



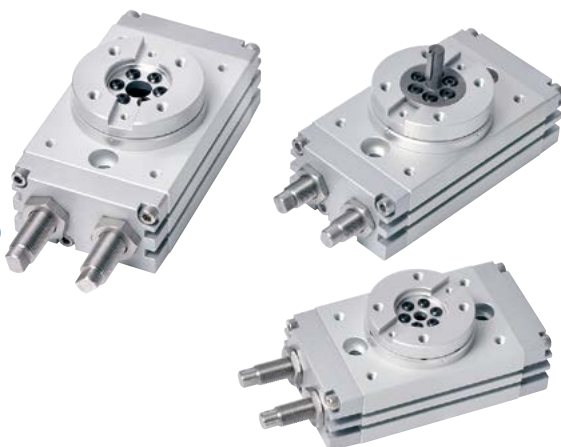
Moment of inertia



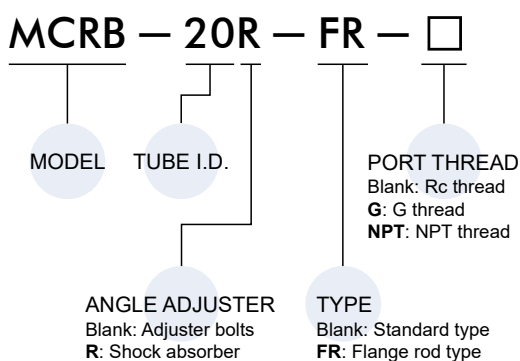
Technical data



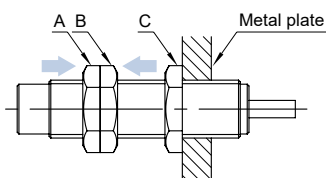
Caution for safety
(Read before installing)



Order example



Installation guide of shock absorber



- 1 Install 3 nuts on the shock absorber as the picture shown.
- 2 Bind the A nut and B nut together via tightening them with different rotating direction.
- 3 Hold B nut and rotate C nut to bind the plate and C nut together.
- 4 Unbind the A nut and B nut. The installation is complete.

Features

- Twin rack and pinion fitted as standard.
- Can be adjusted between 0 and 190 degrees.
- Simple mounting of sensors.
- Magnetic as standard.

Specification

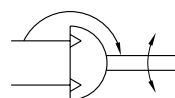
Model		MCRB			
Acting type		Double acting			
Tube I.D. (mm)		16	20	25	32
Port size		Rc1/8			
Medium		Air			
Max. operating pressure	Adjusting bolt	1 MPa			
	Shock absorber	0.6 MPa (*1)			
Min. operating pressure		0.1 MPa (*2)			
Proof pressure		1.5 MPa			
Ambient temperature		-5~+60°C (No freezing)			
Lubrication		Not required			
Cushion		NBR spacer			
Allowable kinetic energy	Cushion pad	0.007J	0.040J	0.081J	0.32J
	Cushion	0.039J	0.116J	0.294J	1.6J
Stable rotation time regulation range		0.2~1.0 s/90°			
Sensor switch		RCD 			
Weight (kg)		0.7	1.16	1.57	3.07

*1. The maximum operating pressure of the actuator is restricted by the maximum allowable thrust of the shock absorber.

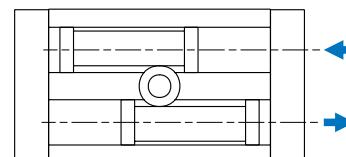
*2. No-load conditions.

*3. The shock absorber is expendable. Replace when damping performance decrease.

