

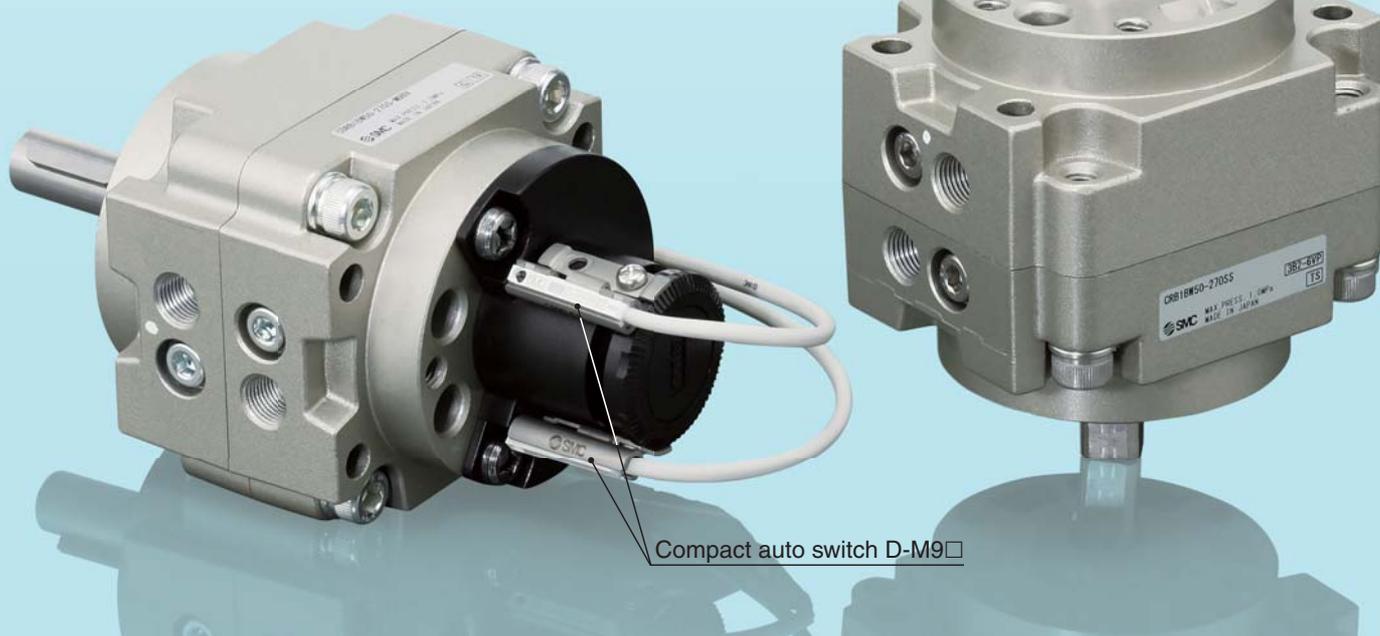
Vane Type Rotary Actuator

50, 63, 80, 100

New

New

Compact auto switches
are mountable! (D-M9□)



Compact auto switch D-M9□

Stainless steel specification for main parts

Made to Order

Size: 50, 63, 80, 100

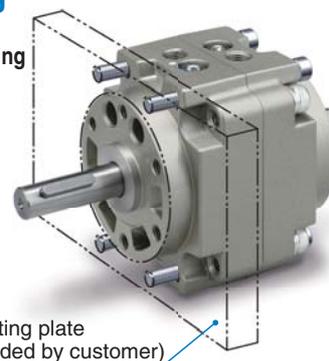


Two different port locations (side and axial) are available.



Mounting

Direct mounting



Foot mounting



Series **CRB1**



CAT.EUS20-247A-UK

Basic type
Series CRB1



Series Variations

		Fluid	Air																		
		Size	50				63				80				100						
	Vane type	S: Single vane D: Double vane		S		D		S		D		S		D		S		D			
	Port location	Side ported (—) Axial ported (E)		Side ported	Axial ported																
Standard	Rotating angle	90°		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		180°		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
		270°		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
		Semi-standard	100°		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
			190°		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
			280°		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Shaft type	Double shaft	W	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Cushion	Rubber bumper		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Variations	Basic type		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
		With auto switch		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
With One-touch fittings		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Clean series		10-	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Copper-free and fluorine-free		20-	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Option	Mounting	With foot bracket	L	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Made to Order	Material	Stainless steel specification for main parts		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	Shaft type	Double shaft type	Double shaft (Long shaft with four chamfers)	J	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
			Double shaft with four chamfers	Z	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
			Double shaft key	Y	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
			Double round shaft	K	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	Single shaft type	Single shaft key	S	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		Single round shaft	T	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		Single shaft with four chamfers	X	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Pattern	Shaft pattern		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
		Rotation pattern		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	

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CRB1

Simple Specials

Made to Order

Auto Switch Mounting

Vane Type Rotary Actuator

Series CRB1

Size: 50, 63, 80, 100

How to Order

Basic type

With auto switch

With auto switch
(With auto switch unit and built-in magnet)
* Refer to page 26 when the auto switch unit is needed separately.

Mounting

B	Basic
L	Foot

Refer to Table (1) below when foot bracket assembly is required separately.

Table (1): Foot Bracket Assembly Part Number

Model	Assembly part no.
CRB1LW50	P411020-5
CRB1LW63	P411030-5
CRB1LW80	P411040-5
CRB1LW100	P411050-5

CRB1 B W 80 - 90 S

CDRB1 B W 80 - 90 S - M9B L

Size

50
63
80
100

Shaft type

W Double shaft (Long shaft key & Four chamfers)

Rotating angle

Classification	Symbol	Single vane	Double vane
Standard	90	90°	90°
	180	180°	—
	270	270°	—
Semi-standard	100	100°	100°
	190	190°	—
	280	280°	—

Vane type

S	Single vane
D	Double vane

Connecting port location

—	Side ported
E	Axial ported

Auto switch

—	Without auto switch (Built-in magnet)
M	Without D-M9 type auto switch (Built-in magnet)

* For applicable auto switch model, refer to the table below.
** The operating range and hysteresis of the D-M9□ are different from those of the other auto switches. For details, refer to page 26.

Made to Order or Port thread type
Refer to pages 15 to 17, 24 and 25 for details about Made to Order specifications.

—	Rc
-XF*	G
-XN*	NPT

* Combination with Made to Order is not available.

Number of auto switches

S	1 pc.*
—	2 pcs.**

* S: A right-hand auto switch is shipped.
** —: A right-hand switch and a left-hand switch are shipped.

Electrical entry/Lead wire length

—	Grommet/Lead wire: 0.5 m
M	Grommet/Lead wire: 1 m
L	Grommet/Lead wire: 3 m
CN	Connector/Without lead wire
C	Connector/Lead wire: 0.5 m
CL	Connector/Lead wire: 3 m

* Connectors are available only for the R73, R80, T79.
** Lead wire with connector part nos.
D-LC05: Lead wire 0.5 m
D-LC30: Lead wire 3 m
D-LC50: Lead wire 5 m

Applicable Auto Switches/Refer to the Auto Switch Guide for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire type	Lead wire length [m]					Pre-wired connector	Applicable load	
					DC	AC	Perpendicular	In-line		0.5 (—)	1 (M)	3 (L)	5 (Z)	None (N)		IC circuit	Relay, PLC
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	—	○		
				3-wire (PNP)				M9PV	M9P	●	●	●	○	—	○		
				2-wire				M9BV	M9B	●	●	●	○	—	○		
				3-wire (NPN)				—	S79	●	●	●	○	—	○	IC circuit	
				3-wire (PNP)				—	S7P	●	—	●	○	—	○		
Reed auto switch	—	Connector	No	2-wire	24 V	12 V	100 V	—	T79	●	—	●	○	—	○	—	
				—				T79C	●	—	●	●	—	—			
				Grommet				—	R73	●	—	●	○	—	—	—	
				Connector				—	R73C	●	—	●	●	—	—		
				Grommet				48 V, 100 V	100 V	—	R80	●	—	●	○		
Connector	—	24 V or less	—	R80C	●	—	●	●	—								

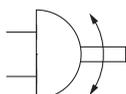
* Lead wire length symbols: 0.5 m — (Example) R73C
 3 m L (Example) R73CL
 5 m Z (Example) R73CZ
 None N (Example) R73CN

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

- Excellent reliability and durability. The use of bearings to support thrust and radial loads improves reliability and durability.
- The body of the rotary actuator can be mounted directly.
- Two different port locations (side and axial) are available.



Symbol



Refer to pages 26 to 28 for actuators with auto switches.

- Auto switch unit and switch block unit
- Operating range and hysteresis
- How to change the auto switch detecting position
- Auto switch mounting
- Auto switch adjustment

Made to Order
Made to Order
 (For details, refer to pages 15 to 17, 24 and 25.)

Symbol	Description
XA1 to XA24	Shaft type pattern
XC1	Addition of connection port
XC4	Change of rotating angle
XC5	Change of rotating angle
XC6	Change of rotating angle
XC7	Reversed shaft
XC26	Change of rotating angle
XC27	Change of rotation range and direction
XC30	Fluorine grease

Specifications

Size	50	63	80	100	50	63	80	100	
Vane type	Single vane (S)				Double vane (D)				
Rotating angle	Standard	90° ⁺⁴ ₀ , 180° ⁺⁴ ₀ , 270° ⁺⁴ ₀				90° ⁺⁴ ₀			
	Semi-standard	100° ⁺⁴ ₀ , 190° ⁺⁴ ₀ , 280° ⁺⁴ ₀				100° ⁺⁴ ₀			
Fluid	Air (Non-lube)								
Proof pressure	1.5 MPa								
Ambient and fluid temperature	5 to 60 °C								
Max. operating pressure	1.0 MPa								
Min. operating pressure	0.15 MPa								
Rotation time adjustment range	0.1 to 1 s/90°								
Allowable kinetic energy	0.082 J	0.12 J	0.398 J	0.6 J	0.112 J	0.16 J	0.54 J	0.811 J	
Shaft load	Allowable radial load	245 N	390 N	490 N	588 N	245 N	390 N	490 N	588 N
	Allowable thrust load	196 N	340 N	490 N	539 N	196 N	340 N	490 N	539 N
Bearing	Bearing								
Port location	Side ported or Axial ported								
Port size	Side ported	1/8		1/4		1/8		1/4	
	Axial ported	1/8		1/4		1/8		1/4	
Mounting	Basic, Foot								

Volume

Classification	Rotating angle	Single vane (S)				Double vane (D)			
		50	63	80	100	50	63	80	100
Standard	90°	30	70	88	186	48	98	136	272
	180°	49	94	138	281	—	—	—	—
	270°	66	118	188	376	—	—	—	—
Semi-standard	100°	32	73	93	197	52	104	146	294
	190°	51	97	143	292	—	—	—	—
	280°	68	121	193	387	—	—	—	—

Weight

Model	Rotating angle	Single vane (S)				Double vane (D)			
		50	63	80	100	50	63	80	100
Main body	90°	810	1365	2070	3990	830	1410	2120	4150
	180°	790	1330	2010	3880	—	—	—	—
	270°	770	1290	1950	3760	—	—	—	—
	100°	808	1360	2065	3980	822	1400	2100	4100
	190°	788	1325	2005	3870	—	—	—	—
	280°	766	1285	1940	3735	—	—	—	—
Auto switch unit + 2 auto switches		65	85	95	165	65	85	95	165
Foot bracket assembly		384	785	993	1722	384	785	993	1722

Mounting Bracket Assembly Part No.

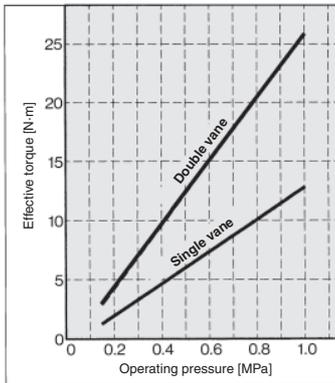
Model		Foot bracket assembly part number	Description
Basic type	With auto switch		
CRB1LW50	CDRB1LW50	P411020-5	· 2 foot brackets · 8 mounting bolts · 8 mounting nuts · 8 washers
CRB1LW63	CDRB1LW63	P411030-5	
CRB1LW80	CDRB1LW80	P411040-5	
CRB1LW100	CDRB1LW100	P411050-5	

* Refer to page 12 for detailed dimensions.

