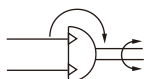


Product feature

1. Rack and pinion design, stable functioning.
2. Double cylinder structure, double output could be achieved.
3. The manufacturing precision of working platform is high, and is easy for installation , and is of precise orientation.
4. The center of working platform has a through hole, and pipe can be located and passed through this hole;
5. Guide hole is designed on the both side of the cylinder body (10~200) or undersurface (2~7), which is simply to install.
6. Two modes of buffer could be chosen, adjustment bolt buffer and internal shock absorber, the maximum buffer energy of internal shock absorber is 3-5 times that of adjustment bolt buffer.

Symbol



Specification

Specification		2	3	7	10	20	30	50	70	100	200	
Acting type		Double rack and pinion(Double acting)										
Fluid		Air(to be filtered by 40µm filter element)										
Operating pressure	With adjustment bolt	0.15~0.7MPa(22~100psi)(1.5~7.0bar)										
	With internal shock absorber	-	0.15~0.7MPa(22~100psi)(1.5~7.0bar)									
Proof pressure		1.2MPa(175psi)(12.0bar)										
Temperature °C		-20~70										
Angle adjustment range		0~190°							0~190°			
Repeatable precision	With adjustment bolt	0.2°										
	With internal shock absorber	-	0.05°									
Theoretic moment (Nm)(0.5MPa)		0.2	0.33	0.63	1.1	2.2	2.8	5.0	7.5	11.0	22.0	
Cushion type	With adjustment bolt	Rubber bumper										
	With internal shock absorber	-	Shock absorber									
Port size	End ports	M5×0.8					1/8" [Note1]					
	Side ports	M5×0.8										
Weight g		120	175	270	535	940	1260	2060	2890	4100	7650	

[Note1] PT thread, G thread and NPT thread are available.

Maximum allowed movement energy and rotation times

Model	Maximal allowed energy (J)		Rotation times (s/90°)	
	With adjustment bolt	With internal shock absorber	With adjustment bolt	With internal shock absorber
HRQ2	0.0015	-	0.2~0.7	-
HRQ3	0.002	-	0.2~0.7	-
HRQ7	0.006	-	0.2~1.0	-
HRQ10	0.01	0.04	0.2~1.0	0.2~0.7
HRQ20	0.025	0.12	0.2~1.0	0.2~0.7
HRQ30	0.05	0.12	0.2~1.0	0.2~0.7
HRQ50	0.08	0.30	0.2~1.0	0.2~0.7
HRQ70	0.24	1.1	0.2~1.5	0.2~1.0
HRQ100	0.32	1.6	0.2~2.0	0.2~1.0
HRQ200	0.56	2.9	0.2~2.5	0.2~1.0

[Note]

- 1: The movement energy should not exceed the allowed maximum energy, or the inner accessories of product would be damaged;
- 2: When the rotation times of with shock absorber is larger than the allowed tolerance, the bigger effect will be lost.

Ordering code

HRQ 20 A

① ② ③ ④

① Model

HRQ: Rotary Table/Rack & Pinion Style

② Specification

2 3 7 10 20 30
50 70 100 200

③ Cushion type

Blank: With adjustment bolt	Specification
Blank: With adjustment bolt	2 3 7
A: With internal shock absorber	10 20 30 50 70 100 200