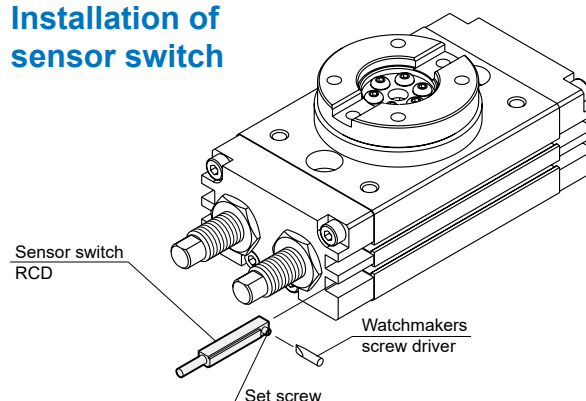
Symbol



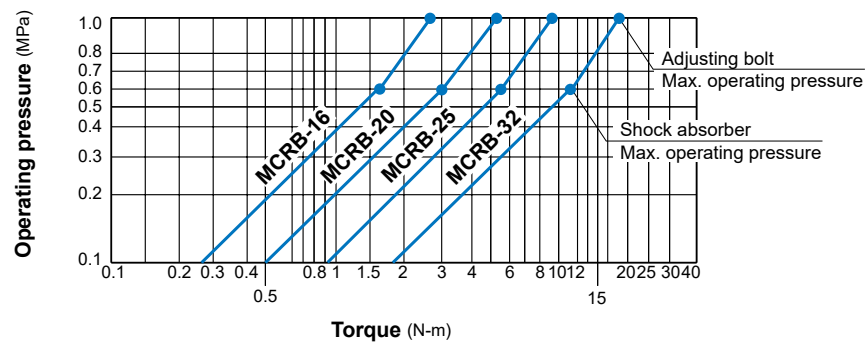
Action profile



Installation of sensor switch



Torque diagram



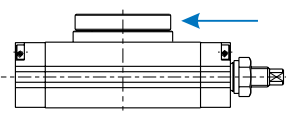
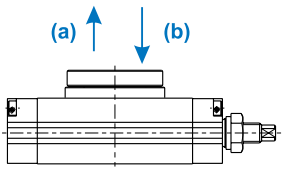
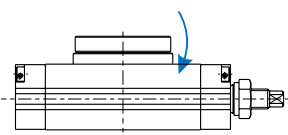
Theoretic force

Unit: N·m

Model		MCRB			
Tube I.D.		16	20	25	32
Operating pressure (MPa)	0.1	0.26	0.5	0.91	1.88
	0.2	0.52	1	1.81	3.78
	0.3	0.78	1.5	2.72	5.66
	0.4	1.04	2.01	3.62	7.56
	0.5	1.31	2.51	4.55	9.44
	0.6	1.57	3	5.45	11.32
	0.7	1.83	3.5	6.36	13.23
	0.8	2.09	4.02	7.26	15.12
	0.9	2.35	4.52	8.17	17.01
	1.0	2.61	5.03	9.08	18.9

Allowable load

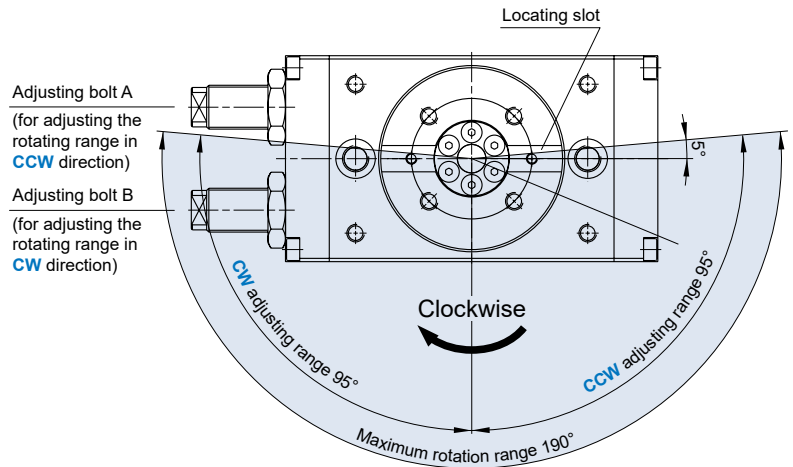
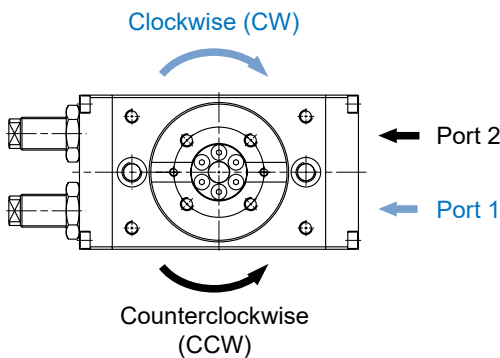
Set the load and moment to be applied to the table within the allowable values shown in the table below.
(Values outside of limitations will cause excessive play, deteriorate accuracy, and shorten service life.)