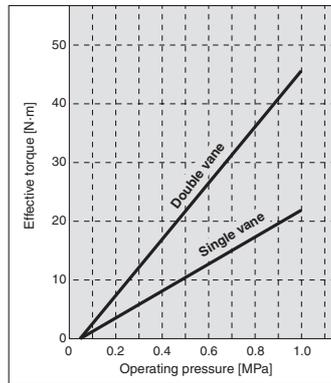
Series CRB1

Effective Output

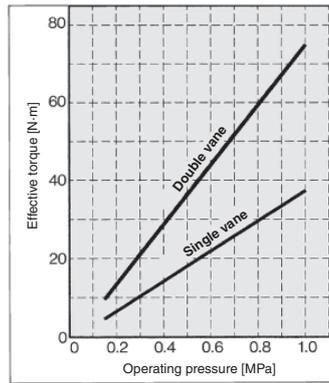
Size: 50



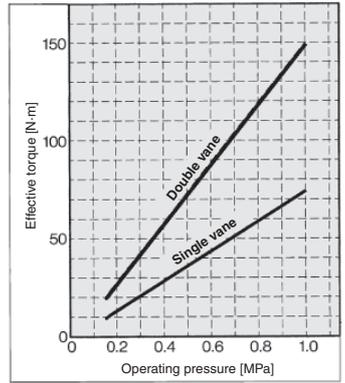
Size: 63



Size: 80



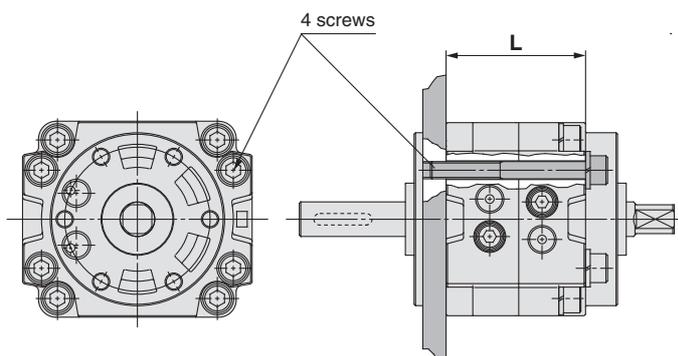
Size: 100



Key Position and Rotation Range (Top View from Long Shaft Side) Key positions in the figures below show the intermediate rotation position when A or B port is pressurised.

	Single vane type			Double vane type
	90°	180°	270°	90°
Standard				
Semi-standard				

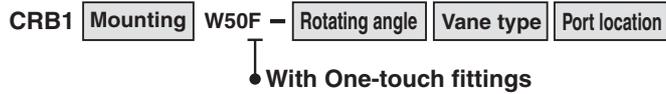
Direct Mounting of Body



Reference Screw Size

Size	L	Screw
50	48	M 6
63	52	M 8
80	60	M 8
100	80	M10

With One-touch Fittings



With One-touch fittings facilitate the piping work and greatly reduce the installation space.

Specifications

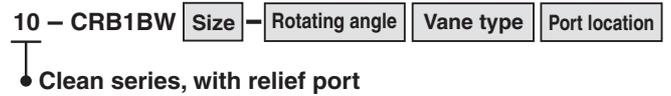
Vane type	Single vane	Double vane
Size	50	
Operating pressure range [MPa]	0.15 to 1.0	
Speed regulation range [s/90°]	0.1 to 1	
Port location	Side ported or Axial ported	
Piping	With One-touch fittings	
Mounting	Basic, Foot	
Variations	Basic type, With auto switch	

Applicable Tubing and Size

Applicable tubing O.D./I.D. [mm]	Ø 6/Ø 4
Applicable tubing material	Nylon, Soft nylon, Polyurethane

Refer to page 13 for external dimensions.

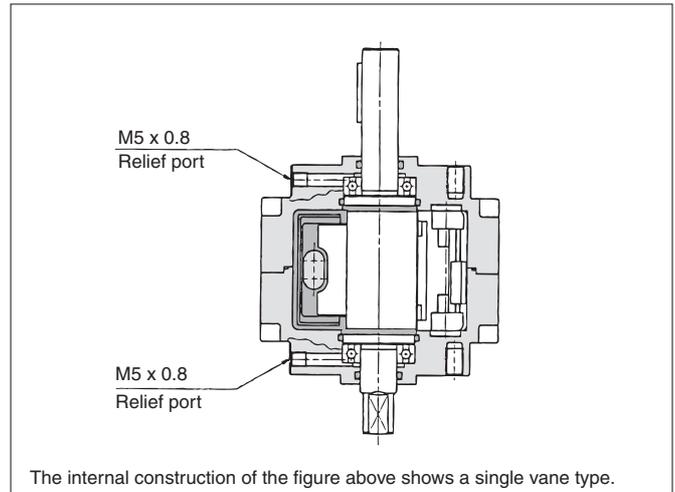
Clean Series



The double-seal construction of the actuator shaft section of these series to channel exhaust through the relief ports directly to the outside of a clean room environment allows operation of these cylinders in a class 100 clean room.

Specifications

Vane type	Single/Double vane	
Size	50	63
Operating pressure range [MPa]	0.15 to 1.0	
Speed regulation range [s/90°]	0.1 to 1	
Port location	Side ported or Axial ported	
Piping	Screw-in type	
Relief port size	M5 x 0.8	
Mounting	Basic	
Variations	Basic type, With auto switch	
Allowable kinetic energy	0.029 J	0.042 J



Series CRB1

Stainless Steel Specification for Main Parts

CDRB1 **Mounting** W **Size** — **Rotating angle** **Vane type** **Port location** S

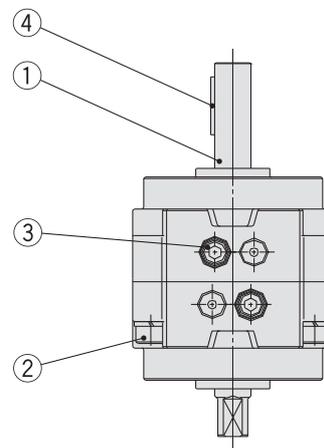
● Auto switch

—	Basic type
D	With auto switch (With switch unit)

● Stainless steel specification for main parts

Specifications

Vane type	Single/Double vane			
Size	50	63	80	100
Operating pressure range [MPa]	0.15 to 1.0			
Speed regulation range [s/90°]	0.1 to 1			
Port location	Side ported or Axial ported			
Piping	Screw-in type			
Mounting	Basic, Foot			
Variations	Basic type, With auto switch			
Allowable kinetic energy	0.029 J	0.042 J	0.142 J	0.212 J



Stainless Steel Parts

	Description
1	Vane shaft
2	Hexagon socket head cap screw
3	Special screw
4	Parallel key

* Individual part cannot be shipped.

Rotary Actuator: Replaceable Shaft

A shaft can be replaced with a different shaft type except for standard shaft type (W).

Without auto switch **CRB1B** **J** Size – Rotating angle Vane type Port location – Made to Order

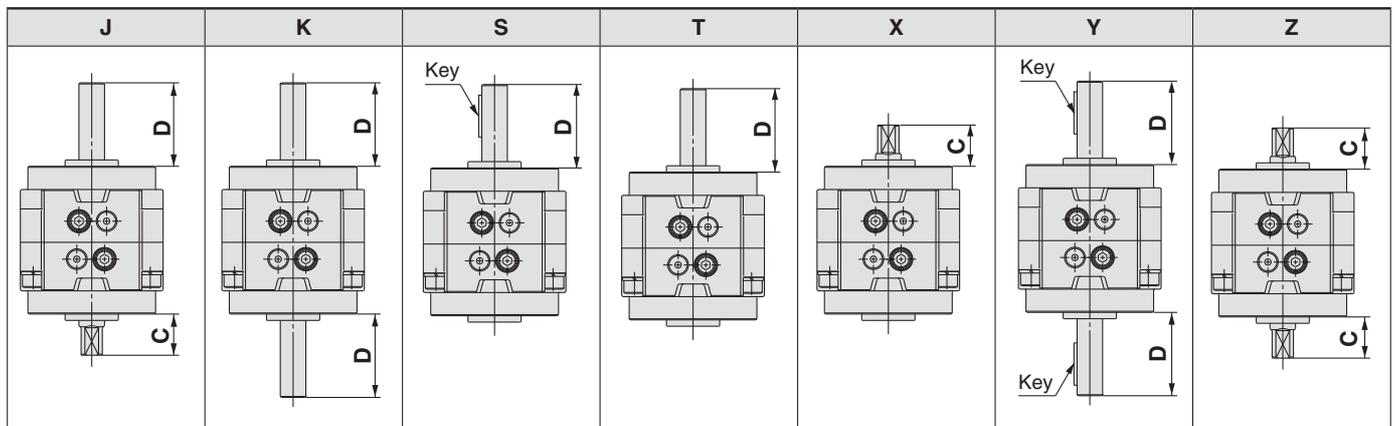
Shaft type ●

J	Double shaft (Long shaft with four chamfers)
K	Double round shaft
S	Single shaft key
T	Single round shaft
X	Single shaft with four chamfers
Y	Double shaft key
Z	Double shaft with four chamfers

● Made to Order

Symbol	Description
XA31 to XA60	Shaft type pattern
XC1	Addition of connection port
XC4	Change of rotating angle
XC5	Change of rotating angle
XC6	Change of rotating angle
XC7	Reversed shaft
XC26	Change of rotating angle
XC27	Change of rotation range and direction
XC30	Fluorine grease

* Refer to pages 18 to 25 for details.



[mm]

Size	C	D
50	19.5	39.5
63	21	45
80	23.5	53.5
100	30	65

Note) Dimensions and tolerance of the shaft and keyway are the same as the standard.

With auto switch **CDRB1B** **J** Size – Rotating angle Vane type Port location – Made to Order

With auto switch ●

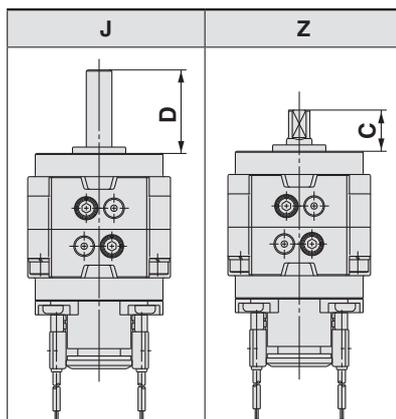
Shaft type ●

J	Double shaft (Long shaft with four chamfers)
Z	Double shaft with four chamfers

● Made to Order

Symbol	Description
XA31 to XA60	Shaft type pattern
XC1	Addition of connection port
XC4	Change of rotating angle
XC5	Change of rotating angle
XC6	Change of rotating angle
XC7	Reversed shaft
XC26	Change of rotating angle
XC27	Change of rotation range and direction
XC30	Fluorine grease

The above may not be selected when the product comes with an auto switch. Refer to pages 18 to 25 for details.



[mm]

Size	C	D
50	19.5	39.5
63	21	45
80	23.5	53.5
100	30	65

Note) Dimensions and tolerance of the shaft and keyway are the same as the standard.

Series CRB1

Construction

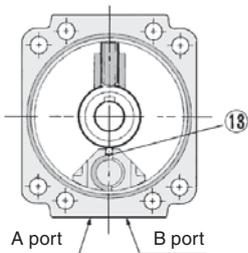
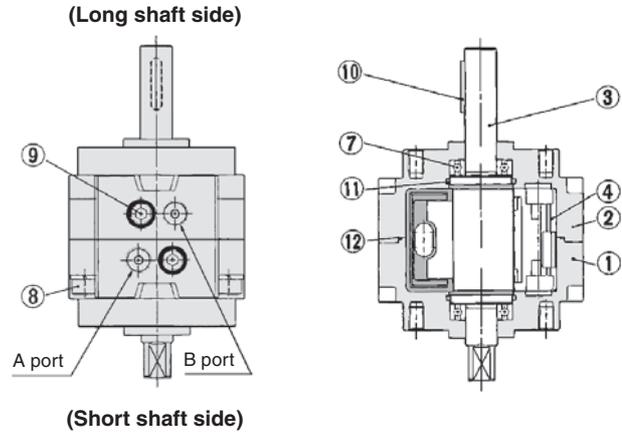
Basic type (Keys in the figures below show the intermediate rotation position.)

Component Parts

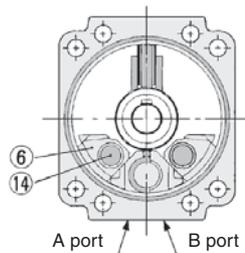
No.	Description	Material	Note
1	Body (A)	Aluminium alloy	Painted
2	Body (B)	Aluminium alloy	Painted
3	Vane shaft	Carbon steel*	
4	Stopper	Aluminium alloy	
5	Stopper	Resin	For 90°
6	Stopper	Resin	For 180°
7	Bearing	Bearing steel	
8	Hexagon socket head cap screw (with washer)	Chrome molybdenum steel	
9	Special screw	Chrome molybdenum steel	
10	Parallel key	Carbon steel	
11	O-ring	NBR	
12	O-ring	NBR	Special O-ring
13	Stopper seal	NBR	Special seal
14	Holding rubber	NBR	

* Individual part cannot be shipped.

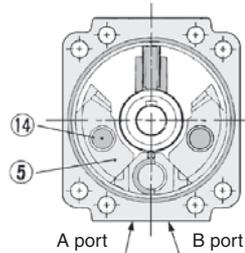
* The material is chrome molybdenum steel for double vane type.



