Rotary Actuator/Vane Type

CRB1 Series

Size: 50, 63, 80, 100





Vane Type Rotary Actuator CRB1 Series



With solenoid valve CVRB1 Series

Series Variations

				Fluid	Air																
				Size			5	0			6	3			8	0			10	0	
	Va	Vane type S: Single vane D: Double vane						S D		5	S D		2	s		D		s		0)
	Por	t loca	tion	Side ported (Nil) Axial ported (E)			Axial ported	Side ported	Axial ported												
			90° 180°				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
		e					•	_	_	•	•		_	•	•		_	•	•	_	_
		g ang		270°		Ì.♦-	•	_	_	•	•		_	•	٠	_	_	•	•	_	_
Standard		otatin	Idard	200°			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	ſ	ř	mi-star	190°		+	•			•	•			•	•		_	•	•		-
			Sen	280°		l+	٠			•	٠			•	٠			•	•		
	Shaft type		Dou	ible shaft	<u>+</u>	•	•	•	•	•	•	•	•	•	٠	•	•	•	٠	•	
l	Cus	hion	Rub	Rubber bumper			•	•	•	•	•	•	•	•	•	٠	•	•	•	٠	•
	Variations		Bas	ic type		•	•	•	•	•	•	•	•	•	•	٠	•	•	•	٠	•
			With	h auto switch		•	•	•	•	•	•	•	•	•	•	٠	•	•	•	٠	•
			With	n One-touch fittings		+	•	•	•												-
			Clea	an series	10-	<u> </u>	•	•	•	•	•	•	•					-			
			Сорр	Copper-free and fluorine-free 20-			•	•	•	•	٠	٠	•	•	٠	٠	•	•	•	٠	•
		V		th solenoid valve CVRB1				•		•		•		•		٠		•		٠	
Option	Mou	nting	With	n foot bracket	<u> </u>	•	•	•	•	•	•	•	•	•	٠	•	•	•	٠	•	
	Mat	erial	for m	less steel specification ain parts		├ ◆	•	•	•	•	•	•	•	•	•	٠	•	•	•	٠	•
		type	Doub (Long	ole shaft g shaft with four chamfers)	J	⊢ ♦-	•	•	•	•	•	•	•	•	•	٠	•	•	•	٠	•
		shaft	Dou with	ble shaft four chamfers	z	┝┿	•	•	•	•	•	•	•	•	•	٠	•	•	•	٠	+
ler	be	aldu	Dou	ıble shaft key	Y	┝┿	•	•	•	•	•	•	•	•	•	٠	•	•	•	٠	•
ade to Orde	laft ty	Do	Dou	ible round shaft	к	+	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	ŝ	t type	Sing	gle shaft key	S	┝┿	•	•	•	•	•	•	•	•	•	٠	•	•	•	٠	+
Σ		le shaft	Sing	gle round shaft T		┝┿	•	•	•	•	•	•	•	•	•	٠	•	•	•	٠	+
		Sing	Sing	le shaft four chamfers	Х	┝┿	•	•	•	•	•	•	•	•	•	٠	•	•	•	•	•
	Pat	tern	Sha	lft pattern		┝┿	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
		Pattern Ro		ation pattern		┝┿	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
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Auto Switch Mounting Page 135

SMC SMC	109
Courtesy of Steven Engineering, Inc - (800) 258-9200 - sale	es@steveneng.com - www.stevenengineering.com

