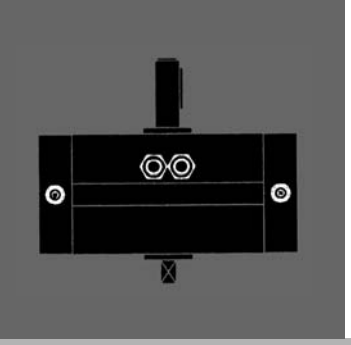


Rotary Actuator

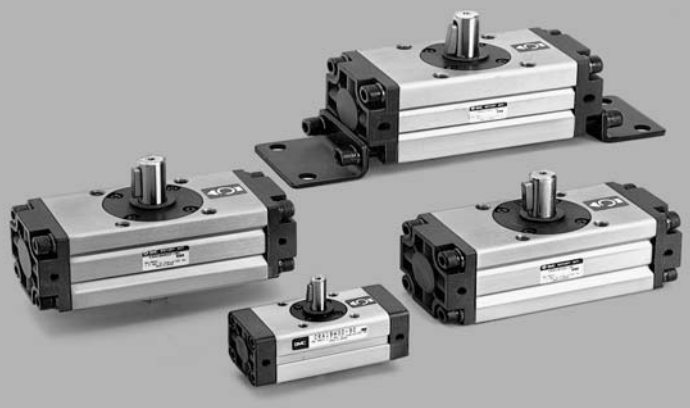
Series CRA1

Rack Pinion Style/Size: 30, 50, 63, 80, 100

Models with cushion or with solenoid valve available.
(Only sizes ≥50 are available.)

Angle adjustement is possible.
Size 30····· Fine angle adjuster is standard equipment.
Size 50 or larger·····Angle adjustable style

Auto switch is mountable.
Adjustment of switch location is easy with rail mounting.



Series Variations

	Fluid		Air					Hydraulic oil				Page
	Size		30	50	63	80	100	50	63	80	100	
Standard	Rotation angle	90°	●	●	●	●	●	●	●	●	●	1.4-2 to 1.4-22
		100°	●	●	●	●	●	●	●	●	●	
		180°	●	●	●	●	●	●	●	●	●	
		190°	●	●	●	●	●	●	●	●	●	
	Shaft style	Single shaft S	●	●	●	●	●	●	●	●	●	
		Double shaft W	●	●	●	●	●	●	●	●	●	
		Single shaft with four chamfers X	●	●	●	●	●	●	●	●	●	
		Double shaft key Y	●	●	●	●	●	●	●	●	●	
		Double shaft with four chamfers Z	●	●	●	●	●	●	●	●	●	
	Cushion	Without air cushion	●	●	●	●	●	●	●	●	●	
		With air cushion	●	●	●	●	●	●	●	●	●	
	Variations	With auto switch	●	●	●	●	●	●	●	●	●	
		Angle adjustable style	●	●	●	●	●	●	●	●	●	
		Clean specification 11-	●	●	●	●	●	●	●	●	●	
		Copper free (standard)	●	●	●	●	●	●	●	●	●	
		Built-in one-touch fittings	●	●	●	●	●	●	●	●	●	
		Flange F	●	●	●	●	●	●	●	●	●	
Option	Mounting bracket	Foot L	●	●	●	●	●	●	●	●	●	
Made to Order	Material of main part	Stainless steel -X6	●	●	●	●	●					1.4-23 to 1.4-40
	Shaft style	Single shaft S	●	●	●	●	●					
		Single shaft with four chamfers X	●	●	●	●	●					
		Double shaft key Y	●	●	●	●	●					
		Double shaft with four chamfers Z	●	●	●	●	●					
		Single round shaft T	●	●	●	●	●					
		Double shaft (Round, With four chamfers) J	●	●	●	●	●					
		Double round shaft K	●	●	●	●	●					
	Operating temp.	100°C at maximum	●	●	●	●	●					
	Patterns	Shaft end shape	●	●	●	●	●					
		Rotation range	●	●	●	●	●					
		Port location	●	●	●	●	●					
	Both sides angle adjustable -X10		●	●	●	●	●					
	One side angle adjustable, One side with cushion -X11		●	●	●	●	●					
	Fluorine rubber as seal material -X16		●	●	●	●	●					

Rotary Actuator

Series CRA1

Rack Pinion Style/Size: 30, 50, 63, 80, 100

How to Order

Size 30

CRA1 [B] W 30 — [90]

Mounting style

B	Basic
L	Foot

Rod end shape
Double shaft

Rotation angle

90	90°
180	180°

Sizes 50 to 100

[E] CRA1 [B] [S] [ ] [50] — [90] [ ]

Thread Port

—	RC(PT)
E	G(PF)

Mounting

B	Basic
L*	Foot
F	Flange

*Refer to the tables below for parts number.

Shaft style

Std.	**S**	Single shaft
	W	Double shaft
Option	**X**	Single shaft with four chamfers
	Y	Double shaft key
	Z	Double shaft with four chamfers

Styles

—	Pneumatic
H	Air-hydro

Size

50
63
80
100

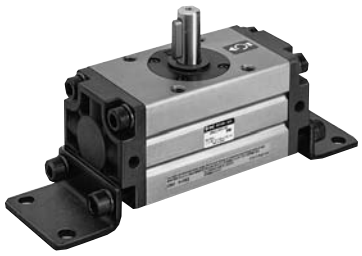
Rotation angle

Std.	**90**	90°
	180	180°
Option	**100**	100°
	190	190°

Air Cushion

—	Without air cushion
C	With air cushion

Foot Brackets Part No.



Size	Foot bracket	Mounting screws included in foot bracket
30	CRA1L30-Y-1	M5 X 25
50	CRA1L50-Y-1	M8 X 35
63	CRA1L63-Y-1	M10 X 40
80	CRA1L80-Y-1	M12 X 50
100	CRA1L100-Y-1	M12 X 50

Notes) The part numbers shown above include mounting screw.
As ordering foot bracket, write "1 piece" for the bracket for one rotary actuator.

Specifications

Style	Pneumatic					Air-hydro			
Size	**30**	**50**	**63**	**80**	**100**	**50**	**63**	**80**	**100**
Fluid	Air (Non-lube)					Hydraulic oil			
Max. operating pressure	1MPa								
Min. operating pressure	0.1MPa								
Ambient and fluid temperature	0° to 60°C (No freezing)								
Cushion	None	With or without air cushion				None			
Output (1) (Nm)	1.9	9.3	17	32	74	9.3	17	32	74
Allowable surge pressure	———					1.5MPa			
Backlash	(2)	Within 1°							
Tolerance in rotating angle	—	+4° 0							

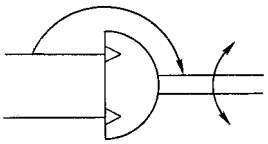
Note 1) Output under the operating pressure of 0.5MPa. Refer to p.1.0-28 for further information.
Note 2) Since CRA1□30 has a stopper installed, there is no backlash produced under pressure.

Allowable Kinetic Energy/Safe Range of Rotation Time

Model	Allowable kinetic energy			Safe range of rotation time
	Allowable kinetic energy (J)		Cushion angle	
	Without cushion	With cushion (1)		Rotation time (s/90°)
CRA1□W30	0.01	—	—	0.2 to 1
CRA1□□50	0.05	0.98	35°	0.2 to 2
CRA1□□63	0.12	1.5	35°	0.2 to 3
CRA1□□80	0.16	2.0	35°	0.2 to 4
CRA1□□100	0.54	2.9	35°	0.2 to 5

Note 1) Allowable kinetic energy of the bumpers equipped model
The maximum absorbed energy under proper adjustment of the cushion needle.

JIS symbol



Order Made P.1.4-23 to 1.4-40

Weight/Standard

(kg)

Model	Standard weight		Additional weight	
	90°	180°	Foot bracket	Flange bracket
CRA1BW30	0.3	0.4	0.1	—
CRA1BW50	1.5	1.7	0.3	0.5
CRA1BW63	2.5	3	0.5	0.9
CRA1BW80	4.3	5	0.9	1.5
CRA1BW100	8.5	9.5	1.2	2

⚠ Precaution

**Be sure to read before handling.
Refer to p.0-20 and 0-21 for Safety Instructions and common precautions on the products mentioned in this catalogue, and refer to p.1.0-2 to 1.0-4 for precautions on every series.**

Weight/With Auto Switches and Solenoid Valves

(kg)

Size	Additional weight	
	With 2 auto switches	With solenoid valve*
30	0.1	—
50	0.2	0.2
63	0.4	0.2
80	0.6	0.2
100	0.9	0.2

* Weight of the solenoid valve is not included. Refer to p.1.4-17 concerning weight of the solenoid valve.

Rotary Actuator with Built-in One-touch Fittings

CRA1 | Mounting | Shaft style | Size | F — Rotation | Additional symbol

F: With built-in one-touch fittings

Piping steps and installation space are saved.

Specifications

Style	Pneumatic
Applicable size	**30, 50, 63**
Max. operating pressure	1MPa
Min. operating pressure	0.1MPa
Auto switch	Mountable

Applicable Tube Specification

Size	**30**	**50**	**63**
Applicable tube O.D.	ø4	ø6	
Applicable tube materials	Nylon, Soft nylon, Polyurethane		

Refer to p.1.4-8 to 1.4-10 for dimensions.

Clean Series Rotary Actuator

11—CRA1 | Mounting | Shaft type | Size — Rotation | Additional symbol

11: Clean series

Vacuum ports are equipped to prevent dust from being produced from the rod part of the rotary actuators.

Specifications

Style	Pneumatic
Applicable size	**30, 50**
Max. operating pressure	1MPa
Min. operating pressure	0.1MPa
Auto switch	Mountable

Copper Free Rotary Actuator

No influence on cathode ray tubes by copper ion and fluorine resin. As standard models are already made applicable to copper free styles, they can be applied as they are.

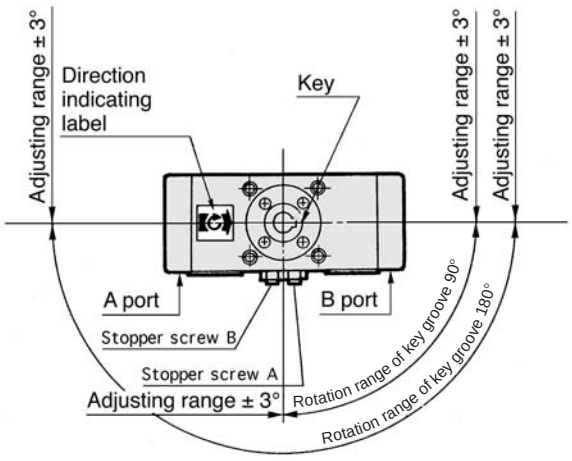
Specifications

Style	Pneumatic
Applicable size	**30, 50, 63, 80, 100**
Max. operating pressure	1MPa
Min. operating pressure	0.1MPa
Auto switch	Mountable

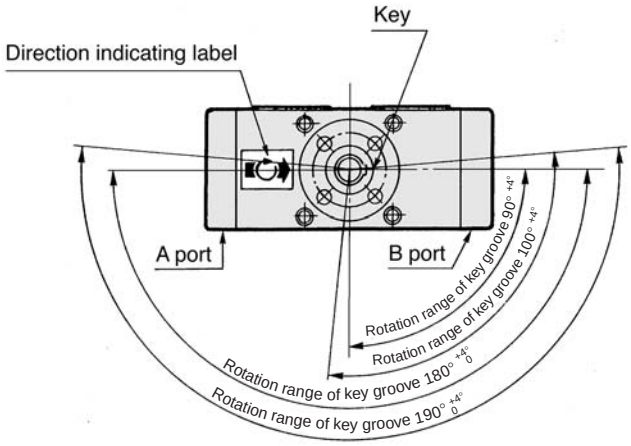
Rotation Range of Key Grooves

If air pressure is applied from the A side of the direction indication label, the shaft rotates clockwise. If air pressure is applied from the B side, the shaft rotates counterclockwise.

Size: 30



Size: 50 to 100



Stopper screw A: For end adjustment in clockwise direction
Stopper screw B: For end adjustment in counter clockwise direction.

How to Set The Rotation Time

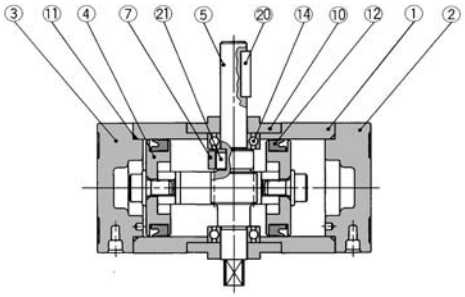
Even if the torque that is generated by the rotary actuator is small, the parts could become damaged depending on the inertia of the load. Therefore, the rotation time should be determined by calculating the load's inertial moment and kinetic energy. Refer to p.1.0-33 and 1.0-34 for details on how to set the rotation time.

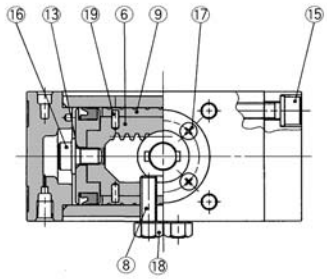
Allowable load on the shaft

Refer to the model selecting order step 3 for rotary actuators on p.1.0-14 concerning allowable loads on the shafts of series CRA1.

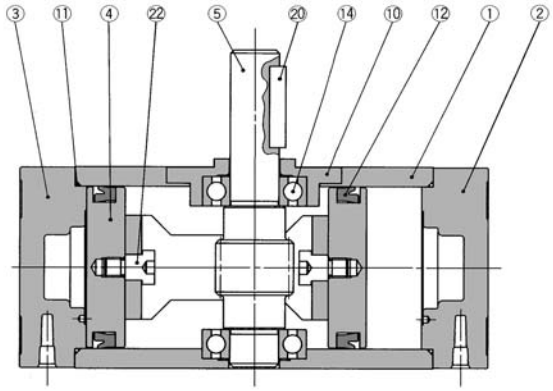
Construction

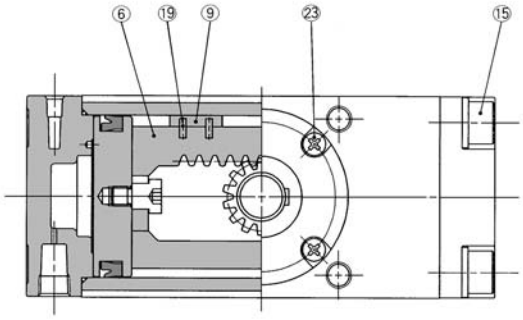
Without air cushion
Size: 30





Without air cushion
Size: 50 to 100





Component Parts

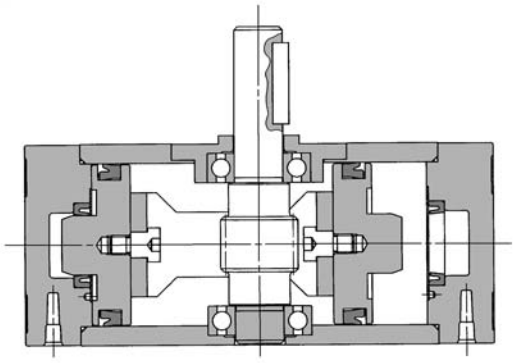
No.	Description	Material	Note
①	Body	Aluminum alloy	Hard anodized
②	Cover (Right)	Aluminum alloy	Black anodized
③	Cover (Left)	Aluminum alloy	Black anodized
④	Piston	Aluminum alloy	Chromated
⑤	Shaft	Chromium-molybdenum steel	
⑥	Rack	Carbon steel	Nitrided
⑦	Stopper	Chromium-molybdenum steel	
⑧	Stopper screw	Chromium-molybdenum steel	Black dyed
⑨	Slider	Resin	
⑩	Bearing retainer	Zink alloy (1)	Black painted
⑪	Tube gasket	NBR	

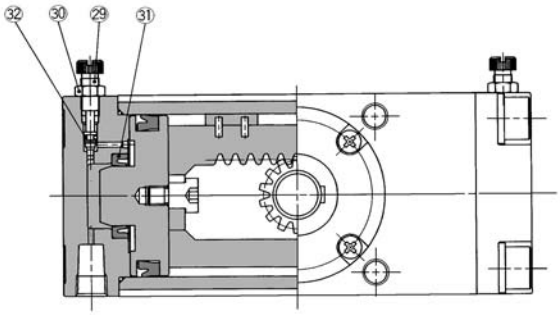
Note 1) Size 50 to 100: Aluminum alloy (Black alumite)

Component Parts

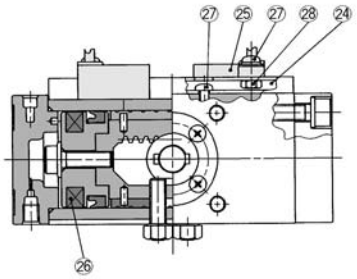
No.	Description	Material	Note
⑫	Piston packing	NBR	
⑬	O ring	NBR	
⑭	Bearing	Carbon steel	
⑮	Hexagon socket head cap screw spring washer	Chromium-molybdenum steel	Black zinc chromated
⑯	Hexagon socket head cap flange screw	Chromium-molybdenum steel	Zinc chromated
⑰	Cross-recessed countersunk head screw	Steel wire	Black dyed
⑱	Hexagon nut	Steel wire	Black dyed
⑲	Spring pin	Steel wire	
⑳	Parallel key	Carbon steel	
㉑	Parallel key	Carbon steel	
㉒	Connecting screw	Carbon steel	Zinc chromated
㉓	Cross-recessed round head screw	Steel wire	Black zinc chromated

With air cushion

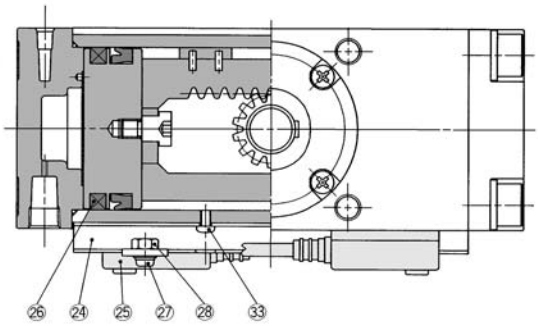




With auto switch
Size: 30



Size: 50 to 100



Component Parts

No.	Description	Material	Note
㉔	Auto switch mounting rail	Aluminum alloy	
㉕	Auto switch	———	
㉖	Plastic magnet	Magnetic substance	
㉗	Cross-recessed head cap screw	Steel wire	Nickel plated
㉘	Hexagon nut	Steel wire	Nickel plated
㉙	Needle valve	Steel wire	Nickel plated
㉚	Lock nut	Steel wire	Nickel plated
㉛	Cushion packing	NBR	
㉜	O ring	NBR	
㉝	Cross-recessed head cap screw	Steel wire	Nickel plated

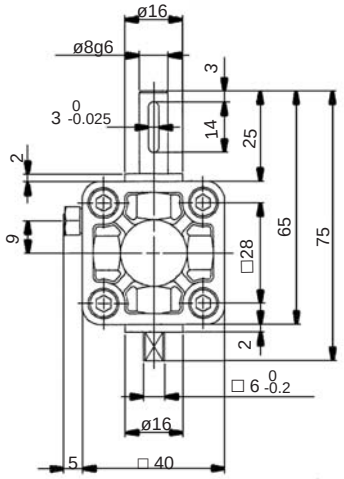
Replacement Parts (Corresponding parts shown below are set.)