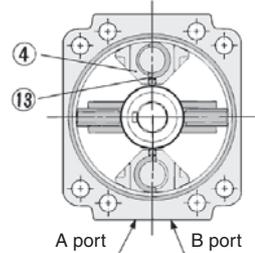
For 270° (Top view from long shaft side)
Single vane



For 180° (Top view from long shaft side)
Single vane



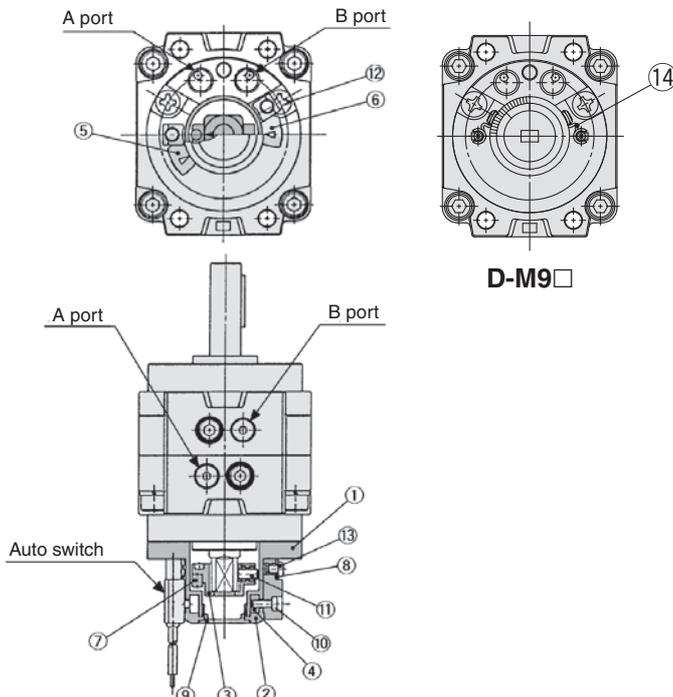
For 90° (Top view from long shaft side)
Single vane



For 90° (Top view from long shaft side)
Double vane

With auto switch

(Keys in the figures below show the actuator for 180° when A port is pressurised.)



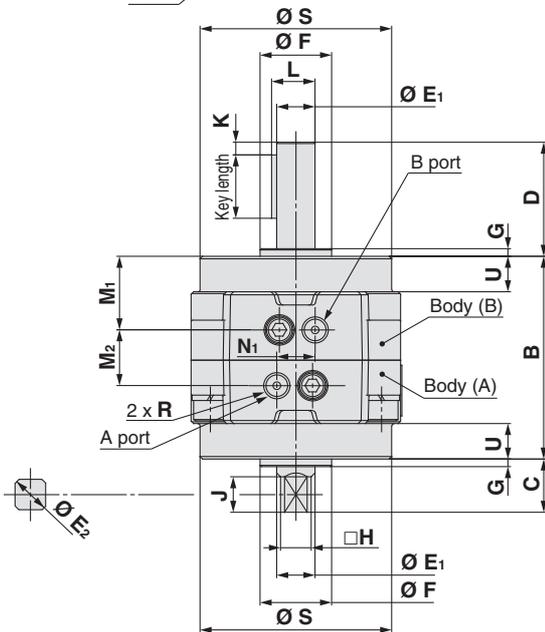
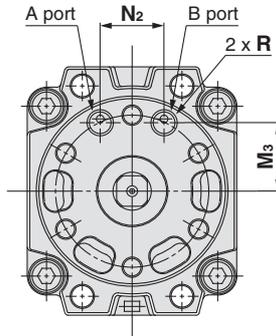
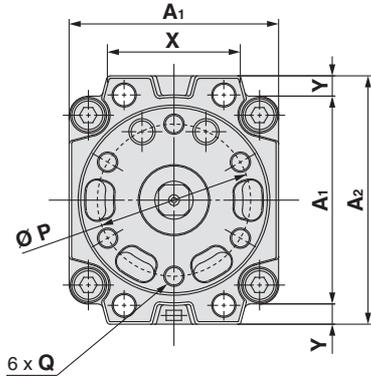
Component Parts

No.	Description	Material	Note
1	Cover (A)	Resin	
2	Cover (B)	Resin	
3	Magnet lever	Resin	
4	Holding block	Stainless steel	
5	Switch block (A)	Resin	
6	Switch block (B)	Resin	
7	Magnet	—	
8	Arm	Stainless steel	
9	Rubber cap	NBR	
10	Cross recessed round head screw	Stainless steel	
11	Hexagon socket head set screw	Stainless steel	
12	Cross recessed round head screw	Chrome molybdenum steel	For size 50, 63, 80
	Hexagon socket head cap screw	Chrome molybdenum steel	For size 100
13	Cross recessed round head screw	Stainless steel	
14	Switch holder	Stainless steel	

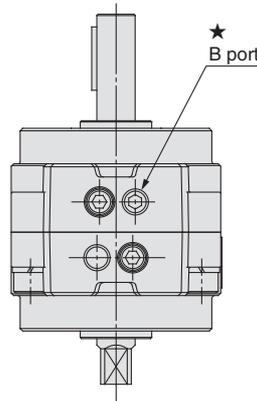
* Individual part cannot be shipped. Please purchase the whole unit. (Refer to page 26.)

Dimensions: 50, 63, 80, 100

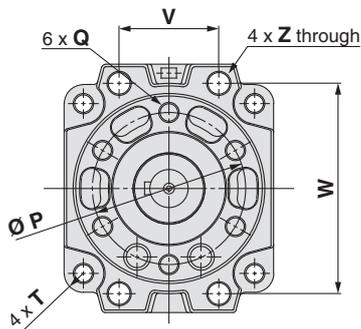
Single vane type/Double vane type
CRB1BW□-□S/D
 <Port location: Side ported>



Axial ported (Port location): CRB1BW□-□SE, CRB1BW□-□DE



★ If B port of Body (B) is machined, the port is plugged with Rc 1/8.



Key Dimensions

Key dimension			L
	b (h9)	h (h9)	
Size	50	63	80
	4 ⁰ _{-0.030}	5 ⁰ _{-0.030}	5 ⁰ _{-0.030}
	4 ⁰ _{-0.030}	5 ⁰ _{-0.030}	5 ⁰ _{-0.030}
	7 ⁰ _{-0.036}	7 ⁰ _{-0.036}	40

Size	A1	A2	B	C	D	E1 (g6)	E2 (h9)	F (h9)	G	H	J	K	L	M1	M2	M3	N1	N2	P	Q	R (*)	S	T	U	V	W	X	Y	Z
50	67	78	70	19.5	39.5	12 ^{-0.006} _{-0.017}	11.9 ⁰ _{-0.043}	25 ⁰ _{-0.052}	3	10	13	5	13.5	26	18	21	14	18	50	M6 x 1 depth 9	1/8	R6	11	34	66	46	5.5	6.5	
63	82	98	80	21	45	15 ^{-0.006} _{-0.017}	14.9 ⁰ _{-0.043}	28 ⁰ _{-0.052}	3	12	14	5	17	29	22	27	15	25	60	M8 x 1.25 depth 10	1/8	R7.5	14	39	83	52	8	9	
80	95	110	90	23.5	53.5	17 ^{-0.006} _{-0.017}	16.9 ⁰ _{-0.043}	30 ⁰ _{-0.052}	3	13	16	5	19	30	30	29	20	30	70	M8 x 1.25 depth 12	1/4	R8	15	48	94	63	7.5	9	
100	125	140	103	30	65	25 ^{-0.007} _{-0.020}	24.9 ⁰ _{-0.052}	45 ⁰ _{-0.062}	4	19	22	5	28	35.5	32	38	24	38	80	M10 x 1.5 depth 13	1/4	R11	11.5	60	120	78	7.5	11	

* For single vane type: Above figures show actuators for 180° when B port is pressurised.
 * For double vane type: Figures above show the intermediate rotation position when the A or B port is pressurised.
 * In addition to Rc, G and NPT are also available for connection ports.

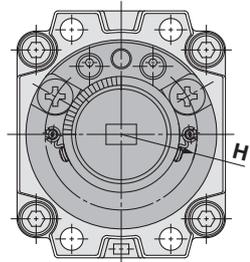
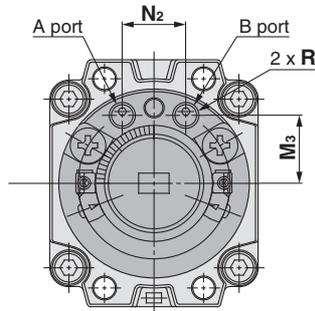
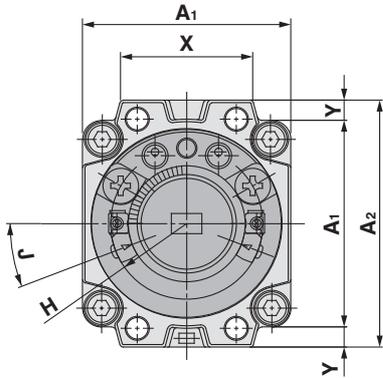
Series CRB1

Dimensions: 50, 63, 80, 100 (With auto switch)

Single vane type/Double vane type

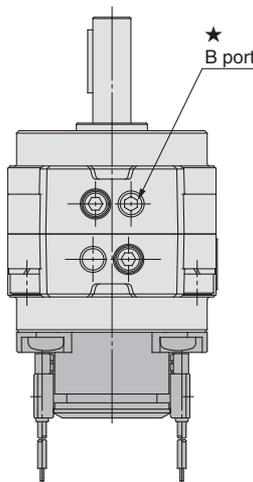
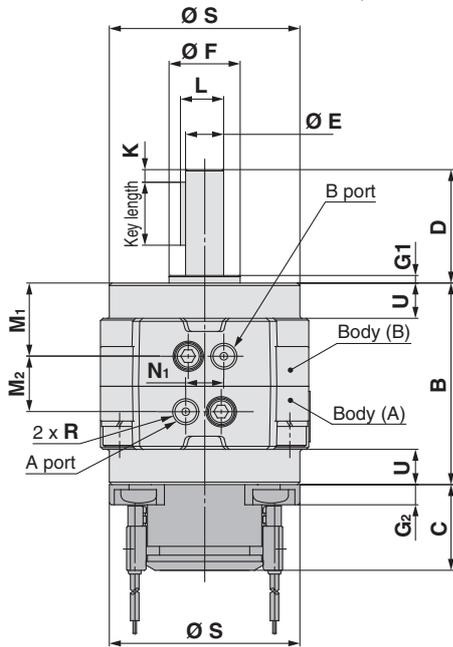
CDRB1BW□-□S/D

<Port location: Side ported>

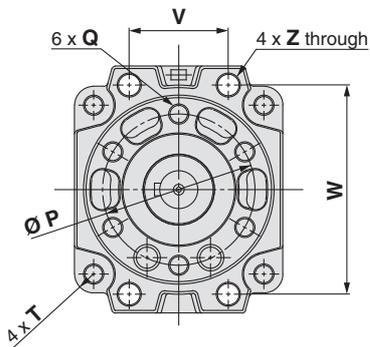


D-M9□

Axial ported (Port location): CDRB1BW□-□SE, CDRB1BW□-□DE



★ If B port of Body (B) is machined, the port is plugged with Rc 1/8.



