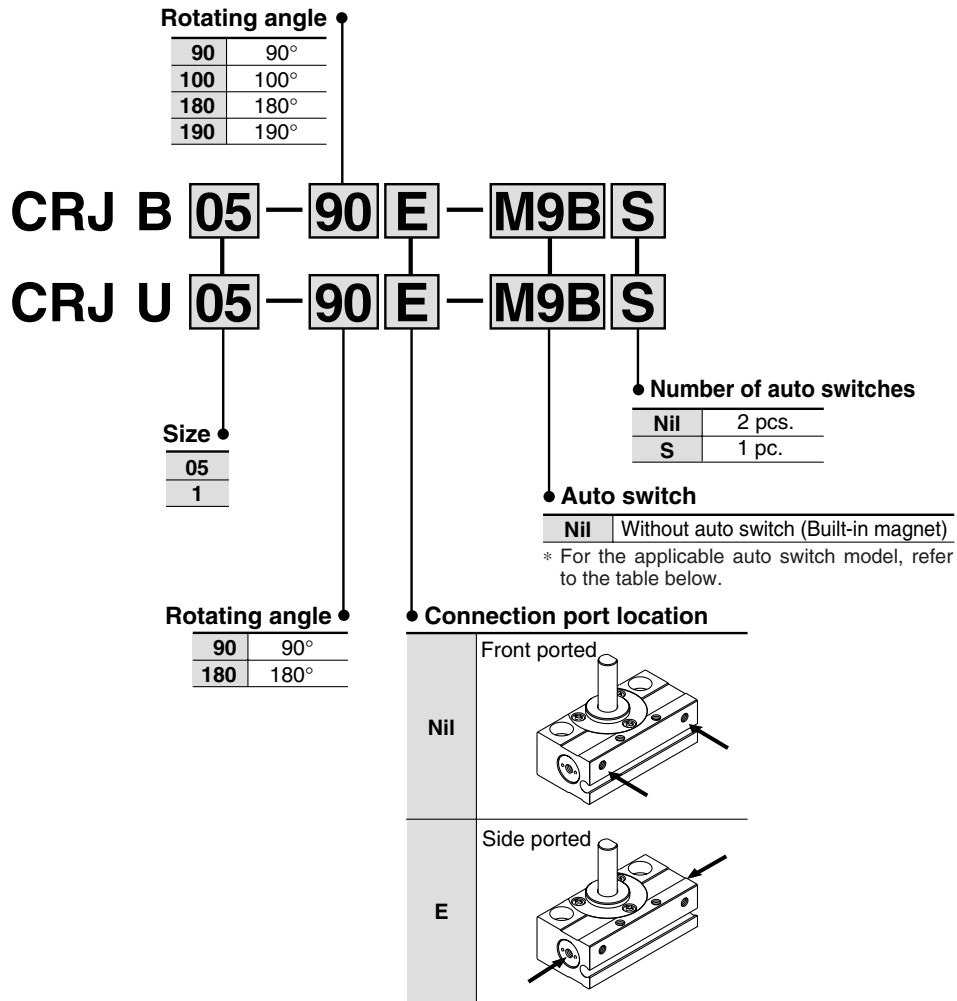


Mini-rotary Actuator Rack & Pinion Style Series **CRJ**

How to Order

Basic type
With external stopper



- CRB2
- CRBU2
- CRB1
- MSU
- CRJ**
- CRA1
- CRQ2
- MSQ
- MRQ
- D-
- 20-

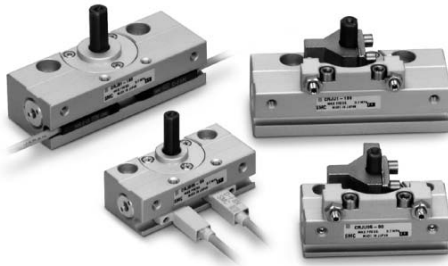
Applicable Auto Switch/Refer to pages 11-11-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length* (m)				
					DC	AC	Electrical entry direction	Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)	
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	12 V	—	—	M9N	●	●	—	
				F8N				—	●	●	○		
				—				M9P	●	●	—		
				F8P				—	●	●	○		
				—				M9B	●	●	—		
				F8B				—	●	●	○		
	Diagnosis indication (2-color)	—	Grommet	Yes	3-wire (NPN)	24 V	12 V	—	—	F9NW	●	●	○
					3-wire (PNP)				—	F9PW	●	●	○
					2-wire				—	F9BW	●	●	○
					—				—	—	—	—	

* Lead wire length symbols: 0.5 m Nil (Example) M9N
 3 m L (Example) M9NL
 5 m Z (Example) F9NWZ

* Auto switches marked "○" are produced upon receipt of order.

