | | |
| Solid state switch | — | Grommet | Yes | 3-wire (NPN) | 24 V | 5 V, 12 V | — | F59 | ● | ● | ○ | ○ | IC circuit | Relay, PLC | | | |
| | | | | 3-wire (PNP) | | | | F5P | ● | ● | ○ | ○ | | | | | |
| | | | | 2-wire | — | — | 100 V, 200 V | J59 | ● | ● | ○ | ○ | — | | | | |
| | | | | J51 | | | | ● | ● | ○ | — | — | | | | | |
| | Diagnosis indication (2-color) | | | — | — | — | — | 24 V | 5 V, 12 V | — | F59 W | ● | ● | | ○ | ○ | IC circuit |
| | | | | | | | | | | | F5PW | ● | ● | | ○ | ○ | IC circuit |
| | | | | | | | | | | | J59 W | ● | ● | | ○ | ○ | — |
| | | | | | | | | | | | F5BA ** | — | ● | | ○ | ○ | — |
| Water resistant (2-color) | — | — | — | — | — | — | — | — | — | — | — | — | | | | | |
| Diagnosis output (2-color) | — | — | — | — | 5 V, 12 V | — | F59F | ● | ● | ○ | ○ | IC circuit | | | | | |

** Although it is possible to mount water resistant type auto switches, note that the rotary actuator itself is not of water resistant construction.

* Lead wire length symbols: 0.5 m Nil (Example) A53
3 m L (Example) A53L
5 m Z (Example) A53Z



Refer to page 11-11-36 for detailed solid state switches with pre-wire connectors.

Angle Adjustable Type Rotary Actuator Rack & Pinion Style Series CRA1□□U



Specifications

| | |
|------------------------|---------------------------------------|
| Fluid | Air (Non-lube) |
| Cushion | None |
| Mounting | Basic style, Foot style, Flange style |
| Angle adjustable range | 0° to 90° |
| Backlash | Within 1° |

Weight

| Model | Standard weight | | Additional weight |
|------------|-----------------|------|-------------------|
| | 90° | 180° | |
| CRA1□□U50 | 1.5 | 1.7 | 0.5 |
| CRA1□□U63 | 2.5 | 3.0 | 0.8 |
| CRA1□□U80 | 4.3 | 5.0 | 1.5 |
| CRA1□□U100 | 8.5 | 9.5 | 2.0 |

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

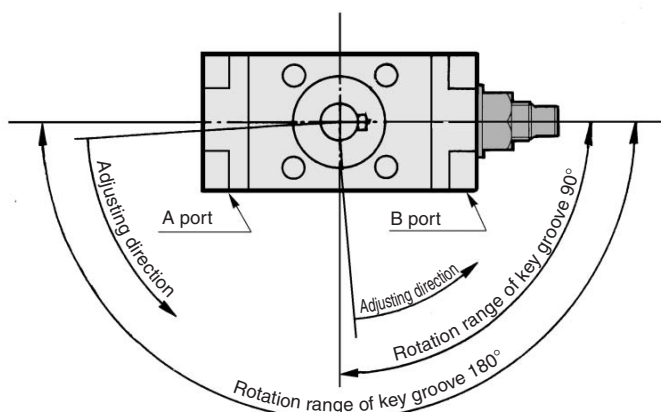
MRQ

D-

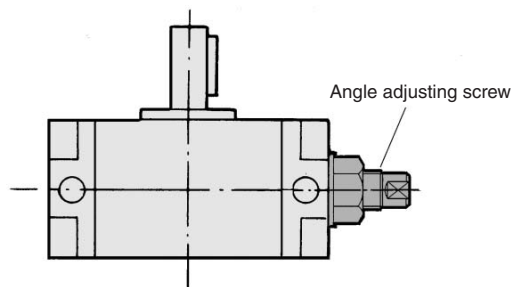
20-

Rotation Range of Key Groove

Adjusting direction is in the direction the arrows show.
Adjusting angle at 90° at maximum.
90° type: 90° to 0°, 180° type: 180° to 90°



How to Adjust Angle



Rotation angle becomes smaller by tightening the angle adjusting screw to the right.