Key Dimensions

Key dimension			
	b (h9)	h (h9)	L
50	4 ⁰ _{-0.030}	4 ⁰ _{-0.030}	20
63	5 ⁰ _{-0.030}	5 ⁰ _{-0.030}	25
80	5 ⁰ _{-0.030}	5 ⁰ _{-0.030}	36
100	7 ⁰ _{-0.036}	7 ⁰ _{-0.036}	40

Size	A1	A2	B	C	D	E (g6)	F (h9)	G1	G2	H (R)	J	K	L	M1	M2	M3	N1	N2	P	Q	R (*)	S	T	U	V	W	X	Y	Z
50	67	78	70	32	39.5	12 ^{-0.006} _{-0.017}	25 ⁰ _{-0.052}	3	6.5	R22.5	32.5	5	13.5	26	18	21	14	18	50	M6 x 1 depth 9	1/8	60	R6	11	34	66	46	5.5	6.5
63	82	98	80	34	45	15 ^{-0.006} _{-0.017}	28 ⁰ _{-0.052}	3	8	R30	21	5	17	29	22	27	15	25	60	M8 x 1.25 depth 10	1/8	75	R7.5	14	39	83	52	8	9
80	95	110	90	34	53.5	17 ^{-0.006} _{-0.017}	30 ⁰ _{-0.052}	3	8	R30	21	5	19	30	30	29	20	30	70	M8 x 1.25 depth 12	1/4	88	R8	15	48	94	63	7.5	9
100	125	140	103	39	65	25 ^{-0.007} _{-0.020}	45 ⁰ _{-0.062}	4	13	R30	21	5	28	35.5	32	38	24	38	80	M10 x 1.5 depth 13	1/4	108	R11	11.5	60	120	78	7.5	11

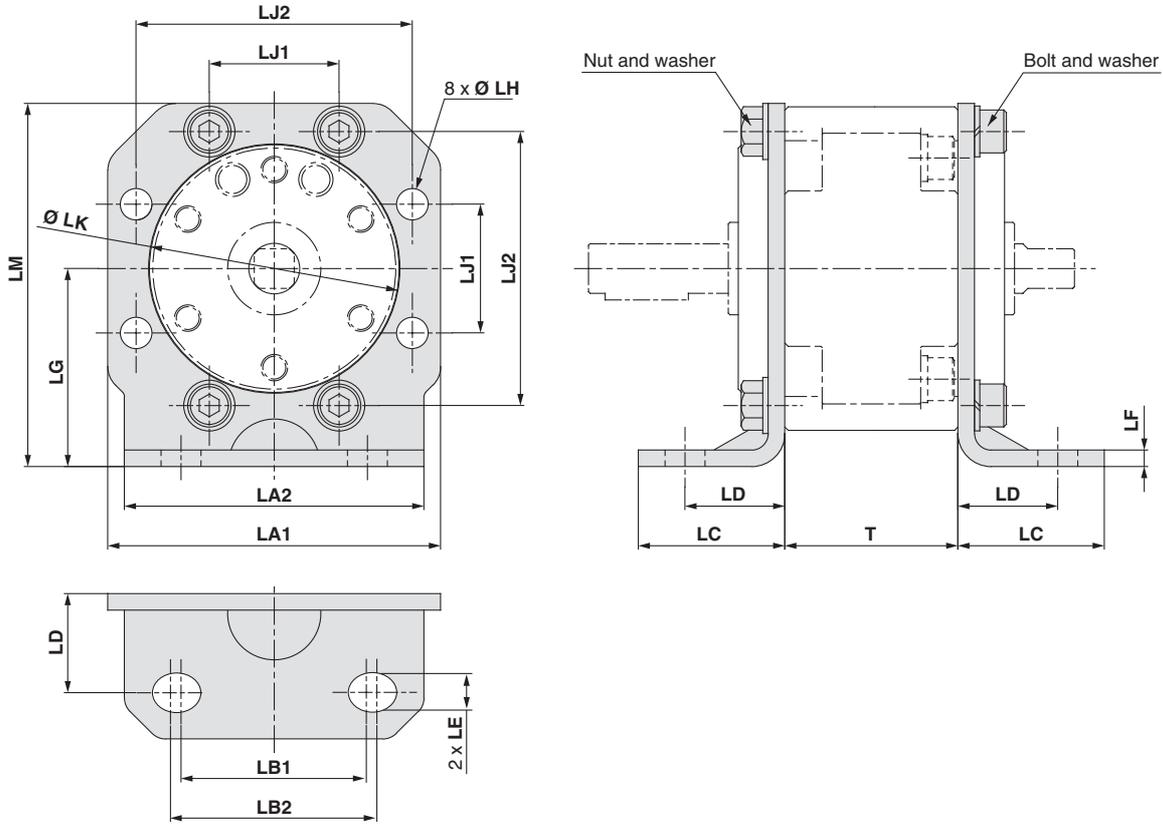
* For single vane type: Above figures show actuators for 180° when B port is pressurised.

* For double vane type: Figures above show the intermediate rotation position when the A or B port is pressurised.

* In addition to Rc, G and NPT are also available for connection ports.

Dimensions

Option: Foot bracket



CRB1

Simple Specials

Made to Order

Auto Switch
Mounting

[mm]

Size	Foot bracket assembly part number	LA1	LA2	LB1	LB2	LC	LD	LE	LF	LG	LH	LJ1	LJ2	LK	LM	T
50	P411020-5	78	70	45	50	36	25.5	∅ 10	4.5	45	7.5	34	66	60.5	84	48
63	P411030-5	100	90	56	63	44	30	∅ 12	5	60	9.5	39	83	75.5	110	52
80	P411040-5	111	100	63	70	46	32	∅ 12	6	65	9.5	48	94	88.5	120.5	60
100	P411050-5	141	126	80	80	55	39.5	∅ 14	6	80	11.5	60	120	108.5	150.5	80

Note 1) The foot bracket (with bolt, nut, and washer) is not mounted on the actuator at the time of shipment.

Note 2) The foot bracket can be mounted on the rotary actuator at 90° intervals.

Note 3) Refer to the foot bracket assembly part number in the table at right when foot bracket assembly is required separately.

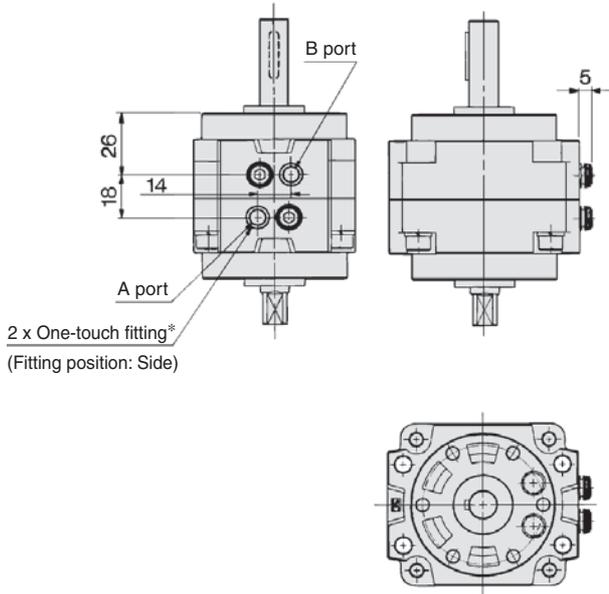
Model		Foot bracket assembly part number
Basic type	With auto switch	
CRB1LW50	CDRB1LW50	P411020-5
CRB1LW63	CDRB1LW63	P411030-5
CRB1LW80	CDRB1LW80	P411040-5
CRB1LW100	CDRB1LW100	P411050-5

Series CRB1

With One-touch Fittings: 50

Basic type
CRB1□W50F-□□

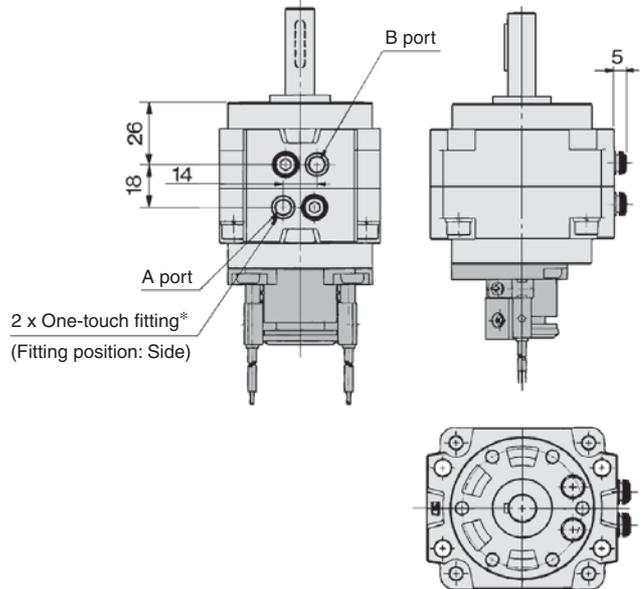
<Port location: Side ported>



2 x One-touch fitting*
(Fitting position: Side)

With auto switch
CDRB1□W50F-□□-□

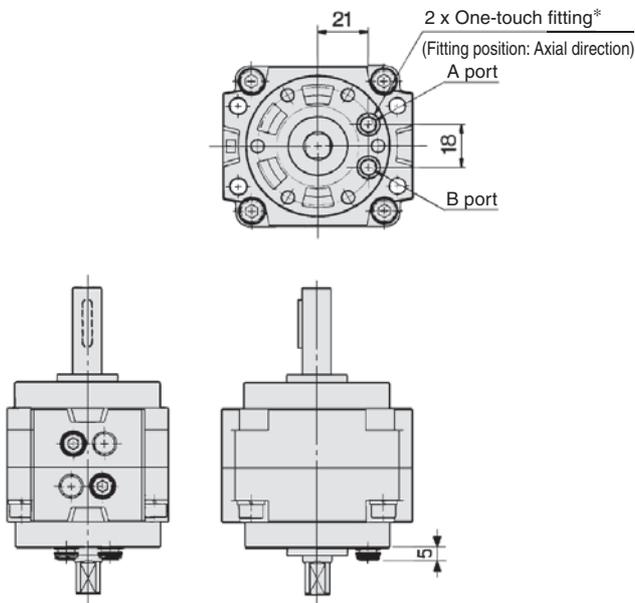
<Port location: Side ported>



2 x One-touch fitting*
(Fitting position: Side)

CRB1□W50F-□□E

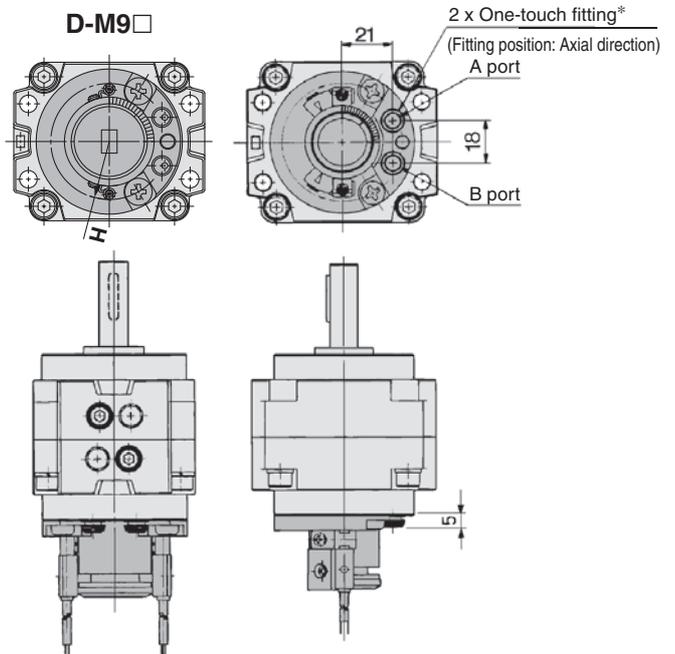
<Port location: Axial ported>



2 x One-touch fitting*
(Fitting position: Axial direction)

CDRB1□W50F-□□E-□

<Port location: Axial ported>



2 x One-touch fitting*
(Fitting position: Axial direction)

Applicable Tubing and O.D./I.D

Applicable tubing O.D./I.D [mm]	Ø 6/Ø 4
Applicable tubing material	Nylon, Soft nylon, Polyurethane

* Dimensions not indicated in the above figures are the same as size 50 actuator.

* Keys in the figures above show the intermediate rotation position for single vane type.

Auto Switch
Mounting

Made to Order

Simple Specials

CRB1

Series CRB1 (Size: 50, 63, 80, 100)

Simple Specials

-XA1 to -XA24: Shaft Pattern Sequencing I

Shaft shape pattern is dealt with simple made-to-order system.
Please contact SMC for a specification sheet when placing an order.

Symbol

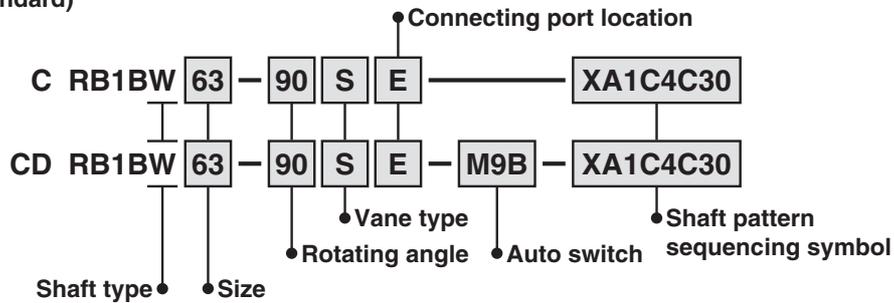
-XA1 to XA24

Shaft Pattern Sequencing I

Applicable shaft type: W (Standard)

Without auto switch

With auto switch



Shaft Pattern Sequencing Symbol

● Axial: Top (Long shaft side)

Symbol	Description	Size			
		50	63	80	100
XA1	Shaft-end female thread	●	●	●	●
XA14*	Shaft through-hole + Shaft-end female thread	●	●	●	●
XA17*	Change of long shaft length (Change of key length)	●	●	●	●
XA24*	Double key	●	●	●	●

* The vane type for the shaft through-hole is compatible with single vanes only.

● Axial: Bottom (Short shaft side)

Symbol	Description	Size			
		50	63	80	100
XA2*	Shaft-end female thread	●	●	●	●
XA15*	Shaft through-hole + Shaft-end female thread	●	●	●	●
XA18*	Change of short shaft length	●	●	●	●

* The vane type for the shaft through-hole is compatible with single vanes only.

● Double Shaft

Symbol	Description	Size			
		50	63	80	100
XA13*	Shaft through-hole	●	●	●	●
XA16*	Shaft through-hole + Double shaft-end female threads	●	●	●	●
XA19*	Change of double shaft length	●	●	●	●
XA20*	Reversed shaft, Change of double shaft length	●	●	●	●

* The vane type for the shaft through-hole is compatible with single vanes only.