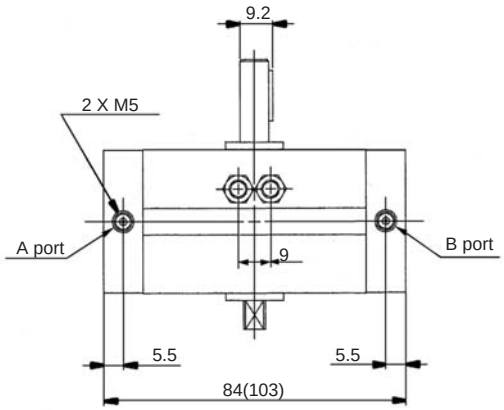
Size	Replacement parts			
	Standard	With air cushion	With auto switch	Air-hydro
CRA1□W30-90	P294010-20	———	P294010-20	———
CRA1□W30-180	P294010-21	———	P294010-21	———
CRA1□□50	P294020-20A	P294020-20A	P294020-20A	P294020-23A
CRA1□□63	P294030-20A	P294030-20A	P294030-20A	P294030-23A
CRA1□□80	P294040-20	P294040-20	P294040-20	P294040-23
CRA1□□100	P294050-20A	P294050-20A	P294050-20A	P294050-23A
Corresponding parts	⑨, ⑪, ⑫, and ⑲ are set.			

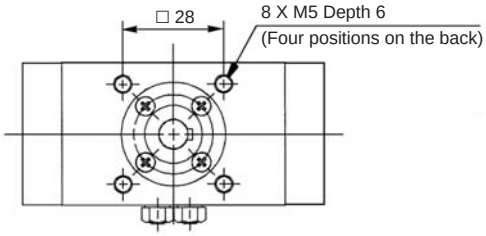
Note) When ordering spare parts, write "1 piece" for 1 set of the parts for one actuator.

Size 30/Standard: CRA1BW, Foot Style: CRA1LW

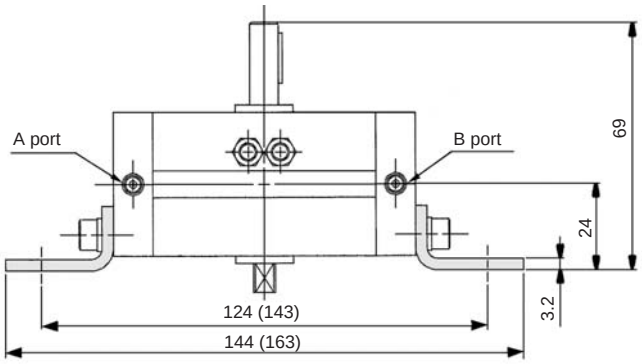
Standard/CRA1BW30

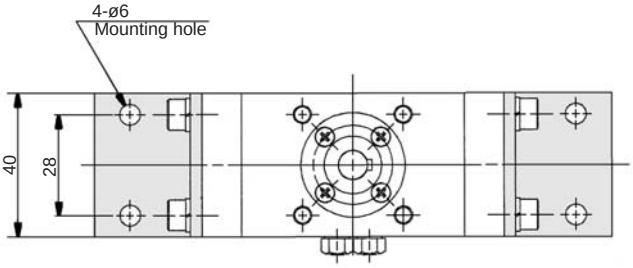






Foot style/CRA1LW30

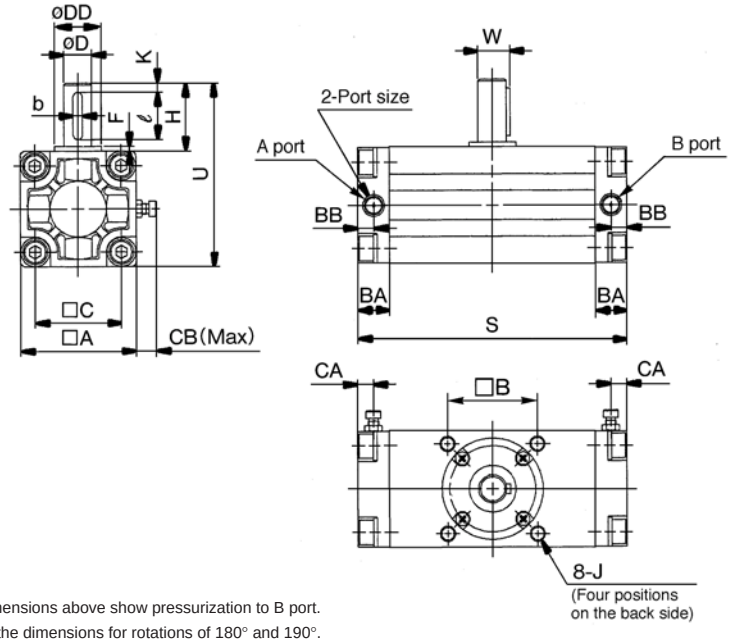




∗ The dimensions above show pressurization to B port.
∗ ( ) are the dimensions for rotation of 180°

Size 50, 63, 80, 100/Standard: CRA1B□

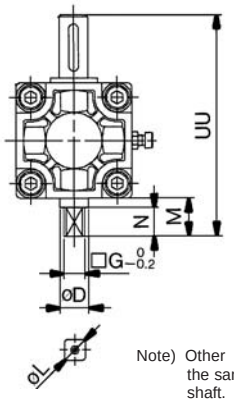
Size: 50 to 100
Single shaft style/CRA1BS
Single shaft



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

Models	Port size	A	B	C	D (g6)	DD (h9)	F	H	J	K	S	U	W	BA	BB	CA∗	CB∗	Key dimensions b	Key dimensions ℓ
CRA1BS50	1/8	62	48	46	15	25	2.5	36	M8 Depth 8	5	144 (177)	98	17	17	8.5	8.5	13	5 0 -0.030	25
CRA1BS63	1/8	76	60	57	17	30	2.5	41	M10 Depth 12	5	163 (201.5)	117	19.5	20	10	10	14	6 0 -0.030	30
CRA1BS80	1/4	92	72	70	20	35	3	50	M12 Depth 13	5	186 (230)	142	22.5	23.5	12	12	18	6 0 -0.030	40
CRA1BS100	3/8	112	85	85	25	40	4	60	M12 Depth 14	5	245 (311)	172	28	25	12.5	12.5	18	8 0 -0.036	45

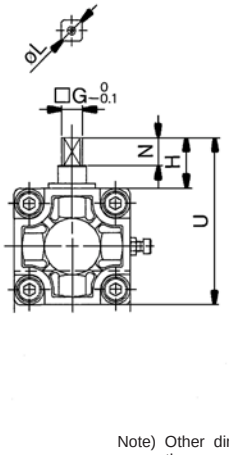
Double shaft style/CRA1BW
Double shaft



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

Models	D (g6)	G	M	N	UU	L
CRA1BW50	15	11	20	15	118	14
CRA1BW63	17	13	22	17	139	16
CRA1BW80	20	15	25	20	167	19
CRA1BW100	25	19	30	25	202	24

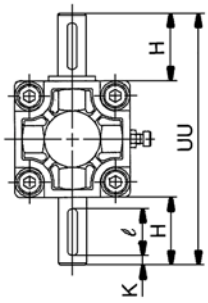
Single shaft with four chamfers/CRA1BX



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

Models	G	H	N	U	L
CRA1BX50	11	27	15	89	14
CRA1BX63	13	29	17	105	16
CRA1BX80	15	38	20	130	19
CRA1BX100	19	44	25	156	24

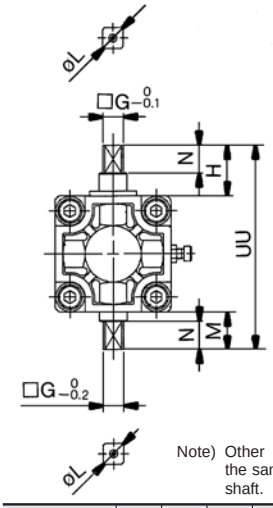
Double shaft key/CRA1BY



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

Models	H	K	UU	ℓ
CRA1BY50	36	5	134	25
CRA1BY63	41	5	158	30
CRA1BY80	50	5	192	40
CRA1BY100	60	5	232	45

Double shaft with four chamfers/CRA1BZ

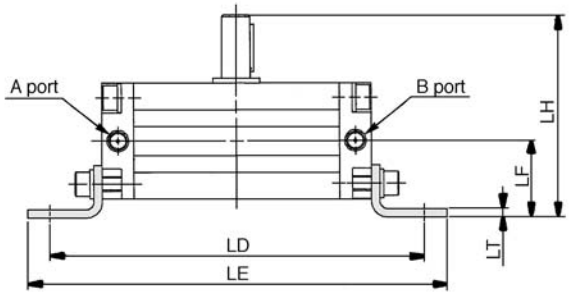


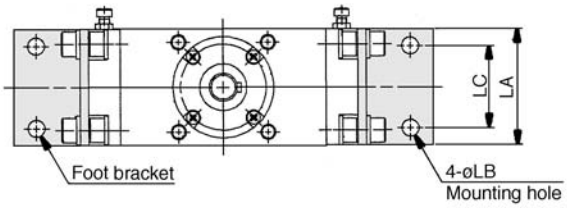
Note) Other dimensions are the same as the single shaft.

Models	G	H	M	N	UU	L
CRA1BZ50	11	27	20	15	109	14
CRA1BZ63	13	29	22	17	127	16
CRA1BZ80	15	38	25	20	155	19
CRA1BZ100	19	44	30	25	186	24

Size 50, 63, 80, 100/Foot Style: CRA1L□, Flange Style: CRA1F□

Foot style/CRA1L□

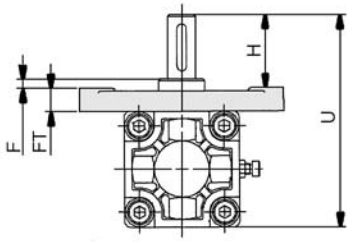


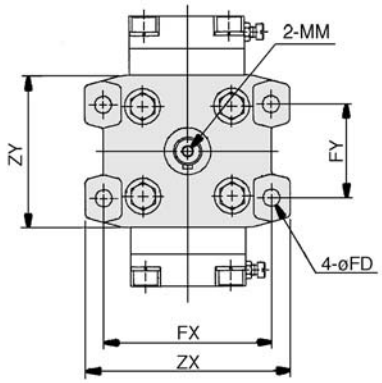


∗Dimensions above show pressurization to B port.
∗( ) are the dimensions for rotation of 180° and 190°.

Models	LA	LB	LC	LD	LE	LF	LH	LT
CRA1L□□50	62	9	44	200 (233)	224 (257)	41	108	4.5
CRA1L□□63	76	11	55	235 (273.5)	263 (301.5)	48	127	5
CRA1L□□80	92	13	67	274 (318)	316 (360)	58	154	6
CRA1L□□100	112	13	87	333 (399)	375 (441)	73.5	189.5	6

Flange style
Single shaft/CRA1FS

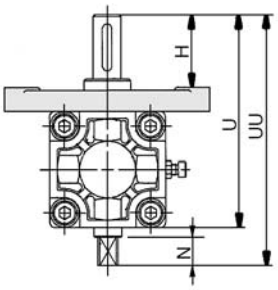




Other dimensions are the same as standard.

Models	F	H	MM	U	FD	FT	FX	FY	ZX	ZY
CRA1F□□50	4	39	M6 Depth12	114	9	13	90	50	110	81
CRA1F□□63	5	45	M6 Depth12	136	11.5	15	105	59	130	101
CRA1F□□80	5	55	M8 Depth16	165	13.5	18	130	76	160	119
CRA1F□□100	5	60	M10 Depth20	190	13.5	18	150	92	180	133

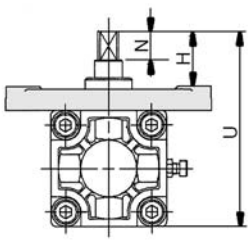
Flange style
Double shaft/CRA1FW



Other dimensions are the same as the single shaft.

Models	H	N	U	UU
CRA1FW□50	39	15	114	134
CRA1FW□63	45	17	136	158
CRA1FW□80	55	20	165	190
CRA1FW□100	60	25	190	220

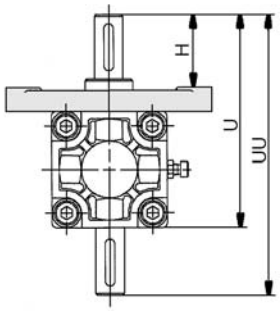
Flange style
Single shaft with four chamfers/ CRA1FX



Other dimensions are the same as the single shaft.

Models	H	N	U
CRA1FX□50	30	15	105
CRA1FX□63	33	17	124
CRA1FX□80	43	20	153
CRA1FX□100	44	25	174

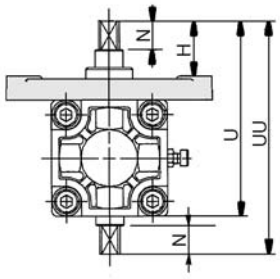
Flange style
Double shaft key/ CRA1FY



Other dimensions are the same as the single shaft.

Models	H	U	UU
CRA1FY□50	39	114	150
CRA1FY□63	45	136	177
CRA1FY□80	55	165	215
CRA1FY□100	60	190	250

Flange style
Double shaft with four chamfers/ CRA1FZ



Other dimensions are the same as the single shaft.

Models	H	N	U	UU
CRA1FZ□50	30	15	105	125
CRA1FZ□63	33	17	124	146
CRA1FZ□80	43	20	153	178
CRA1FZ□100	44	25	174	204

Rotary Actuator with Auto Switch

Series CDRA1

Rack Pinion Style/Size: 30, 50, 63, 80, 100

How to Order

Size 30

C D RA1 [B] W30 — [90] — [A72] [S]

Size 50 to 100

[E] C [D] RA1 [B] [W] [ ] [50] — [90] [ ] — [A53] [S]

Mounting

B	Basic
L	Foot

Rotation angle

90	90°
180	180°

Thread Port

—	Rc(PT)
E	G(PF)

Built-in magnet

Mounting

B	Basic
L*	Foot
F	Flange

Refer to p.1.4-2 for part numbers of foot bracket.

Size

50
63
80
100

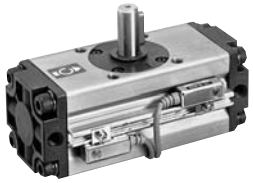
No.of auto switches mounted

S	1
—	2

Note) Max. no. auto switches mountable is two.

Auto switch

* Refer to the table below for part numbers of applicable auto switch.



Shaft styles

Std.	S	Single shaft
	W	Double shaft
Option	X	Single shaft with four chamfers
	Y	Double shaft key
	Z	Double shaft with four chamfers

Style

—	Pneumatic
H	Air-hydro

Cushion

—	Without cushion
C	With cushion

Rotation angle

Std.	90	90°
	180	180°
Option	100	100°
	190	190°

Auto Switch Specifications/Refer to p.2.11-1 for further specifications of auto switch single unit.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch part No. Size 30 Perpendicular	Auto switch part No. Size 30 In-line	Auto switch part No. Size 50 to 100 In-line	Lead wire length(1) (m) 0.5 (—)	3 (L)	5 (Z)	— (N)	Applicable load	
Reed switch	----	Grommet	Yes	3 wire (Equivalent to NPN)	—	5V	—	—	A76H	A56	●	●	—	—	IC	—
				2 wire	—	—	200V	A72	A72H	—	●	●	—	—	—	Relay PLC
			No		24V	12V	100V	A73	A73H	—	●	●	●	—		
						5V,12V	≤ 100V	A80	A80H	—	●	●	—	—	IC	
		Connector	Yes			12V	—	A73C	—	—	●	●	●	●	—	
		Grommet				12V	—	—	—	A53	●	●	●	—		PLC
		Connector	No			5V,12V	≤ 24V	A80C	—	—	●	●	●	●	IC	Relay PLC
		Grommet	Yes			—	100V,200V	—	—	A54	●	●	●	—	—	Relay PLC
			No			—	—	—	—	A67	●	●	—	—	IC	PLC
						—	100V,200V	—	—	A64	●	●	—	—	IC	Relay PLC
	Diagnostic indicator (2 colour)		Yes			—	—	A79W	—	A59W	●	●	—	—	—	
Solid state switch	----	Grommet	Yes	2 wire	—	—	100V,200V	—	—	J51	●	●	○	—	—	Relay PLC
				3wire(NPN)	24V	5V,12V	—	F7NV	F79	F59	●	●	○	—	IC	
				3wire(PNP)				F7PV	F7P	F5P	●	●	○	—		
				2 wire		12V		F7BV	J79	J59	●	●	○	—	—	
		Connector						J79C	—	—	●	●	●	●	—	
	Diagnostic indicator (2 colour)	Grommet		3wire(PNP)		5V,12V		—	F7PW	F5PW	●	●	○	—	IC	
				3wire(NPN)				—	F79W	F59W	●	●	○	—		
				2 wire		—		—	J79W	J59W	●	●	○	—	—	
	Water resistant (2 colour)(2)							—	F7BA(2)	F5BA(2)	—	●	○	—		
	Timer			3wire(NPN)		5V,12V		—	F7NT	F5NT	—	●	○	—	IC	
	Diagnostic output (2 colour)			4wire(NPN)				—	—	F59F	●	●	○	—		

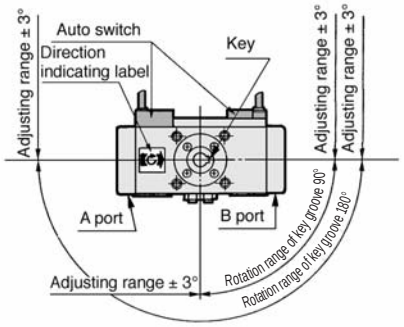
Note 1) Symbols for wire lengths 0.5m····· (—) Ex.) A80C 5m····· Z Ex.) A80CZ
3m····· L Ex.) A80CL — ·····N Ex.) A80CN

Auto switches marked with "○" in the table are made to order specification.