④ Thread type

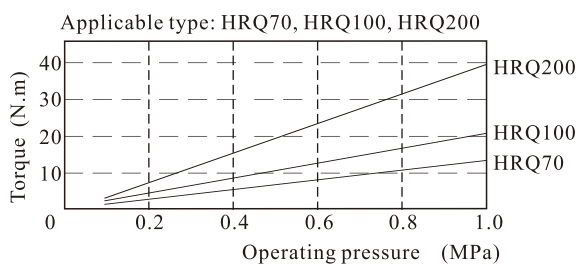
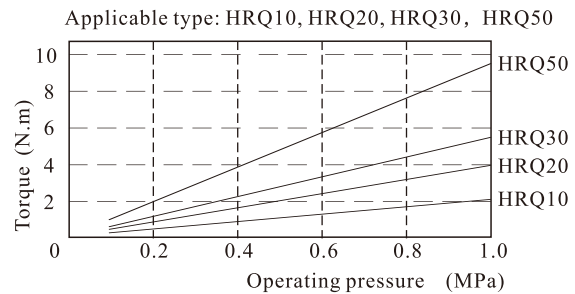
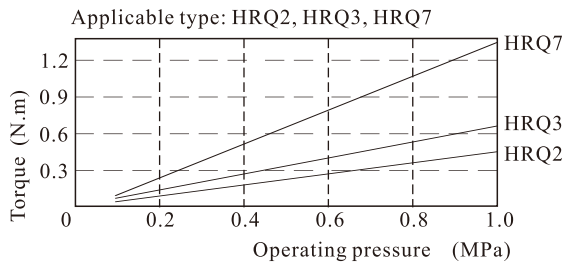
No this code	Specification
Blank: PT	2 3 7 10 20
G: G	30 50 70 100 200
T: NPT	

[Note] HRQ series are all attached with magnet.

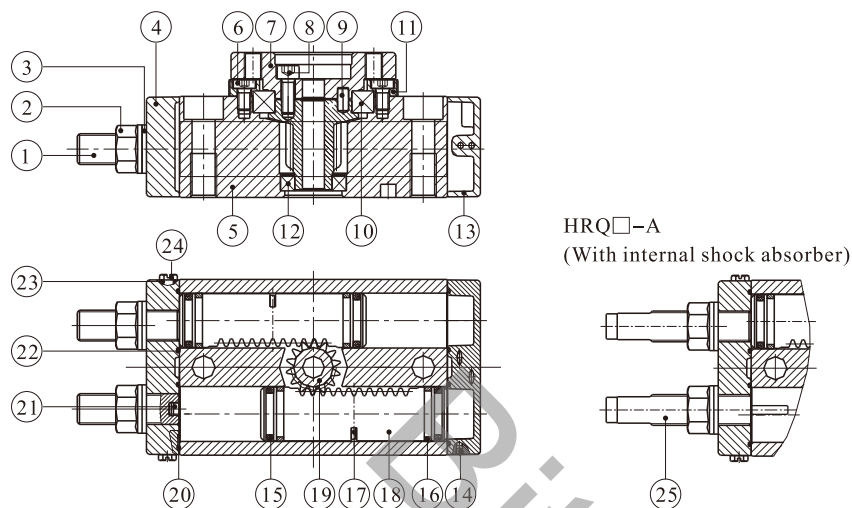
Maximum allowed loading

Loading type	Model									
	HRQ2	HRQ3	HRQ7	HRQ10	HRQ20	HRQ30	HRQ50	HRQ70	HRQ100	HRQ200
Maximum allowed radial loading (N) 	18	30	50	80	150	200	300	330	390	540
Maximum allowed axial loading (N) 	35	50	70	80	150	200	300	300	500	740
Maximum allowed bending moment (Nm) 	0.8	1.1	1.5	2.5	4.0	5.5	10.0	12.0	18.0	25.0

