

Our highlighted product for you

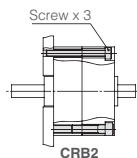
Rotary actuator CRB2 Series

For more details
go to page 202

Many combinations available!

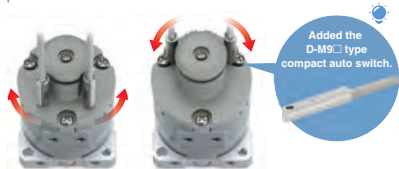
Direct mounting

The rotary actuator body can be mounted directly. Not possible for size 10 to 40 with unit(s).



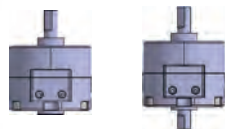
► The mounting position of the auto switch can be set freely

The switch can be fixed in the desired position in the circumferential direction.



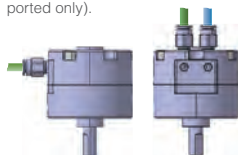
Two shaft options available

Single shaft Double shaft



Connecting port location: Side ported or axial ported

The port location can be selected according to the application (Size 10 to 40 with unit(s) are side ported only).



With auto switch unit



With angle adjuster unit



With auto switch unit
+
With angle adjuster unit

Rotary actuators

Rotary table, vane type MSUB Series



- Sizes 1, 3, 7, 20, rotary angle 90° or 180°
- Compact rotary table, vane with ball bearing rotary plate
- Both end positions adjustable by ±5°
- Double vane type with rotary angle 90° for higher torque
- Rotary plate bearing allows high axial and lateral loads, and supports moments
- Rotary plate with groove for centre pin for the stable mounting of attachments
- Auto switch for detection of the end position mounted on a compact body.

Part number	Size	Rotation angle	Allowable torque [N•m]	Allowable kinetic energy [J]	Thread connection
MSUB1-90S ●	1	90°	0.11	0.005	M3
MSUB1-180S ●		180°			
MSUB3-90S ●	3	90°	0.31	0.013	M5
MSUB3-180S ●		180°			
MSUB7-90S ●	7	90°	0.69	0.032	
MSUB7-180S ●		180°			
MSUB20-90S ●	20	90°	1.78	0.056	
MSUB20-180S ●		180°			

* At 0.5 MPa

Possible auto switches

Size	1, 3	7, 20
Reed	D-93AL	D-R731L + D-R732L
3 wire solid state PNP	D-S9P1L + D-S9P2L	D-S7P1L + D-S7P2L
3 wire solid state NPN	D-S9N1L + D-S9N2L	D-S7N1L + D-S7N2L

Accessories

Item	Auto switch unit
MSUB1-...	P211070-1
MSUB3-...	P211090-1
MSUB7-...	P211060-1
MSUB20-...	P211080-1

Mini rotary actuator CRJ Series



- Compact design, narrow body
- Patented design, no backlash
- Large diameter output shaft and large roller bearing for high rigidity
- Option with external stoppers, adjustable ±5°, can also be retro-fitted.

Round bar version

Part number	Size	Rotation angle	Allowable torque [N•m]	Allowable kinetic energy [mJ]	Angle adjustment	Auto switch
CRJB□-■ ●	05, 1	90°, 100°, 180°, 190°	05: 0,042	05: 0,25; 1: 0,40	—	2-wire solid state D-M9BL
CRJU□-■ ●	05, 1	90°, 180°	1: 0,095	05: 1,0; 1: 2,0	Both-ended ±5°	

□: Size

■: Rotation angle

External stoppers

For type	CRJU05-90	CRJU05-180	CRJU1-90	CRJU1-180
Part number	P531010-1	P531010-2	P531020-1	P531020-2

Please note: If you fit CRJB actuators with external stoppers, you must use the 100° version to achieve a CRJU with 90°, or the 190° version for the CRJU with 180°.

Possible auto switches

3 wire solid state PNP - axial cable	D-M9PL
3 wire solid state NPN - axial cable	D-M9NL
2 wire solid state - axial cable	D-M9BL

Our highlighted product for you

Rotary actuator, vane type CRB1/CRB2 Series



CRB2 (Ø 10 • 15 • 20 • 30 • 40)

CRB1 (Ø 50 • 63 • 80 • 100)

- D-M9 type compact auto switch can be selected
- Possible to add angle adjusted unit (sizes 10 to 40)
- Sizes 10, 15, 20, 30 and 40 with fixed rotary angles 90°, 180°, 270° or rotary angle stepless adjustable up to 240°
- Simple design means long service life
- No back lash in the end position
- Double vane type with rotary angle 90° and 100° for higher torque (optional)
- Easy readjust of: auto switch bearing body and adjustable rotary stops
- Free mount rotary actuator available (sizes 10 to 40).