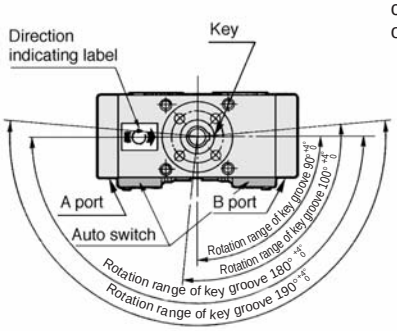
Note 2) This rotary actuator is not a improved product in water proof.
• Consult SMC when using F7BA∗ and F5BA∗.

Rotation Range of Key Grooves/Switch Mounting Positions

Size: 30
CDRA1□W30

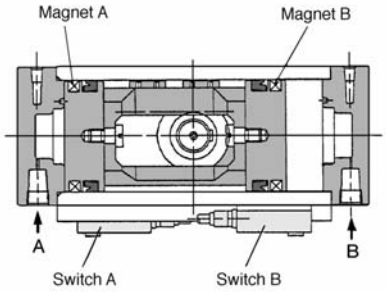


Size: 50 to 100
CDRA1□□50 to 100



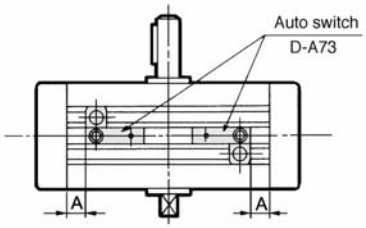
Operation Principles

In the diagram below, switch B is ON. When pressure is applied from A, the piston moves to B, causing the shaft to rotate clockwise. At this time, magnet B goes out of the movement range of switch B, causing switch B to turn OFF. Furthermore, the piston moves to the right, causing magnet A to enter the movement range of switch A. As a result, switch A turns ON.

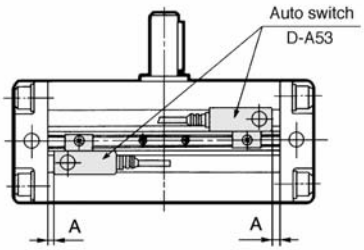


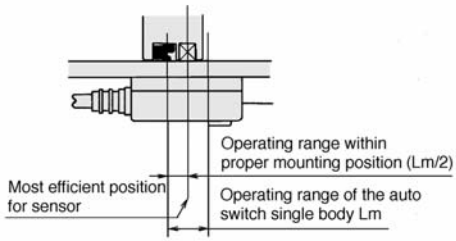
Proper Mounting Positions for Auto Switches

CDRA1□W30



CDRA1□□50 to 100





Operating angle θ m: Converts the operating range (Lm) of the auto switch into the rotation angle
(1)Angle of hysteresis: The hysteresis of the auto switch is converted to degrees.

Model	A (mm)	Operating angle θm	Angle of hysteresis (1)
CDRA1□W30-90	9 (19)	95°	20°
CDRA1□□50-90	9 (26)	65°	20°
CDRA1□□63-90	11 (30)	60°	10°
CDRA1□□80-90	15 (37)	45°	7°
CDRA1□□100-90	27 (60)	35°	5°

∗ The dimensions inside "( )" are for 180°. ∗∗ Up to 2 auto switches can be mounted per actuator. The dimensions in the table are the values that represent the most sensitive positions of the auto switches. Thus, they are not the dimensions that represent the mounting position at the time of shipment.
∗ Consult SMC concerning the angles for the auto switches other than the models D-A73 and D-A53.

⚠ Caution

Be sure to read before handling.
Refer to p.2.11-2 to 2.11-4 before handling auto switches.

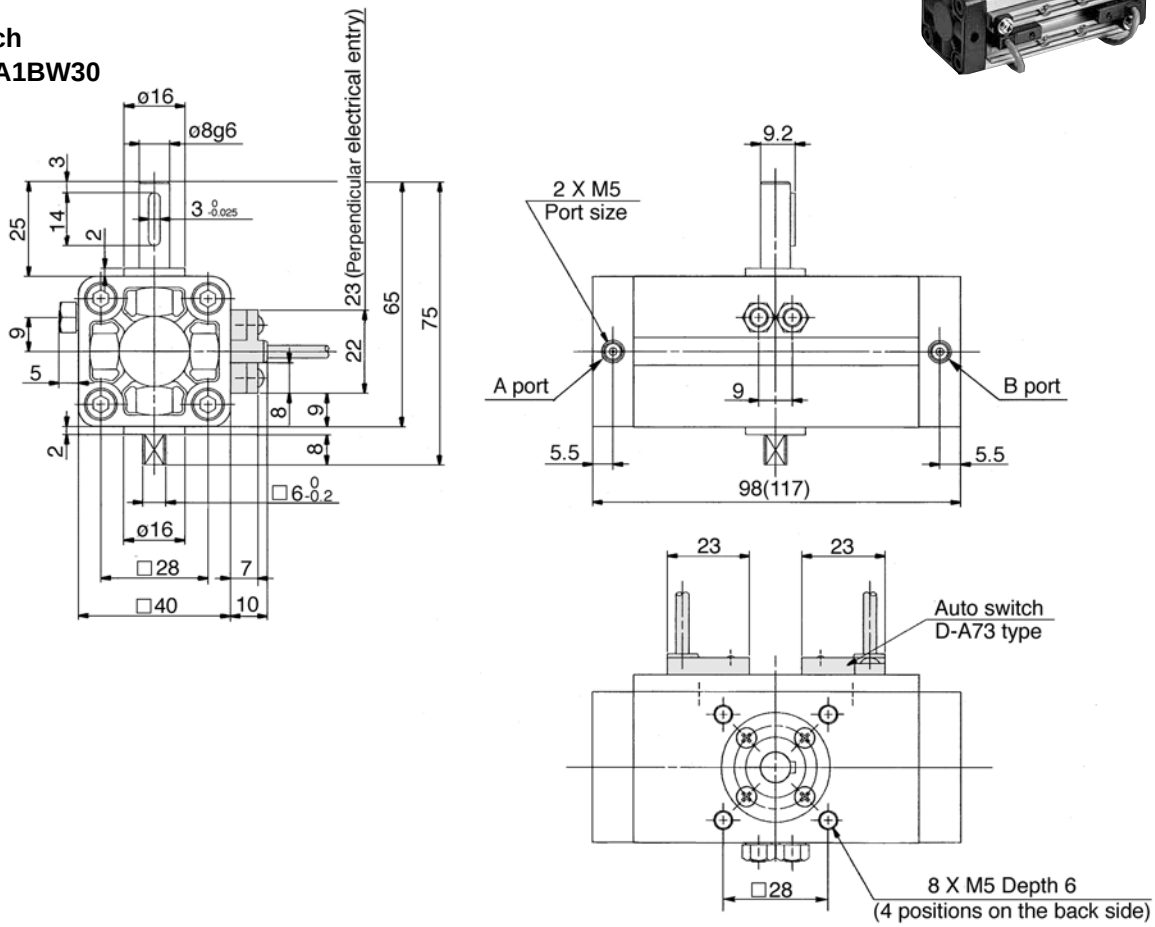
Sets of mounting screws for auto switch (Round head Phillips screw, Hexagon nut)

Model	Part No.
CDRA1□W30	P294010-24
CDRA1□□50 to100	P294020-24

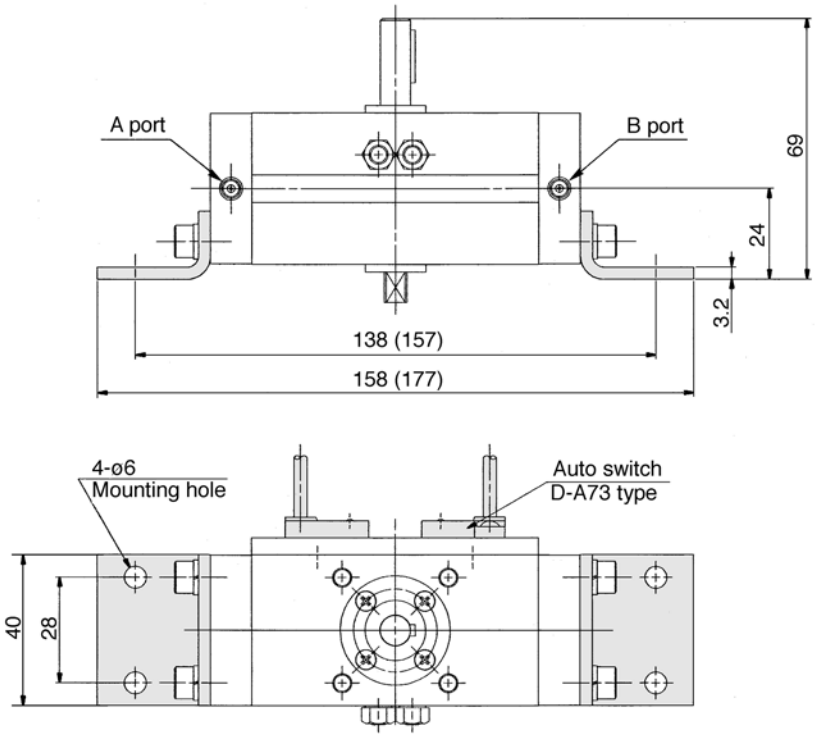
Note 1) The above part numbers include 2 pieces of mounting screws and 2 pieces of nuts.
Note 2) To order a set for 1 unit, the ordering quantity should be "1".

Size 30/Standard: CDRA1BW, Foot Style: CDRA1LW

With auto switch
Standard/CDRA1BW30



Foot style/CDRA1LW30

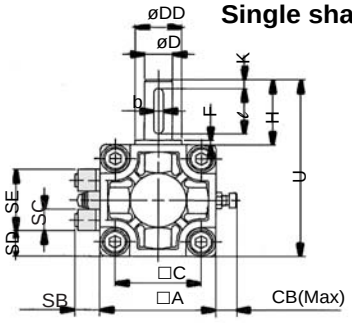


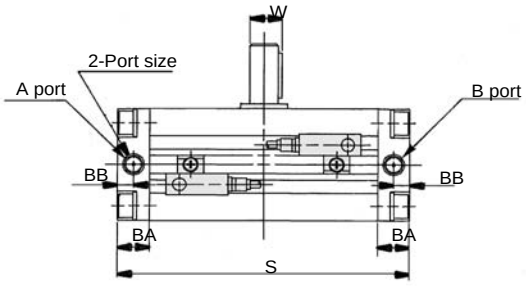
∗ The dimensions above show pressurization to B port.
∗ ( ) are the dimensions for rotation of 180°

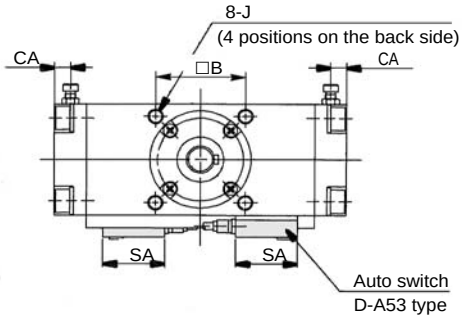
Size 50, 63, 80, 100/Standard: CDRA1B□

With auto switch
Single shaft/CDRA1BS

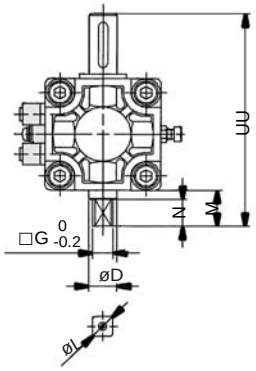
Single shaft







Double shaft/CDRA1BW
Double shaft



Double shaft

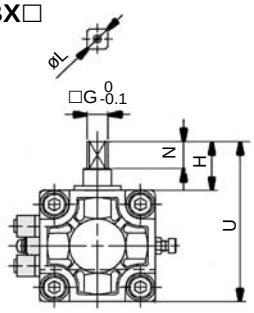
Model	D(g6)	G	M	N	UU	L
CDRA1BW50	15	11	20	15	118	14
CDRA1BW63	17	13	22	17	139	16
CDRA1BW80	20	15	25	20	167	19
CDRA1BW100	25	19	30	25	202	24

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

Single shaft

Model	Port size	A	B	C	D (g6)	DD (h9)	F	H	J	K	S	U	W	BA	BB	CA	CB	SA	SB	SC	SD	SE	Key dimensions b	Key dimensions ℓ
CDRA1BS50	1/8	62	48	46	15	25	2.5	36	M8 X1.25 X 8	5	156(189)	98	17	17	8.5	8.5	13	33	13.5	12	14	34	5 0 -0.030	25
CDRA1BS63	1/8	76	60	57	17	30	2.5	41	M10 X 1.5 X 12	5	175(213.5)	117	19.5	20	10	10	14	33	14.5	12	21	34	6 0 -0.030	30
CDRA1BS80	1/4	92	72	70	20	35	3	50	M12 X 1.75 X 13	5	199(243)	142	22.5	23.5	12	12	18	33	15.5	12	29	34	6 0 -0.030	40
CDRA1BS100	3/8	112	85	85	25	40	4	60	M12 X 1.75 X 14	5	259(325)	172	28	25	12.5	12.5	18	33	16	12	39	34	8 0 -0.036	45

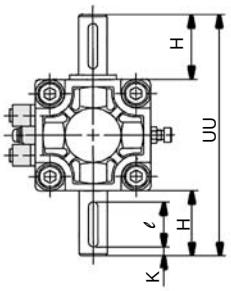
Single shaft with four chamfers/ CDRA1BX□



Other dimensions are the same as the single shaft.

Model	G	H	N	U	L
CDRA1BX□50	11	27	15	89	14
CDRA1BX□63	13	29	17	105	16
CDRA1BX□80	15	38	20	130	19
CDRA1BX□100	19	44	25	156	24

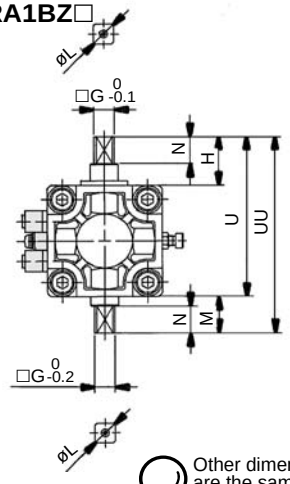
Double shaft key/CDRA1BY□



Other dimensions are the same as the single shaft.

Model	H	K	UU	ℓ
CDRA1BY□50	36	5	134	25
CDRA1BY□63	41	5	158	30
CDRA1BY□80	50	5	192	40
CDRA1BY□100	60	5	232	45

Double shaft with four chamfers/ CDRA1BZ□

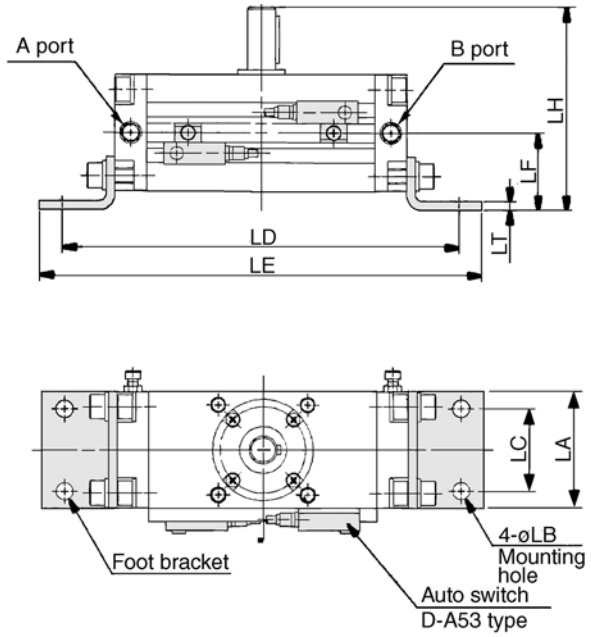


Other dimensions are the same as the single shaft.

Model	G	H	M	N	U	UU	L
CDRA1BZ□50	11	27	20	15	89	109	14
CDRA1BZ□63	13	29	22	17	105	127	16
CDRA1BZ□80	15	38	25	20	130	155	19
CDRA1BZ□100	19	44	30	25	156	186	24

Size 50, 63, 80, 100/Foot Style: CDRA1L, Flange Style: CDRA1F

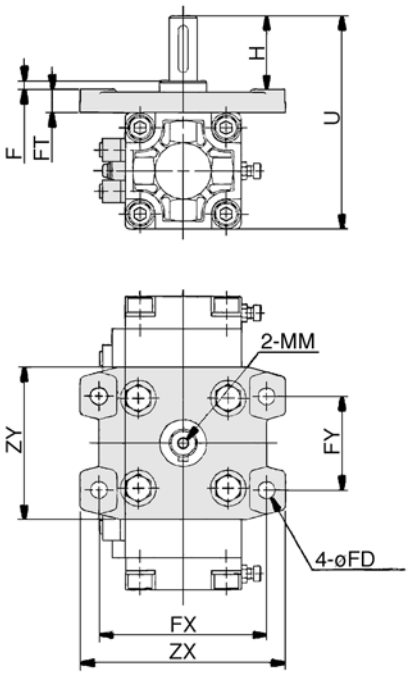
Foot style/CDRA1L□



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

Model	LA	LB	LC	LD	LE	LF	LH	LT
CDRA1L□□50	62	9	44	212 (245)	236 (269)	41	108	4.5
CDRA1L□□63	76	11	55	247 (285.5)	275 (313.5)	48	127	5
CDRA1L□□80	92	13	67	287 (331)	329 (373)	58	154	6
CDRA1L□□100	112	13	87	347 (413)	389 (455)	73.5	189.5	6

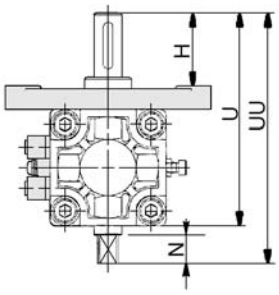
Flange style
Single shaft/CRA1FS



Other dimensions are the same as standard.