Actual torque output



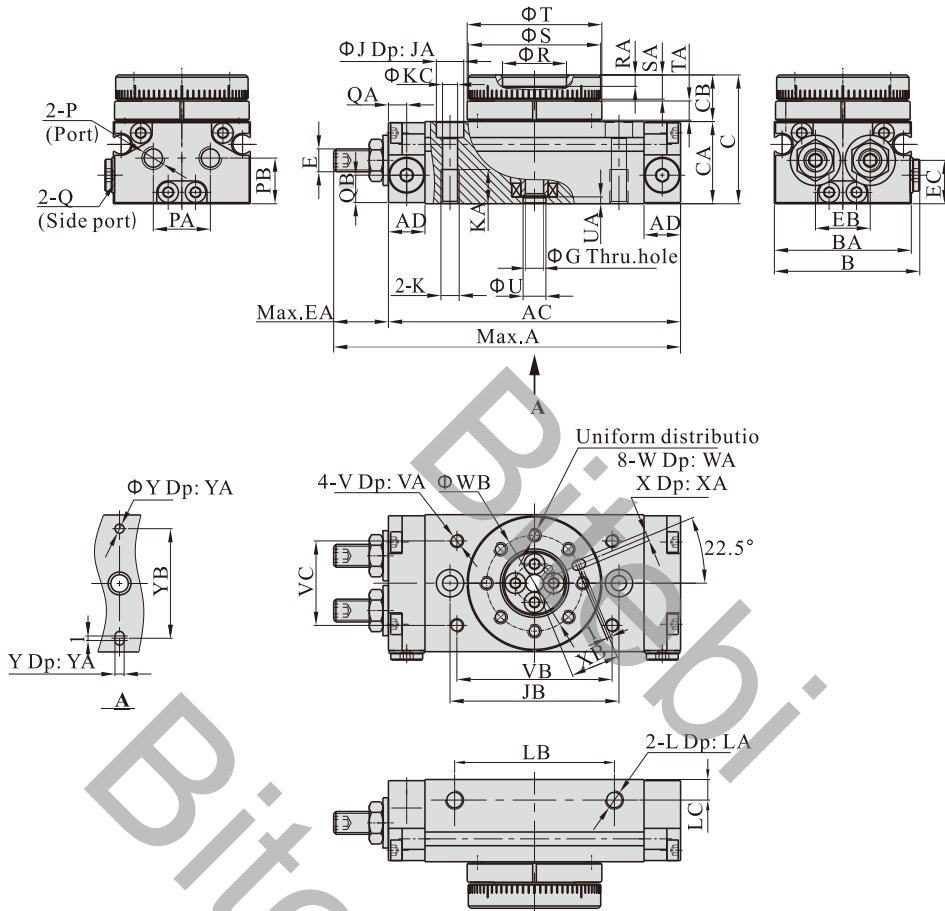
Inner structure and material of major parts



NO.	Item	Material	NO.	Item	Material
1	Adjustment bole	Carbon steel	14	Steel ball	Stainless steel
2	Hexagon nut	Carbon steel	15	Piston seal	NBR
3	Seal washer	Carbon steel & Rubber	16	Wear ring	Wear resistant material
4	Front cover	Aluminum alloy	17	Magnet	Rare earths
5	Body	Aluminum alloy	18	Rack	Stainless steel/Carbon steel
6	Hexagon socket head set bole	Carbon steel	19	Pinion	Chrome molybdenum steel
7	Table	Aluminum alloy	20	O-ring	NBR
8	Hexagon socket head set bole	Carbon steel	21	Bumper	NBR
9	Guide pin/flat key	Carbon steel	22	O-ring	NBR
10	Deep-groove bearing	Subassembly	23	O-ring	NBR
11	Bearing retainer	Aluminum alloy	24	Hexagon screw	Stainless steel
12	Deep-groove bearing/Needle bearing	Subassembly	25	Shock absorber	Subassembly
13	Back cover	Aluminum alloy			