Foot Bracket Part No.

| Size | Foot |
|------|------------|
| 50 | P294020-25 |
| 63 | P294030-25 |
| 80 | P294040-25 |
| 100 | P294050-25 |

Note) Part no. in the table includes mounting screw.

Adjusting Angle per One Rotation of Angle Adjusting Screw

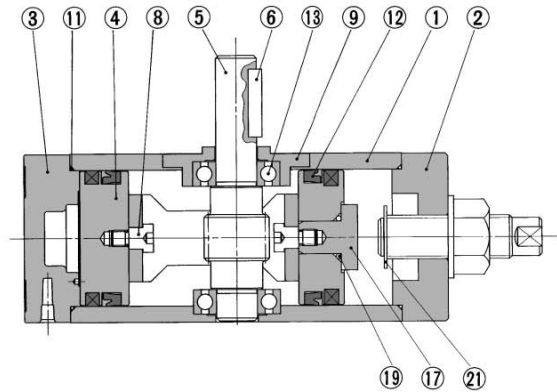
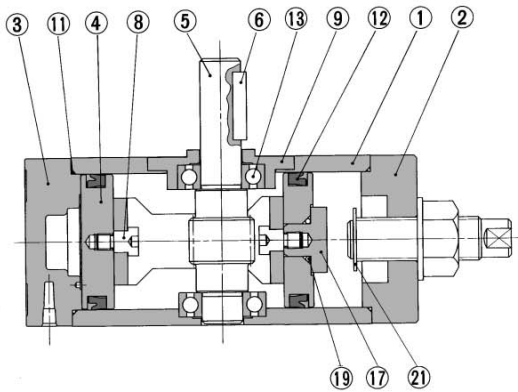
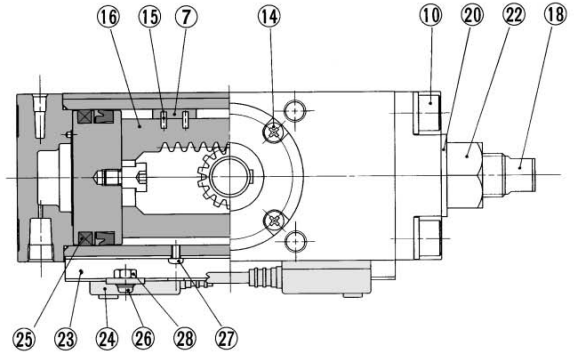
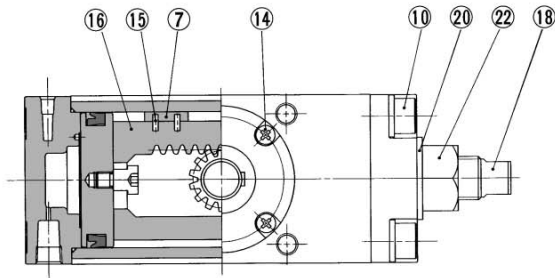
| Size | 50 | 63 | 80 | 100 |
|-----------------|------|------|------|------|
| Adjusting angle | 8.2° | 7.0° | 6.1° | 4.1° |

Series CRA1□□U

Construction

Standard: CRA1□□U

With auto switch: CDRA1□□U



Component Parts

| No. | Description | Material | Note |
|-----|--|-------------------------|----------------------|
| ① | Body | Aluminum alloy | Hard anodized |
| ② | Right cover | Carbon steel | Black zinc chromated |
| ③ | Left cover | Aluminum alloy | Black anodized |
| ④ | Piston | Aluminum alloy | Chromated |
| ⑤ | Shaft | Chrome molybdenum steel | |
| ⑥ | Parallel keyway | Carbon steel | |
| ⑦ | Slider | Resin | |
| ⑧ | Connecting screw | Carbon steel | Zinc chromated |
| ⑨ | Bearing retainer | Aluminum alloy | Black anodized |
| ⑩ | Hexagon socket head cap screw with spring washer | Chrome molybdenum steel | Black zinc chromated |
| ⑪ | Tube gasket | NBR | |
| ⑫ | Piston seal | NBR | |
| ⑬ | Bearing | Bearing steel | |
| ⑭ | Round head Phillips screw | Steel wire | Black zinc chromated |