Model	F	H	MM	U	FD	FT	FX	FY	ZX	ZY
CDRA1F□□50	4	39	M6 Depth 12	114	9	13	90	50	110	81
CDRA1F□□63	5	45	M6 Depth 12	136	11.5	15	105	59	130	101
CDRA1F□□80	5	55	M8 Depth 16	165	13.5	18	130	76	160	119
CDRA1F□□100	5	60	M10 Depth 20	190	13.5	18	150	92	180	133

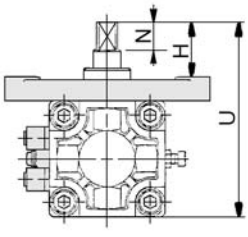
Flange style
Double shaft/CDRA1FW



Other dimensions are the same as the single shaft.

Model	H	N	U	UU
CDRA1FW□50	39	15	114	134
CDRA1FW□63	45	17	136	158
CDRA1FW□80	55	20	165	190
CDRA1FW□100	60	25	190	220

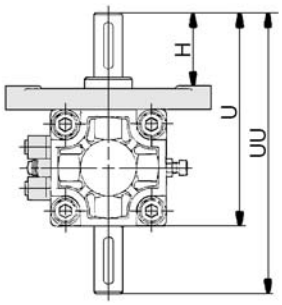
Flange style
Single shaft with four chamfers
/CDRA1FX



Other dimensions are the same as the single shaft.

Model	H	N	U
CDRA1FX□50	30	15	105
CDRA1FX□63	33	17	124
CDRA1FX□80	43	20	153
CDRA1FX□100	44	25	174

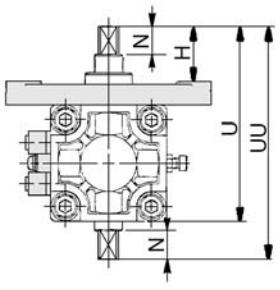
Flange style
Double shaft key
/CDRA1FY



Other dimensions are the same as the single shaft.

Model	H	U	UU
CDRA1FY□50	39	114	150
CDRA1FY□63	45	136	177
CDRA1FY□80	55	165	215
CDRA1FY□100	60	190	250

Flange style
Double shaft with four chamfers
/CDRA1FZ



Other dimensions are the same as the single shaft.

Model	H	N	U	UU
CDRA1FZ□50	30	15	105	125
CDRA1FZ□63	33	17	124	146
CDRA1FZ□80	43	20	153	178
CDRA1FZ□100	44	25	174	204

Angle Adjustable Style Rotary Actuator

(Angle adjusting ability for standard equipment.)

Series CRA1□□U

Rack Pinion Style/Size: 50, 63, 80, 100

How to Order

Without Auto Switch CRA1 **B** **S** **U** **50** — **90**

With Auto Switch CDRA1 **B** **S** **U** **50** — **90** — **A53** **S**

Buit-in magnet

Mounting

B	Basic
L*	Foot
F	Flange

∗Refer to the tables below for part numbers.

Shaft styles

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

Angle adjustable

Size

50
63
80
100

Rotation angle

Standard	**90**	90°
	180	180°
Option	**100**	100°
	190	190°

Auto switch

∗Refer to the tables below for part numbers of applicable auto switch.

No. of auto switches mounted

—	2
S	1

Auto Switch Specifications/Refer to p.2.11-1 for further specifications of auto switch single unit.

Style	Special function	Electrical entry	Indicator	Wiring (out put)	Load voltage DC	Load voltage AC	Auto switch part No.	Lead wire length* (m) 0.5 (—)	3 (L)	5 (Z)	Applicable load	
Reed switch	——	Grommet	Yes	3 wire (Equiv. to NPN)	5V	——	**A56**	●	●	—	IC	——
				2 wire	12V	——	**A53**	●	●	●	—	PLC
					——	100V,200V	**A54**	●	●	●		Relay, PLC
			No		——	——	**A67**	●	●	—	IC	PLC
					——	100V,200V	**A64**	●	●	—	IC	Relay, PLC
	Diagnostic indicator (2 colour)		Yes		——	——	**A59W**	●	●	—	—	
Solid state switch	——	Grommet	Yes	3 wire (NPN)	5V,12V	——	**F59**	●	●	○	IC	Relay, PLC
				3 wire (PNP)			**F5P**	●	●	○		
				2 wire	——	100V,200V	**J51**	●	●	○	—	
					12V	——	**J59**	●	●	○		
	Diagnostic indicator (2 colour)			3 wire (PNP)	5V,12V		**F5PW**	●	●	○	IC	
				3 wire (NPN)			**F59W**	●	●	○		
				2 wire	——	——	**J59W**	●	●	○	—	
	Water resistant						**F5BA**	—	●	○		
	Timer			3 wire (NPN)	5V,12V		**F5NT**	—	●	○	IC	
	Diagnostic output (2 colour)			4 wire (NPN)			**F59F**	●	●	○		

∗Symbols for lead wire length 0.5m····· — Ex.) A53
3m····· L Ex.) A53L
5m····· Z Ex.) 53Z

∗Auto switches without contact point marked with "○" are made to order spacifications.

Foot Brackets/Part No.

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

The part numbers of bracket in the table above are for foot fittings including mounting screws.

Specifications

Fluid	Air (Non-lube)
Cushion	Without cushion
Mounting	Basic, Foot, Flange style
Angle adjustable range	0° to 90°
Backlash	Within 1°

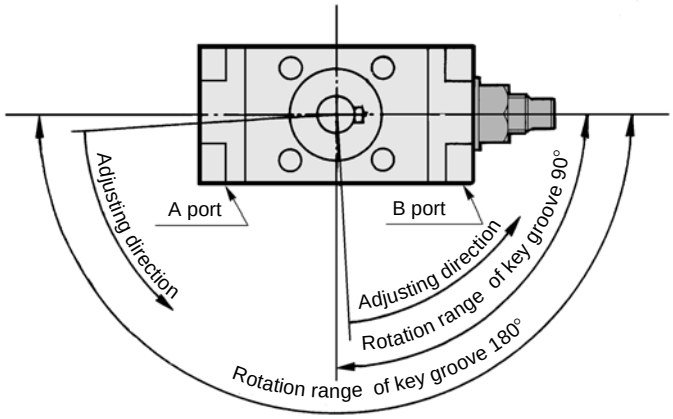
Weight

(kg)

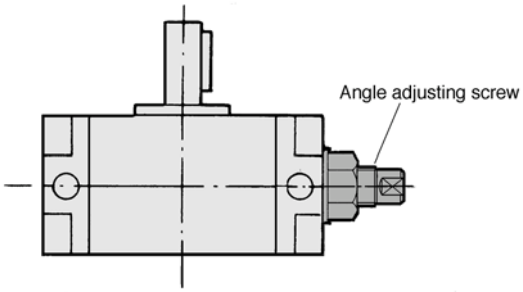
Model	Standard weight		Additional weight
	90°	180°	
CRA1 □□U 50	1.5	1.7	0.5
CRA1 □□U 63	2.5	3.0	0.8
CRA1 □□U 80	4.3	5.0	1.5
CRA1 □□U 100	8.5	9.5	2.0

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



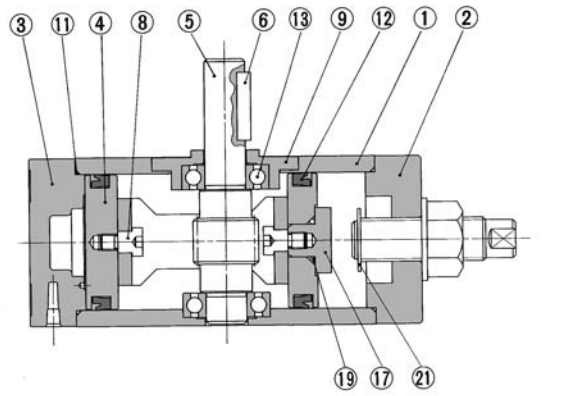
Rotation angle becomes smaller by tightening the angle adjusting screw to the right.

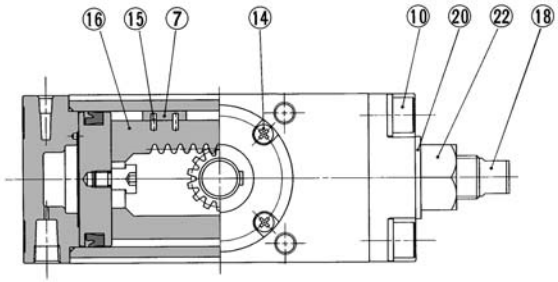
Adjusting angle per one rotation of angle adjusting screw

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

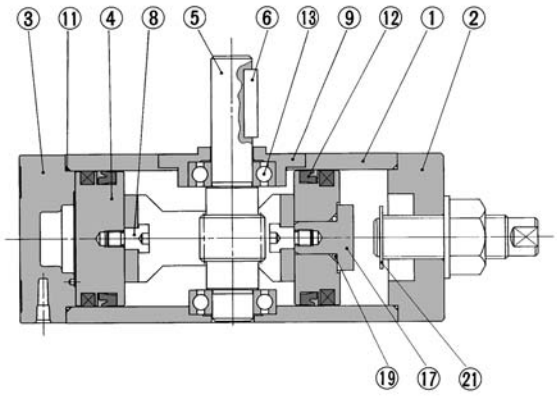
Construction

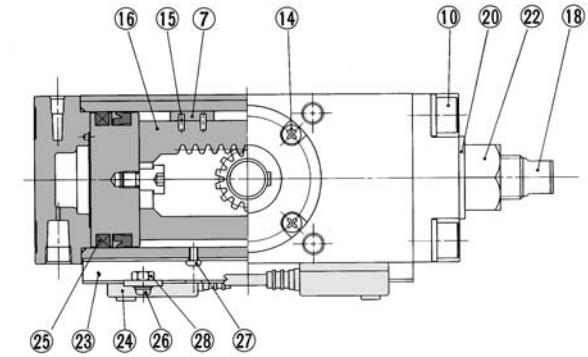
Standard/CRA1□□U





With auto switch/CDRA1□□U





Component Parts

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

Component Parts

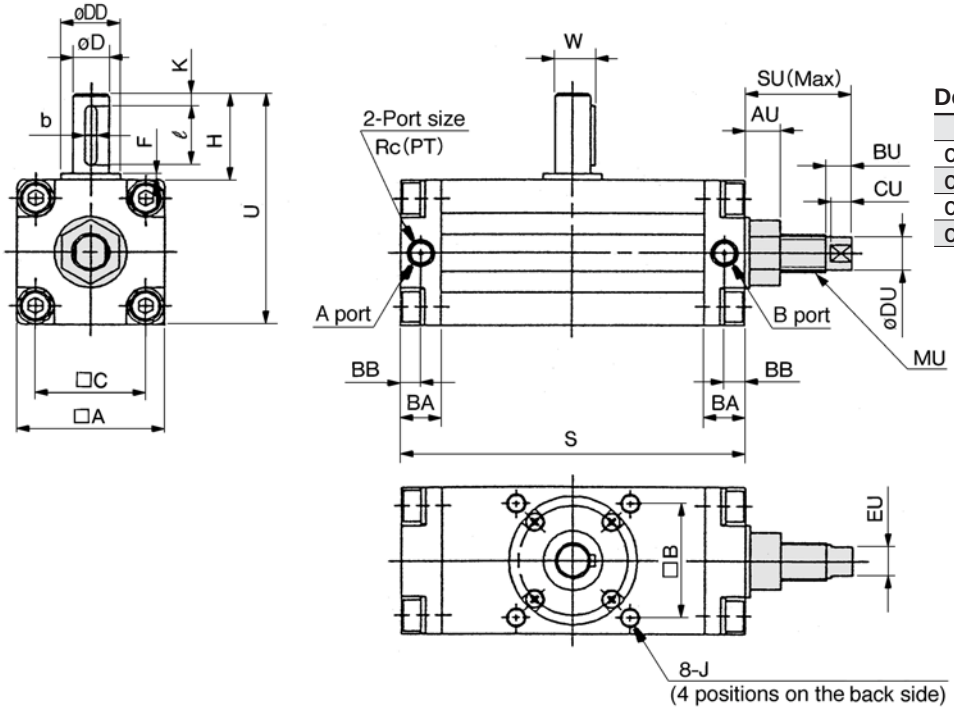
No.	Description	Material	Note
⑮	Spring pin	Steel wire	
⑯	Rack	Carbon steel	Nitrided
⑰	Stopper	Carbon steel	Zinc chromated
⑱	Stopper screw	Carbon steel	Black zinc anodized
⑲	O ring	NBR	
⑳	Seal washer	NBR	
㉑	E type stopper ring	Steel wire	Chromated
㉒	Hexagon nut	Steel wire	Nickel plated
㉓	Switch mounting rail	Aluminum alloy	
㉔	Auto switch		
㉕	Plastic magnet	Magnetic substance	
㉖	Cross-recessed head cap screw	Steel wire	Nickel plated
㉗	Cross-recessed head cap 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	⑦,⑪,⑫,⑮ and ⑳ are set.

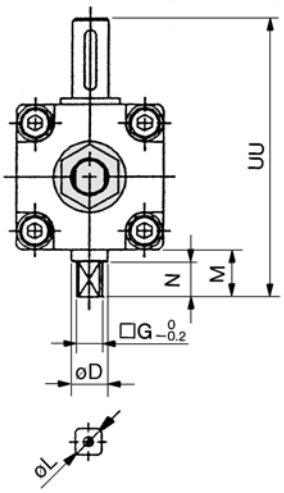
Size 50, 63, 80, 100/Standard: CRA1□□U

Single shaft style/CRA1BSU



Double shaft style/CRA1BWU

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



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

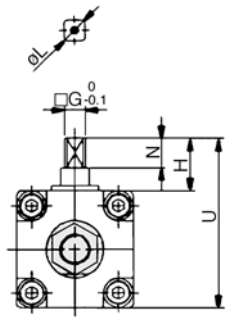
Single shaft style

Model	Port size Rc(PT)	A	AU	B	BA	BB	BU	C	CU	D (g6)	DD (h9)	DU	EU	F	H	J	K	MU	S	SU	U	W	Key dimensions b	Key dimensions ℓ
CRA1BSU50	1/8	62	15	48	17	8.5	11	46	9	15	25	14	12	2.5	36	M8 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 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 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 Depth 14	5	M24 X 1.5	245 (311)	73.5	172	28	8 0 -0.036	45

Series CRA1□□U

Size 50,63,80,100

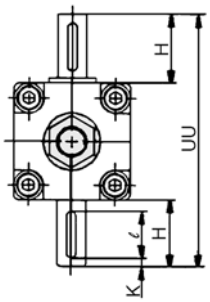
Single shaft with four chamfers/ CRA1BXU□



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

Other dimensions are the same as the single shaft.

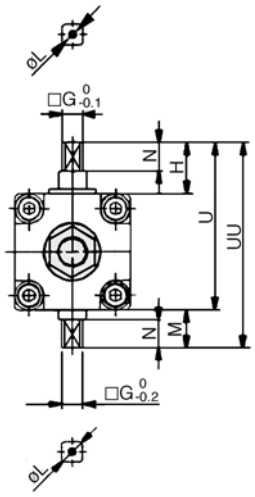
Double shaft/CRA1BYU□



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

Other dimensions are the same as the single shaft.

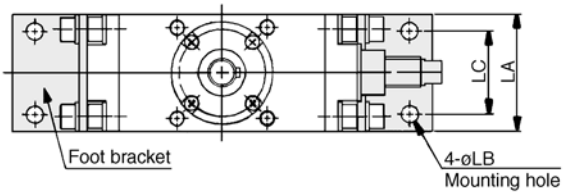
Double shaft with four chamfers/ CRA1BZU□

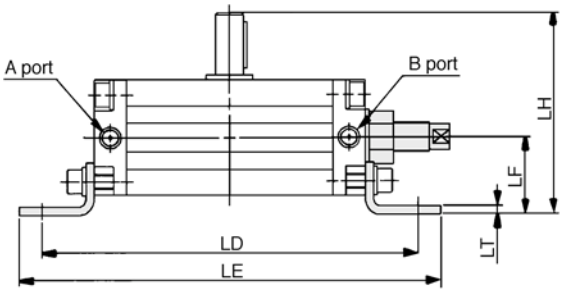


Model	G	H	L	M	N	U	UU
CRA1BZU□50	11	27	14	20	15	89	109
CRA1BZU□63	13	29	16	22	17	105	127
CRA1BZU□80	15	38	19	25	20	130	155
CRA1BZU□100	19	44	24	30	25	156	186

Other dimensions are the same as the single shaft.

Foot style/CRA1L□U





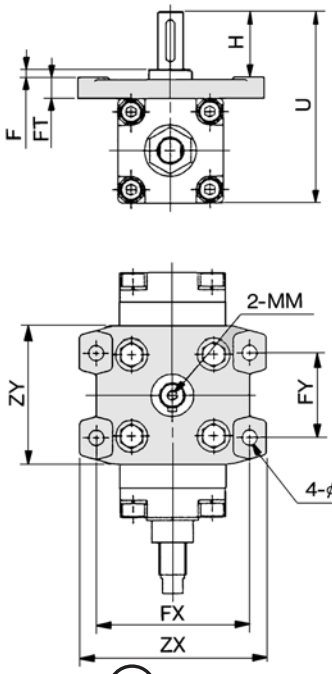
∗The dimensions below show pressurization to B port.
∗( ) are the dimensions for rotation of 180° and 190°.

Other dimensions are the same as the single shaft.

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

Size 50, 63, 80, 100

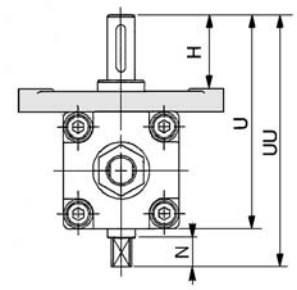
Single shaft flange style/CRA1FSU



Other dimensions are the same as standard.