* The product with an auto switch is available only for XA1, 14, 17 and 24.

Combination

XA□ Combination

Symbol	Description	Axial direction		Combination													
		Up	Down	XA1	XA2	XA13	XA14	XA15	XA16	XA17	XA18	XA19	XA20	XA24			
XA1	Shaft-end female thread	●	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—
XA2	Shaft-end female thread	—	●	—	●	—	—	—	—	—	—	—	—	—	—	—	—
XA13	Shaft through-hole	●	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—
XA14	Shaft through-hole + Shaft-end female thread	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
XA15	Shaft through-hole + Shaft-end female thread	—	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—
XA16	Shaft through-hole + Double shaft-end female threads	●	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—
XA17	Change of long shaft length (Change of key length)	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
XA18	Change of short shaft length	—	●	●	—	—	—	—	—	—	—	—	—	—	—	—	—
XA19	Change of double shaft length	●	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—
XA20	Reversed shaft, Change of double shaft length	●	●	—	—	—	—	—	—	—	—	—	—	—	—	—	—
XA24	Double key	●	—	●	●	●	●	●	●	●	●	●	●	●	●	●	●

A total of two XA□ combinations is available.
Example: XA1A24

XA□, XC□ Combination

Combination other than -XA□, such as Made to Order (-XC□), is also available.
Refer to pages 24 to 25 for details about made-to-order specifications.

Symbol	Description	Size	XA1, XA2 XA13 to 20, 24
XC1	Addition of connection port	50, 63 80, 100	●
XC4	Change of rotating angle		●
XC5	Change of rotating angle		●
XC6	Change of rotating angle		●
XC7	Reversed shaft		—
XC26	Change of rotating angle		●
XC27	Change of rotation range and direction		●
XC30	Fluorine grease		●

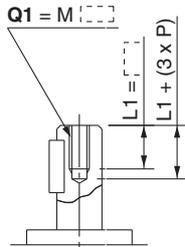
A total of four XA□ and XC□ combinations is available.
Example: XA1A24C1C30

Axial: Top (Long shaft side)

Symbol: A1

Machine female threads into the long shaft.

- The maximum dimension L1 is, as a rule, twice the thread size.
(Example) For M3: L1 = 6
- Applicable shaft type: W



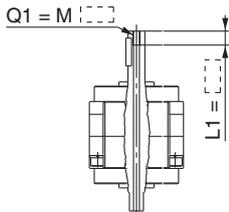
Size	Q1 [mm]
50	M3, M4, M5
63	M4, M5, M6
80	M4, M5, M6
100	M5, M6, M8

Symbol: A14

Applicable to single vane type only

A special end is machined onto the long shaft, and a through-hole is drilled into it. Female threads are machined into the through-holes, whose diameter is equivalent to the diameter of the pilot holes.

- The maximum dimension L1 is, as a rule, twice the thread size.
(Example) For M5: L1 = 10
- Applicable shaft type: W

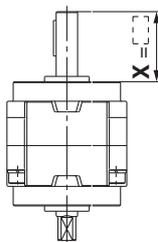


Size	50	63	80	100
Thread				
M5 x 0.8	Ø 4.2	Ø 4.2	Ø 4.2	—
M6 x 1	—	Ø 5	Ø 5	Ø 5
M8 x 1.25	—	—	—	Ø 6.8

Symbol: A17

Shorten the long shaft.

- Applicable shaft type: W



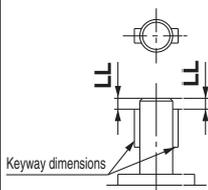
Size	X [mm]
50	24.5 to 39.5
63	28 to 45
80	30.5 to 53.5
100	40 to 65

Symbol: A24

Double key

Keys and keyways are machined at 180° of standard position.

- Applicable shaft type: W
- Equal dimensions are indicated by the same marker.



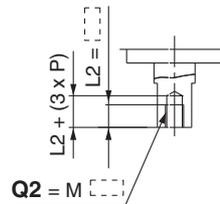
Size	Keyway dimension	LL [mm]
50	4 x 4 x 20	5
63	5 x 5 x 25	
80	5 x 5 x 36	
100	7 x 7 x 40	

Axial: Bottom (Short shaft side)

Symbol: A2

Machine female threads into the short shaft.

- The maximum dimension L2 is, as a rule, twice the thread size.
(Example) For M4: L2 = 8
- Applicable shaft type: W



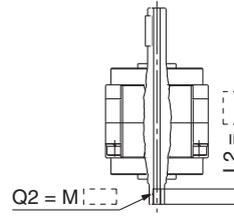
Size	Q2 [mm]
50	M3, M4, M5
63	M4, M5, M6
80	M4, M5, M6
100	M5, M6, M8

Symbol: A15

Applicable to single vane type only

A special end is machined onto the short shaft, and a through-hole is drilled into it. Female threads are machined into the through-hole, whose diameter is equivalent to the pilot hole diameter.

- The maximum dimension L2 is, as a rule, twice the thread size.
(Example) For M4: L2 = 8
- Applicable shaft type: W

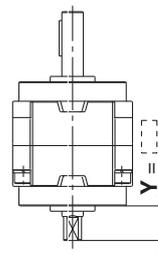


Size	50	63	80	100
Thread				
M5 x 0.8	Ø 4.2	Ø 4.2	Ø 4.2	—
M6 x 1	—	Ø 5	Ø 5	Ø 5
M8 x 1.25	—	—	—	Ø 6.8

Symbol: A18

Shorten the short shaft.

- Applicable shaft type: W



Size	Y [mm]
50	4 to 19.5
63	4 to 21
80	4 to 23.5
100	5 to 30

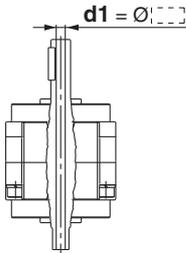
Double Shaft

Symbol: A13

Applicable to single vane type only

Shaft with through-hole

- Minimum machining diameter for d1 is 0.1.
- Applicable shaft type: W



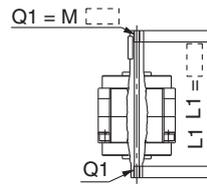
Size	d1
50	Ø 4 to Ø 5
63	Ø 4 to Ø 6
80	Ø 4 to Ø 6.5
100	Ø 5 to Ø 8

Symbol: A16

Applicable to single vane type only

A special end is machined onto both the long and short shafts, and a through-hole is drilled into both shafts. Female threads are machined into the through-holes, whose diameter is equivalent to the diameter of the pilot holes.

- The maximum dimension L1 is, as a rule, twice the thread size.
- (Example) For M5: L1 = 10
- Applicable shaft type: W
- Equal dimensions are indicated by the same marker.

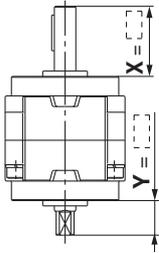


Size	50	63	80	100
Thread				
M5 x 0.8	Ø 4.2	Ø 4.2	Ø 4.2	—
M6 x 1	—	Ø 5	Ø 5	Ø 5
M8 x 1.25	—	—	—	Ø 6.8

Symbol: A19

Shorten both long and short shafts.

- Applicable shaft type: W



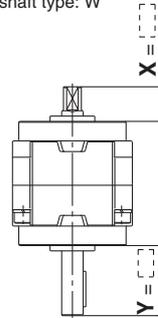
Size	X	Y
50	24.5 to 39.5	4 to 19.5
63	28 to 45	4 to 21
80	30.5 to 53.5	4 to 23.5
100	40 to 65	5 to 30

Symbol: A20

The rotation axis is reversed.

(If shortening the shaft is not required, indicate "*" for dimension X, Y.)

- Applicable shaft type: W



Size	X	Y
50	4 to 19.5	24.5 to 39.5
63	4 to 21	28 to 45
80	4 to 23.5	30.5 to 53.5
100	5 to 30	40 to 65

Series CRB1 (Size: 50, 63, 80, 100)

Simple Specials

-XA31 to -XA60: Shaft Pattern Sequencing II

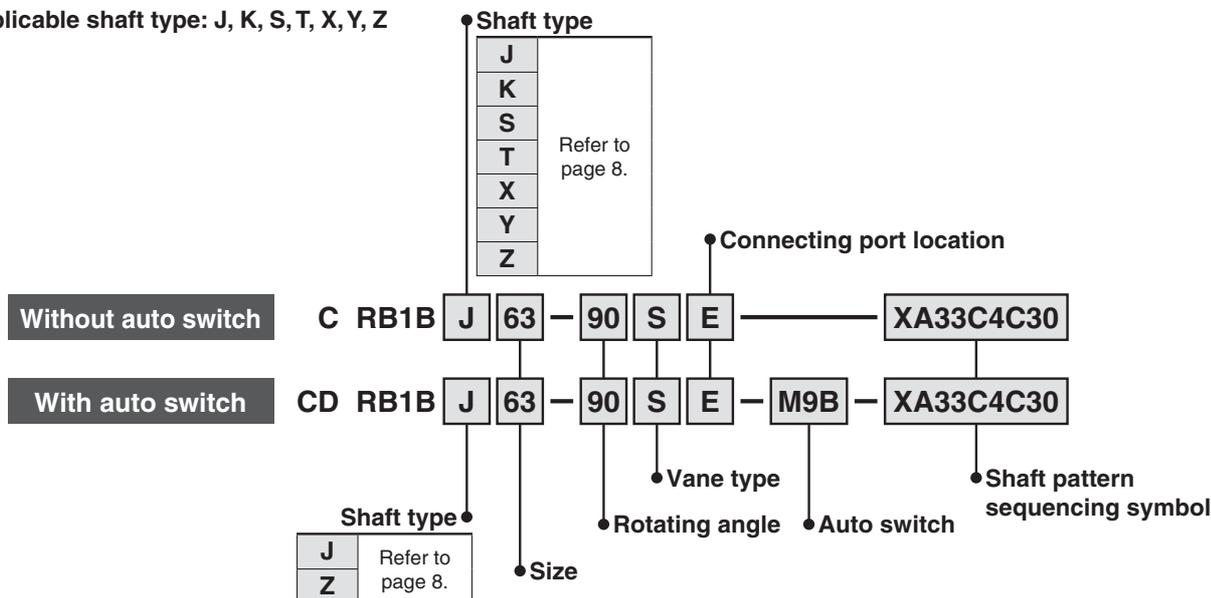
Shaft shape pattern is dealt with simple made-to-order system.
Please contact SMC for a specification sheet when placing an order.

Symbol

-XA31 to XA60

Shaft Pattern Sequencing II

Applicable shaft type: J, K, S, T, X, Y, Z



Shaft Pattern Sequencing Symbol

● Axial: Top (Long shaft side)

Symbol	Description	Shaft type	Size
XA31	Shaft-end female thread	S, Y	50, 63, 80, 100
XA33	Shaft-end female thread	J, K, T	
XA35	Shaft-end female thread	X, Z	
XA37	Stepped round shaft	J, K, T	
XA45	Middle-cut chamfer	J, K, T	
XA48	Change of long shaft length (With keyway)	S, Y	
XA51	Change of long shaft length (Without keyway)	J, K, T	
XA54	Change of long shaft length (With four chamfers)	X, Z	

● Axial: Bottom (Short shaft side)

Symbol	Description	Shaft type	Size
XA32	Shaft-end female thread	S, Y	50, 63, 80, 100
XA34	Shaft-end female thread	K, T	
XA36	Shaft-end female thread	J, X, Z	
XA38	Stepped round shaft	K	
XA46	Middle-cut chamfer	K	
XA49	Change of short shaft length (With keyway)	Y	
XA52	Change of short shaft length (Without keyway)	K	
XA55	Change of short shaft length (With four chamfers)	J, Z	

● Double Shaft

Symbol	Description	Shaft type	Size
XA39*	Shaft through-hole	S, Y	50, 63, 80, 100
XA40*	Shaft through-hole	K, T	
XA41*	Shaft through-hole	J, X, Z	
XA42*	Shaft through-hole + Double shaft-end female threads	S, Y	
XA43*	Shaft through-hole + Double shaft-end female threads	K, T	
XA44*	Shaft through-hole + Double shaft-end female threads	J, X, Z	
XA50	Change of double shaft length (Both sides with keyway)	Y	
XA53	Change of double shaft length (Without keyway)	K	
XA56	Change of double shaft length (Both sides with four chamfers)	Z	
XA57	Change of double shaft length (With four chamfers, without keyway)	J	
XA58	Reversed shaft, Change of double shaft length (With four chamfers, without keyway)	J, T	
XA59	Reversed shaft, Change of shaft length (With four chamfers)	X	
XA60	Reversed shaft, Change of shaft length (With keyway)	S	

* The vane type for the shaft through-hole is compatible with single vanes only.

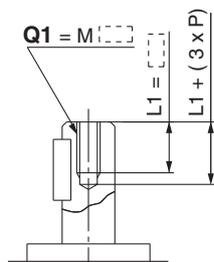
* The product with an auto switch is available only for J and Z shafts of XA33, 35, 37, 45, 51 and 54.