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CRB□2 CRB1

Vane Type Rotary Actuator **CRB1 Series** Size: 50, 63, 80, 100



	Cassial	Fleetrical	light	Minima	Load voltage			Auto s	switch	Loodwine	Le	ead w	ire ler	ngth [m]	Pro-wirod	Annli	aabla
Type	function	entry	ator	(Output)	Load Voltage		model		Leau wire	0.5	1	3	5	None	connector	Appi	ad	
			India	(Output)		DC AC		Perpendicular	In-line	type	(Nil)	(M)	(L)	(Z)	(N)	CONNECTOR	10	au
		Grommet		3-wire (NPN)		5 V,		M9NV	M9N		۲	•		0	—	0	IC circuit — IC circuit	
0.04				3-wire (PNP)		12 V		M9PV	M9P		٠	•	•	0	-	0		
Solid				2-wire		12 V		M9BV	M9B]	٠		•	0	-	0		
state	_		Yes	3-wire (NPN)		5 V,		_	S79]	•	—	•	0	-	0		Deley
switch				3-wire (PNP)		12 V		—	S7P	Oilproof	٠	-	•	0	-	0		
				2 wire	24 V	10.1/			T79	heavy-duty	٠	—	•	0	-	0		Relay,
	Connector		2-wire		12 V			T79C	cord	•	—	•	٠	•	—	_	1 20	
Deed		Grommet	Vaa			100 V	100 V	—	R73		۲	—	•	0	—			
Reed		Connector	Yes	O united			_		R73C]	•	-	•	٠	•		_	
switch		Grommet	No	2-wire		48 V, 100 V	100 V	-	R80]	•	—		0	-		IC circuit	
Switchi		Connector	INU			-	24 V or less	—	R80C		٠	-	•	٠	•		-	
* Lead wire length symbols: 0.5 m Nii (Example) R73C 3 m L (Example) R73CL 5 m Z (Example) R73CZ None N (Example) R73CZ					C CL CZ CN		* Soli proc	d state auto s duced upon re	witch eceip	nes m t of or	arked der.	with	"O" a	re				

- 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 135 to 137 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

undo to	
Maudor	Made to Order
Order	
-	 (For details, refer to pages 124 to 126, 133 and 134.)

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			
V	ane type		Single	vane (S)		Double vane (D)						
Rotat	ing Standard		90° ⁺⁴ , 18	0°*4, 270°*	4 0		9	0°+4				
angle	Semi-standard	1	00°+4, 19	0°*4, 280°*	4 0		10	0°+4				
Fluid					Air (No	n-lube)						
Proof	pressure				1.5	MPa						
Ambient a	nd fluid temperature				5 to	60°C						
Max. op	erating pressure	1.0 MPa										
Min. ope	erating pressure	0.15 MPa										
Rotation t	ime adjustment range	0.1 to 1 s/90°										
Allowab	le 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	Allowable radial load	245 N	390 N	490 N	588 N	245 N	390 N	490 N	588 N			
load	Allowable thrust load	196 N	340 N	490 N	539 N	196 N	340 N	490 N	539 N			
Beari	ng	Bearing										
Port l	ocation	Side ported or Axial ported										
Port Side ported		1,	/8	1,	/4	1,	/8	1/4				
size	Axial ported	1,	/8	1,	/4	1,	/8	1/4				
Moun	ting		Basic, Foot									

Volume

									[cm ³]		
Classification	Rotating angle		Single v	/ane (S)		Double vane (D)					
Classification		50	63	80	100	50	63	80	100		
	90°	30	70	88	186	48	98	136	272		
Standard	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

									[g]		
Madal	Rotating		Single v	ane (S)		Double vane (D)					
woder	angle	50	63	80	100	50	63	80	100		
	90°	810	1365	2070	3990	830	1410	2120	4150		
	180°	790	1330	2010	3880	_	_	_	_		
Main	270°	770	1290	1950	3760	_	_	_	_		
body	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 brack	et assembly	384	785	993	1722	384	785	993	1722		

D-🗆

MRQ

Mounting Bracket Assembly Part No.

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

* Refer to page 119 for detailed dimensions.

SMC

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Vane Type Rotary Actuator CRB1 Series

Effective Output



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



Direct Mounting of Body



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SMC

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 120 for external dimensions.

Clean Series

10 – CRB1BW	Size	Rotating angle	Vane type	Port location
Т				

Clean series, with relief port

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

•••••			_ ICD I
Vane type	Single/Do	uble vane	UNJ
Size	50	63	CRA1
Operating pressure range [MPa]	0.15 t	o 1.0	
Speed regulation range [s/90°]	0.1	o 1	CRQ2
Port location	Side ported of	r Axial ported	MSO
Piping	Screw-	n type	
Relief port size	M5 x	0.8	MSZ
Mounting	Ba	sic	CB02X
Variations	Basic type, Wi	th auto switch	MSQX
Allowable kinetic energy	0.029 J	0.042 J	MRQ



The internal construction of the figure above shows a single vane type.