Dimensions

HRQ2/3/7

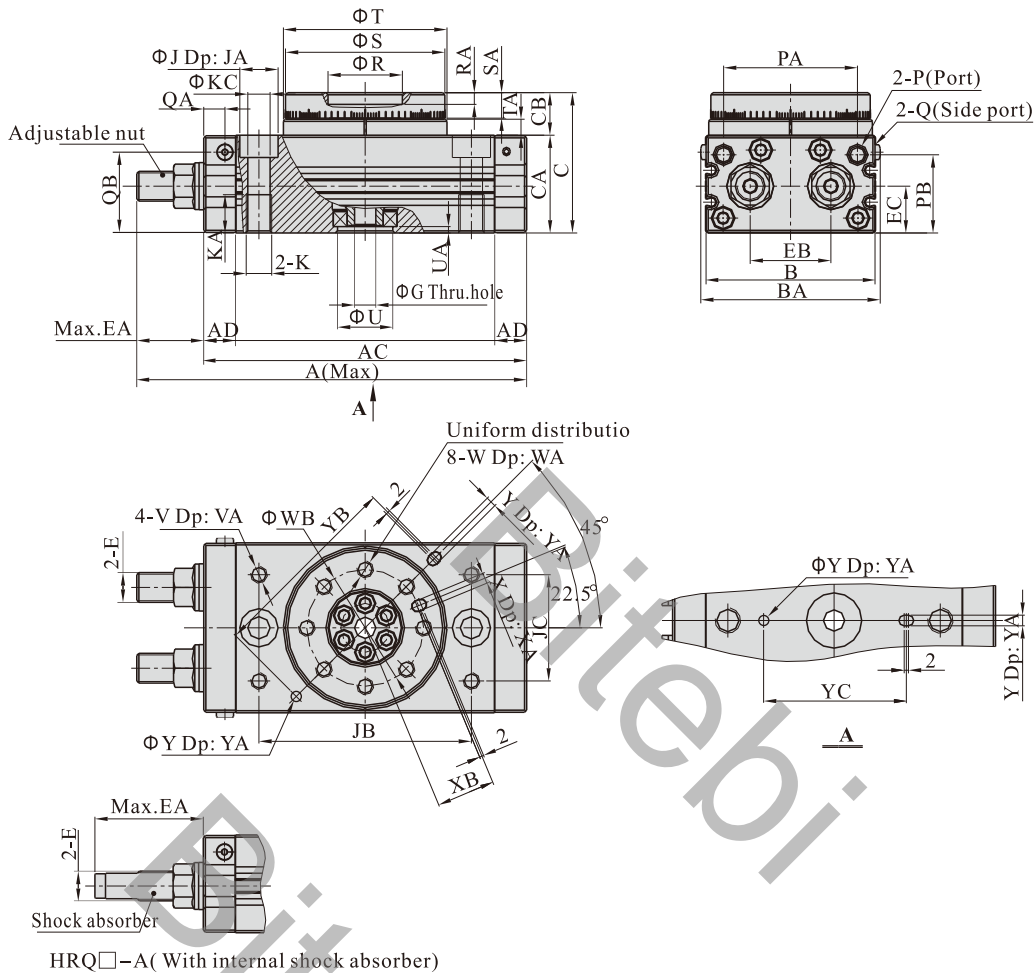


Type\Item	A	AC	AD	B	BA	C	CA	CB	E	EA	EB	EC	G	J	JA	JB	K	KA
2	76	64	8	32	30	28	18	10	M5×0.8	12	12	9.5	4	6	3.5	37	M4×0.7	7.5
3	82	70	8	36.5	34.5	30.5	20.5	10	M5×0.8	12	15.5	10.5	5	7.5	4.5	43	M5×0.8	8.5
7	94.5	79.5	8	43	41	34.5	23	11.5	M6×1.0	15	18.5	12	6	7.5	4.5	50	M5×0.8	8.5

Type\Item	KC	L	LA	LB	LC	P	PA	PB	Q	QA	QB	R	RA	S	SA	T	TA
2	3.5	M4×0.7	4	35	4.5	M5×0.8	12.5	10	M5×0.8	4	6	14(H9)	2.5	29(h9)	5.5	29.5(h9)	4
3	4.5	M4×0.7	4	40	4.5	M5×0.8	15.5	12	M5×0.8	4	7.5	17(H9)	2.5	33(h9)	5.5	34(h9)	4
7	4.5	M5×0.8	5	50	5	M5×0.8	18.5	14	M5×0.8	4	9	20(H9)	3	39(h9)	6.5	40(h9)	4.5

Type\Item	U	UA	V	VA	VB	VC	W	WA	WB	X	XA	XB	Y	YA	YB
2	5(H9)	1.5	M3×0.5	3.5	34	18.5	M3×0.5	5.5	21	2(H9)	2	10.5	2(H9)	2	24
3	6(H9)	1.5	M3×0.5	3.5	38	23	M3×0.5	5.5	25	2(H9)	2	12.5	2(H9)	2	28
7	7(H9)	1.5	M4×0.7	4.5	45	30	M4×0.7	6.5	29	3(H9)	3	14.5	3(H9)	3	32