Pictures				
Tube I.D.	Allowable radial load (N)	Allowable thrust load (N)		Allowable moment (N.m)
		(a)	(b)	
16	78	74	78	2.4
20	196	197	363	5.3
25	314	296	451	9.7
32	390	493	708	18

Rotating direction and angle

- When the port 1 is pressurized, the flange rotates in clockwise (CW) direction.
- When the port 2 is pressurized, the flange rotates in counter-clockwise (CCW) direction.

The rotating angle range can be adjust by the method shown as right figure.



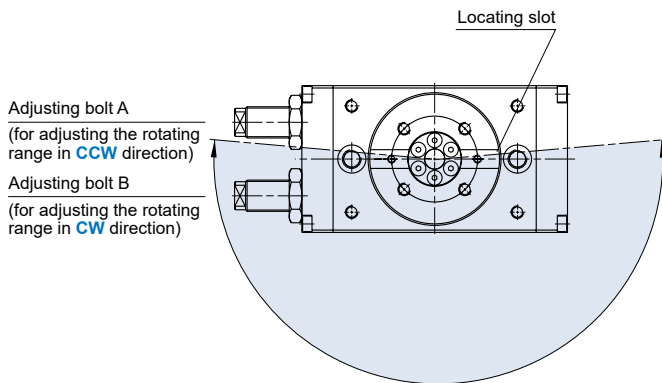
NOTE

- The figure shows the rotating range and use the pin hole as indicator.
- The locating slot in the figure locates at the situation which the CCW & CW rotating range are both adjusted at 90°.

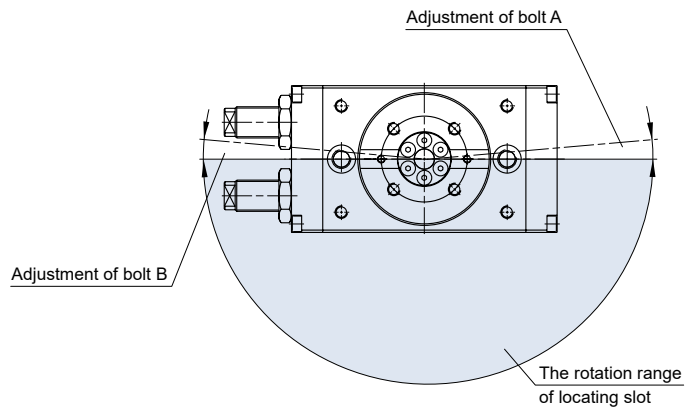
Rotating range adjusting example

- The followed figures show the rotating range of different adjustment via bolt A and B.
(The drawings also show the rotation ranges of the locating slot.)