Axial: Top (Long shaft side)

Symbol: A31

Machine female threads into the long shaft.

- The maximum dimension L1 is, as a rule, twice the thread size.
(Example) For M3: L1 = 6
- Applicable shaft type: S, Y

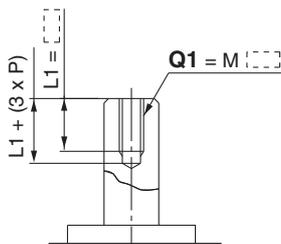


Size	Q1 [mm]	
	S	Y
50	M3, M4, M5	
63	M4, M5, M6	
80	M4, M5, M6	
100	M5, M6, M8	

Symbol: A33

Machine female threads into the long shaft.

- The maximum dimension L1 is, as a rule, twice the thread size.
(Example) For M3: L1 = 6
- Applicable shaft type: J, K, T

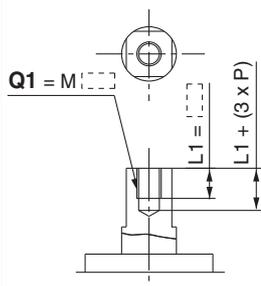


Size	Q1 [mm]		
	J	K	T
50	M3, M4, M5, M6		
63	M4, M5, M6		
80	M4, M5, M6, M8		
100	M5, M6, M8, M10		

Symbol: A35

Machine female threads into the long shaft.

- The maximum dimension L1 is, as a rule, twice the thread size.
(Example) For M3: L1 = 6
- Applicable shaft type: X, Z



Size	Q1 [mm]	
	X	Z
50	M3, M4, M5	
63	M4, M5, M6	
80	M4, M5, M6	
100	M5, M6, M8	

Symbol: A37

The long shaft can be further shortened by machining it into a stepped round shaft.

- (If shortening the shaft is not required, indicate "*" for dimension X.)
(If not specifying dimension CA, indicate "*" instead.)
- Equal dimensions are indicated by the same marker.
- Applicable shaft type: J, K, T

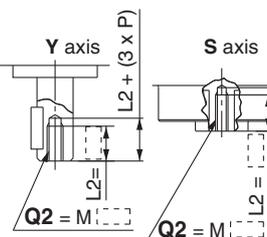
Size	X [mm]			L1 max			D1		
	J	K	T	J	K	T	J	K	T
50	4 to 39.5			X-3			3 to 11.9		
63	4 to 45			X-3			3 to 14.9		
80	4 to 53.5			X-3			3 to 16.9		
100	5 to 65			X-4			3 to 24.9		

Axial: Bottom (Short shaft side)

Symbol: A32

Machine female threads into the short shaft.

- The maximum dimension L2 is, as a rule, twice the thread size.
(Example) For M4: L2 = 8
- Applicable shaft type: S, Y

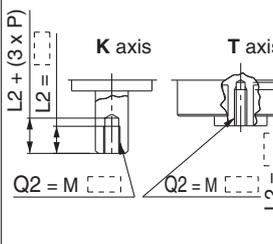


Size	Q2 [mm]	
	S	Y
50	M3, M4, M5, M6	M3, M4, M5
63	M4, M5, M6	M4, M5, M6
80	M4, M5, M6, M8	M4, M5, M6
100	M5, M6, M8, M10	M5, M6, M8

Symbol: A34

Machine female threads into the short shaft.

- The maximum dimension L2 is, as a rule, twice the thread size.
(Example) For M3: L2 = 6
- Applicable shaft type: K, T

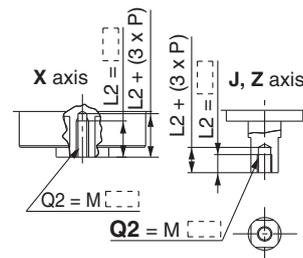


Size	Q2 [mm]	
	K	T
50	M3, M4, M5, M6	
63	M4, M5, M6	
80	M4, M5, M6, M8	
100	M5, M6, M8, M10	

Symbol: A36

Machine female threads into the short shaft.

- The maximum dimension L2 is, as a rule, twice the thread size.
(Example) For M3: L2 = 6
- Applicable shaft type: J, X, Z



Size	Q2 [mm]		
	X	J	Z
50	M3, M4, M5, M6	M3, M4, M5	
63	M4, M5, M6	M4, M5, M6	
80	M4, M5, M6, M8	M4, M5, M6	
100	M5, M6, M8, M10	M5, M6, M8	

Symbol: A38

The short shaft can be further shortened by machining it into a stepped round shaft.

- (If shortening the shaft is not required, indicate "*" for dimension Y.)
(If not specifying dimension CB, indicate "*" instead.)
- Equal dimensions are indicated by the same marker.
- Applicable shaft type: K

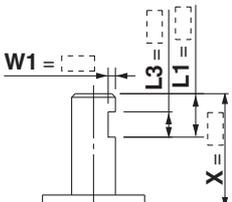
Size	Y [mm]			D2	
	Y	L2 max	D2		
50	4 to 39.5	Y-3	3 to 11.9		
63	4 to 45	Y-3	3 to 14.9		
80	4 to 53.5	Y-3	3 to 16.9		
100	5 to 65	Y-4	3 to 24.9		

Axial: Top (Long shaft side)

Symbol: A45 The long shaft can be further shortened by machining a middle-cut chamfer into it.
(The position of the chamfer is same as the standard one.)

(If shortening the shaft is not required, indicate "*" for dimension X.)

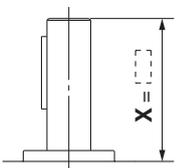
- Minimum machining dimension is 0.1.
- Applicable shaft type: J, K, T



Size	X			W1			L1 max			L3 max		
	J	K	T	J	K	T	J	K	T	J	K	T
50	11.5 to 39.5	1 to 6	X-3	L1-2								
63	12.5 to 45	1 to 7.5	X-3	L1-2								
80	13.5 to 53.5	1 to 8.5	X-3	L1-2								
100	18.5 to 65	1 to 12.5	X-4	L1-2								

Symbol: A48 Shorten the long shaft.

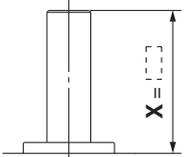
- Applicable shaft type: S, Y



Size	X
50	24.5 to 39.5
63	28 to 45
80	30.5 to 53.5
100	40 to 65

Symbol: A51 Shorten the long shaft.

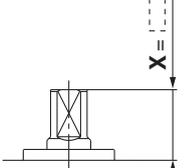
- Applicable shaft type: J, K, T



Size	X
50	4 to 39.5
63	4 to 45
80	4 to 53.5
100	5 to 65

Symbol: A54 Shorten the long shaft.

- Applicable shaft type: X, Z



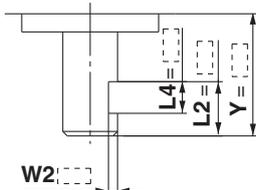
Size	X
50	4 to 19.5
63	4 to 21
80	4 to 23.5
100	5 to 30

Axial: Bottom (Short shaft side)

Symbol: A46 The short shaft can be further shortened by machining a middle-cut chamfer into it.
(The position of the chamfer is same as the standard one.)

(If shortening the shaft is not required, indicate "*" for dimension X.)

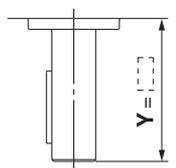
- Minimum machining dimension is 0.1.
- Applicable shaft type: K



Size	Y			W2			L2 max			L4 max		
	50	11.5 to 39.5	1 to 6	Y-3	L2-2							
63	12.5 to 45	1 to 7.5	Y-3	L2-2								
80	13.5 to 53.5	1 to 8.5	Y-3	L2-2								
100	18.5 to 65	1 to 12.5	Y-4	L2-2								

Symbol: A49 Shorten the short shaft.

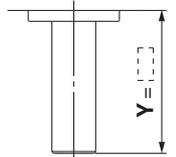
- Applicable shaft type: Y



Size	Y
50	24.5 to 39.5
63	28 to 45
80	30.5 to 53.5
100	40 to 65

Symbol: A52 Shorten the long shaft.

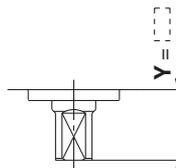
- Applicable shaft type: K



Size	Y
50	4 to 39.5
63	4 to 45
80	4 to 53.5
100	5 to 65

Symbol: A55 Shorten the short shaft.

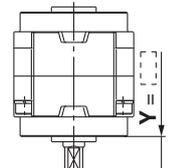
- Applicable shaft type: J, Z



Size	Y
50	4 to 19.5
63	4 to 21
80	4 to 23.5
100	5 to 30

Symbol: A59 Reverse the assembly of the shaft, and shorten the long shaft.

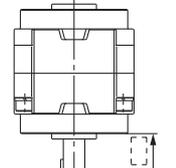
- Applicable shaft type: X



Size	Y
50	4 to 19.5
63	4 to 21
80	4 to 23.5
100	5 to 30

Symbol: A60 Reverse the assembly of the shaft, and shorten the long shaft.

- Applicable shaft type: S



Size	Y
50	24.5 to 39.5
63	28 to 45
80	30.5 to 53.5
100	40 to 65

⚠ Caution

For the shaft patterns A45 and A46, a middle-cut chamfer may interfere with the centre hole if the W1/W2 dimensions and (L1 - L3), (L2 - L4) dimensions are less than what are shown in the table below.

Size	W1	W2	L1-L3	L2-L4
50	4.5 to 6		2 to 5.5	
63	6 to 7.5		2 to 3	
80	6.5 to 8.5		2 to 6.5	
100	10.5 to 12.5		2 to 6.5	

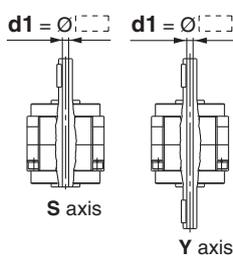
Double Shaft

Symbol: A39

Applicable to single vane type only

Shaft with through-hole

- Minimum machining diameter for d1 is 0.1.
- Applicable shaft type: S, Y



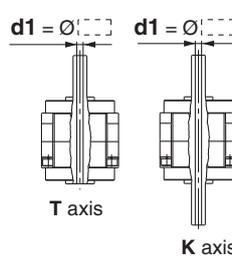
Size	d1 [mm]	
	S	Y
50	Ø 4 to Ø 5	
63	Ø 4 to Ø 6	
80	Ø 4 to Ø 6.5	
100	Ø 5 to Ø 8	

Symbol: A40

Applicable to single vane type only

Shaft with through-hole

- Minimum machining diameter for d1 is 0.1.
- Applicable shaft type: K, T



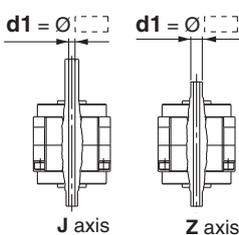
Size	d1 [mm]	
	K	T
50	Ø 4 to Ø 5.5	
63	Ø 4 to Ø 6	
80	Ø 4 to Ø 7.5	
100	Ø 5 to Ø 10	

Symbol: A41

Applicable to single vane type only

Shaft with through-hole

- Minimum machining diameter for d1 is 0.1.
- Applicable shaft type: J, X, Z



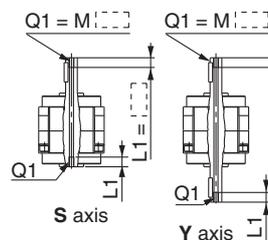
Size	d1 [mm]		
	J	X	Z
50	Ø 4 to Ø 5		
63	Ø 4 to Ø 6		
80	Ø 4 to Ø 6.5		
100	Ø 5 to Ø 8		

Symbol: A42

Applicable to single vane type only

A special end is machined onto both the long and short shafts, and a through-hole is drilled into both shafts. Female threads are machined into the through-holes, whose diameter is equivalent to the diameter of the pilot holes.

- The maximum dimension L1 is, as a rule, twice the thread size.
- Applicable shaft type: S, Y • Equal dimensions are indicated by the same marker.



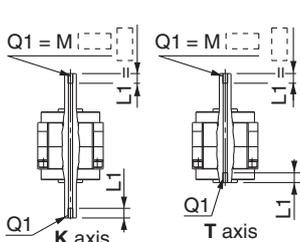
Size	d1 [mm]							
	S		Y		S		Y	
50	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2
63	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2
80	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2
100	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2
Thread	M5 x 0.8	—	—	—	—	—	—	—
	M6 x 1	—	—	—	—	—	—	—
	M8 x 1.25	—	—	—	—	—	—	—
	M10 x 1.5	—	—	—	—	—	—	—

Symbol: A43

Applicable to single vane type only

A special end is machined onto both the long and short shafts, and a through-hole is drilled into both shafts. Female threads are machined into the through holes, whose diameter is equivalent to the diameter of the pilot holes.

- The maximum dimension L1 is, as a rule, twice the thread size.
- Applicable shaft type: K, T • Equal dimensions are indicated by the same marker.