| No. | Description | Material | Note |
|-----|---------------------------|-------------------|----------------------|
| ⑮ | Spring pin | Steel wire | |
| ⑯ | Rack | Carbon steel | Nitrided |
| ⑰ | Stopper | Carbon steel | Zinc chromated |
| ⑱ | Stopper screw | Carbon steel | Black zinc chromated |
| ⑲ | O-ring | NBR | |
| ⑳ | Seal washer | NBR | |
| ㉑ | E type stopper ring | Steel wire | Chromated |
| ㉒ | Hexagon nut | Steel wire | Nickel plated |
| ㉓ | Switch mounting rail | Aluminum alloy | |
| ㉔ | Auto switch | | |
| ㉕ | Plastic magnet | Magnetic material | |
| ㉖ | Round head Phillips screw | Steel wire | Nickel plated |
| ㉗ | Round head Phillips screw | Steel wire | Nickel plated |
| ㉘ | Hexagon nut | Steel wire | Nickel plated |

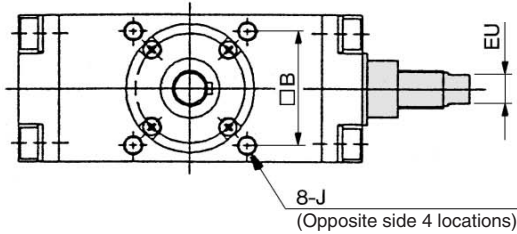
Replacement Parts (The corresponding parts shown below are set.)

| Size (Type) | With angle adjuster, With angle adjuster and auto switch |
|-------------------------|---|
| CRA1□□U50 | P294020-22A |
| CRA1□□U63 | P294030-22A |
| CRA1□□U80 | P294040-22 |
| CRA1□□U100 | P294050-22A |
| Corresponding parts no. | ⑦, ⑪, ⑫, ⑮, and ㉒ are set. |

Angle Adjustable Type Rotary Actuator Rack & Pinion Style **Series CRA1□□U**

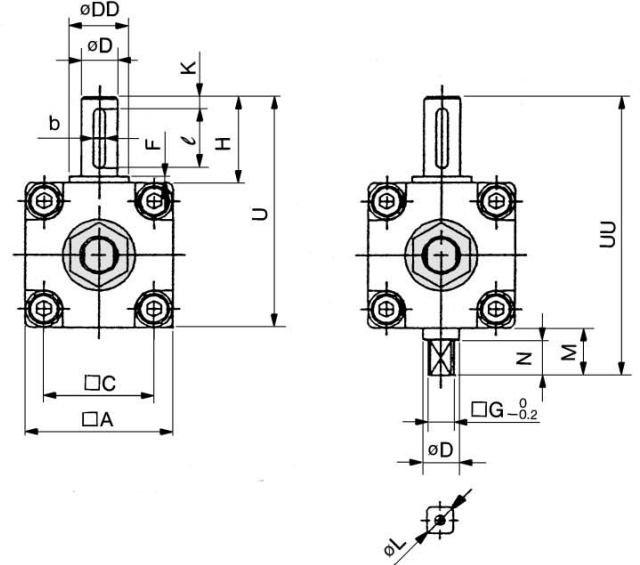
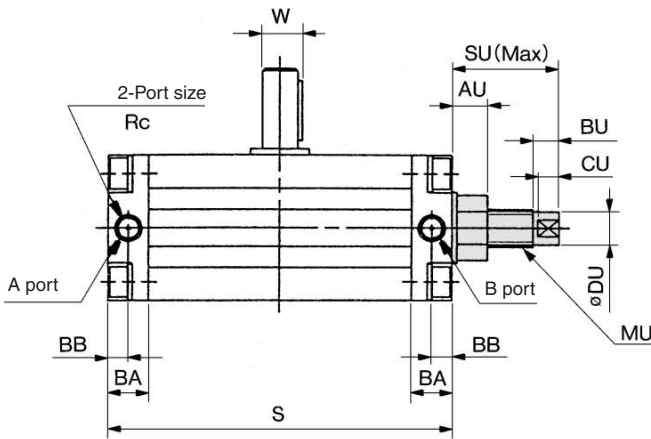
Size 50, 63, 80, 100/Standard: CRA1□□U