Double shaft with single vane

Part number	Size	Rotation angle	Effective rotational torque [N•m] ¹⁾	Allowable kinetic energy [J]	Thread connection
CRB2BW10-90SZ ●	10	90°	0.18	0.00015	M3
CRB2BW10-180SZ ●		180°			
CRB2BW10-270SZ ●		270°			
CRB2BW15-90SZ ●	15	90°	0.46	0.001	
CRB2BW15-180SZ ●		180°			
CRB2BW15-270SZ ●		270°			
CRB2BW20-90SZ ●	20	90°	0.99	0.003	M5
CRB2BW20-180SZ ●		180°			
CRB2BW20-270SZ ●		270°			
CRB2BW30-90SZ ●	30	90°	2.58	0.02	
CRB2BW30-180SZ ●		180°			
CRB2BW30-270SZ ●		270°			
CRB2BW40-90SZ ●	40	90°	5.38	0.04	G 1/8
CRB2BW40-180SZ ●		180°			
CRB2BW40-270SZ ●		270°			
CRB1BW50-90S-XF ●	50	90°	8.14	0.082	
CRB1BW50-180S-XF ●		180°			
CRB1BW50-270S-XF ●		270°			
CRB1BW63-90S-XF ●	63	90°	15.5	0.12	G 1/4
CRB1BW63-180S-XF ●		180°			
CRB1BW63-270S-XF ●		270°			
CRB1BW80-90S-XF ●	80	90°	25.7	0.398	
CRB1BW80-180S-XF ●		180°			
CRB1BW80-270S-XF ●		270°			
CRB1BW100-90S-XF ●	100	90°	51.2	0.6	
CRB1BW100-180S-XF ●		180°			
CRB1BW100-270S-XF ●		270°			

1) Eff. rotational torque at 0.7 MPa

D: Built-in magnet available, place "D" after "C" in sizes 50 to 100 if you want to order it.

Auto switch, angle adjuster and joint unit part number

Size	①	②	③
	Auto switch unit part no. 1,2)	Angle adjuster unit part no. 1)	Joint unit part no. 3)
10	P611070-1	P811010-3	P211070-10
15	P611090-1	P811020-3	P211090-10
20	P611060-1	P811030-3	P211060-10
30	P611080-1	P811040-3	P211080-10
40	P611010-1	P811050-3 ⁴⁾	P211010-10

1) Each unit can be retrofitted to the rotary actuator

2) Auto switch unit can be ordered separately if the rotary actuator with auto switch is required after the product being delivered. Since the auto switch will not be included, please order separately

3) Joint unit is required to retrofit the angle adjuster unit to a rotary actuator with auto switch or to retrofit the auto switch unit to a rotary actuator with angle adjuster

4) P811050-5 in case of unit part number for D-M9□.



Flange

Part number	Size
P211070-2	10
P211090-2	15
P211060-2	20
P211080-2	30

Foot bracket

Part number	Size
P411020-5	50
P411030-5	63
P411040-5	80
P411050-5	100

Auto switches

Part number	Size	Type	Wiring	Cable	Voltage
D-M9P1L+D-M9P2L ¹⁾	10, 15	Solid state	3-wire (PNP)	3 m	24 VDC
D-M9N1L+D-M9N2L ¹⁾			3-wire (NPN)		
D-93AL ¹⁾		Reed	2-wire		
D-M9P1L+D-M9P2L ¹⁾	20, 30, 40, 50, 63, 80, 100	Solid state	3-wire (PNP)		
D-M9N1L+D-M9N2L ¹⁾			3-wire (NPN)		
D-R731L+D-R732L ¹⁾		Reed	2-wire		

1) Left handed and right handed switches are needed so order one of each part number.

Rotary actuator, free mount, vane type

CRBU2 Series



- D-M9 type compact auto switch can be selected
- Rotating angle: 90°, 180°, 270°
- Reduced weight
- Many variations of shaft-end shape (6 types)
- Port location can be selected: Side or axial ported
- Auto switch can be fixed at any position in the circumferential direction
- Many mounting variations.