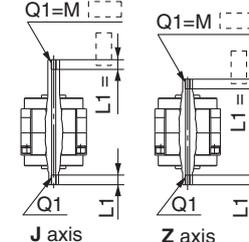
Size	d1 [mm]							
	K		T		K		T	
50	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2
63	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2
80	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2
100	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2
Thread	M5 x 0.8	—	—	—	—	—	—	—
	M6 x 1	—	—	—	—	—	—	—
	M8 x 1.25	—	—	—	—	—	—	—
	M10 x 1.5	—	—	—	—	—	—	—

Symbol: A44

Applicable to single vane type only

A special end is machined onto both the long and short shafts, and a through-hole is drilled into both shafts. Female threads are machined into the through-holes, whose diameter is equivalent to the diameter of the pilot holes.

- The maximum dimension L1 is, as a rule, twice the thread size.
- Applicable shaft type: J, X, Z • Equal dimensions are indicated by the same marker.

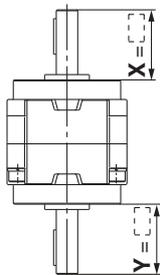


Size	d1 [mm]																
	J			X			Z			J			X			Z	
50	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2
63	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2
80	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2
100	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2	Ø 4.2
Thread	M5 x 0.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	M6 x 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	M8 x 1.25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	M10 x 1.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Symbol: A50

Shorten both long and short shafts.

- Applicable shaft type: Y

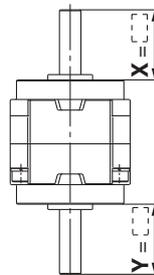


Size	X [mm]		Y [mm]	
	X	Y	X	Y
50	24.5 to 39.5	24.5 to 39.5	24.5 to 39.5	24.5 to 39.5
63	28 to 45	28 to 45	28 to 45	28 to 45
80	30.5 to 53.5	30.5 to 53.5	30.5 to 53.5	30.5 to 53.5
100	40 to 65	40 to 65	40 to 65	40 to 65

Symbol: A53

Shorten both long and short shafts.

- Applicable shaft type: K



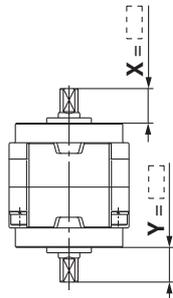
Size	X [mm]		Y [mm]	
	X	Y	X	Y
50	4 to 39.5	4 to 39.5	4 to 39.5	4 to 39.5
63	4 to 45	4 to 45	4 to 45	4 to 45
80	4 to 53.5	4 to 53.5	4 to 53.5	4 to 53.5
100	5 to 65	5 to 65	5 to 65	5 to 65

Double Shaft

Symbol: A56

Shorten both long and short shafts.

- Applicable shaft type: Z

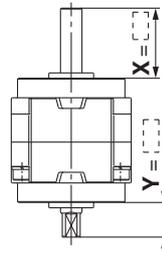


Size	X	Y
50	4 to 19.5	4 to 19.5
63	4 to 21	4 to 21
80	4 to 23.5	4 to 23.5
100	5 to 30	5 to 30

Symbol: A57

Shorten both long and short shafts.

- Applicable shaft type: J



Size	X	Y
50	4 to 39.5	4 to 19.5
63	4 to 45	4 to 21
80	4 to 53.5	4 to 23.5
100	5 to 65	5 to 30

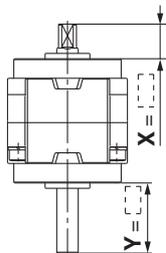
Symbol: A58

The rotation axis is reversed.

The long shaft and short shaft are shortened.

(If shortening the shaft is not required, indicate "*" for dimension X, Y.)

- Applicable shaft type: J, T



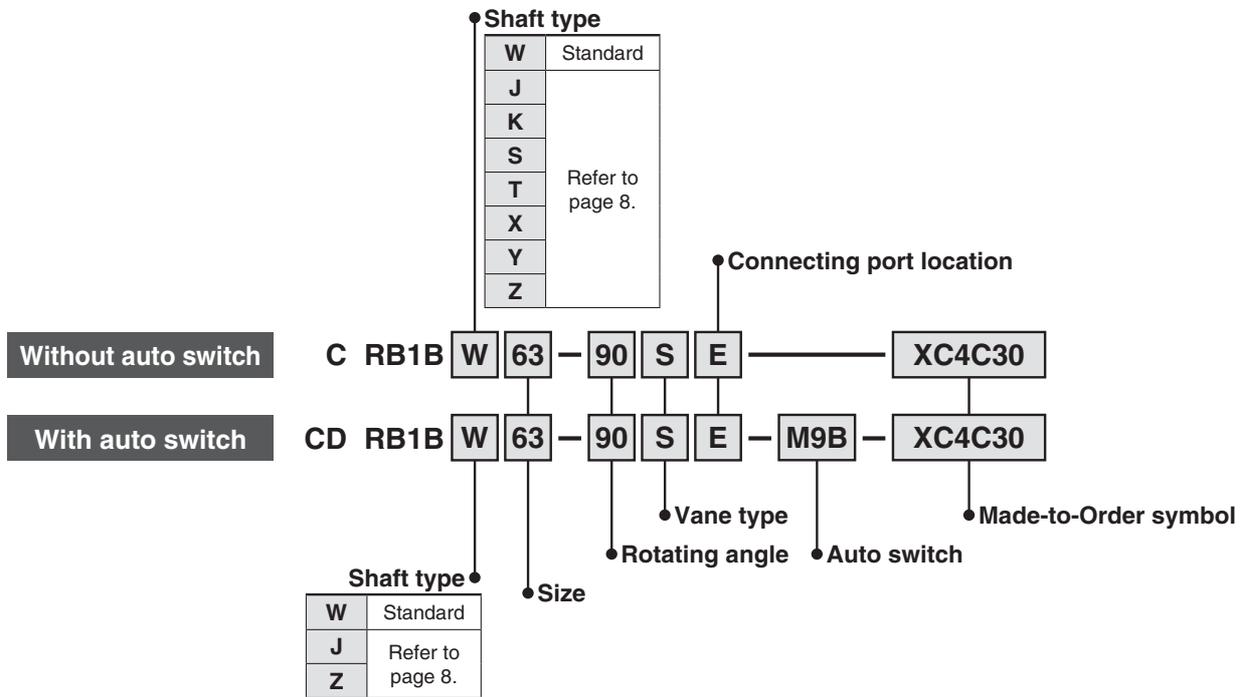
Size	X	Y
50	4 to 19.5	4 to 39.5
63	4 to 21	4 to 45
80	4 to 23.5	4 to 53.5
100	5 to 30	5 to 65

Series CRB1 (Size: 50, 63, 80, 100)

Made to Order

XC1, 4, 5, 6, 7, 26, 27, 30

How to Order



Made-to-Order Symbol

Symbol	Description	Applicable shaft type	Size
		W, J, K, S, T, X, Y, Z	
XC1	Addition of connection port	●	50, 63, 80, 100
XC4	Change of rotating angle	●	
XC5	Change of rotating angle	●	
XC6	Change of rotating angle	●	
XC7*	Reversed shaft	●	
XC26	Change of rotating angle	●	
XC27	Change of rotation range and direction	●	
XC30	Fluorine grease	●	

* This specification is not available for rotary actuators with auto switch unit.

Combination

Symbol	Combination	
	XC1	XC30
XC1	—	●
XC4	●	●
XC5	●	●
XC6	●	●
XC7	●	●
XC26	●	●
XC27	●	●
XC30	●	—

Symbol: C1 Add connection ports on Body (A).
(An additionally machined port will have an aluminum surface since it will be left unfinished.)

Size	[mm]		
	Q	M	N
50	Rc 1/8	21	18
63	Rc 1/8	27	25
80	Rc 1/4	29	30
100	Rc 1/4	38	38

Symbol: C4 Change of rotating angle. (Applicable to single vane type only)
Start of rotation is horizontal line (90° down from the top to the right side).

Size	Rotation range θ [mm]
50	45 ^{+8°} ₀ , 90 ^{+8°} ₀ , 135 ^{+6°} ₀
63	
80	
100	

Start of rotation is the position of the key when A port is pressurised.
(Top view from long shaft side)

CRB1

Simple Specials

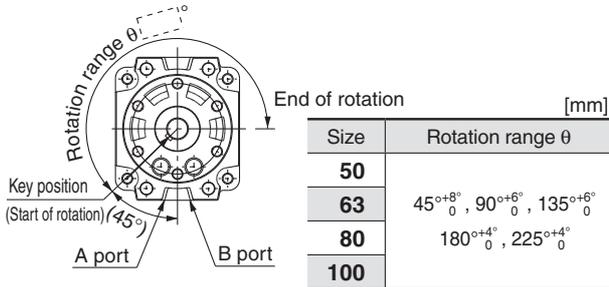
Made to Order

Auto Switch Mounting

Series CRB1

Symbol: C5

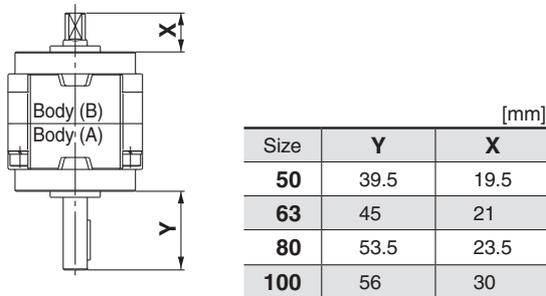
Change of rotating angle. (Applicable to single vane type only)
Start of rotation is 45° up from the bottom of the vertical line to the left side.



Start of rotation is the position of the key when B port is pressurised.
(Top view from long shaft side)

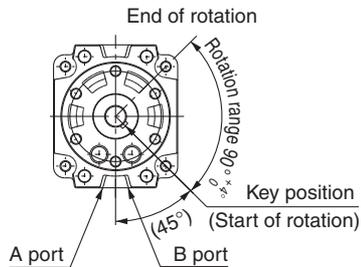
Symbol: C7

The shafts are reversed.



Symbol: C27

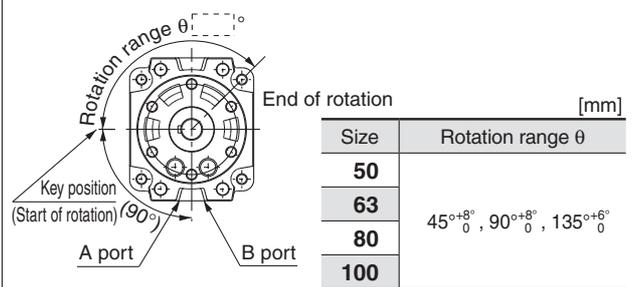
Change of rotating angle. (Applicable to double vane type only)
Rotating angle 90° Start of rotation is 45° up from the bottom of the vertical line of the right side.



Start of rotation is the position of the key when A port is pressurised.
(Top view from long shaft side)

Symbol: C6

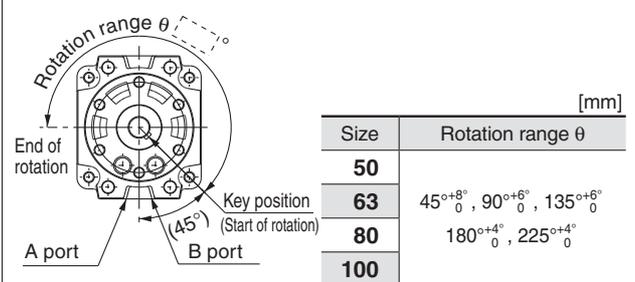
Change of rotating angle. (Applicable to single vane type only)
Start of rotation is horizontal line (90° down from the top to the left side).



Start of rotation is the position of the key when B port is pressurised.
(Top view from long shaft side)

Symbol: C26

Change of rotating angle. (Applicable to single vane type only)
Start of rotation is 45° up from the bottom of the vertical line to the right side.



Start of rotation is the position of the key when A port is pressurised.
(Top view from long shaft side)

Symbol: C30

Change the standard grease to fluorine grease.
(Not for low-speed specification.)

Series CRB1 Auto Switch Mounting

Auto Switch Unit and Switch Block Unit

Unit Part Number

Size	For D-M9□		For D-S/T79□, D-R73/80□		
	Auto switch unit part number*1	Switch block unit part number Common to right-hand and left-hand	Auto switch unit part number*1	Switch block unit part number*2	
				For right-hand	For left-hand
50	P411020-1M	P811010-8M	P411020-1	P411020-8	P411020-9
63	P411030-1M		P411030-1	P411040-8	P411040-9
80	P411040-1M		P411040-1		
100	P411050-1M		P411050-1		

*1 An auto switch will not be included, please order it separately.

*2 Auto switch unit comes with one right-hand and one left-hand switch blocks that are used for addition or when the switch block is damaged.

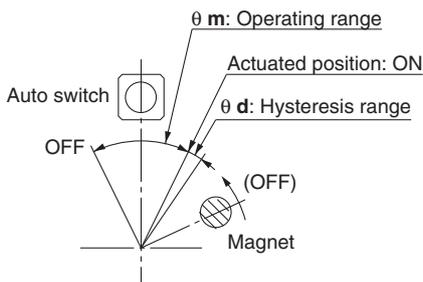
Operating Range and Hysteresis

* Operating range: θm

The range between the position where the auto switch turns ON as the magnet inside the auto switch unit moves and the position where the auto switch turns OFF as the magnet travels the same direction.