Model	F	FD	FT	FX	FY	H	MM	U	ZX	ZY
CRA1F□U50	4	9	13	90	50	39	M6 X 12	114	110	81
CRA1F□U63	5	11.5	15	105	59	45	M6 X 12	136	130	101
CRA1F□U80	5	13.5	18	130	76	55	M8 X 16	165	160	119
CRA1F□U100	5	13.5	18	150	92	60	M10 X 20	190	180	133

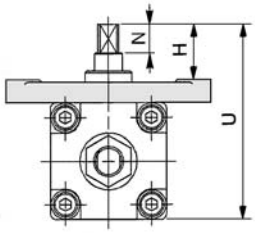
Flange style Double shaft/ CRA1FWU



Other dimensions are the same as the single shaft.

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

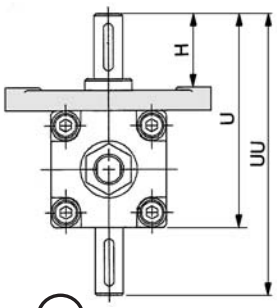
Flange style Single shaft with four chamfers/ CRA1FXU



Other dimensions are the same as the single shaft.

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

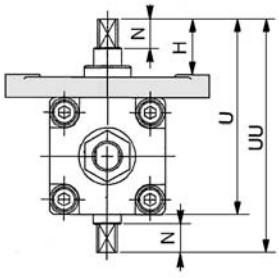
Flange style Double shaft key/ CRA1FYU



Other dimensions are the same as the single shaft.

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

Flange style Double shaft with four chamfers/ CRA1FZU

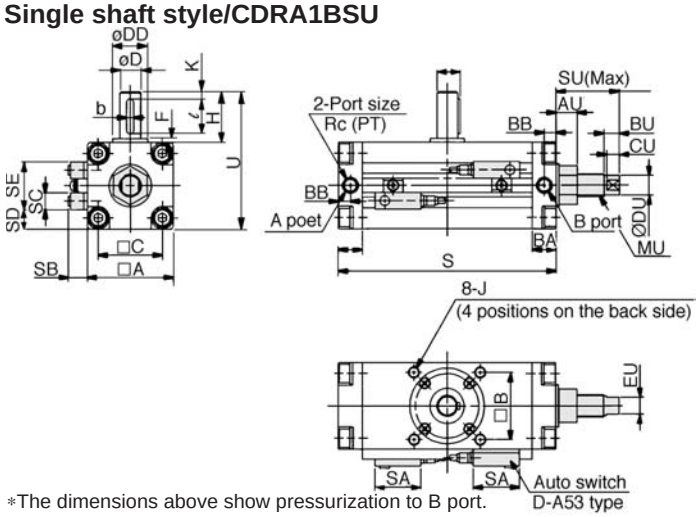


Other dimensions are the same as the single shaft.

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

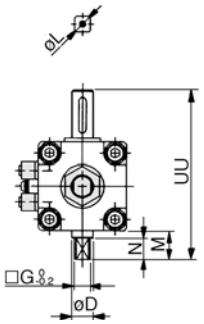
Series CRA1□□U
Size 50,63,80,100

Single shaft style/CDRA1BSU



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

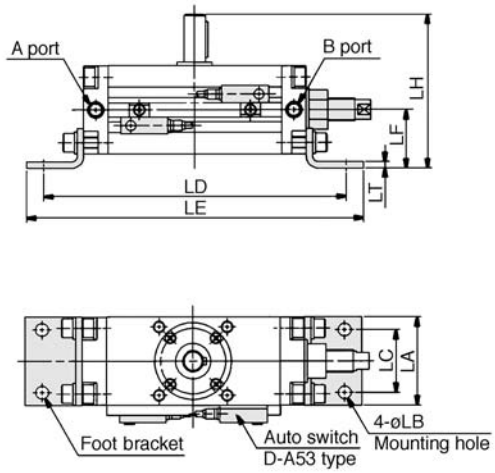
Double shaft style/CDRA1BWU



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

Model	Port size Rc(PT)	□A	□B	□C	øD (g6)	øDD (h9)	F	H	J	K	S	U	W	BA	BB	SA	SB	SC	SD	SE	Key dimensions b	Key dimensions ℓ	AU	BU	CU	DU	EU	SU	MU
CDRA1BSU50	1/8	62	48	46	15	25	2.5	36	M8 Depth8	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 Depth12	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 Depth13	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 Depth14	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

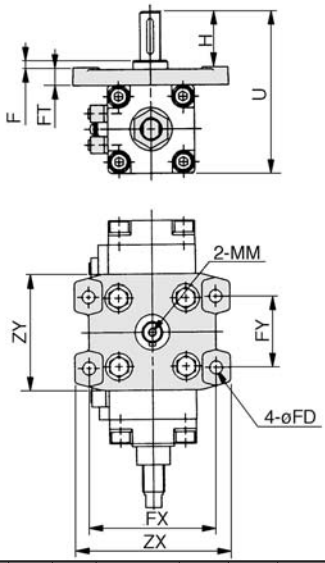
Foot style/CDRA1LSU



∗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

Single shaft flange style/CDRA1FSU



Model	F	H	MM	U	øFD	FT	FX	FY	ZX	ZY
CDRA1FSU50	4	39	M6 Depth12	114	9	13	90	50	110	81
CDRA1FSU63	5	45	M6 Depth12	136	11.5	15	105	59	130	101
CDRA1FSU80	5	55	M8 Depth16	165	13.5	18	130	76	160	119
CDRA1FSU100	5	60	M10 Depth20	190	13.5	18	150	92	180	133

Series CRA1
Made to Order Specifications
Change of Shaft End Shape/-XA1 to XA46

Consult SMC for further information on specifications, dimensions and delivery.

1 Change of shaft end shape

Symbols

-XA1 to XA46

A wide selection of models is now available, as non-standard shaft configurations for the CRA1 series rotary actuators are provided in 60 styles.

Applicable patterns

Size	30, 50, 63, 80, 100
Pattern	XA1 to XA24, XA33 to XA46, XC7 to XC11, XC30 to XC64

Additional reminders

- Enter the dimensions within a range that allows for additional machining.
- SMC will make appropriate arrangements if no dimensions, tolerance, or finish instructions are given in the diagram.
- The length of the unthreaded portion is 2 to 3 pitches.
- Unless specified otherwise, the thread pitch is based on coarse metric threads.
  P = thread pitch
  M3, M4, M5,
  M6, M8, M10
- Enter the desired values in the ☐ portion of the diagram.
- Consult SMC for made to order specifications other than those mentioned in "How to Order".
- Individual drawings for specific made to order models may not be available.
  Consult SMC separately if drawings are needed.

How to Order

CRA1 L W ☐ P 50 — 90 ☐ — X A1

Mounting

B	Basic
L	Foot
F	Flange

Shaft style

Standard	S*	Single shaft key
	W	Double shaft (Long shaft key & four chamfers)
Option	X	Single shaft with four chamfers
	Y	Double shaft key
	Z	Double shaft with four chamfers
	T	Single round shaft
	J	Double shaft (Long shaft without key & with four chamfers)
	K	Double round shaft

*Size 30 is available as an made to order product.
**Refer to p.1.4-36 to 1.4-38 concerning further information on shafts X, Y, Z, T, J and K

Style

—	Pneumatic
H	Air-hydro

Provided in patterns

Size

30
50
63
80
100

Rotation angle

90°
100°
180°
190°

Air cushion

—	Without air cushion
C	With air cushion

Symbol for made to order specification

Pattern symbols for made to order

Applicable patterns indicated in the above table.
A1 to A24, A33 to A46
C7 to C11, C30 to C64
*Refer to p1.4-24 for further information.

How to order model with auto switches

Refer to p.1.4-11 concerning how to order for the auto switch equipped type.

How to order angle adjustable style

Refer to p1.4-16 concerning how to order for the angle adjustable type.

Change of Shaft End Shape/-XA1 to XA46

Consult SMC for further information on specifications, dimensions and delivery.

1 Change of shaft end shape

Symbols
-XA1 to XA46

Applicable shaft style/Pattern combination table (Size: 30, 50, 63, 80, 100)

Shaft style/S (Single shaft), W (Double shaft), Y (Double shaft key)

Symbol	Description	Shaft direction		Applicable size
		Upper	Lower	
-XA1	Female thread at the shaft end	●	—	30 50 63 80 100
-XA2	Female thread at the shaft end	—	●	
-XA13	Shaft through-hole	●	●	
-XA14	Shaft through-hole and female thread	●	—	
-XA15	Shaft through-hole and female thread	—	●	
-XA16	Shaft through-hole and female thread	●	●	
-XA24	Double key	●	—	

Shaft style

Symbol	Description	Shaft direction		Shaft style							Applicable size
		Upper	Lower	J	K	S	T	Y	X	Z	
-XA33	Female thread at the shaft end	●	—	●	●	—	●	—	—	—	30 50 63 80 100
-XA34	Female thread at the shaft end	—	●	●	●	—	●	—	—	—	
-XA35	Female thread at the shaft end	●	—	—	—	—	—	—	●	●	
-XA36	Female thread at the shaft end	—	●	—	—	—	—	—	●	●	
-XA37	Round shaft with steps	●	—	●	●	—	●	—	—	—	
-XA38	Round shaft with steps	—	●	—	●	—	—	—	—	—	
-XA40	Shaft through-hole	●	●	—	●	—	●	—	—	—	
-XA41	Shaft through-hole	●	●	●	—	—	—	—	●	●	
-XA43	Shaft through-hole with female	●	●	—	●	—	●	—	—	—	
-XA44	Shaft through-hole with female	●	●	●	—	—	—	—	●	●	
-XA45	Intermediate chamfer	●	—	●	●	—	●	—	—	—	
-XA46	Intermediate chamfer	—	●	—	●	—	—	—	—	—	

Shaft style

Symbol	Description	Shaft style								Applicable size
		S	W	X	Y	Z	T	J	K	
-XC7	Reverse mounting of rotation shaft	●	●	●	—	—	●	●	—	50 63 80 100
-XC8	Change of rotation range	●	●	—	●	—	—	—	—	
-XC9		●	●	—	●	—	—	—		
-XC10		●	●	—	●	—	—	—	—	
-XC11		●	●	—	●	—	—	—	—	
-XC30	Fluorine grease	●	●	●	●	●	●	●	●	30 to 100
-XC31	Change of rotation range and shaft rotation direction	●	●	—	●	—	—	—	—	50 63 80 100
-XC32		●	●	—	●	—	—	—	—	
-XC33		●	●	—	●	—	—	—	—	
-XC34		●	●	—	●	—	—	—	—	
-XC35		●	●	—	●	—	—	—	—	
-XC36		●	●	—	●	—	—	—	—	
-XC37	Change of rotation range and angle adjusting direction	●	●	—	●	—	—	—	—	
-XC38		●	●	—	●	—	—	—	—	
-XC39		●	●	—	●	—	—	—	—	
-XC40		●	●	—	●	—	—	—	—	
-XC41		●	●	—	●	—	—	—	—	
-XC42		●	●	—	●	—	—	—	—	
-XC43		●	●	—	●	—	—	—	—	
-XC44		●	●	—	●	—	—	—	—	
-XC45		●	●	—	●	—	—	—	—	
-XC46		●	●	—	●	—	—	—	—	
-XC47	Change of rotation range and angle adjusting direcation (Angle adjusting screw is equipped on the left.)	●	●	—	●	—	—	—	—	
-XC48		●	●	—	●	—	—	—	—	
-XC49		●	●	—	●	—	—	—	—	
-XC50		●	●	—	●	—	—	—	—	
-XC51		●	●	—	●	—	—	—	—	
-XC52		●	●	—	●	—	—	—	—	
-XC53		●	●	—	●	—	—	—	—	
-XC54		●	●	—	●	—	—	—	—	
-XC55		●	●	—	●	—	—	—	—	
-XC56		●	●	—	●	—	—	—	—	
-XC57		●	●	—	●		—	—	—	
-XC58		●	●	—	●	—	—	—	—	
-XC59	Change of port direction	●	●	●	●	●	●	●	●	30 to 100
-XC60		●	●	●	●	●	●	●	●	
-XC61		●	●	●	●	●	●	●	●	
-XC62	Reverse mounting of auto switch	●	●	●	●	●	●	●	●	50 63 80 100
-XC63	One side hydro, One side air	●	●	●	●	●	●	●	●	
-XC64	One side hydro, One side air	●	●	●	●	●	●	●	●	

Made to Order Specifications
Change of Shaft End Shape/-XA1 to XA33

Consult SMC for further information on specifications, dimensions and delivery.

1 Change of shaft end shape

Symbols
-XA1 to XA33

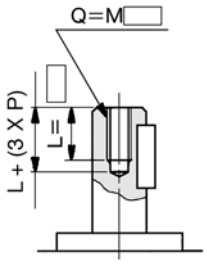
Additional reminders

- Enter the dimensions within a range that allows for additional machining.
- SMC will make appropriate arrangements if no dimensional, tolerance, or finish instructions are given in the diagram.
- The length of the unthreaded portion is 2 to 3 pitches.
- Unless specified otherwise, the thread pitch is based on coarse metric threads.
  P = thread pitch
  M3, M4, M5
  M6, M8, M10
- Enter the desired figures in the □ portion of the diagram.
- If not specified, the chamfer "C" is 0.5.

Symbol: A1 Note) Except for the flange style

Machine female threads into the long end of the shaft.
(Shafts S, W and Y are additionally machined.)
The L dimension (maximum) is, as a rule, twice the size of the bolt.

(Example: For M3 bolt: L max. = 6mm)

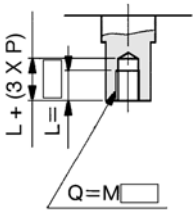


Size	Q
30	M3
50	M4, M5, M6
63	M4, M5, M6
80	M4, M5, M6, M8
100	M5, M6, M8, M10

Symbol: A2 Note) Except for the flange style.

Machine female threads into the short end of the shaft.
(Shafts S, W and Y are additionally machined.)
The L dimension (maximum) is, as a rule, twice the size of the bolt.

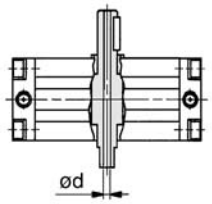
(Example: For M4 bolt: L max. = 8mm)



Size	Q
30	M3, M4
50	M4, M5, M6
63	M4, M5, M6
80	M4, M5, M6, M8
100	M5, M6, M8, M10

Symbol: A13 Note) Except for the flange style

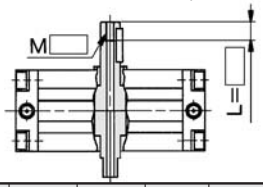
Shaft through-hole (Shafts S, W, Y are additionally machined)
Note) The minimum range of the machinable dimension for the ød area is 0.1mm.



Size	d
30	ø2.5
50	ø4 to ø 7
63	ø4 to ø 8
80	ø6.8 to ø11
100	ø6.8 to ø13

Symbol: A14 Note) Except for the flange style

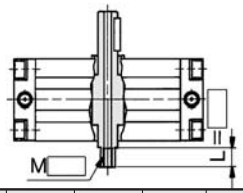
Machine a special end (at the long end of the shaft), and machine female threads in the through-hole at the long end of the shaft, thus creating a through-holes to serve as the pilot hole.
(Shafts S, W, Y are additionally machined.)
The L dimension (maximum) is, as a rule, twice the size of the bolt.
(Example: For M5 bolt: L max. = 10mm)



Thread \ Size	30	50	63	80	100
M3	ø2.5	—	—	—	—
M5	—	ø4	ø4	—	—
M6	—	ø5	ø5	—	—
M8	—	—	ø6.8	ø 6.8	ø 6.8
M10	—	—	—	ø 8.5	ø 8.5
M12	—	—	—	ø10.3	ø10.3
Rc X PT1/8	—	—	—	ø 8	ø 8
Rc X PT1/4	—	—	—	—	ø11

Symbol: A15 Note) Except for the flange style

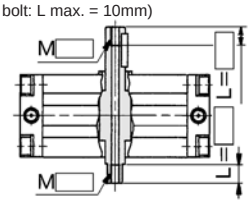
Machine a special end (at the short end of the shaft), and machine female threads in the through hole at the short end of the shaft, thus creating a through holes to serve as the pilot hole.
(Shafts S, W, Y are additionally machined.)
The L dimension (maximum) is, as a rule, twice the size of the bolt.
(Example: For M4 bolt: L max. = 8mm)



Thread \ Size	30	50	63	80	100
M3	ø2.5	—	—	—	—
M5	—	ø4	ø4	—	—
M6	—	ø5	ø5	—	—
M8	—	—	ø6.8	ø 6.8	ø 6.8
M10	—	—	—	ø 8.5	ø 8.5
M12	—	—	—	ø10.3	ø10.3
Rc (PT)1/8	—	—	—	ø 8	ø 8
Rc (PT)1/4	—	—	—	—	ø11

Symbol: A16 Note) Except for the flange style

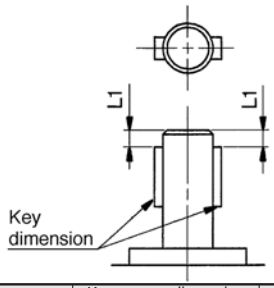
Machine special ends (at both the long and short ends of the shaft), and machine female threads in the through hole at both the long and short ends of the shaft, thus creating through holes to serve as pilot holes.
(Shafts S, W, Y are additionally machined.)
The L dimension (maximum) is basically twice the size of the bolt.
(Example: For M5 bolt: L max. = 10mm)



Thread \ Size	30	50	63	80	100
M3	ø2.5	—	—	—	—
M5	—	ø4	ø4	—	—
M6	—	ø5	ø5	—	—
M8	—	—	ø6.8	ø 6.8	ø 6.8
M10	—	—	—	ø 8.5	ø 8.5
M12	—	—	—	ø10.3	ø10.3
Rc(PT) 1/8	—	—	—	ø 8	ø 8
Rc (PT)1/4	—	—	—	—	ø11

Symbol: A24

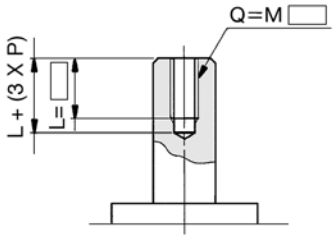
Double keys
Additionally machine a key groove at 180° from the standard key position.
(Shafts S, W, Y are additionally machined.)