Series CRJ



Specifications

Size	05		1	
	Basic type	With external stopper	Basic type	With external stopper
Fluid	Air (Non-lube)			
Max. operating pressure	0.7 MPa			
Min. operating pressure	0.15 MPa			
Ambient and fluid temperature	0 to 60°C (No freezing)			
Rotating angle ^{Note)}	90 ^{+8°} ₀ , 100 ^{+10°} ₀ 180 ^{+8°} ₀ , 190 ^{+10°} ₀	90, 180	90 ^{+8°} ₀ , 100 ^{+10°} ₀ 180 ^{+8°} ₀ , 190 ^{+10°} ₀	90, 180
Angle adjustment range	—	±5° at each rotation end	—	±5° at each rotation end
Cylinder bore size	ø6		ø8	
Port size	M3 x 0.5			

Note) If optimum accuracy of the (rotating) angle is required, select an actuator with external stopper.

Allowable Kinetic Energy and Rotation Time Adjustment Range

Size			Allowable kinetic energy (mJ)	Rotation time adjustment range for stable operation (s/90°)
05	Basic type	CRJB05	0.25	0.1 to 0.5
	With external stopper	CRJU05	1.0	
1	Basic type	CRJB1	0.40	
	With external stopper	CRJU1	2.0	

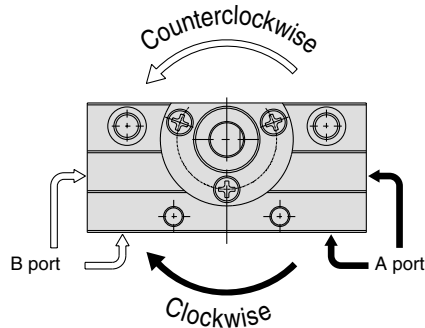
Weight

Type	Model		Weight (g) ^{Note)}
Basic type	05	CRJB05-90	32
		CRJB05-100	
		CRJB05-180	
		CRJB05-190	
	1	CRJB1-90	54
		CRJB1-100	
		CRJB1-180	
With external stopper	05	CRJU05-90	47
		CRJU05-180	53
	1	CRJU1-90	70
		CRJU1-180	81

Note) Values above do not include auto switch weights.

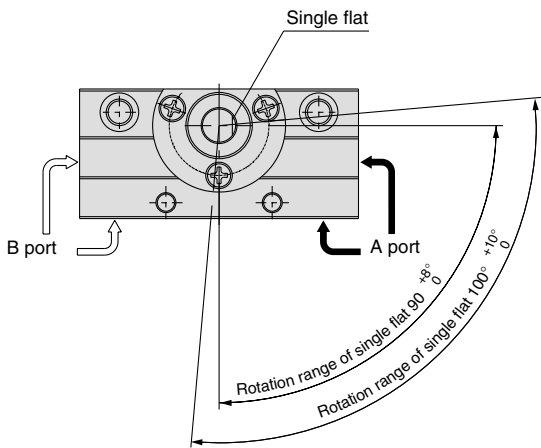
Rotating Direction and Rotating Angle

- The shaft turns clockwise when the A port is pressurized, and counterclockwise when the B port is pressurized.
- For actuators with external stopper, the rotation end can be set within the ranges shown in the drawing by adjusting the stopper bolt.