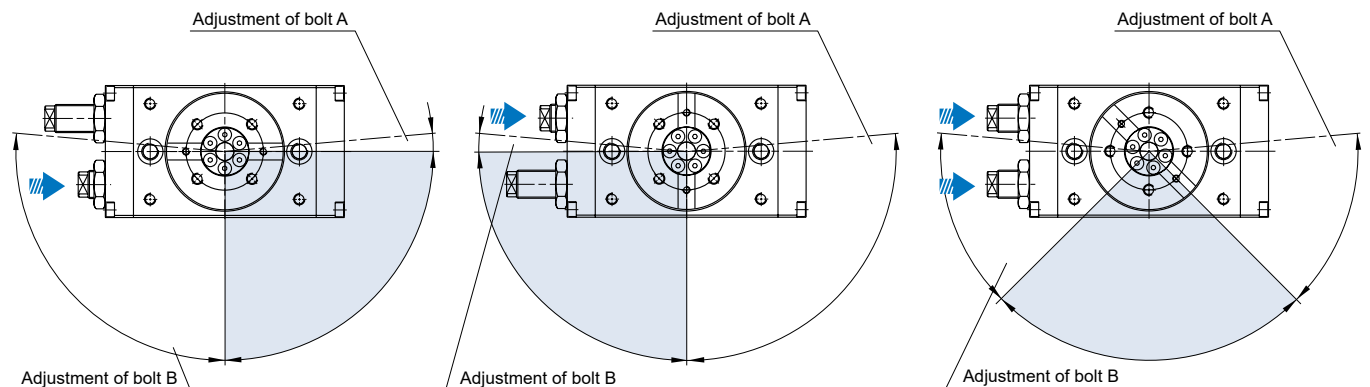
190° (Max) Rotation

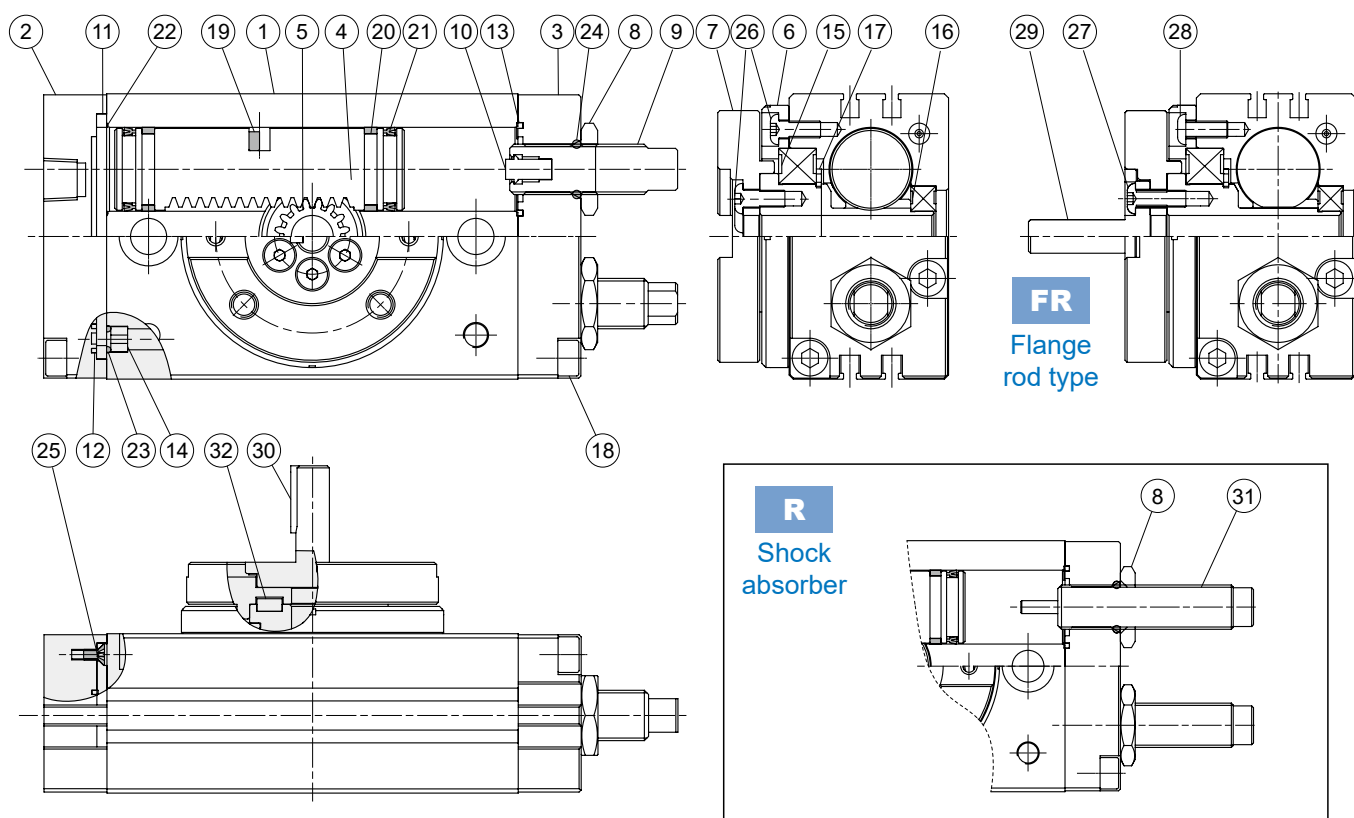


180° Rotation



90° Rotation





Material

No.	Part name	Material	Q'y	Repair kits (inclusion)
1	Body	Aluminum alloy	1	
2	Cover	Aluminum alloy	1	
3	End cover	Aluminum alloy	1	
4	Piston	Stainless steel	2	
5	Pinion	SCM	1	
6	Bearing retainer	Aluminum alloy	1	
7	Table	Aluminum alloy	1	
8	Seal nut	Stainless steel	2	
9	Adjusting bolt *1	Stainless steel	2	
10	Cushion pad *1	NBR	2	●
11	Plate	Aluminum alloy	1	
12	Packing	NBR	1	●
13	Packing	NBR	2	●
14	Fixed	Copper	2	
15	Ball bearing	Bearing steel	1	