★The dimensions below show pressurization to B port.
Single shaft type: CRA1BSU



Double Shaft Type: CRA1BWU (mm)

| Model | D (g6) | G | L | M | N | UU |
|-------------------|--------|----|----|----|----|-----|
| CRA1BWU50 | 15 | 11 | 14 | 20 | 15 | 118 |
| CRA1BWU63 | 17 | 13 | 16 | 22 | 17 | 139 |
| CRA1BWU80 | 20 | 15 | 19 | 25 | 20 | 167 |
| CRA1BWU100 | 25 | 19 | 24 | 30 | 25 | 202 |



Single Shaft Type

| Model | Port size Rc | A | AU | B | BA | BB | BU | C | CU | D (g6) | DD (h9) | DU | EU | F | H | J | K | MU | S | SU | U | W | Keyway dimensions | |
|-------------------|--------------|-----|----|----|------|------|----|----|----|--------|---------|----|----|-----|----|------------------------|---|-----------|----------------|------|-----|------|----------------------------------|----|
| | | | | | | | | | | | | | | | | | | | | | | | b | ℓ |
| CRA1BSU50 | 1/8 | 62 | 15 | 48 | 17 | 8.5 | 11 | 46 | 9 | 15 | 25 | 14 | 12 | 2.5 | 36 | M8 x 1.25 depth 8 | 5 | M16 x 1.5 | 144 (177) | 45 | 98 | 17 | 5 ⁰ _{-0.030} | 25 |
| CRA1BSU63 | 1/8 | 76 | 19 | 60 | 20 | 10 | 13 | 57 | 11 | 17 | 30 | 18 | 14 | 2.5 | 41 | M10 x 1.5 depth 12 | 5 | M20 x 1.5 | 163 (201.5) | 54.5 | 117 | 19.5 | 6 ⁰ _{-0.030} | 30 |
| CRA1BSU80 | 1/4 | 92 | 22 | 72 | 23.5 | 12 | 16 | 70 | 13 | 20 | 35 | 22 | 19 | 3 | 50 | M12 x 1.75 depth 13 | 5 | M24 x 1.5 | 186 (230) | 62.5 | 142 | 22.5 | 6 ⁰ _{-0.030} | 40 |
| CRA1BSU100 | 3/8 | 112 | 22 | 85 | 25 | 12.5 | 16 | 85 | 13 | 25 | 40 | 22 | 19 | 4 | 60 | M12 x 1.75 depth 14 | 5 | M24 x 1.5 | 245 (311) | 73.5 | 172 | 28 | 8 ⁰ _{-0.036} | 45 |

* () are the dimensions for rotation of 180° and 190°.

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

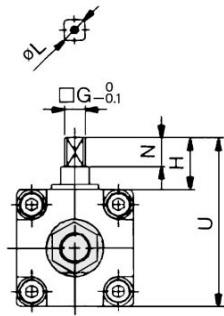
D-

20-

Series CRA1□□U

Size 50, 63, 80, 100

Single shaft with four chamfers:
CRA1BXU□

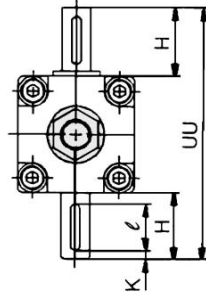


(mm)

| Model | G | H | L | N | U |
|-------------|----|----|----|----|-----|
| CRA1BXU□50 | 11 | 27 | 14 | 15 | 89 |
| CRA1BXU□63 | 13 | 29 | 16 | 17 | 105 |
| CRA1BXU□80 | 15 | 38 | 19 | 20 | 130 |
| CRA1BXU□100 | 19 | 44 | 24 | 25 | 156 |

Note) Other dimensions are the same as the single shaft.