CRB🗆2

CRB1

MSU

Stainless Steel Specification for Main Parts



Specifications										
Vane type		Single/Do	uble vane							
Size	50	63	80	100						
Operating pressure range [MPa]		0.15	to 1.0							
Speed regulation range [s/90°]	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 0.21									



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 sw	itch CRB1B J	Size – Rotat	ting angle Van	e type P	ort loca	tion – Made	to Order	
					Made to	Order		
	Shaft type				Symb		Description	
J Double shaft (Lo	ng shaft with four chamfers)				XA31 to X	KA60 Shaft type pa	ittern	CRB1
K Double	round snatt				XC1	Addition of co	onnection port	UTID I
T Single	round shaft				XC4	Change of ro	tating angle	MSU
X Single shaft v	vith four chamfers				XC5	Change of ro	tating angle	
Y Double	e shaft key				XC7	Beversed sh	aft	CRJ
Z Double shaft	with four chamfers				XC2	6 Change of ro	tating angle	
					XC2	7 Change of rota	ation range and direction	CRA1
					XC3	0 Fluorine great	ise]
					* Refer to p	ages 127 to 134 for d	etails.	CRQ2
J	К	S	т	X		Y	Z	MSQ
	<u> </u>	Key				Key		
								MSZ
				l nar	of			CDUSA
╽┍━╍╧╪╧╍┓╴┸	╵┸┲═╧╪╧╍┓╴╽	t the second sec	┥┍╧╇╧╌╸┥		<u> </u>	**		MSQX
╽┟┲╼╲╧┲╼┓┶	┟┲╼╲╧╱╾┱┶	┟┲╼╲╧╜╼┓┶	┟┎┷┲╾╲╧┲╾┓┶				╽┟┲╾╲╧┲╼┱┶	
○ ⊕	@ @	□ �� □		🗌 🎯 🤅	ן ך ו	🞯 🍽		MRQ
. •	• •	••		. 00)	. •••		
│ <u>॑<u>व</u>िं/॒॑॑<u>ा</u>॑ऀ</u>		ਥ						
	╵└──╤╪╤╍┙┰│							
			1					
						Key /	1	
			[mm]	,				1
Size	C	D	[]					
50	19.5	39.5						
63	21	45						
80	23.5	53.5						
100	30	65						
Note) Dimensions of the	shaft and key groove are	e the same as the standa	ard.					
(Dimension parts	different from the standar	d conform to the general	tolerance.)					
With auto ew		L Size Bot	ating angle Va	ne tvne	Port loc	ation - Mad	e to Order	
with auto sw				ine type	r ont loc			
With auto	switch •				Made to	Order	-	_
					Symb	ol E	Description	
	Shaft type	•			XA31 to X	KA60 Shaft type pa	attern	-
J Double shaft (L	ong shaft with four chamfers)				XC1	Addition of co	onnection port	4
Z Double shaf	with four chamfers				XC5	Change of ro	tating angle	1
					XC6	Change of ro	tating angle	1
	7				XC7	Reversed sh	aft]
J	2				XC2	6 Change of ro	tating angle	-
					XC2	Change of rota	ation range and direction	·
					The above	may not be selected	when the product comes	' D- □
	 ଆ oț				with an auto	switch. Refer to pag	es 127 to 134 for details	
- 6	- O					[mm]		
		Sizo				D.		
		50	10	5	30	9.5		
		63	21	-	4	5		
		80	23.	5	5	3.5		
		100	30		6	5		
		Note) Dimensions	of the shaft and key groc	ve are the san	ne as the sta	ndard.		
L ¥ ¥	W W	(Dimension	parts different from the st	andard conform	m to the gen	eral tolerance.)		
			6 01 10				115	

Construction

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









Component Parts

No.	Description	Material	Note
1	Body (A)	Aluminum alloy	Painted
2	Body (B)	Aluminum alloy	Painted
3	Vane shaft	Carbon steel*	
4	Stopper	Aluminum 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.



D-M9□

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	
10	Cross recessed round head screw	Chrome molybdenum steel	For size 50, 63, 80
12	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 135.)