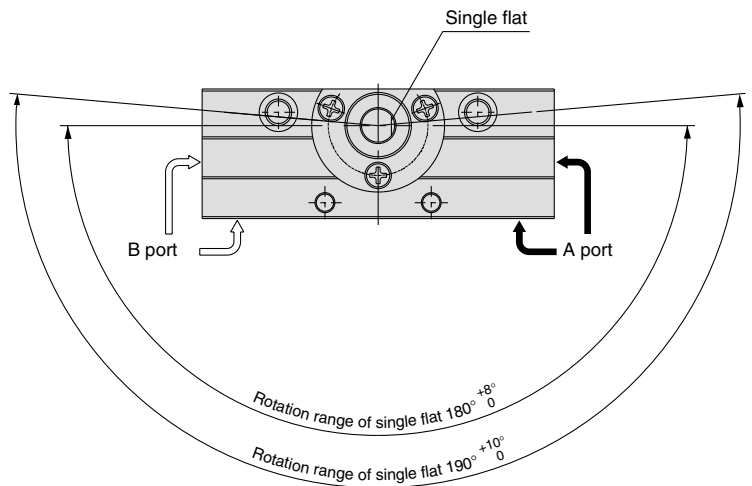


Basic type

For 90° and 100°

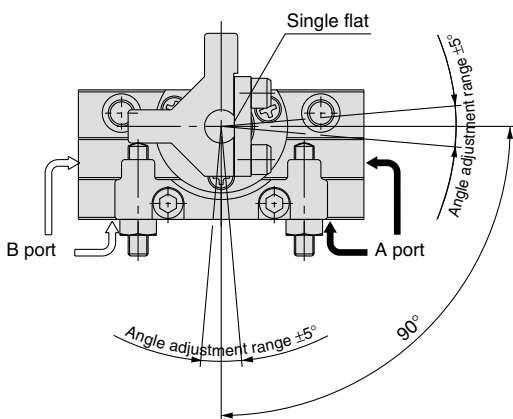


For 180° and 190°

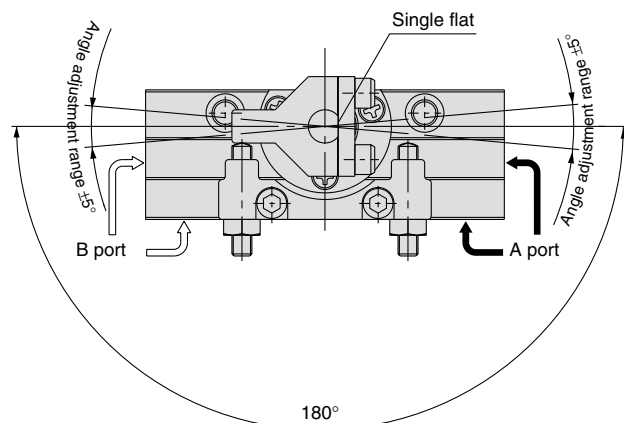


With external stopper

For 90°



For 180°



- Note) • The drawings show the rotation range for the shaft's single flat.
 • The single flat position in the drawings shows the counterclockwise rotation end when the rotation angle is adjusted to 90° and 180°.