Double shaft key:
CRA1BYU□

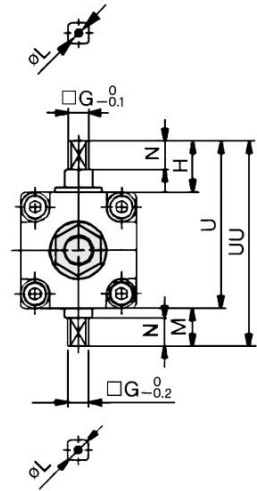


(mm)

| Model | ℓ | H | K | UU |
|-------------|----|----|---|-----|
| CRA1BYU□50 | 25 | 36 | 5 | 134 |
| CRA1BYU□63 | 30 | 41 | 5 | 158 |
| CRA1BYU□80 | 40 | 50 | 5 | 192 |
| CRA1BYU□100 | 45 | 60 | 5 | 232 |

Note) Other dimensions are the same as the single shaft.

Double shaft with four chamfers:
CRA1BZU□

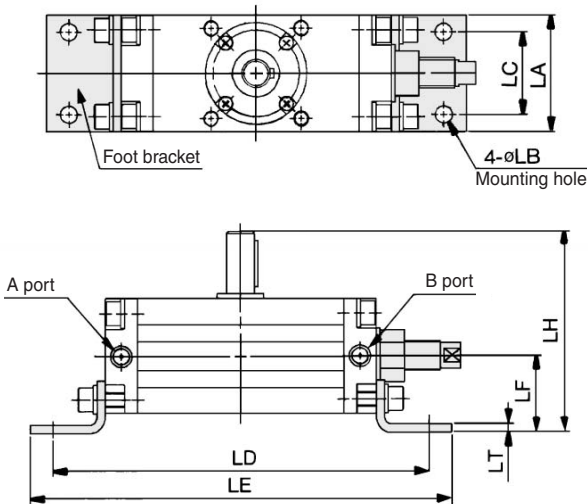


(mm)

| Model | G | H | L | M | N | U | UU |
|-------------|----|----|----|----|----|-----|-----|
| CRA1BZU□50 | 11 | 27 | 14 | 20 | 15 | 89 | 109 |
| CRA1BZU□63 | 13 | 29 | 16 | 22 | 17 | 105 | 127 |
| CRA1BZU□80 | 15 | 38 | 19 | 25 | 20 | 130 | 155 |
| CRA1BZU□100 | 19 | 44 | 24 | 30 | 25 | 156 | 186 |

Note) Other dimensions are the same as the single shaft.

Foot style: CRA1L□U



★ The dimensions below show pressurization to B port.
* () are the dimensions for rotation of 180° and 190°. (mm)

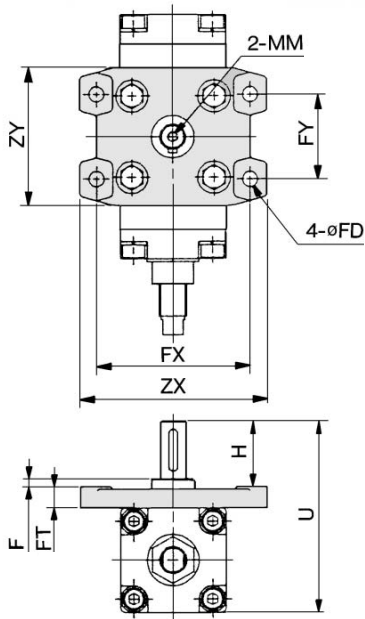
| Model | LA | LB | LC | LD | LE | LF | LH | LT |
|------------|-----|----|----|----------------|----------------|------|-------|-----|
| CRA1L□U50 | 62 | 9 | 44 | 200 (233) | 224 (257) | 41 | 108 | 4.5 |
| CRA1L□U63 | 76 | 11 | 55 | 235 (273.5) | 263 (301.5) | 48 | 127 | 5 |
| CRA1L□U80 | 92 | 13 | 67 | 274 (318) | 316 (360) | 58 | 154 | 6 |
| CRA1L□U100 | 112 | 13 | 87 | 333 (399) | 375 (441) | 73.5 | 189.5 | 6 |

Note) Other dimensions are the same as the single shaft.