16	Ball bearing	Bearing steel	1	
17	Snap ring	Spring steel	1	
18	Bolt	Stainless steel	8	
19	Magnet	Magnet material	2	
20	Wear ring	Resin	4	
21	Piston packing	NBR	4	●

No.	Part name	Material	Q'y	Repair kits (inclusion)
22	O-ring	NBR	2	●
23	O-ring	NBR	2	●
24	O-ring	NBR	2	●
25	Screw	Carbon steel	2	
26	Bolt	Carbon steel	10	
27	Bolt *2	Carbon steel	6	
28	Bolt *2	Carbon steel	4	
29	Rotate shaft *2	Carbon steel	1	
30	Round key *2	Carbon steel	1	
31	Shock absorber *3	—	2	
32	Round key	Carbon steel	1	

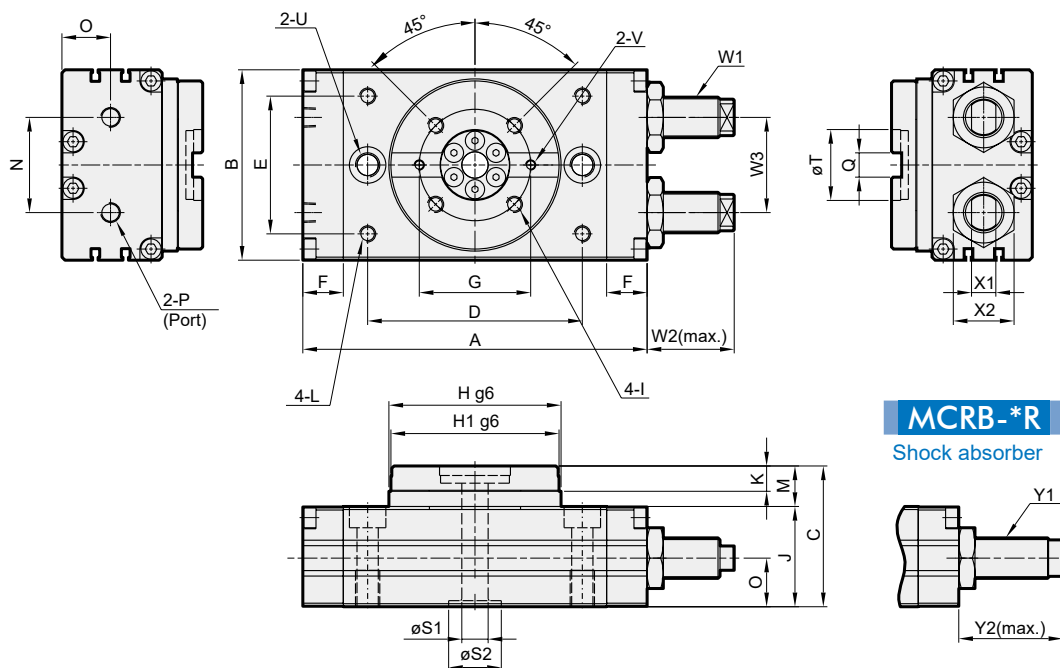
*1. Only suitable for adjuster bolts.

*2. No.27~30 for (FR) flange rod type.