10 1

(II

12





(Short shaft side)

With auto switch

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

116

Dimensions: 50, 63, 80, 100

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



0.20	_	~~		•		(g6)	(h9)	(h9)	ũ	••	•		-		1412	1110		142	•	~	(*)	•	•	•	•		~	•	-
50	67	78	70	19.5	39.5	12 ^{-0.006}	11.9 _{-0.043}	25 _{-0.052}	3	10	13	5	13.5	26	18	21	14	18	50	M6 x 1 depth 9	1/8	60	^R 6	11	34	66	46	5.5	6.5
63	82	98	80	21	45	15 ^{-0.006}	14.9 _{-0.043}	28 _{-0.052}	3	12	14	5	17	29	22	27	15	25	60	M8 x 1.25 depth 10	1/8	75	^R 7.5	14	39	83	52	8	9
80	95	110	90	23.5	53.5	17 ^{-0.006}	16.9 _{-0.043}	30 _{-0.052}	3	13	16	5	19	30	30	29	20	30	70	M8 x 1.25 depth 12	1/4	88	^R 8	15	48	94	63	7.5	9
100	125	140	103	30	65	25 ^{-0.007}	24.9 ⁰ _{-0.052}	45_0.062	4	19	22	5	28	35.5	32	38	24	38	80	M10 x 1.5 depth 13	1/4	108	^R 11	11.5	60	120	78	7.5	11

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

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

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

Single vane type/Double vane type CDRB1BW□-□S/D <Port location: Side ported>



Key Dimensions

																													'unur'
Size	A 1	A 2	в	с	D	E (g6)	F (h9)	G1	G2	H (R)	J	к	L	M1	M2	Мз	N1	N2	Ρ	Q	R (*)	s	т	U	۷	w	x	Y	z
50	67	78	70	32	39.5	12 ^{-0.006}	25 _{-0.052}	3	6.5	^R 22.5	32.5	5	13.5	26	18	21	14	18	50	M6 x 1 depth 9	1/8	60	^R 6	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	^R 30	21	5	17	29	22	27	15	25	60	M8 x 1.25 depth 10	1/8	75	^R 7.5	14	39	83	52	8	9
80	95	110	90	34	53.5	17 ^{-0.006}	30 _{-0.052}	3	8	^R 30	21	5	19	30	30	29	20	30	70	M8 x 1.25 depth 12	1/4	88	^R 8	15	48	94	63	7.5	9
100	125	140	103	39	65	25 ^{-0.007}	45 _{-0.062}	4	13	^R 30	21	5	28	35.5	32	38	24	38	80	M10 x 1.5 depth 13	1/4	108	^R 11	11.5	60	120	78	7.5	11

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

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

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

A 118

Dimensions

Option: Foot bracket



CRB[2
CRB1
MSU
CRJ
CRA1
CRQ2
MSQ
MSZ
CRQ2X MSQX
MRQ

																[mm]
Size	Foot bracket assembly part number	LA1	LA2	LB1	LB2	LC	LD	LE	LF	LG	LH	LJ1	LJ2	LK	LM	т
50	P411020-5	78	70	45	50	36	25.5	ø10	4.5	45	7.5	34	66	60.5	84	48
63	P411030-5	100	90	5	6	44	30	ø12	5	60	9.5	39	83	75.5	110	52
80	P411040-5	111	100	6	3	46	32	ø12	6	65	9.5	48	94	88.5	120.5	60
100	P411050-5	141	126	8	0	55	39.5	ø14	6	80	11.5	60	120	108.5	150.5	80

Note 1) The foot bracket (with bolt, nut, and Note 1) The foot bracket (with boit, 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.

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

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Vane Type Rotary Actuator **CRB1** Series

With One-touch Fittings: 50

Basic type CRB1 UW50F- CRB1 V50F- CRB1 V50F-



(Fitting position: Side)

B port

ÓĆ

ØC

M

CRB1□W50F-□□E <Port location: Axial ported>



With auto switch CDRB10W50F-00-0

<Port location: Side ported>



CDRB1 W50F- E-<Port location: Axial ported>



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

 \ast 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.

Rotary Actuator with Solenoid Valve CVRB1 Series Size: 50, 63, 80, 100



N (Example) R73CN None Solid state auto switches marked with "O" are produced upon receipt of order.