CRB2

CRBU2

CRB1

MSU

CRJ

CRA1

CRQ2

MSQ

MRQ

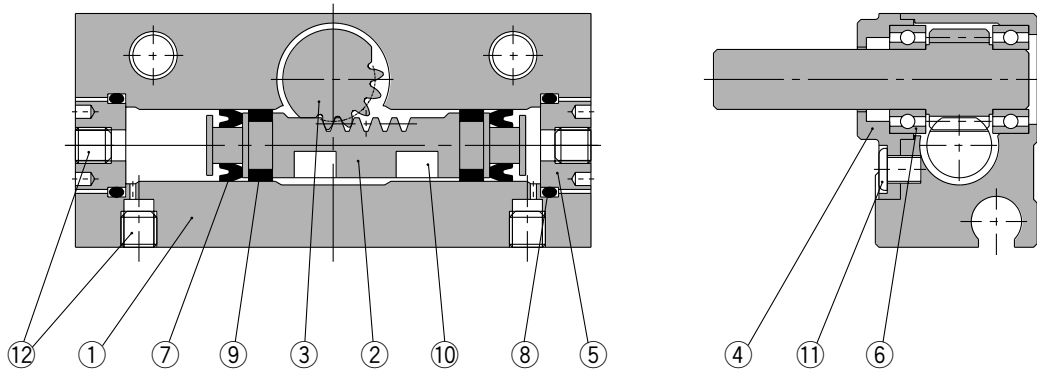
D-

20-

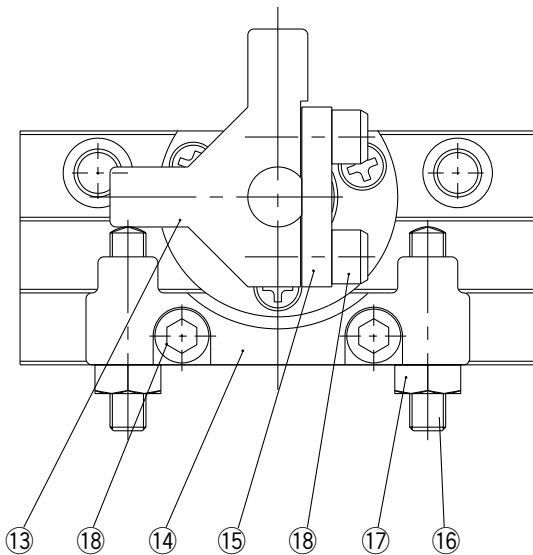
Series CRJ

Construction

Basic type: CRJB



With external stopper: CRJU



Component Parts

No.	Description	Material
①	Body	Aluminum alloy
②	Piston	Stainless steel
③	Shaft	Stainless steel
④	Bearing retainer	Aluminum alloy
⑤	Cover	Aluminum alloy
⑥	Bearing	Bearing steel
⑦	Piston seal	NBR
⑧	O-ring	NBR
⑨	Wear ring	Resin

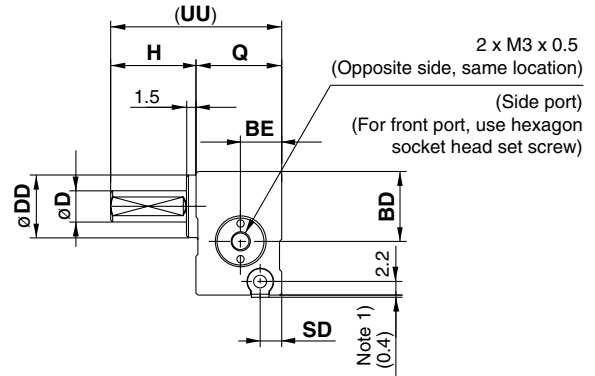
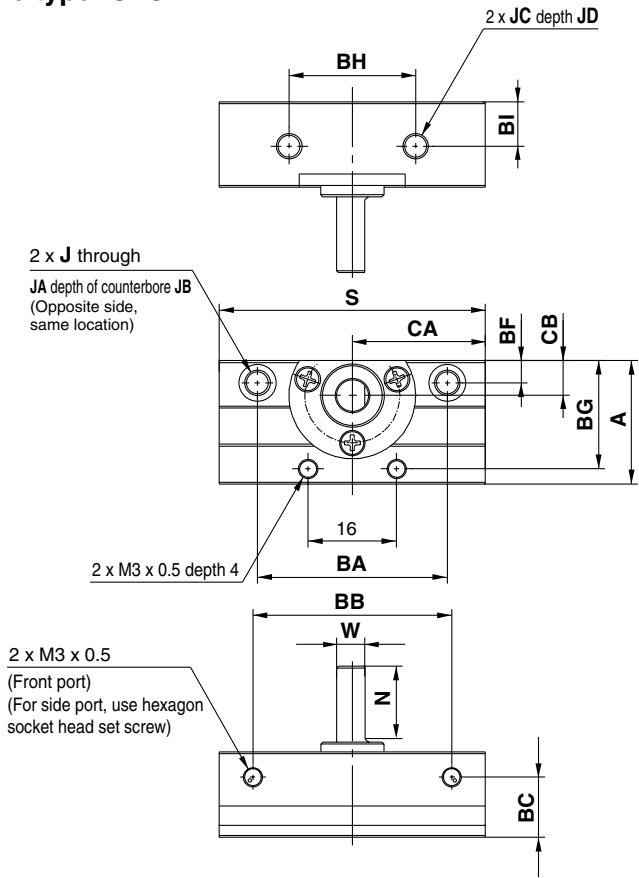
No.	Description	Material
⑩	Magnet	Magnetic material
⑪	Round head no. 0 Philips screw	Steel wire
⑫	Hexagon socket head set screw	Stainless steel
⑬	Stopper	Chrome molybdenum steel
⑭	Holder	Aluminum alloy
⑮	Stopper retainer	Steel
⑯	Hexagon socket head set screw	Steel wire
⑰	Hexagon nut	Steel wire
⑱	Hexagon socket head cap screw	Stainless steel

* The mounting position of hexagon socket head set screws (No. 12) varies depending on the connecting port location.