Size	Key groove dimension	L1
30	3 X 3 X 14	3
50	5 X 5 X 25	5
63	6 X 6 X 30	5
80	6 X 6 X 40	5
100	8 X 7 X 45	5

Symbol: A33 Note) Except for the flange style

Machine female threads into the long end of the shaft.
(Shafts J, K and T are additionally machined.)
The L dimension (maximum) is, as a rule, twice the size of the bolt.
(Example: For M3 bolt: L max. = 6mm)



Size	Q
30	M3
50	M4, M5, M6, M8
63	M4, M5, M6, M8, M10
80	M4, M5, M6, M8, M10, M12
100	M5, M6, M8, M10, M12

Change of Shaft End Shape/-XA34 to XA44

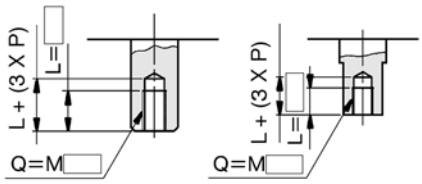
Consult SMC for further information on specifications, dimensions and delivery.

1 Change of shaft end shape

Symbols
-XA34 to XA44

Symbol: A34
Note) Except for flange style

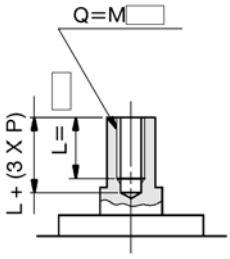
Machine female threads into the short end of the shaft.
(Shafts J, K and T additionally machined)
The L dimension (maximum) is, as a rule, twice the size of the bolt.
(Example: For M3 bolt: L = 6)



Size	Q
30	M3
50	M4, M5, M6, M8
63	M4, M5, M6, M8, M10
80	M4, M5, M6, M8, M10, M12
100	M5, M6, M8, M10, M12

Symbol: A35
Note) Except for flange style

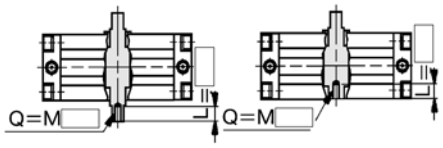
Machine female threads into the long end of the shaft.
(Shafts X and Z additionally machined)
The L dimension (maximum) is, as a rule, twice the size of the bolt.
(Example: For M3 bolt: L = 6)



Size	Q
30	M3
50	M4, M5, M6, M8
63	M4, M5, M6, M8, M10
80	M4, M5, M6, M8, M10, M12
100	M5, M6, M8, M10, M12

Symbol: A36
Note) Except for flange style

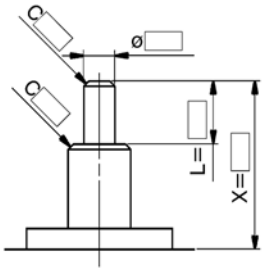
Machine threads into the short end of the shaft.
(Shafts X and Z additionally machined)
The L dimension (maximum) is, as a rule, twice the size of the bolt.
(Example: For M3 bolt: L = 6)



Size	Q
30	M3
50	M4, M5, M6, M8
63	M4, M5, M6, M8, M10
80	M4, M5, M6, M8, M10, M12
100	M5, M6, M8, M10, M12

Symbol: A37
Note) Except for flange style

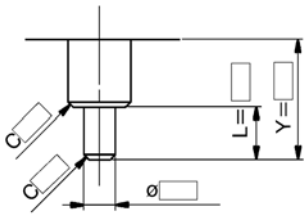
The shaft can be further shortened by machining a round shaft with steps on the long end of the shaft.
(Shafts J, K and T are additionally machined)
(If the shaft is not to be shortened, leave the X dimension blank)



Size	X	Lmax
30	3 to 25	X—2
50	3.5 to 36	X—2.5
63	3.5 to 41	X—2.5
80	4 to 50	X—3
100	5 to 60	X—4

Symbol: A38
Note) Except for flange style

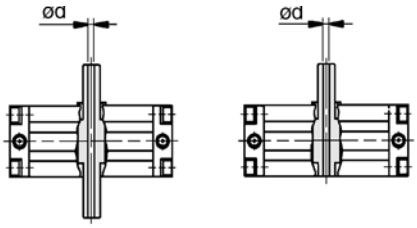
The shaft can be further shortened by machining a round shaft with steps on the short end of the shaft.
(Shaft K are additionally machined)
(If the shaft is not to be shortened, leave the Y dimension blank)



Size	Y	Lmax
30	1 to 25	Y
50	1 to 36	Y
63	1 to 41	Y
80	1 to 50	Y
100	1 to 60	Y

Symbol: A40
Note) Except for flange style

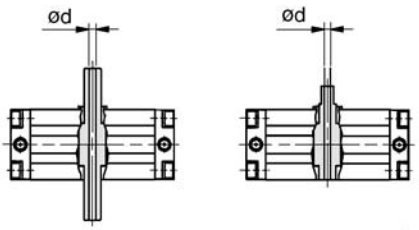
Shaft through-hole
(Shafts K and T are additionally machined)



Size	d
30	ø2.5
50	ø4 to ø 7.5
63	ø4 to ø 8
80	ø6.8 to ø11
100	ø6.8 to ø13

Symbol: A41
Note) Except for flange style

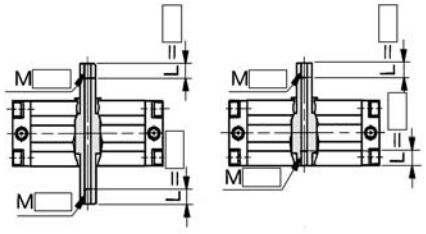
Shaft through-hole
(Shafts J, X and Z are additionally machined)



Size	d
30	ø2.5
50	ø4 to ø 7.5
63	ø4 to ø 8
80	ø6.8 to ø11
100	ø6.8 to ø13

Symbol: A43
Note) Except for flange style

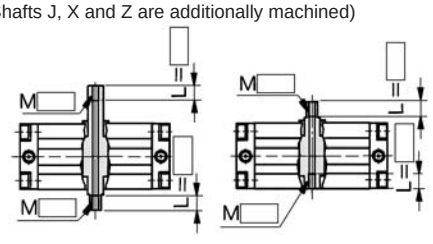
Shaft through-hole and female thread
(Shafts K and T are additionally machined)



Thread \ Size	30	50	63	80	100
M3	ø2.5	—	—	—	—
M5	—	ø4	ø4	—	—
M6	—	ø5	ø5	—	—
M8	—	—	ø6.8	ø 6.8	ø 6.8
M10	—	—	—	ø 8.5	ø 8.5
M12	—	—	—	ø10.3	ø10.3
Rc(PT)1/8	—	—	—	ø 8	ø 8
Rc(PT)1/4	—	—	—	—	ø11

Symbol: A44
Note) Except for flange style

Shaft through-hole and female thread
(Shafts J, X and Z)
(Shafts J, X and Z are additionally machined)



Thread \ Size	30	50	63	80	100
M3	ø2.5	—	—	—	—
M5	—	ø4	ø4	—	—
M6	—	ø5	ø5	—	—
M8	—	—	ø6.8	ø 6.8	ø 6.8
M10	—	—	—	ø 8.5	ø 8.5
M12	—	—	—	ø10.3	ø10.3
Rc(PT)1/8	—	—	—	ø 8	ø 8
Rc(PT)1/4	—	—	—	—	ø11

Series CRA1
Made to Order Specifications
Change of Shaft End Shape/-XA45 to -XA46
Change of Rotation Range (Size 50 to 100) /-XC8 to -XC11

Consult SMC for further information on specifications, dimensions and delivery.

1 Change of shaft end shape

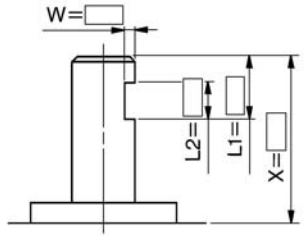
Symbols: -XA45, XA46

Additional reminders

- Enter the dimensions within a range that allows for additional machining.
- SMC will make appropriate arrangements if no dimensions, tolerance, or finish instructions are given in the diagram.
- Enter the desired figures in the □ portion of the diagram.

Symbol: A45 Note) Except for the flange style.

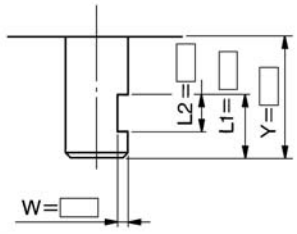
The shaft can be further shortened by machining an intermediate flat on the long end of the shaft (the position is that of the standard flat, the key groove part).
(Shafts J, K and T are additionally machined.)



Size	X	W	L1max	L2max
30	8.5 to 25	1 to 2	X – 2	L1-2
50	12.5 to 36	1 to 5.5	X – 2.5	L1-2
63	13.5 to 41	1 to 6.5	X – 2.5	L1-2
80	16.5 to 50	1 to 8	X – 3	L1-3
100	21 to 60	1.5 to 10.5	X – 4	L1-4

Symbol: A46 Note) Except for the flange style.

The shaft can be further shortened by machining an intermediate chamfering on the short end of the shaft (the position is that of the standard chamfering, the key groove part).
(Shaft K is additionally machined.)



Size	Y	W	L1max	L2max
30	6.5 to 25	1 to 2	Y	L1-2
50	10 to 36	1 to 5.5	Y	L1-2
63	11 to 41	1 to 6.5	Y	L1-2
80	13.5 to 50	1 to 8	Y	L1-3
100	17 to 60	1.5 to 10.5	Y	L1-4

2 Change of rotation range

Symbols: -XC8 to XC11

CRA1 →Refer to the "How to Order" on p.1.4-29. — XC8

• Symbol
XC8 to -XC11

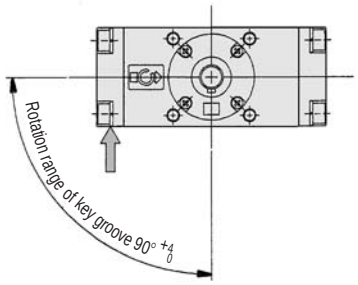
Specification

Applicable size	50, 63, 80, 100
Applicable shaft style	Shaft S, W, Y

The patterns with the rotation angle of 90° and 180° are applicable to the respective patterns with the rotation angles of 100° and 190° of the Made to order specifications.

Symbol: C8

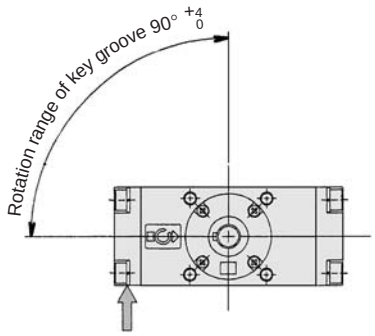
The rotation range is changed.



Note) If it is pressurized from the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C9

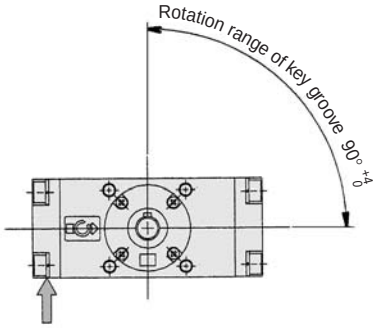
The rotation range is changed.



Note) If it is pressurized from the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C10

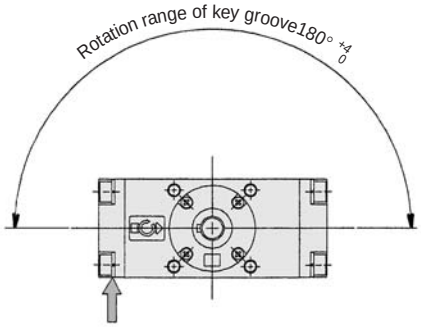
The rotation range is changed.



Note) If it is pressurized from the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C11

The rotation range is changed.



Note) If it is pressurized from the port indicated with the arrow, the shaft rotates in the clockwise direction.

Series CRA1
Made to Order Specifications
Reverse Mounting of Rotation Shaft (Size: 50 to 100) /-XC7
Change of Rotation Range (Size: 30 to 100) /-XC30

Consult SMC for further information on specifications, dimensions and delivery.

3 Reverse mounting of rotation shaft

Symbol: -XC7

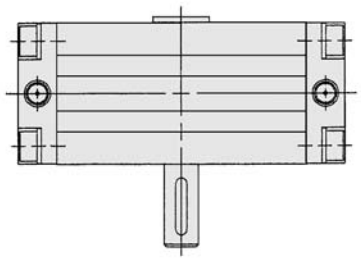
CRA1 →Refer to p.1.4-23 for "How to Order". — XC7

Reverse mounting of rotation shaft (-XC7)

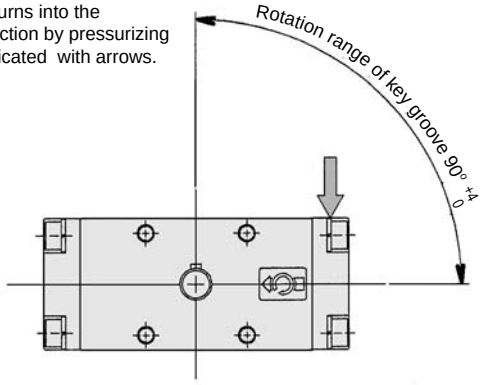
Specifications

Applicable size	**50, 63, 80, 100**
Applicable shaft style	Shaft S, W, X, T, J

Symbol: C7



Note) Shafts turns into the clockwise direction by pressurizing to the port indicated with arrows.



4 Fluorine grease

Symbol: -XC30

CRA1 →Refer to p.1.4-23 for "How to Order". — XC30

Fluorine grease

Lubricant oil in the seal part of packing and inner wall of the cylinder is changed to fluorine type.

Specifications

Applicable size	**30, 50, 63, 80, 100**
Applicable shaft style	S, W, X, Y, Z, T, J, K

∗Refer to p.1.4-3 for other specifications.
∗∗Except for air-hydro type.

Change of Rotation Range and Rotation Direction of Shaft/-XC31 to -XC36

Consult SMC for further information on specifications, dimensions and delivery.

5 Change of the rotation range and the rotation direction of shaft

Symbols
-XC31 to XC36

CRA1 →Refer to the "How to Order" on p.1.4-23. **—XC31**

Specification

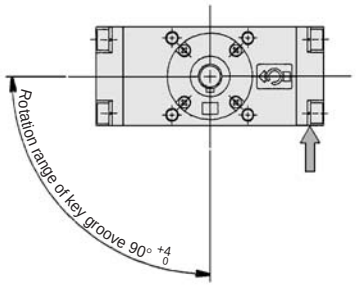
Applicable size	**50, 63, 80, 100**
Applicable shaft style	Shaft S, W, Y

•The rotation range and the rotation direction of the shaft are changed. (-XC31 to -XC36)

The patterns with the rotation angle of 90° and 180° are applicable to the respective patterns with the rotation angles of 100° and 190° of the Made to order specification.

Symbol: C31

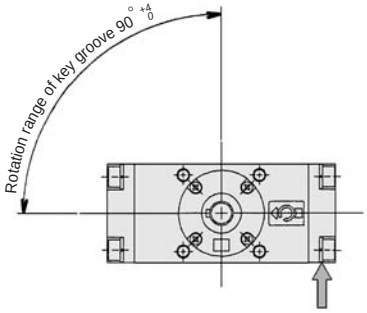
The rotation range is changed and the rotating direction is reversed.



Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C32

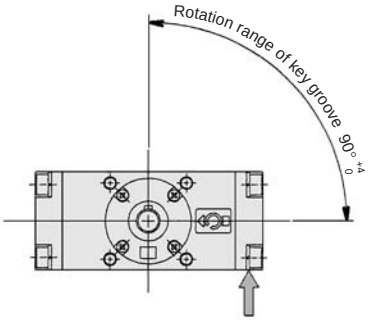
The rotation range is changed and the rotating direction is reversed.



Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C33

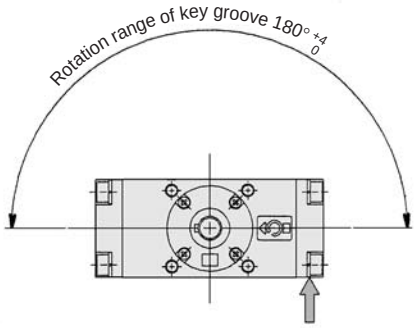
The rotation range is changed and the rotating direction is reversed.



Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C34

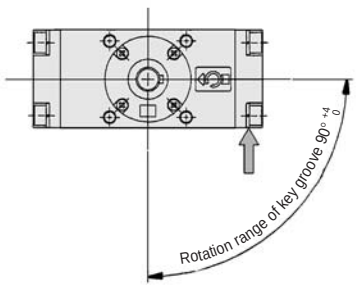
The rotation range is changed and the rotating direction is reversed.



Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C35

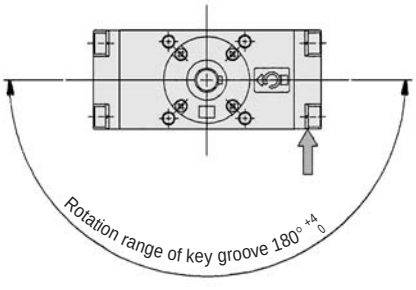
The rotation range is changed and the rotating direction is reversed.



Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C36

The rotation range is changed and the rotating direction is reversed.



Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Consult SMC for further information on specifications, dimensions and delivery.

6 Change of rotation range and the angle adjusting direction

Symbols

-XC37 to XC42

CRA1 →Refer to the "How to Order" on p.1.4-23. **—XC37**

Specification

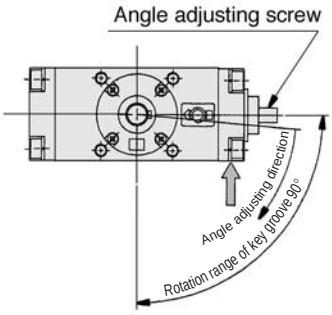
Applicable size	**50, 63, 80, 100**
Applicable shaft style	Shaft S, W, Y

• The rotation range and the angle adjusting direction are changed. (-XC37 to XC42)

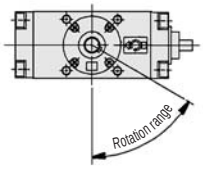
The patterns with the rotation angle of 90° and 180° are applicable to the respective patterns with the rotation angles of 100°and 190° of the Made to order specification.