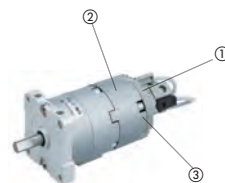


Double shaft with single vane

Part number	Size	Rotation angle	Effective rotational torque [Nm] (at 0.5 MPa)	Allowable kinetic energy [J]	Thread connection
CDRBU2W10-90SZ	10	90°	0.18	0.00015	M3
CDRBU2W10-180SZ		180°			
CDRBU2W10-270SZ		270°			
CDRBU2W15-90SZ	15	90°	0.46	0.001	
CDRBU2W15-180SZ		180°			
CDRBU2W15-270SZ		270°			
CDRBU2W20-90SZ ●	20	90°	0.99	0.003	M5
CDRBU2W20-180SZ		180°			
CDRBU2W20-270SZ		270°			
CDRBU2W30-90SZ	30	90°	2.58	0.02	
CDRBU2W30-180SZ ●		180°			
CDRBU2W30-270SZ		270°			
CDRBU2W40-90SZ	40	90°	5.38	0.04	
CDRBU2W40-180SZ		180°			
CDRBU2W40-270SZ		270°			

Auto switch, angle adjuster and joint unit part number

Size	①	②	③
	Auto Switch Unit part no. ^{1,2)}	Angle Adjuster Unit part no. ¹⁾	Joint Unit part no. ³⁾
10	P611070-1	P811010-3	P211070-10
15	P611090-1	P811020-3	P211090-10
20	P611060-1	P811030-3	P211060-10
30	P611080-1	P811040-3	P211080-10
40	P611010-1	P811050-3 ⁴⁾	P211010-10



1) Each unit can be retrofitted to the rotary actuator

2) Auto switch unit can be ordered separately if the rotary actuator with auto switch is required after the product being delivered. Since the auto switch will not be included, please order separately

3) Joint unit is required to retrofit the angle adjuster unit to a rotary actuator with auto switch or to retrofit the auto switch unit to a rotary actuator with angle adjuster

4) P811050-5 in case of unit part number for for D-M9□.

Flange

Part number	Size
P211070-2	10
P211090-2	15
P211060-2	20
P211080-2	30

Foot bracket

Part number	Size
P411020-5	50
P411030-5	63
P411040-5	80
P411050-5	100

Auto switches

Part number	Size	Type	Wiring	Cable	Voltage
D-M9P1L+D-M9P2L ¹⁾	10, 15	Solid state	3-wire (PNP)	3 m	24 VDC
D-M9N1L+D-M9N2L ¹⁾			3-wire (NPN)		
D-93AL ¹⁾		Reed	2-wire		
D-M9P1L+D-M9P2L ¹⁾	20, 30, 40, 50, 63, 80, 100	Solid state	3-wire (PNP)		
D-M9N1L+D-M9N2L ¹⁾			3-wire (NPN)		
D-R731L+D-R732L ¹⁾		Reed	2-wire		

1) Left handed and right handed switches are needed so order one of each part number.

Rotary actuator, rack and pinion type

CRA1 Series



- Sizes Ø 30 – 100 mm, rotation angle 90° or 180°
- Single and double shaft types available
- Standard model has auto switch for end position detection
- Angle adjusted type available, (Ø 50 to Ø 100)
- Air-hydro type available, (Ø 50 to Ø 100)

Double shaft with built in magnet

Part number	Bore size [mm]	Rotation angle	Effective rotational torque [$N\cdot m$] ¹⁾	Allowable kinetic energy [J]	Port size	Cushion
CDRA1BW30-90Z ●	30	90°	3.82	0.01	M5	None
CDRA1BW30-180Z ●		180°				
CDRA1BW50TF-90CZ ●	50	90°	18.5	0.98	G 1/8	Air Cushion
CDRA1BW50TF-180CZ ●		180°				
CDRA1BW63TF-90CZ ●	63	90°	34.4	1.50		
CDRA1BW63TF-180CZ ●		180°				
CDRA1BW80TF-90CZ ●	80	90°	63.4	2.00	G 1/4	
CDRA1BW80TF-180CZ ●		180°				
CDRA1BW100TF-90CZ	100	90°	149	2.90	G 3/8	
CDRA1BW100TF-180CZ ●		180°				

1) At 1.0 MPa

U: Angle adjusted type available in sizes 50 to 100, place "U" after W if you want to order it.

Possible auto switches

Reed	D-A93L
3 wire solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2 wire solid state/2 colour	D-M9BWL

Foot bracket part number

Foot Bracket	Size
CRA1L30-Y-1Z	30
CRA1L50-Y-1Z	50
CRA1L63-Y-1Z	63
CRA1L80-Y-1Z	80
CRA1L100-Y-1Z	100

Compact rotary actuator

CRQ2 Series



- Sizes 10, 15, 20, 30 and 40
- Compact rotary actuator, rack and pinion type with double piston drive
- Rotational angle adjustable $\pm 5^\circ$
- Stoppers fitted with dampers
- Double piston drive allows end position free from backlash
- Auto switch for querying end position detection can be integrated into body profile.