* Hysteresis range: θd

The range between the position where the auto switch turns ON as the magnet inside the auto switch unit moves and the position where the auto switch turns OFF as the magnet travels the opposite direction.



D-M9□

Size	θm : Operating range	θd : Hysteresis range
50	86°	10°
63, 80, 100	70°	10°

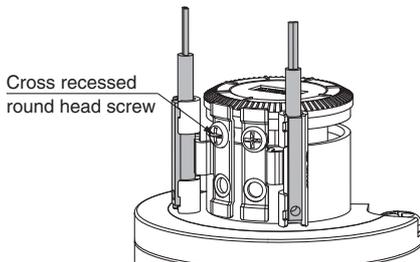
D-S/T79□, D-R73/80□

Size	θm : Operating range	θd : Hysteresis range
50	52°	8°
63, 80, 100	38°	7°

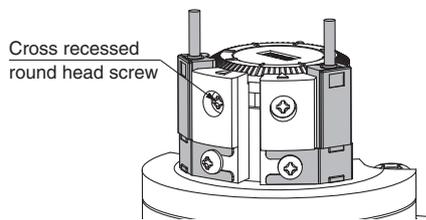
Note) Since the figures in the above table are provided as a guideline only, they cannot be guaranteed. Adjust the auto switch after confirming the operating conditions in the actual setting.

How to Change the Auto Switch Detecting Position

* When setting the detecting position, loosen the cross recessed round head screw a bit and move the auto switch to the preferred position and then tighten again and fix it. At this time, if tightened too much, screw can become damaged and unable to fix position. Proper tightening torque: 0.4 to 0.6 [N·m]
When tightening the cross recessed round head screw, take care that the auto switch does not tilt.



D-M9□
Size: 50 to 100



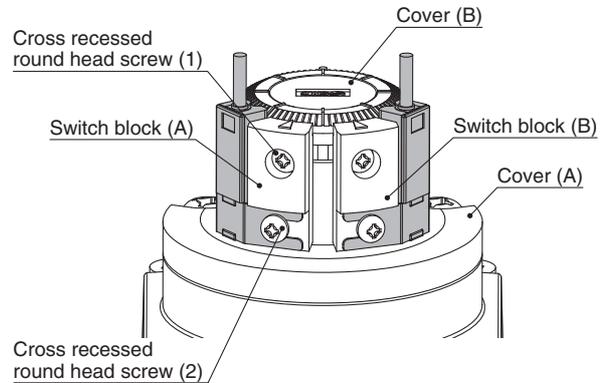
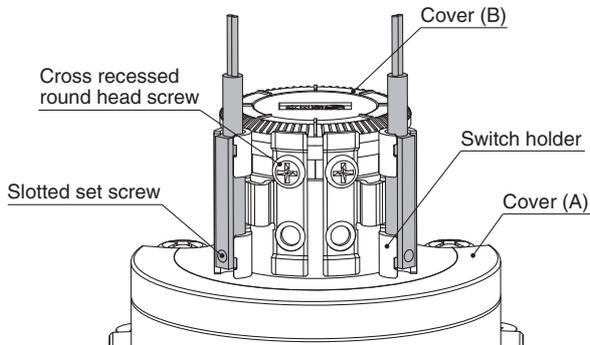
D-S/T79□
D-R73/R80□
Size: 50 to 100

Series CRB1

Auto Switch Mounting

External view and descriptions of auto switch unit

The following shows the external view and typical descriptions of the auto switch unit.

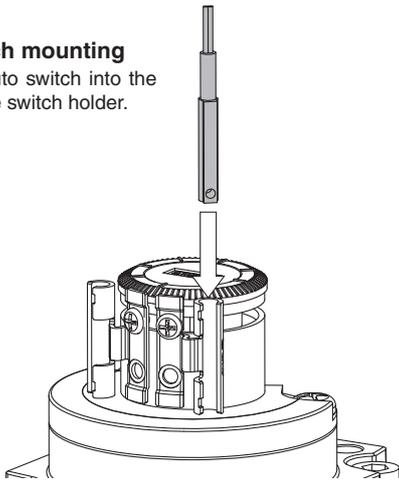


Mounting Procedure

<Applicable auto switch>
Solid state auto switch
D-M9□

1. Auto switch mounting

Insert the auto switch into the groove of the switch holder.

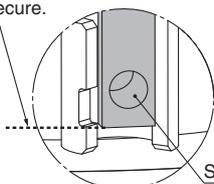


2. Auto switch securing

Align the auto switch with the lower surface of the groove on the side of the switch holder, and secure the slotted set screw. (Refer to the enlarged view.)

* Proper tightening torque: 0.05 to 0.1 [N·m]

Align with the groove lower surface to secure.



Enlarged view

3. Switch holder securing

After the actuated position has been adjusted with the cross recessed round head screw, use the auto switch.

* When tightening the screw, take care that the auto switch does not tilt.

Mounting Procedure

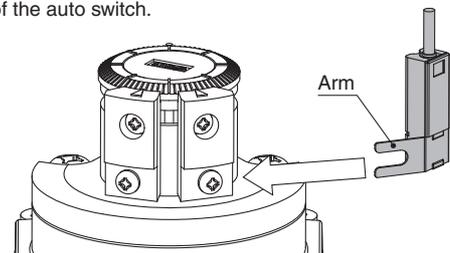
<Applicable auto switch>
Solid state auto switch
D-S79, S7P
D-T79, T79C

Reed auto switch

D-R73/R73C (With indicator light)
D-R80/R80C (Without indicator light)

1. Auto switch mounting

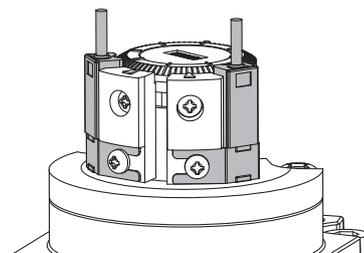
Loosen the cross recessed round head screw (2), and insert the arm of the auto switch.



2. Auto switch securing

Set the auto switch so that it is in contact with the switch block, and tighten the cross recessed round head screw (2).

* Proper tightening torque: 0.4 to 0.6 [N·m]



3. Switch holder securing

After the actuated position has been adjusted with the cross recessed round head screw (1), use the auto switch.

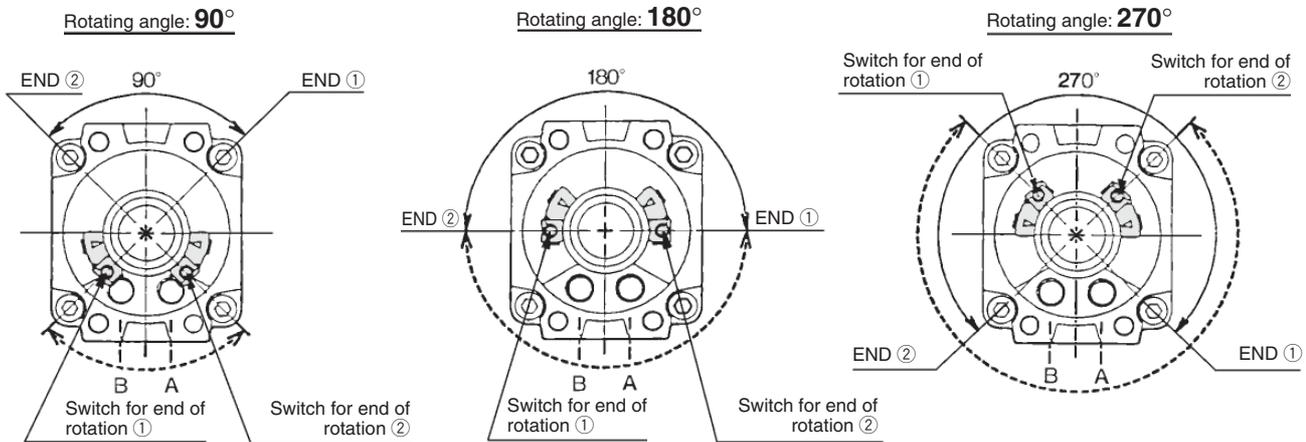
* Proper tightening torque: 0.4 to 0.6 [N·m]

Auto Switch Adjustment

Rotation range of the output shaft key (keyway) and auto switch mounting position

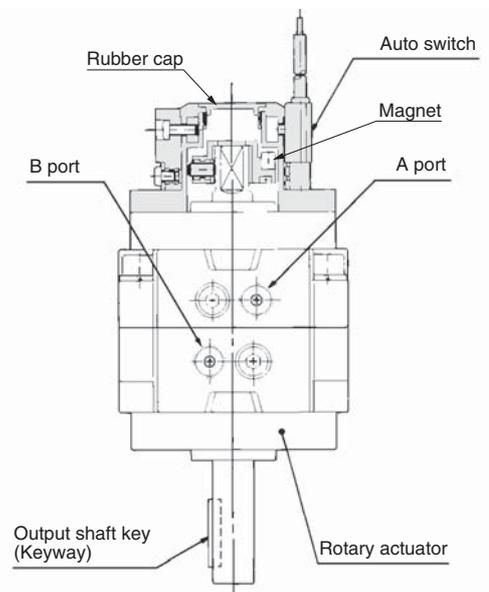
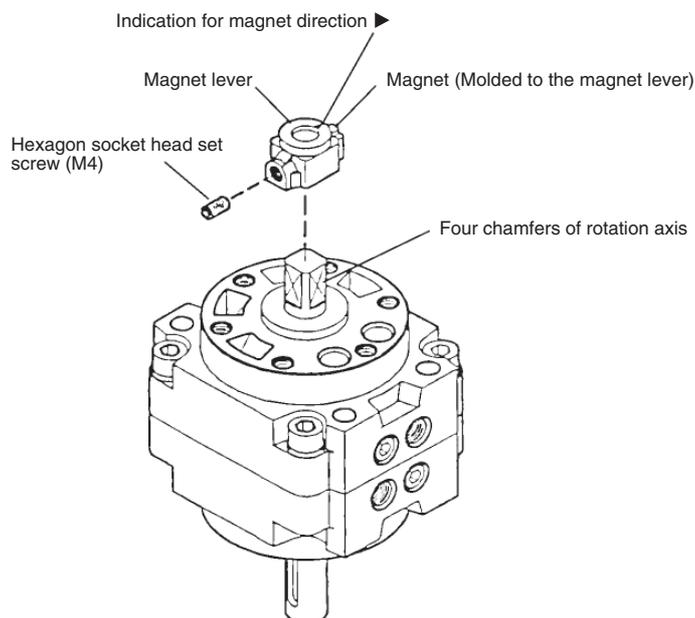
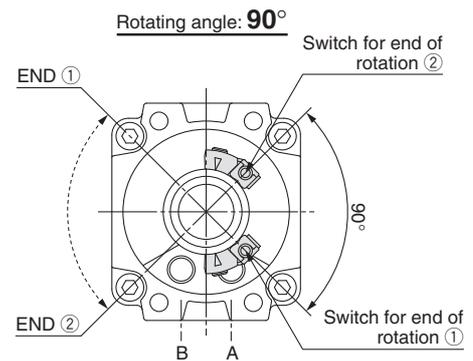
<Applicable models / Size: 50, 63, 80, 100>

<Single vane>



- * Solid-lined curves indicate the rotation range of the output key (keyway). When the key is pointing to end of rotation ① the switch for end of rotation ① will operate, and when the key is pointing to end of rotation ②, the switch for end of rotation ② will operate.
- * Broken-lined curves indicate the rotation range of the built-in magnet. Rotation range of the switch can be decreased by either moving the switch for end of rotation ② clockwise or moving the switch for end of rotation ② counterclockwise. Auto switch in the figures above is at the most sensitive position.
- * Each auto switch unit comes with one right-hand and one left-hand switch.
- * The magnet position can be checked with a convenient ► indication by removing a rubber cap when adjusting the auto switch position.
- * For standard products, a magnet is mounted on the opposite side of the output shaft key.
- * Since four chamfers are machined into the axis of rotation, a magnet position can be readjusted at 90° intervals.

<Double vane>



Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

-  **Caution:** Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
-  **Warning:** Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
-  **Danger:** Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

- *1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
- ISO 4413: Hydraulic fluid power – General rules relating to systems.
- IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
- ISO 10218-1: Manipulating industrial robots - Safety. etc.

Warning

- The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**
Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
- Only personnel with appropriate training should operate machinery and equipment.**
The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.
- Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**
 - The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
 - When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
 - Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.
- Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
 - Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
 - Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue.
 - An application which could have negative effects on people, property, or animals requiring special safety analysis.
 - Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.
Read and accept them before using the product.

Limited warranty and Disclaimer

- The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
- For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
- Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.

*2) Vacuum pads are excluded from this 1 year warranty.

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Caution

- The product is provided for use in manufacturing industries.**
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Caution

- SMC products are not intended for use as instruments for legal metrology.**
Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

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