Symbol: C37

The rotation range and the angle adjusting direction of the angle adjustable style are changed.



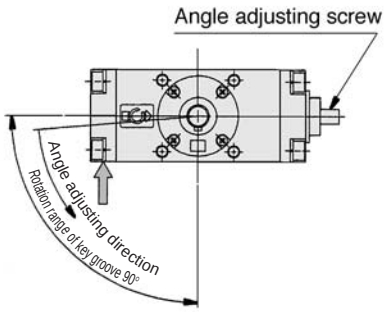
The rotation range under the adjustment of an angle at 60° is indicated below.



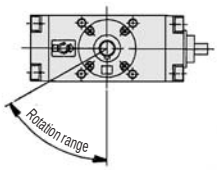
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C38

The rotation range and the angle adjusting direction of the angle adjustable style are changed.



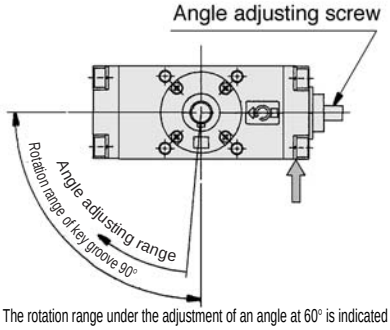
The rotation range under the adjustment of an angle at 60° is indicated below.



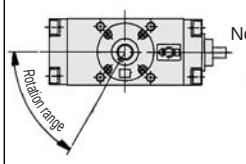
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C39

The rotation range and the angle adjusting direction of the angle adjustable style are changed.



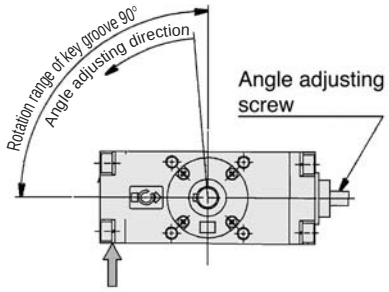
The rotation range under the adjustment of an angle at 60° is indicated below.



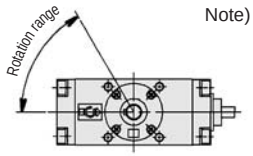
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C40

The rotation range and the angle adjusting direction of the angle adjustable style are changed.



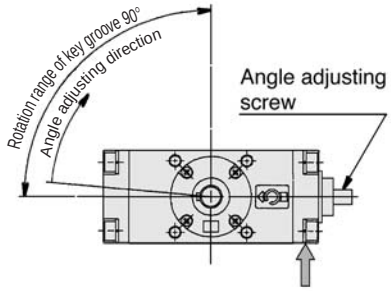
The rotation range under the adjustment of an angle at 60° is indicated below.



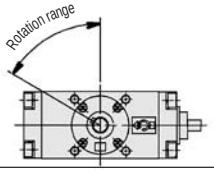
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C41

The rotation range and the angle adjusting direction of the angle adjustable style are changed.



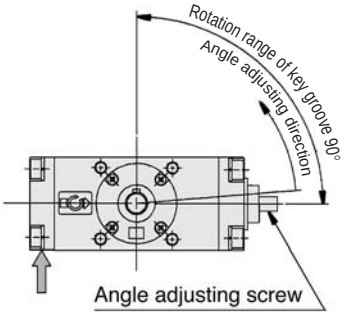
The rotation range under the adjustment of an angle at 60° is indicated below.



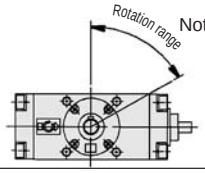
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C42

The rotation range and the angle adjusting direction of the angle adjustable style are changed.



The rotation range under the adjustment of an angle at 60° is indicated below.



Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Consult SMC for further information on specifications, dimensions and delivery.

6 Change of rotation range and angle adjusting direction

Symbols

-XC43 to XC46

CRA1 **→Refer to the "How to Order" on p.1.4-23.** **—XC43**

Specification

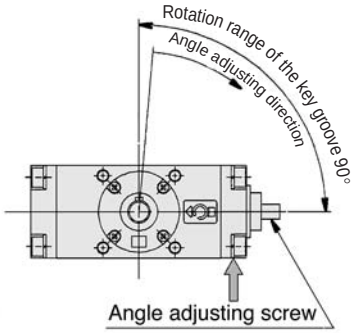
Applicable size	**50, 63, 80, 100**
Applicable shaft style	Shaft S, W, Y

- **The rotation range and the angle adjusting direction are changed. (-XC43 to XC46)**

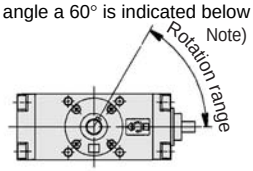
The patterns with the rotation angle of 90° and 180° are applicable to the respective patterns with the rotation angles of 100° and 190° of the Made to order specification.

Symbol: C43

The rotation range and the angle adjusting direction of the angle adjustable style are changed.



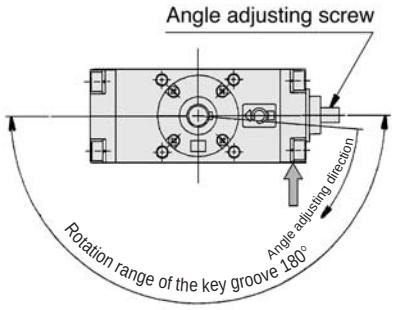
The rotation range under the adjustment of an angle a 60° is indicated below



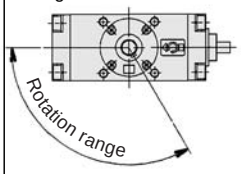
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C44

The rotation range and the angle adjusting direction of the angle adjustable style are changed.



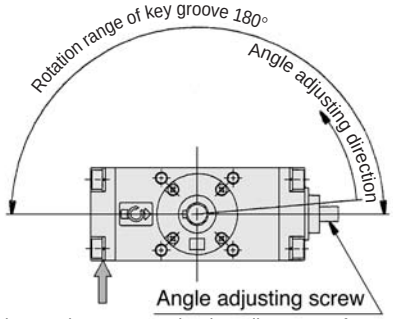
The rotation range under the adjustment of an angle at 120° is indicated below



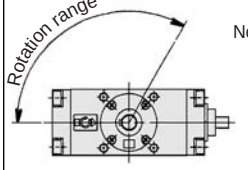
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C45

The rotation range and the angle adjusting direction of the angle adjustable style are changed.



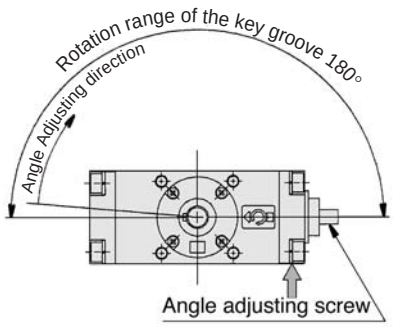
The rotation range under the adjustment of an angle at 120° is indicated below



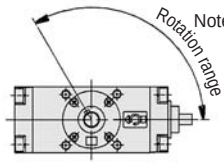
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C46

The rotation range and the angle adjusting direction of the angle adjustable style are changed.



The rotation range under the adjustment of an angle at 120° is indicated below



Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Change of Rotation Range and Angle Adjusting Direction (Angle adjusting screw moved to the left) /-XC47 to XC52

Consult SMC for further information on specifications, dimensions and delivery.

7 Change of rotation range and angle adjusting direction (Angle adjusting screw moved to the left)

Symbols

-XC47 to XC52

CRA1 →Refer to the "How to Order" on p.1.4-23. **—XC47**

Specification

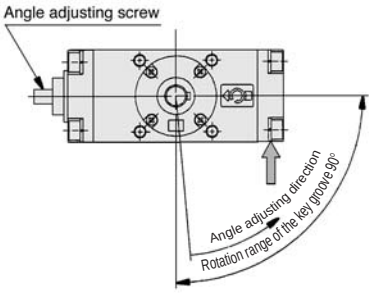
Applicable size	**50, 63, 80, 100**
Applicable shaft style	Shaft S, W, Y

- **The rotation range and the angle adjusting direction are changed. (-XC47 to XC52)**

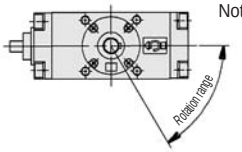
The patterns with the rotation angle of 90° and 180° are applicable to the respective patterns with the rotation angles of 100° and 190° of the Made to order specification.

Symbol: C47

For the angle adjusting style, angle adjusting screws are mounted to the left cover.



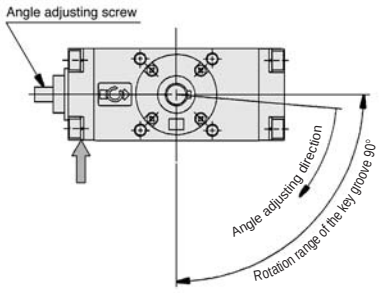
The rotation range under the adjustment of an angle at 60° is indicated below



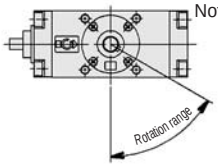
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C48

For the angle adjusting style, angle adjusting screws are mounted to the left cover.



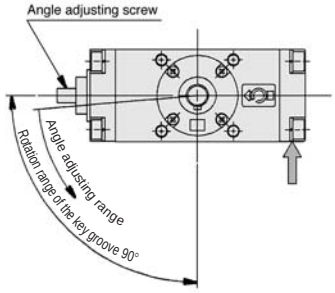
The rotating range under the adjustment of an angle at 60° is indicated below



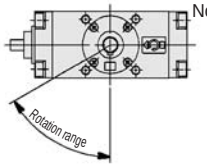
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C49

For the angle adjusting style, angle adjusting screws are mounted to the left cover.



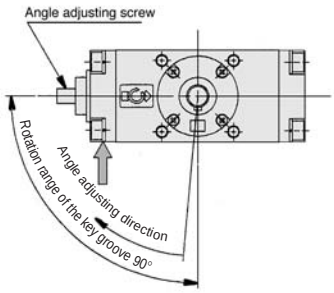
The rotating range under the adjustment of an angle at 60° is indicated below



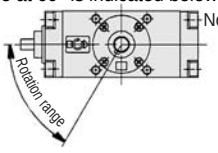
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C50

For the angle adjusting style, angle adjusting screws are mounted to the left cover.



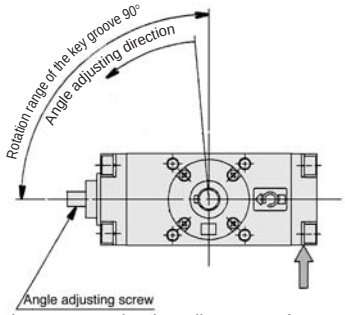
The rotation range under the adjustment of an angle at 60° is indicated below



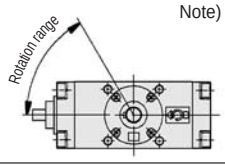
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C51

For the angle adjusting style, angle adjusting screws are mounted to the left cover.



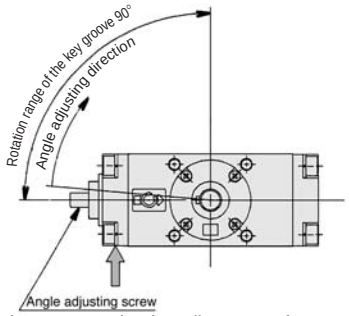
The rotation range under the adjustment of an angle at 60° is indicated below



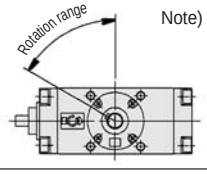
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C52

For the angle adjusting style, angle adjusting screws are mounted to the left cover.



The rotation range under the adjustment of an angle at 60° is indicated below



Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Change of Rotation Range and Angle Adjusting Direction (Angle adjusting screw moved to the left.) /-XC53 to XC58

Consult SMC for further information on specifications, dimensions and delivery.

7 Change of rotation range and angle adjusting direction (Angle adjusting screw moved to the left)

Symbols

-XC53 to XC58

CRA1 →Refer to the "How to Order" on p.1.4-23. **—XC53**

Specification

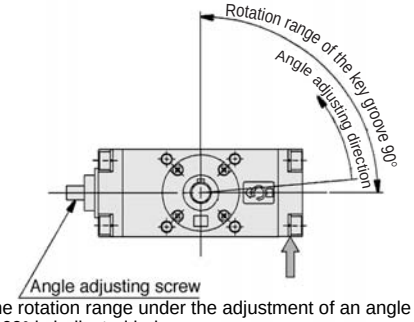
Applicable size	**50, 63, 80, 100**
Applicable shaft style	Shaft S, W, Y

- **The rotation range and the angle adjusting direction of the shaft are changed. (-XC53 to XC58)**

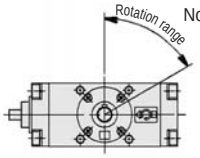
The patterns with the rotation angle of 90° and 180° are applicable to the respective patterns with the rotation angles of 100° and 190° of the Made to order specification.

Symbol: C53

For the angle adjusting style, angle adjusting screws are mounted to the left cover.



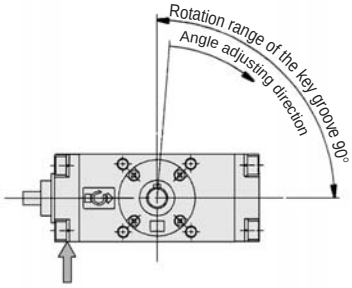
The rotation range under the adjustment of an angle at 60° is indicated below.



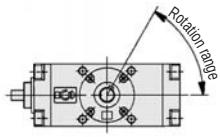
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C54

For the angle adjusting style, angle adjusting screws are mounted to the left cover.



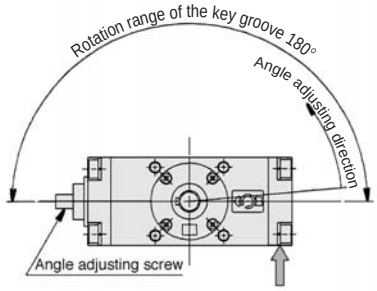
The rotation range under the adjustment of an angle at 60° is indicated below.



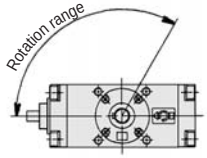
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C55

For the angle adjusting style, angle adjusting screws are mounted to the left cover.



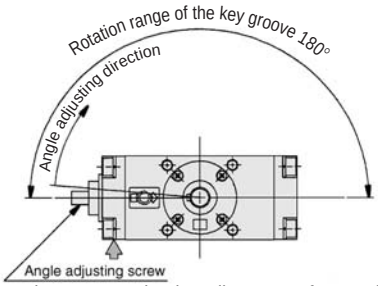
The rotation range under the adjustment of an angle at 120° is indicated below.



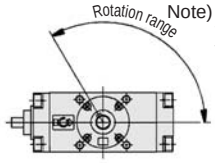
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C56

For the angle adjusting style, angle adjusting screws are mounted to the left cover.



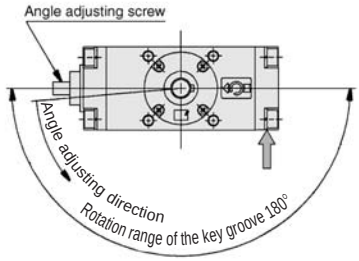
The rotation range under the adjustment of an angle at 120° is indicated below.



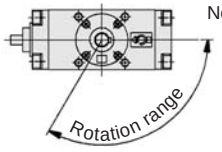
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C57

For the angle adjusting style, angle adjusting screws are mounted to the left cover.



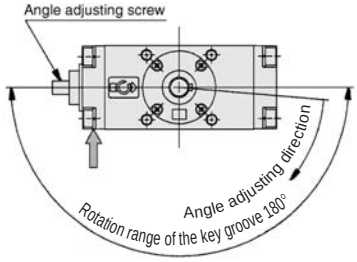
The rotation range under the adjustment of an angle at 120° is indicated below.



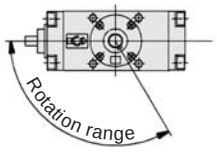
Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Symbol: C58

For the angle adjusting style, angle adjusting screws are mounted to the left cover.



The rotation range under the adjustment of an angle at 120° is indicated below.



Note) If it is pressurized to the port indicated with the arrow, the shaft rotates in the clockwise direction.

Series CRA1
Made to Order Specifications
Change of Port Position (Size 30 to 100)/-XA59 to XA61
Reverse Auto Switch Mounting (Size 50 to 100) /-XC62

Consult SMC for further information on specifications, dimensions and delivery.

8 Change of port position (Mounting location of the cover is changed.)

Symbols

-XC59 to XC61

CRA1 →Refer to the "How to Order" on p.1.4-23. **—XC59**

- **Port position is changed. (-XC59 to -XC61)**

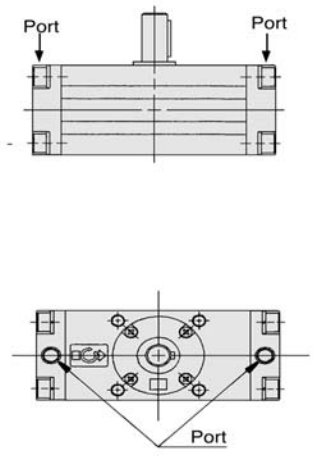
Specification *Except for the solenoid valve equipped style.

Applicable size	30, 50, 63, 80, 100
Applicable shaft style	Shaft S, W, X, Y, Z, T, J, K

The patterns with the rotation angle of 90° and 180° are applicable to the respective patterns with the rotation angles of 100° and 190° of the Made to order specification.
For the bumper equipped type, the needle position is on the opposite side of the port.