121

SMC

R73C

R80

B80C

100 V

24 V or les

48 V. 100 V

•

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IC circui

Reed

auto

switch

2-wire

Grommet

Connector

å



Made to Order Made to Order (For details, refer to pages 124 to 126, 133 and 134,

	······································
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

Refer to pages 135 to 137 for actuators

· How to change the auto switch detecting

· Auto switch unit and switch block unit

· Operating range and hysteresis

Solenoid Valve Specifications

Model			VZ3000/5000 series				
Manual override			Non-locking push type Locking type (Slotted), Locking type (Manual)				
Pilot exhaust type			Pilot valve individual exhaust				
Mounting position			Free				
Impact/Vibration resistance [m/s ²] Note 1)			300/50				
Enclosure			Dusttight				
Electrical entry			Grommet (G)/(H), L plug connector (L), M plug connector (M), DIN terminal (D)				
Call retail valtage D/J	AC 50/60 Hz		100, 200				
Con rated voltage [v]	DC		24				
Allowable voltage fluctuation [%]			-15 to +10 of rated voltage				
Power consumption [W] [Current mA] Note 2)		DC	1.8 (With light: 2.1) (24 VDC: 75 [With light: 87.5])				
Apparent power [VA] Note 2)		Inrush	4.5 to 50 Hz, 4.2/60 Hz [100 VAC: 45/50 Hz, 42/60 Hz 200 VAC: 22.5/50 Hz, 21/60 Hz]				
[Current mA]	AC	Holding	3.5/50 Hz, 3/60 Hz [100 VAC: 35/50 Hz, 30/60 Hz] 200 VAC: 17.5/50 Hz, 15/60 Hz]				
Surge voltage suppressor			DC: Diode, AC: ZNR				
Indicator light			DC: LED (Red), AC: Neon bulb				

* Ontion

Note 1) Impact resistance: No malfunction occurred in the impact test using a drop impact tester. The test was performed at both energized and de-energized states to the axis and right angle direction of the main value and armature. Vibration resistance: No malfunction occurred in the one-sweep test between 45 and 2000 Hz. A test was performed at both ener-

gized and de-energized states to the axis and right angle direction of the main valve and armature. (Value in the initial stage.) Note 2) At the rated voltage.

About rotary actuator specifications

The vibration adjustment range differs from that of the standard series.

With solenoid valve: 0.3 to 1 s/90° Other specifications and structures are similar to those of the standard CRB1 series. Refer to pages 111 and 116.

Dimensions

position

with auto switches.

· Auto switch mounting

· Auto switch adjustment



2	SMC	
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60 (61) 16

70 (71)

24 11.5 30

29 14

29

14

23.5

52 (53)

62 (63)

62 (63)

38

38

104 (120.5)

124 (139)

124 (139) 36

27.5 1/8

42.5 1/8

1/8

102 (136.5)

140 (155)

140 (155) 70 (71) 17

A 122

63

80

100

98 82 18 36 28 88

110 95 22 48 4 100

140

125 22 48 4 100

CRB1 Series (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. (Refer to the front matter.) Please contact SMC for a specification sheet when placing an order.

Shaft Pattern Sequencing I





Shaft Pattern Sequencing Symbol

Note) The tolerance of the additionally machined parts conforms to the general tolerance.

Axial: Top (Long shaft side)

Cumbal	Description		Size						
Symbol	Description	50	63	80	100				
XA1	Shaft-end female thread	•	۲	٠	•				
XA14*	Shaft through-hole + Shaft-end female thread	•	٠	٠	•				
XA17*	Change of long shaft length (Change of key length)	•	•	•	•				
XA24*	Double key		٠	۲					

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

Axial: Bottom (Short shaft side)

Cumhal	Description		Size					
Symbol			63	80	100			
XA2*	Shaft-end female thread	٠	٠	٠				
XA15*	Shaft through-hole + Shaft-end female thread	٠	٠	٠	•			
XA18*	Change of short shaft length	۲		۲				

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

Combination

XA Combination

Symbol	Description	Axial c	firection	cion Combination										
Cymbol	Description	Up	Down					00	monta					
XA1	Shaft-end female thread	•	-	XA1										
XA2	Shaft-end female thread	-	۲	•	XA2]								
XA13	Shaft through-hole			-	-	XA13								
XA14	Shaft through-hole + Shaft-end female thread		-	-	—	-	XA14							
XA15	Shaft through-hole + Shaft-end female thread	-	•	-	—	—	-	XA15						
XA16	Shaft through-hole + Double shaft-end female threads			-	-	-	—	-	XA16					
XA17	Change of long shaft length (Change of key length)		-	-			—			XA17				
XA18	Change of short shaft length	—	۲		—		۲	—	—	—	XA18			
XA19	Change of double shaft length	•		-	—		-	—	—	—	—	XA19		
XA20	Reversed shaft, Change of double shaft length			-	-		_	-	-	-	—	—	XA20	
XA24	Double key		-											XA24

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

XAD, XCD Combination

Combination other than -XAD, such as Made to Order (-XCD), is also available. Refer to pages 133 to 134 for details about made-to-order specifications.