Part number	Size	Rotation angle	Effective torque [N•m]	Allowable kinetic energy [mJ]	Cushion	Thread connection
CDRQ2BW10-90 ●	10	90°	0.3	0.25	Rubber bumper	M5
CDRQ2BW10-180 ●		180°	0.3	0.25		
CDRQ2BW10-360		360°	0.3	0.25		
CDRQ2BW15-90 ●	15	90°	0.75	0.39		
CDRQ2BW15-180 ●		180°	0.75	0.39		
CDRQ2BW15-360		360°	0.75	0.39		
CDRQ2BW20TF-90C ●	20	90°	1.8	120	Air cushion	G 1/8
CDRQ2BW20TF-180C ●		180°	1.8	120		
CDRQ2BW20TF-360C		360°	1.8	120		
CDRQ2BW30TF-90C ●	30	90°	3.1	250		
CDRQ2BW30TF-180C ●		180°	3.1	250		
CDRQ2BW30TF-360C		360°	3.1	250		
CDRQ2BW40TF-90C ●	40	90°	5.3	400		
CDRQ2BW40TF-180C ●		180°	5.3	400		
CDRQ2BW40TF-360C		360°	5.3	400		

* At 0.5 MPa

Possible auto switches

Reed	D-A93L, D-A90L
3 wire solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2 wire solid state/2 colour	D-M9BWL

Rotary table, rack and pinion type

MSQ Series



- These rotary actuators are a complete combination of double piston drive plus rotary plate, with all the benefits that can be included in such a compact unit
- Prefabricated fixing and adjustment pin holes for simply and quickly mounting the actuator, and adding components to the rotary plate
- The through holes in the plate permit e.g. pneumatic tubes or electric cables to be passed through, so that no messy external wiring is needed
- The rotary plate with ball-bearings provides accuracy and enables greater loads to be supported
- Arranged centrally on one side is the air supply and the angle adjustment for the end positions, steplessly adjustable from 0 to 190 degrees using adjustment screws or shock absorbers. Grooved markings and the scaled rotary plate allow a rapid adjustment of the actuator
- The auto switches can be fully integrated into the body.

Part number	Size	Rotation angle	Effective torque ¹⁾ [N•m]	Allowable kinetic energy [J]	Cushion	Thread connection
MSQB1A ●	1	0~190°	0.10	0.001	None	M3
MSQB2A ●	2		0.21	0.0015		
MSQB3A ●	3		0.35	0.002		
MSQB7A ●	7		0.67	0.006		
MSQB10A	10		1.07	0.007		
MSQB20A ●	20		2.20	0.025	Rubber bumper	M5
MSQB30A ●	30		3.19	0.048		
MSQB50A ●	50		5.57	0.081		
MSQB70A ●	70		8.15	0.24		
MSQB100A	100		12.2	0.32		
MSQB200A ●	200		23.8	0.56	Internal shock absorber	Rc 1/8
MSQB10R ●	10		1.07	0.039		
MSQB20R ●	20		2.20	0.116		
MSQB30R ●	30		3.19	0.116		
MSQB50R ●	50		5.57	0.294		
MSQB70R ●	70		8.15	1.1		
MSQB100R	100		12.2	1.6		
MSQB200R ●	200		23.8	2.9		

1) At 0.6 MPa.

Possible auto switches

Reed ¹⁾	D-A90L, D-A93L
3 wire solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2 wire solid state/2 colour	D-M9BWL

1) Not for MSQB1A to MSQB7A

Double piston drive with rotary plate and external shock absorbers

MSQ□L, MSQ□H Series



- Sizes: 10, 20, 30 and 50
- 4-10 times more admissible kinetic energy compared to internal shock absorber type
- Reduced length
- Symmetrical types available.