Angle Adjustable Type Rotary Actuator Rack & Pinion Style **Series CRA1□□U**

Size 50, 63, 80, 100

Single shaft flange style: CRA1FSU

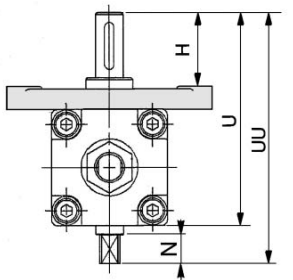


Note) Other dimensions are the same as standard. (mm)

| Model | F | FD | FT | FX | FY | H | MM | U | ZX | ZY |
|-------------------|---|------|----|-----|----|----|---------------------|-----|-----|-----|
| CRA1F□U50 | 4 | 9 | 13 | 90 | 50 | 39 | M6 x 1.0 depth 12 | 114 | 110 | 81 |
| CRA1F□U63 | 5 | 11.5 | 15 | 105 | 59 | 45 | M6 x 1.0 depth 12 | 136 | 130 | 101 |
| CRA1F□U80 | 5 | 13.5 | 18 | 130 | 76 | 55 | M8 x 1.25 depth 16 | 165 | 160 | 119 |
| CRA1F□U100 | 5 | 13.5 | 18 | 150 | 92 | 60 | M 10 x 1.5 depth 20 | 190 | 180 | 133 |

- CRB2
- CRBU2
- CRB1
- MSU
- CRJ
- CRA1**
- CRQ2
- MSQ
- MRQ
- D-
- 20-

**Flange style
Double shaft:
CRA1FWU**

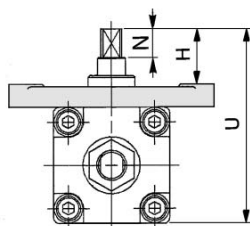


(mm)

| Model | H | N | U | UU |
|-------------------|----|----|-----|-----|
| CRA1FWU50 | 39 | 15 | 114 | 134 |
| CRA1FWU63 | 45 | 17 | 136 | 158 |
| CRA1FWU80 | 55 | 20 | 165 | 190 |
| CRA1FWU100 | 60 | 25 | 190 | 220 |

Note) Other dimensions are the same as the single shaft.

**Flange style
Single shaft with four
chamfers: CRA1FXU**

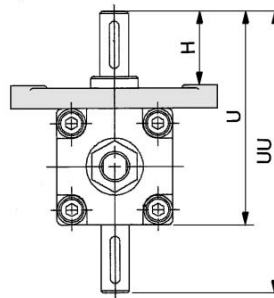


(mm)

| Model | H | N | U |
|-------------------|----|----|-----|
| CRA1FXU50 | 30 | 15 | 105 |
| CRA1FXU63 | 33 | 17 | 124 |
| CRA1FXU80 | 43 | 20 | 153 |
| CRA1FXU100 | 44 | 25 | 174 |

Note) Other dimensions are the same as the single shaft.

**Flange style
Double shaft key:
CRA1FYU**

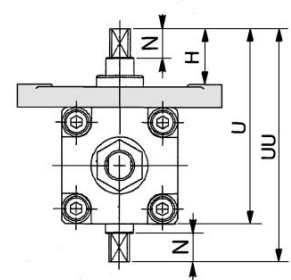


(mm)

| Model | H | U | UU |
|-------------------|----|-----|-----|
| CRA1FYU50 | 39 | 114 | 150 |
| CRA1FYU63 | 45 | 136 | 177 |
| CRA1FYU80 | 55 | 165 | 215 |
| CRA1FYU100 | 60 | 190 | 250 |

Note) Other dimensions are the same as the single shaft.