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

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

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SMC Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Double Shaft

Symbol	Description		Size					
	Description	50	63	80	100			
XA13*	Shaft through-hole	٠	•	۲				
XA16*	Shaft through-hole + Double shaft-end female threads	٠	•	٠				
XA19*	Change of double shaft length	•	•	٠				
XA20*	Reversed shaft, Change of double shaft length	۲		۲				

* 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.





Axial: Bottom (Short shaft side)



[mm]

[mm]

ø6.8

[mm]

02

M3, M4, M5

M4, M5, M6

M4, M5, M6

M5, M6, M8

50 63 80 100

ø4.2 ø4.2 ø4.2

ø5

ø5 ø5

Υ

4 to 19.5

4 to 23.5

4 to 21

5 to 30

D-

Double Shaft Symbol: A13 Symbol: A16 Applicable to single vane type only 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. Shaft with through-hole · Minimum machining diameter for d1 is 0.1. · Applicable shaft type: W The maximum dimension L1 is, as a rule, twice the thread size. (Example) For M5: L1 = 10 d1 = ø Applicable shaft type: W · Equal dimensions are indicated by the same marker. [mm] [mm] Q1 = M []] Size Size d1 50 100 63 80 50 ø4 to ø5 Thread 11 M5 x 0.8 63 ø4 to ø6 ø4.2 ø4.2 ø4 2 _ Ξ 80 M6 x 1 ø5 ø5 ø5 ø4 to ø6.5 _ Ξ 100 ø5 to ø8 M8 x 1.25 ø6.8 Qī Symbol: A19 Symbol: A20 Shorten both long and short shafts The rotation axis is reversed. (If shortening the shaft is not required, indicate "*" for dimension X, Y.) · Applicable shaft type: W Applicable shaft type: W Ш × [mm] [mm] Size х Y Size х v 50 24.5 to 39.5 4 to 19.5 50 4 to 19.5 24.5 to 39.5 4 to 21 to 45 63 28 to 45 4 to 21 63 28 80 30.5 to 53.5 4 to 23.5 80 4 to 23.5 30.5 to 53.5 100 40 to 65 100 5 to 30 5 to 30 40 to 65

CRB1 Series (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. (Refer to the front matter.)

Shaft shape pattern is dealt with simple made-to-order system. (Refer to the front matter.) Please contact SMC for a specification sheet when placing an order.



Shaft Pattern Sequencing Symbol

• Axial: Top (Long shaft side)

Symbol	Description	Shaft type	Size
XA31	Shaft-end female thread	S, Y	
XA33	Shaft-end female thread	J, K, T	
XA35	Shaft-end female thread	X, Z	50,
XA37	Stepped round shaft	J, K, T	63,
XA45	Middle-cut chamfer	J, K, T	80,
XA48	Change of long shaft length (With keyway)	S, Y	100
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	
XA34	Shaft-end female thread	K, T	
XA36	Shaft-end female thread	J, X, Z	50,
XA38	Stepped round shaft	К	63,
XA46	Middle-cut chamfer	К	80,
XA49	Change of short shaft length (With keyway)	Υ	100
XA52	Change of short shaft length (Without keyway)	К	
XA55	Change of short shaft length (With four chamfers)	J, Z	

Double Shaft

• Dour	ble Shaft		
Symbol	Description	Shaft type	Size
XA39*	Shaft through-hole	S, Y	
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	50
XA44*	Shaft through-hole + Double shaft-end female threads	J, X, Z	62
XA50	Change of double shaft length (Both sides with keyway)	Y	03,
XA53	Change of double shaft length (Without keyway)	К	80,
XA56	Change of double shaft length (Both sides with four chamfers)	Z	100
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)	Х	
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.