Part number	Size	Rotation angle	Allowable kinetic energy [J]	Cushion	Thread connection
MSQB10L2 ●	10	180°	0.161	External shock absorber	M5
MSQB10L3 ●		90°			
MSQB20L2 ●	20	180°	0.574		
MSQB20L3 ●		90°			
MSQB30L2 ●	30	180°	0.805		
MSQB30L3 ●		90°			
MSQB50L2 ●	50	180°	1.310		Rc 1/8
MSQB50L3 ●		90°			
MSQB10H2 ●	10	180°	0.231		M5
MSQB10H3 ●		90°			
MSQB20H2 ●	20	180°	1.06		
MSQB20H3 ●		90°			
MSQB30H2 ●	30	180°	1.21	Rc 1/8	
MSQB30H3 ●		90°			
MSQB50H2 ●	50	180°	1.82		
MSQB50H3 ●		90°			

High precision rotary table

MSQA Series



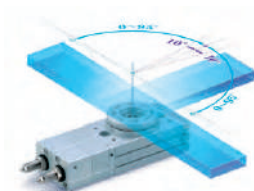
- Sizes: 1, 2, 3, 7, 10, 20, 30 and 50
- Double row precision ball bearing and dimensional tolerances made in H8/h8
- Movement in direction of tables radial thrust: 0.01 mm or less.

3-position rotary table

MSZ Series



- Stop position adjustment range
 - From centre: $\pm 10^\circ$
 - Rotation range: 0 to 95°
- Can be operated by a single valve
- High precision type available.



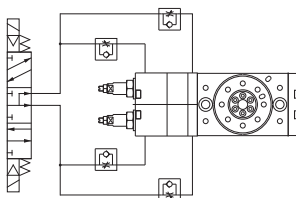
Part number	Size	Rotation angle	Effective torque [N•m] ¹⁾	Allowable kinetic energy [mJ]	Cushion	Thread connection
MSZB10A ●	10	0~190°	1	7	None	M5
MSZB20A ●	20		2	25		
MSZB30A ●	30		3	48		
MSZB50A ●	50		5	81		

1) At 0.6 MPa

Possible auto switches

Reed	D-A90L, D-A93L
3 wire solid state/2 colour	NPN: D-M9NWL, PNP: D-M9PWL
2 wire solid state/2 colour	D-M9BWL

Controllable with one 3-position solenoid valve



Rotary cylinder

MRQ Series



- Size $\varnothing 32, 40$ mm, linear stroke to 100 mm, rotary angle 90° or 180°
- Unit has combination of stroke and rotary movement
- Stroke and rotary movement can be controlled separately
- Pneumatic cushioning for linear movement
- Rotary movement adjustable in both end positions ($\pm 5^\circ$)
- Linear and rotary movement with end position detection using standard auto switch.

Round bar version

Part number	Bore size [mm]	Rotation angle	Effective torque ¹⁾ [N•m]	Allowable kinetic energy [J]	Stroke length [mm]	Thread connection
MRQBS32-□CA ●	32	90°	1.1	0.023	10, 20, 25, 30, 40, 50, 75, 100	G 1/8
MRQBS32-□CB ●		180°				
MRQBS40-□CA ●	40	90°	2.1	0.028		
MRQBS40-□CB ●		180°				

□: Stroke length

1) At 0.5 MPa

Possible auto switches

Reed	D-A73HL
3 wire solid state/2 colour - PNP	D-F7PWL
3 wire solid state/2 colour - NPN	D-F79WL

Accessories/Flange

Part No.	Size
P317010-7	32
P317020-7	40

Rotary gripper

MRHQ Series



- Ø 10, 16, 20, 25
- Compact combination of gripping and rotating function
- Simple piping/wiring from one side
- Length approx. 20 % shorter compared to previous product-combination with adapter plate
- Rotation angles of 90° and 180° are available
- The standard model with magnets allows the retrofitting of auto switches
- Both and positions adjustable by ±5°.

Part number	Rotary actuator			Gripper		Thread connection
	Rotation angle	Angle adjustment	Allowable kinetic energy [J]	Cylinder bore [mm]	Opening/Closing stroke [mm]	
MRHQ10D-90S-N ●	90°	±10°	0.0046	10	4	M5
MRHQ10D-180S-N ●	180°					
MRHQ16D-90S-N ●	90°	±10°	0.014	16	6	
MRHQ16D-180S-N ●	180°					
MRHQ20D-90S-N ●	90°	±10°	0.034	20	10	
MRHQ20D-180S-N ●	180°					
MRHQ25D-90S-N ●	90°	±10°	0.074	25	14	
MRHQ25D-180S-N ●	180°					

Single acting gripper optional

Possible auto switches (for rotary actuators)

3 wire solid state	NPN: D-M9NL-746, PNP: D-M9PL-746
2 wire solid state	D-M9BL-746

Possible auto switches (for gripper)

3 wire solid state	NPN: D-M9NVL, PNP: D-M9PVL
2 wire solid state	D-M9BVL



Parallel air gripper

MHZ2/MHZ Series



- Ø 6, 10, 16, 20, 25, 32, 40
- New mini gripper size Ø 6
- High repeatability ±0,01 mm.

See next page for characteristics table.