Dimensions/Size 05, 1

Basic type: CRJB

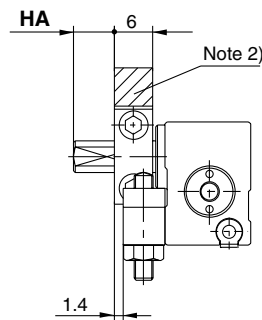
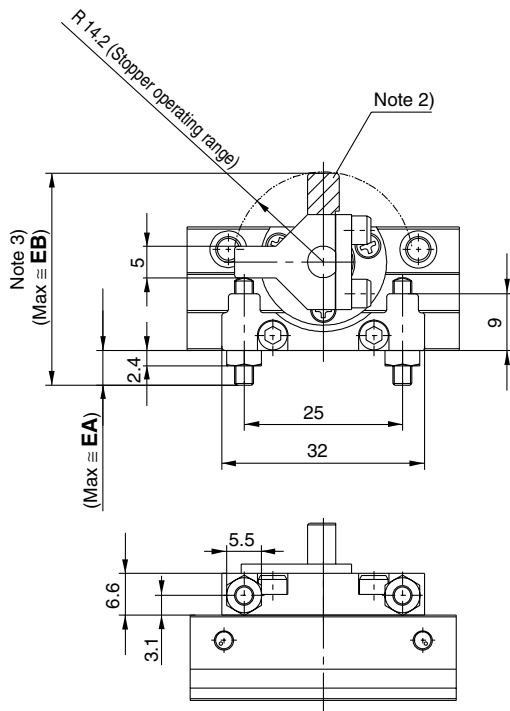
Note 1) This dimension is for the actuator with D-F9 type auto switch (not including the 2-color indication type).



- CRB2
- CRBU2
- CRB1
- MSU
- CRJ**
- CRA1
- CRQ2
- MSQ
- MRQ
- D-
- 20-

With external stopper: CRJU

Note 2) For the 180° specification, the slated line area do not exist.
 Note 3) The maximum dimensions that appear are those measured at the maximum rotating angle. settings: 100° and 190°.

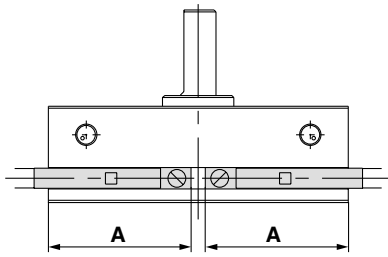


	(mm)		
Size	EA	EB	HA
CRJU05	5.6	33.8	6.5
CRJU1	5.6	35.8	7.5

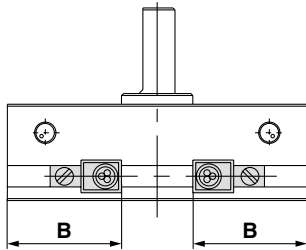
Size	Rotating angle	(mm)																									
		A	BA	BB	BC	BD	BE	BF	BG	BH	BI	CA	CB	D	DD	J	JA	JB	JC	JD	H	N	Q	S	SD	UU	W
CRJB05	90°	19.5	30	32.4	9.5	11	6.5	3.5	17.1	20	7	21.5	5.5	5g6	10h9	M4 x 0.7	5.8	3.5	M4 x 0.7	5	14.5	12.5	13.5	43	3.4	28	4.5
	180°			43.4								27											54				
CRJB 1	90°	23.5	35	37.4	12.5	14	9	4.5	21.1	22	8.5	24	7.5	6g6	14h9	M5 x 0.8	7.5	4.5	M5 x 0.8	6	15.5	13.5	16.5	48	5.9	32	5.5
	180°			50.4								30.5											61				

Series CRJ

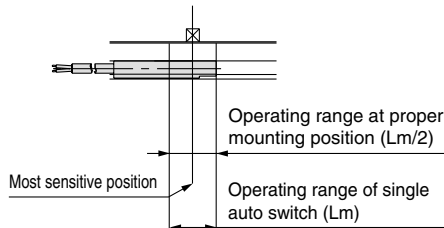
Proper Auto Switch Mounting Position (Detection at rotation end)



For D-F9, D-M9



For D-F8



Size	Rotating angle	D-F9, D-M9 auto switch			D-F8 auto switch		
		A	Operating angle θ_m	Hysteresis angle	B	Operating angle θ_m	Hysteresis angle
05	90°	20.5	40° (35°)	10° (10°)	16.5	20°	10°
	180°	23.2			19.2		
1	90°	22.4	30° (25°)	10° (10°)	18.4	15°	10°
	180°	25.6			21.6		

Operating angle θ_m : Value of the operating range L_m of a single auto switch converted to an axial rotating angle.

Hysteresis angle : Value of auto switch hysteresis converted to an angle.

Note) Figures in parentheses are the cases for D-M9 switch types.