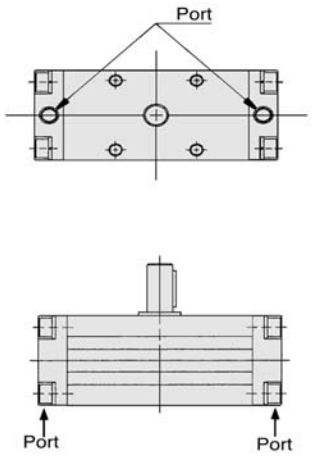
Symbol: C59

Direction of the port is changed. (upwards)



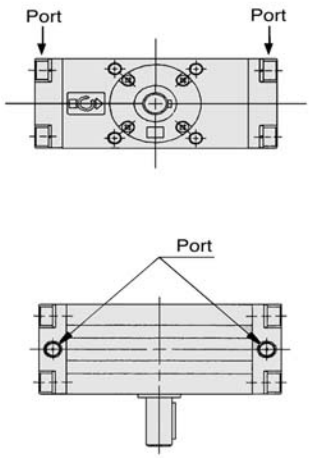
Symbol: C60

Direction of the port is changed. (downwards)



Symbol: C61

Direction of the port is changed. (backwards)



9 Reverse mounting of the auto switch against the standard

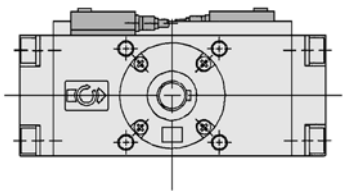
Symbol

-XC62

CRA1 →Refer to the "How to Order" auto switch equipped type on p.1.4-11. **—XC62**

Symbol: C62

The auto switch is reverse mounted to the standard.



Series CRA1 (Size 50 to 100)
Made to Order Specifications
One Side Air-hydro, One Side Air Style/-XC63 to XC64

Consult SMC for further information on specifications, dimensions and delivery.

10 One side air-hydro, One side air style

Symbols

-XC63, -XC64

CRA1 →Refer to the "How to Order" on p.1.4-23. **—XC63**

Specifications

Applicable size	50, 63, 80, 100
Applicable shaft style	Shaft S, W, X, Y Z, T, J, K

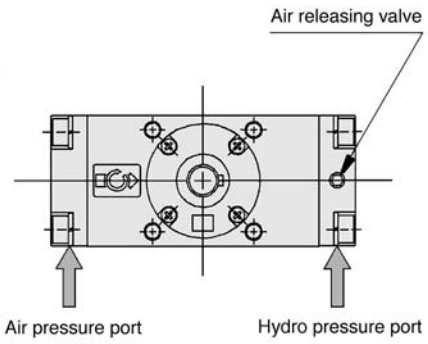
∗Except for the solenoid valve equipped type, angle adjustable type and air cushion equipped type.

• One side air-hydro, One side air
-XC63: Left side air
Right side air-hydro
-XC64: Left side air-hydro
Right side air

The patterns with the rotation angle of 90°and 180° are applicable to the respective patterns with the rotation angles of 100°and 190° of the Made to order specification.

Symbol: C63

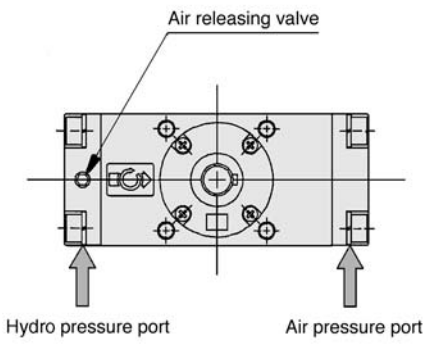
One side air, one side air-hydro specifications (Left side air, right side hydro)



The figure shows the pressurized situation to the hydro pressure port.

Symbol: C64

One side air, one side air-hydro specifications (Left side hydro, right side air)



The figure shows the pressurized situation to the air pressure port.

Consult SMC for further information on specifications, dimensions and delivery.

11 **Without key groove (Shaft style variations)**

Symbols

Shaft style: T, J, K

Refer to "How to Order" on p.1.4-2 and 1.4-11 for further information.

C□RA1 | **Mounting** | **Shaft style** | **30** | **Rotation**

Shaft style

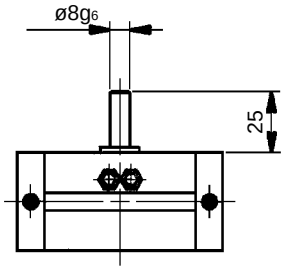
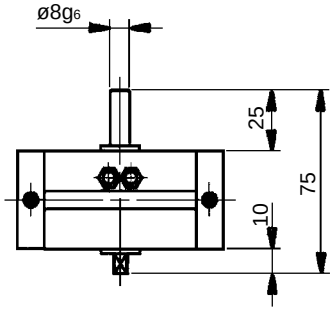
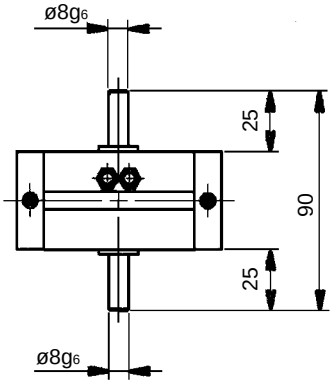
T	Single round shaft
J	Double shaft (Long shaft without key & with four chamfers)
K	Double round shaft

Specifications

Style	Pneumatic*
Size	**30**
Shaft style	Single round rod end (T), Double round rod end (K), Double rod end/(w/o long rod end key & with four chamfers) (J)
Cushion	Without cushion
Auto switch	Mountable
Mounting style	Basic, Foot

*Refer to p.1.4-3 for other specifications.

Dimensions (mm)

Shaft style	**T** (Single round shaft)	**J** (Double round shaft/Long shaft without key & with four chamfers)	**K**(Double round shaft)
Shape			

Series CRA1 (Size 50 to 100)
Made to Order Specifications
Without Key Groove (Shaft Style Variations)/Shaft Style: T, J, K

Consult SMC for further information on specifications, dimensions and delivery.

12 Without key groove (Shaft Variations)

Symbols

Shaft style: T, J, K

C□RA1 | Mounting | Shaft style | Size | Rotation | |

Air cushion

—	Without cushion
C	With air cushion

Refer to "How to Order" on p.1.4-2, 1.4-11, 1.4-16.

Shaft style

T	Single round shaft
J	Double shaft (Long shaft without key and with four chamfers)
K	Double round shaft

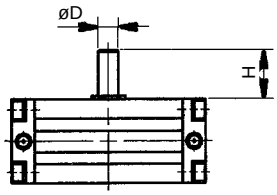
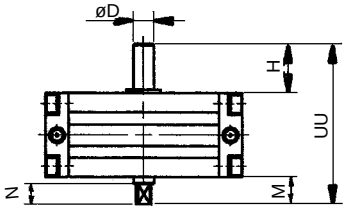
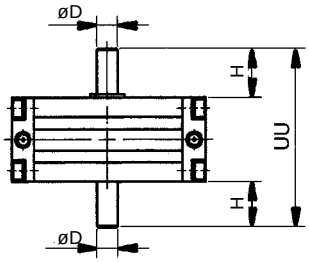
Speicifications

Style	Pneumatic	Air-hydro
Size	50, 63, 80, 100	
Fluid	Air (Non-lube)	Hydric oil
Shaft style	Single round shaft (T), Double round shaft (K), Double shaft/Long shaft without key and with four chamfers (J)	
Cushion	Not attached	Not attached
Auto switch	Mountable	
Mounting style	Basic, Foot	

Note) Except for flange style.
∗Refer to p.1.4-3 for other specifications.

Dimensions

(mm)

Shaft style	T(Single round shaft)		J(Double shaft/Long shaft without key & with four chamfers)					K(Double round shaft)		
Shape										
Size	D(g6)	H	D(g6)	H	M	N	UU	D(g6)	H	UU
50	15	36	15	36	20	15	118	15	36	134
63	17	41	17	41	22	17	139	17	41	158
80	20	50	20	50	25	20	167	20	50	192
100	25	60	25	60	30	25	202	25	60	232

∗ Refer to p.1.4-9 and 1.4-10 for other specifications.

Series CRA1 (Size 30)
Made to Order Specifications
Shaft Variations/Shaft Style: S, X, Y, Z

Consult SMC for further information on specifications, dimensions and delivery.

13 Shaft variations

Symbols

Shaft style: S, X, Y, Z

C□RA1 **Mounting** **Shaft style** 30 **Rotation**

Refer to "How to Order" on p.1.4-2 and 1.4-11.

Shaft style

S	Single shaft key
X	Single shaft with four chamfers
Y	Double shaft key
Z	Double shaft with four chamfers

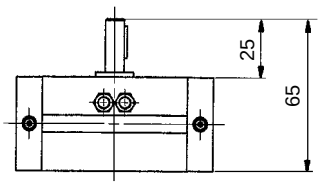
Six shaft types other than standard shaft type W (Double shaft) of size 30 are made into patterns.

Specifications

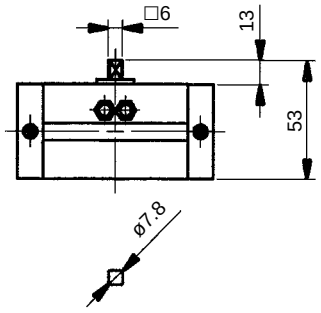
Style	Pneumatic
Size	**30**
Max. operating pressure	1MPa
Min. operating pressure	0.1MPa
Shaft style	Single shaft key (S), Double shaft with four chamfers (X), Double shaft key (Y), Double shaft with four chamfers (Z)
Mounting	Basic, Foot
Auto switch	Mountable

∗Refer to p.1.4-3 for other specifications.

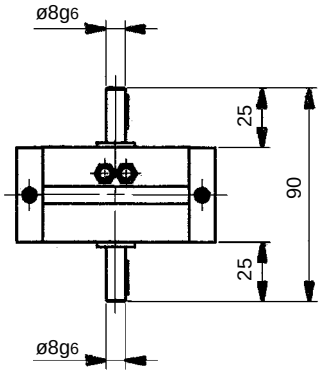
S(Single shaft key)



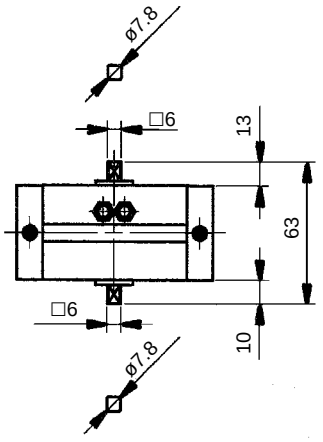
X(Single shaft with four chamfers)



Y(Double shaft key)



Z(Double shaft with four chamfers)



Series CRA1
Made to Order Specifications
Stainless Steel for Main Part/-X6
Heat Resistant Style/-X7

Consult SMC for further information on specifications, dimensions and delivery.

14 Stainless steel for main part

Symbol: **-X6**

C□RA1 | Refer to the "How to Order" on p.1.4-2, 1.4-11. | S — X6

Stainless steel for main part

For applications in areas that pose a risk of rust or corrosion, a portion of the materials used in the standard parts has been changed to stainless steel.

Specifications

Style	Pneumatic
Size	**30, 50, 63, 80, 100**
Fluid	Air (Non-lube)
Max. operating pressure	1MPa
Min. operating pressure	0.1MPa
Stainless steel part	Shaft, Bolt, Parallel key
Cushion	30—Without cushion 50 to 100—With or without air cushion
Auto switch	Mountable

∗Specifications other than indicated above are the same as that shown on p.1.4-3.
∗∗Except for the angle adjustable style.

15 Heat resistant style

Symbol: **-X7**

CRA1 | Refer to the "How to Order" on p.1.4-2 and 1.4-16. | — X7

Heat resistant style

In this rotary actuator, the material of the seals has been changed to the heat resistant type (to withstand up to 100°C), for applications in environments that exceed the standard specification temperatures of 0 to 60°C.

Specifications

Style	Pneumatic
Size	**30, 50, 63, 80, 100**
Rotation	90°, 180° (Size 30 to 100) 100°, 190° (Size 50 to 100)
Ambient and fluid temperature	0 to 100°C
Lubrication	ISO VG32
Seal material	Fluorine rubber
Shaft style	Single shaft, Double shaft, Single shaft with four chamfers, double shaft key, Double shaft four chamfers Double round shaft, Double shaft (Round shaft, With four chamfers), Double round shaft
Cushion	30 — Without cushion 50 to 100 —With or without air cushion
Auto switch	Not mountable

∗Specifications other than indicated above are the same as that shown on p.1.4-3.
∗∗Except for models with solenoid valve.

16 Fluorine rubber seal

Symbol: **-X16**

CDRA1 | Refer to the "How to Order" on p.1.4-11 and 1.4-16. | – X16

Fluorine rubber seal

Seal is now changed to fluoro rubber.

Specifications

Style	Pneumatic
Size	**30, 50, 63, 80, 100**
Fluid	Air (No lubrication)
Max. operating pressure	1MPa
Min. operating pressure	0.1MPa
Ambient and fluid temperature	0°C to 60°C (No condensation)
Seal material	Fluorine rubber
Cushion	30 — Not equipped 50 to 100 — Note equipped, With air cushion
Auto switch	Mountable

∗Specifications other than indicated above are the same as that shown on p.1.4-3.
∗∗Except for models with solenoid valve.

Series CRA1
Made to Order Specifications
Both Sides Angle Adjustable Style/-X10
One Side Angle Adjustable, One Side Cushion Style/-X11

Consult SMC for further information on specifications, dimensions and delivery.

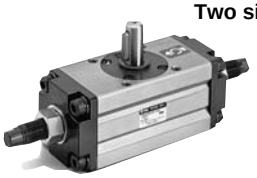
17 Both sides angle adjustable Style

Symbol **-X10**

Refer to "How to Order" on p.1.4-16.

C□RA1 | Mounting | Shaft style | U | Size | Rotation | U-X10

Two sides angle adjustable style

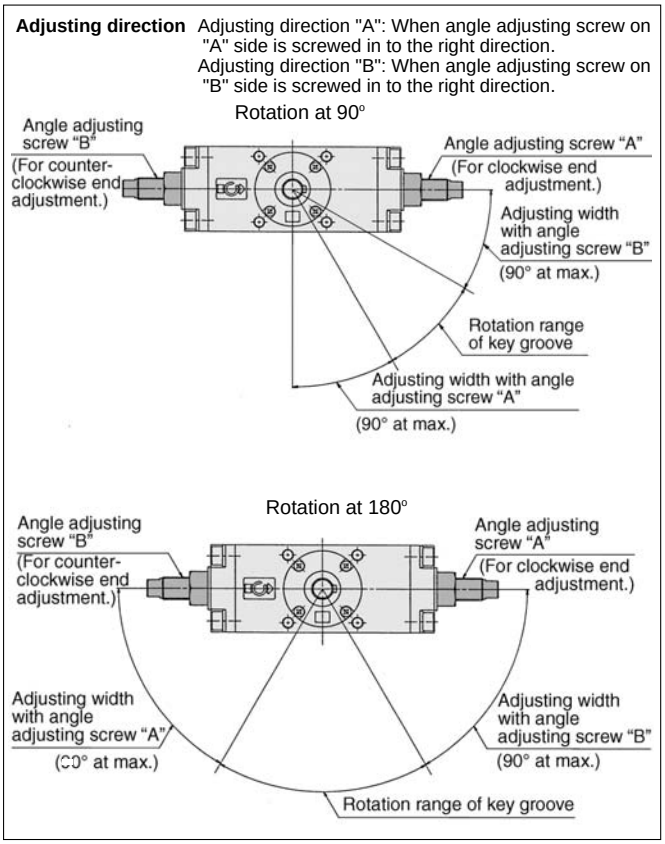


Sepecifications

Style	Pneumatic
Size	**50, 63, 80, 100**
Rotation	90°, 180°,100°,190°
Shaft style	Single shaft (S), Double shaft (W), Single shaft with four chamfers (X), Double shaft key (Y), Double shaft with four chamfers (Z), Single round shaft (T), Double shaft/Round shaft, four chamfers (J), Double round shaft (K)
Cushion	Without cushion
Variations	With auto switch, With solenoid valve

∗Refer to p.1.4-3 for other specifications.

Adjusting direction Adjusting direction "A": When angle adjusting screw on "A" side is screwed in to the right direction.
Adjusting direction "B": When angle adjusting screw on "B" side is screwed in to the right direction.



18 One side angle adjustable, One side cushion style

Symbol **-X11**

Refer to "How to Order" on p.1.4-16.

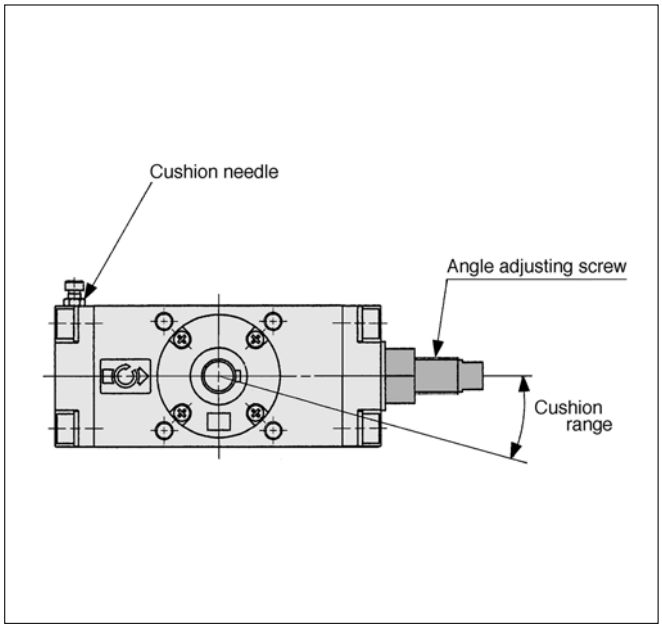
C□RA1 | Mounting | Shaft style | U | Size | Rotation | C-X11

One side angle adjuster and one side cushion style

Sepecifications

Type	Pneumatic
Size	**50, 63, 80, 100**
Rotation	90°, 180°,100°,190°
Shaft type	Single shaft (S), Double shaft (W), Single shaft with four chamfers (X), Double shaft key (Y), Double shaft with four chamfers (Z), Single round shaft (T), Double shaft/Round shaft, Four chamfers (J), Double round shaft (K)
Cushion	With cushion on one side
Auto switch	Mountable
Variations	With auto switch, With solenoid valve

∗Refer to p.1.4-3 for other specifications.



∗ Refer to p.1.4-9 and 1.4-10 for dimensions.