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Combination

XA Combination

Cumhal	Description	Axial d	irection	Ap	plic	cab	le s	haf	t ty	ре						Con	nbina	ation					
Symbol	Description	Up	Down	J	κ	S	Т	Х	Υ	Ζ		_	*]	Thes	e are	e sha	ft tv	pes t	hat o	can b	be co	mbir	ned.
XA31	Shaft-end female thread	•	—	—	—	۲	-	-		—	XA31												
XA32	Shaft-end female thread	_	\bullet	—	_	۲	_	-	•	—	۲	XA32											
XA33	Shaft-end female thread	•	-	•	•	-	•	-	—	—	—	—	XA33										
XA34	Shaft-end female thread	_	\bullet	—	•	—		-	—	—	—	—	•	XA34		_							
XA35	Shaft-end female thread	•	_	—	_	_	_	•	_	•	—	—	—	—	XA35								
XA36	Shaft-end female thread	—	\bullet	•	—	-	—		—	•	—	—	J*	-	X, Z*	XA36							
XA37	Stepped round shaft	•	—	•	•	—	۲	-	—	—	—	—	—	K, T*	—	J*	XA37						
XA38	Stepped round shaft	—	\bullet	—	•	-	—	-	—	—	—	—	K*	-	—	—							
XA39	Shaft through-hole	•	\bullet	—	—	۲	_	-	•	—	—	—	—	—	—	—	—	J					
XA40	Shaft through-hole	۲	\bullet	—	۲		۲	-	—	—	—	—	_	-	—	—	—]					
XA41	Shaft through-hole	•	\bullet	•	—	—	-	•	—	•	—	—	—	-	—	—	—						
XA42	Shaft through-hole + Double shaft-end female threads	•	\bullet	—	—	•	—	-	•	—	—	—	—	-	—	—	—						
XA43	Shaft through-hole + Double shaft-end female threads	۲		-	۲	—	۲	-	—	-	—	—	—	-	—	—	—						
XA 44	Shaft through-hole + Double shaft-end female threads	•	\bullet	•	—	—	-	•	—	•	—	—	—	-	—	—	—	XA38					
XA45	Middle-cut chamfer	•	-	•	۲	-	•	-	—	—	—	—	—	K, T*	—	J*	—	K*	XA39	XA40	XA41	XA45	
XA46	Middle-cut chamfer	—		-	۲	—	-	-	—	-	—	—	K*	-	—	—	K*	-	—	-	—	K*	XA46
XA48	Change of long shaft length (With keyway)	•	—	—	—	۲	-	-		—	—	٠	—	-	—	—	—	-	۲	—	—	-	—
XA49	Change of short shaft length (With keyway)	—	\bullet	—	—	-	—	-	•	—	Y^*	—	—	-	—	—	—	—	Υ*	—	-	—	—
XA50	Change of double shaft length (Both sides with keyway)	۲		—	—	—	-	-		—	—	—	—	-	—	—	—	-	Y*	-	—	-	—
XA51	Change of long shaft length (Without keyway)	•	—	•	•	—	۲	-	—	—	—	—	—	K, T*	—	J*	—	K*	-	K, T*	J*	-	κ*
XA52	Change of short shaft length (Without keyway)	—	\bullet	—	•	-	—	-	—	—	—	—	K*	-	—	—	—	—	—	K*	-	Κ*	—
XA53	Change of double shaft length (Without keyway)	۲	\bullet	—	۲	—	-	-	—	—	—	—	—	-	—	—	—	-	—	K*	—	-	—
XA54	Change of long shaft length (With four chamfers)	•	—	—	-	-	—	•	—	•	—	—	—	-	—	X, Z*	—	-	—	—	X, Z*	-	—
XA55	Change of short shaft length (With four chamfers)	—			—	—	—	-			_	-	J*	-	Ζ*	-	J*	-	—		J, Z*	J*	—
XA56	Change of double shaft length (Both sides with four chamfers)	•	\bullet	—	—	-	—	-	—	•	_	—	—	-	—	—	—	—	—	—	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)	•	•		—	-	•	—		-	_	—	—	-	—	—	—	—	—	Τ*	J*	-	—
XA59	Reversed shaft, Change of shaft length (With four chamfers)	_	•	—	_	-	_	•	_	—	_	—	_	-	—	—	—	-	—	—	X*	-	_
XA60	Reversed shaft, Change of shaft length (With keyway)	_	•	_	—	۲	—	-	_	_	-	—	-	-	-	—	-	-	S*	—	_	-	-

Combinations of XA39 to XA44 with others are not available.