**Flange style
Double shaft with four
chamfers: CRA1FZU**



(mm)

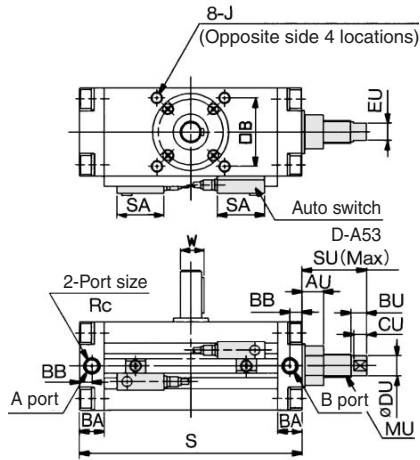
| Model | H | N | U | UU |
|-------------------|----|----|-----|-----|
| CRA1FZU50 | 30 | 15 | 105 | 125 |
| CRA1FZU63 | 33 | 17 | 124 | 146 |
| CRA1FZU80 | 43 | 20 | 153 | 178 |
| CRA1FZU100 | 44 | 25 | 174 | 204 |

Note) Other dimensions are the same as the single shaft.

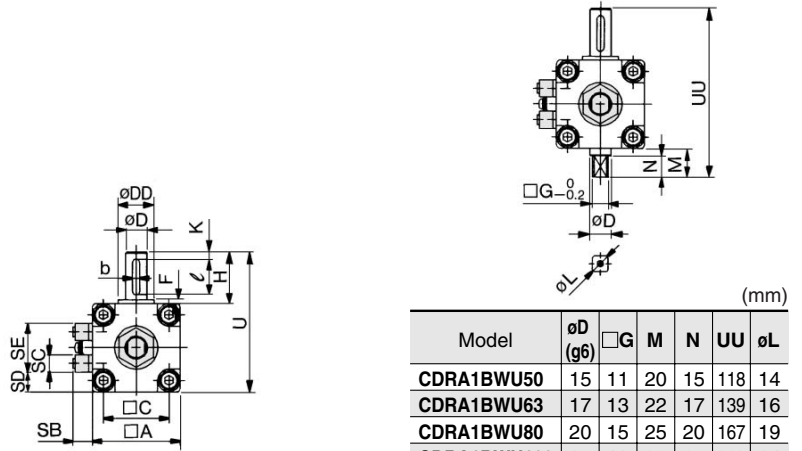
Series CRA1□□U

Size 50, 63, 80, 100

Single shaft type: CDRA1BSU



Double shaft type: CDRA1BWU

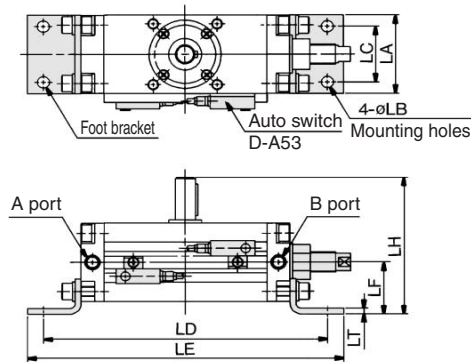


| Model | øD (g6) | G | M | N | UU | øL |
|-------------|---------|----|----|----|-----|----|
| CDRA1BWU50 | 15 | 11 | 20 | 15 | 118 | 14 |
| CDRA1BWU63 | 17 | 13 | 22 | 17 | 139 | 16 |
| CDRA1BWU80 | 20 | 15 | 25 | 20 | 167 | 19 |
| CDRA1BWU100 | 25 | 19 | 30 | 25 | 202 | 24 |

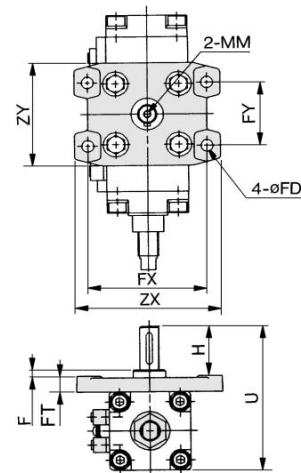
* The dimensions above show pressurization to B port.
* () are the dimensions for rotation of 180° and 190°.