*3. Only suitable for (R) shock absorber.

Order example of repair kits

Tube I.D.	Repair kits	
	Adjuster bolts	Shock absorber (R)
ø16	PS-MCRB-16	PS-MCRB-16R
ø20	PS-MCRB-20	PS-MCRB-20R
ø25	PS-MCRB-25	PS-MCRB-25R
ø32	PS-MCRB-32	PS-MCRB-32R



Code Tub. I.D.	A	B	C	D	E	F	G	H	H1	I	J	K	L	M	N	O	P
16	108	58	47	62	38	15	38	50	48	M5×7dp, P.C.D38	33	8	M5×8dp	14	26	15.5	Rc1/8
20	128	68	55	78	47	15	46	62.5	60	M6×7dp, P.C.D46	38	10	M6×8dp	17	27	18.5	Rc1/8
25	135.5	77	58.5	84	55	15.5	48	67	65	M6×9dp, P.C.D48	41.5	10	M6×8dp	17	37	20	Rc1/8
32	170	94	69.5	106	68	20	55	85	83	M8×10dp, P.C.D55	49.5	12.5	M8×8.5dp	20	47	24	Rc1/8

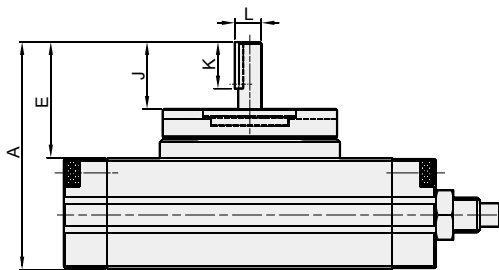
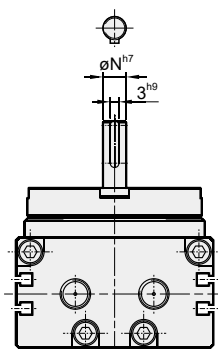
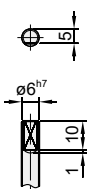
Code Tub. I.D.	Q	S1	S2	T	U	V	W1	W2
16	8 ^{+0.03} ₋₀ (wide)×3.3dp	6	17 H9 ^{+0.043} ₀ ×2.5dp	24 H9 ^{+0.052} ₀ ×3dp	2- $\varnothing 6.8$ thru, $\varnothing 11 \times 6.5$ dp, M8×12dp(sink)	M3×4dp	M10×1.0	27
20	10 ^{+0.03} ₋₀ (wide)×3.5dp	10	22 H9 ^{+0.052} ₀ ×2.5dp	32 H9 ^{+0.062} ₀ ×3dp	2- $\varnothing 8.6$ thru, $\varnothing 14 \times 8.5$ dp, M10×15dp(sink)	M4×6dp	M12×1.0	23
25	12 ^{+0.03} ₋₀ (wide)×4dp	13	22 H9 ^{+0.052} ₀ ×3dp	32 H9 ^{+0.062} ₀ ×3.7dp	2- $\varnothing 8.6$ thru, $\varnothing 14 \times 8.5$ dp, M10×15dp(sink)	M4×5dp	M14×1.5	36
32	12 ^{+0.03} ₋₀ (wide)×5dp	13	26 H9 ^{+0.052} ₀ ×3dp	35 H9 ^{+0.062} ₀ ×4.7dp	2- $\varnothing 10.5$ thru, $\varnothing 18 \times 10.5$ dp, M12×18dp(sink)	M5×5dp	M20×1.5	43

Code Tub. I.D.	W3	X1	X2	Y1	Y2
16	26	7	17	FK-1008L-S	24
20	32	8	19	FK-1210L-S	36.5
25	37	8	22	FK-1412L-S	41
32	47	12	30	FK-2016L-S	55

Flange rod type

$\varnothing 16$

$\varnothing 20 \sim \varnothing 32$



Code Tub. I.D.	A	E	J	K	L	N
16	64.5	31.5	17.5	-	-	-
20	78	40	23	16	9.2	8
25	81.5	40	23	20	11.2	10
32	109.5	60	40	20	13.2	12

* Other dimensions are the same as standard type.