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

A total of two XA combinations is available.

Example: XA31A32

Note) The tolerance of the additionally machined parts conforms to the general tolerance.

XAD, XCD Combination

Combination other than $XA\Box$, such as Made to Order ($XC\Box$), is also available. Refer to pages 133 and 134 for details about made-to-order specifications.

Symbol	Symbol Description		XA31 to XA60
XC1	Addition of connection port	•	
XC4	Change of rotating angle		
XC5	Change of rotating angle		
XC6	Change of rotating angle	•	•
XC7	Reversed shaft	J, S, T, X	—
XC26	Change of rotating angle	•	•
XC27	Change of rotation range and direction		
XC30	Fluorine grease		

The vane type for the shaft through-hole is compatible with single vanes only. A total of four XA⊟ and XC⊟ combinations is available. Example: XA31A32C1C30 XA32C1C4C30

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



Axial: Bottom (Short shaft side)



[mm]

v

M3, M4, M5

M4, M5, M6

M4, M5, M6

M5, M6, M8

[mm]

[mm]

т

Q2

02

Q2

.1 z

M3, M4, M5

M4, M5, M6

M4, M5, M6

[mm]

D2

3 to 11.9

3 to 14.9

129

L2 max

Y-3

Y-3

Y-3 3 to 16.9

Y-4 3 to 24.9 D-🗆



A Caution

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

		[mm]
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
130		

Axial: Bottom (Short shaft side)



100

40 to 65

SMC

Simple Specials CRB1 Series



Double Shaft Symbol: A56 Shorten both long and short shafts Symbol: A57 Shorten both long and short shafts. Applicable shaft type: Z Applicable shaft type: J Ш × [mm] [mm] γ Size Y Size Х Х 50 4 to 19.5 4 to 19.5 50 4 to 39.5 4 to 19.5 1 63 4 to 21 4 to 21 63 4 to 45 4 to 21 80 4 to 23.5 4 to 23.5 80 4 to 53.5 4 to 23.5 100 5 to 30 5 to 30 100 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 [mm] Size Х Y i 50 4 to 19.5 4 to 39.5 4 to 21 63 4 to 45 80 4 to 23.5 4 to 53.5 100 5 to 30 5 to 65 Ш

CRB1 Series (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 W, J, K, S, T, X, Y, Z	Size
XC1	Addition of connection port	•	
XC4 Change of rotating angle			
XC5 Change of rotating angle			50,
XC6 Change of rotating angle		•	63,
XC7*	Reversed shaft		80,
XC26 Change of rotating angle			100
XC27 Change of rotation range and direction			
XC30	Fluorine grease		

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



Combination





133



CRB1 Series Auto Switch Mounting

Auto Switch Unit and Switch Block Unit

Unit Part Number

		For D-M9□	For D-S/T79□, D-R73/80□				
Size	Auto switch unit	Switch block unit part number	Auto switch unit	Switch block unit part number*2			
	part number*1 Common to right-hand and lef		part number*1	For right-hand	For left-hand		
50	P411020-1M		P411020-1	P411020-8	P411020-9		
63	P411030-1M	D011010 0M	P411030-1				
80	P411040-1M	P811010-8M	P411040-1	P411040-8	P411040-9		
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: θ m

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: θ d

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	θ m: Operating range	θ d: Hysteresis range			
50	86°	10°			
63, 80, 100	70 °	10°			

D-S/T79, D-R73/80

Size	θ m: Operating range	θ d: 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.



CRB□2 CRB1 MSU CRJ

CRA1

CR02

MSO

MSZ

CR02X

MSQX

MRQ

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□



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.



3. Switch holder securing

Enlarged view

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

Slotted set screw

* 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]

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Auto Switch Adjustment

Rotation range of the output shaft key (keyway) and auto switch mounting position <Applicable models / Size: 50, 63, 80, 100>

Magnet (Molded to the magnet lever)

Four chamfers of rotation axis

<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 ③ clounterclockwise. 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.

Indication for magnet direction >

Magnet lever

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Hexagon socket head set screw (M4)



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Output shaft key

(Keyway)

Rotating angle: 90°

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Switch for end of

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rotation

Auto switch Magnet A port

Rotary actuator

END 2

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