| Model | Port size Rc | A | B | C | øD (g6) | øDD (h9) | F | H | J | K | S | U | W | BA | BB | SA | SB | SC | SD | SE | Keyway dimensions | | AU | BU | CU | DU | EU | SU | MU |
|-------------|--------------|-----|----|----|---------|----------|-----|----|---------------------|---|-------------|-----|------|------|------|----|------|----|----|----|----------------------------------|----|----|----|----|----|----|------|-----------|
| | | | | | | | | | | | | | | | | | | | | | b | l | | | | | | | |
| CDRA1BSU50 | 1/8 | 62 | 48 | 46 | 15 | 25 | 2.5 | 36 | M8 x 1.25 depth 8 | 5 | 156 (189) | 98 | 17 | 17 | 8.5 | 33 | 13.5 | 12 | 14 | 34 | 5 ⁰ _{-0.030} | 25 | 15 | 11 | 9 | 14 | 12 | 45 | M16 x 1.5 |
| CDRA1BSU63 | 1/8 | 76 | 60 | 57 | 17 | 30 | 2.5 | 41 | M10 x 1.5 depth 12 | 5 | 175 (213.5) | 117 | 19.5 | 20 | 10 | 33 | 14.5 | 12 | 21 | 34 | 6 ⁰ _{-0.030} | 30 | 19 | 13 | 11 | 18 | 14 | 54.5 | M20 x 1.5 |
| CDRA1BSU80 | 1/4 | 92 | 72 | 70 | 20 | 35 | 3 | 50 | M12 x 1.75 depth 13 | 5 | 199 (243) | 142 | 22.5 | 23.5 | 12 | 33 | 15.5 | 12 | 29 | 34 | 6 ⁰ _{-0.030} | 40 | 22 | 16 | 13 | 22 | 19 | 62.5 | M24 x 1.5 |
| CDRA1BSU100 | 3/8 | 112 | 85 | 85 | 25 | 40 | 4 | 60 | M12 x 1.75 depth 14 | 5 | 259 (325) | 172 | 28 | 25 | 12.5 | 33 | 16 | 12 | 39 | 34 | 8 ⁰ _{-0.036} | 45 | 22 | 16 | 13 | 22 | 19 | 73.5 | M24 x 1.5 |

Foot style: CDRA1LSU



Single shaft flange style: CDRA1FSU



* The dimensions above show pressurization to B port.
* () are the dimensions for rotation of 180° and 190°.
Note) Other dimensions are the same as the single shaft.

| Model | LA | øLB | LC | LD | LE | LF | LH | LT |
|-------------|-----|-----|----|-------------|-------------|------|-------|-----|
| CDRA1LSU50 | 62 | 9 | 44 | 212 (245) | 236 (269) | 41 | 108 | 4.5 |
| CDRA1LSU63 | 76 | 11 | 55 | 247 (285.5) | 275 (313.5) | 48 | 127 | 5 |
| CDRA1LSU80 | 92 | 13 | 67 | 287 (331) | 329 (373) | 58 | 154 | 6 |
| CDRA1LSU100 | 112 | 13 | 87 | 347 (413) | 389 (455) | 73.5 | 189.5 | 6 |

| Model | F | H | MM | U | øFD | FT | FX | FY | ZX | ZY |
|-------------|---|----|---------------------|-----|------|----|-----|----|-----|-----|
| CDRA1FSU50 | 4 | 39 | M 6 x 1.0 depth 12 | 114 | 9 | 13 | 90 | 50 | 110 | 81 |
| CDRA1FSU63 | 5 | 45 | M 6 x 1.0 depth 12 | 136 | 11.5 | 15 | 105 | 59 | 130 | 101 |
| CDRA1FSU80 | 5 | 55 | M 8 x 1.25 depth 16 | 165 | 13.5 | 18 | 130 | 76 | 160 | 119 |
| CDRA1FSU100 | 5 | 60 | M10 x 1.5 depth 20 | 190 | 13.5 | 18 | 150 | 92 | 180 | 133 |