HRQ10~50



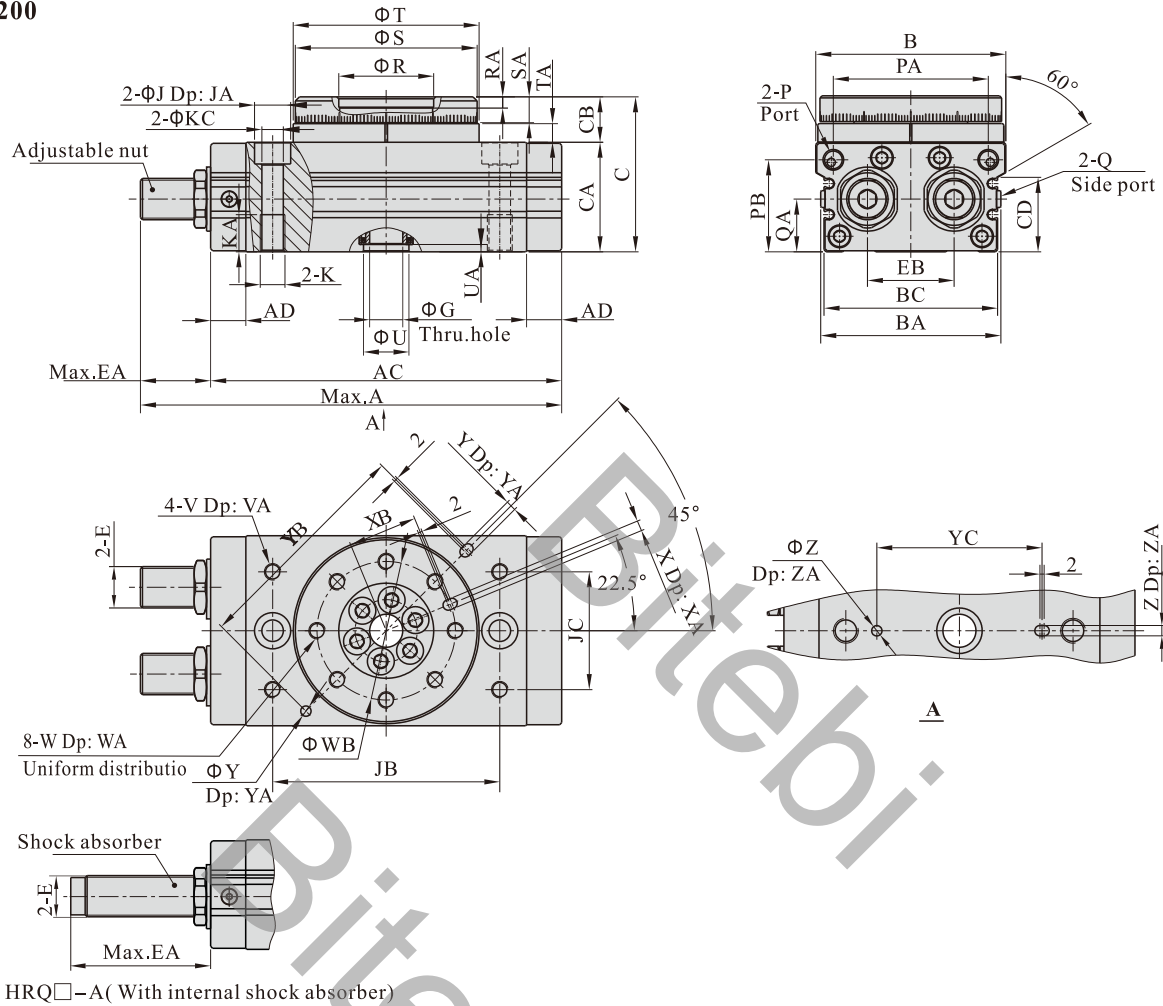
Type\Item	A(With internal shock absorber)	A(With adjustment bolt)	AC	AD	B	BA	C	CA	CB	E
10	123	112	92	9.5	50	54	47	34	13	M10×1.0
20	169	145.3	117	11	65	69	54	37	17	M12×1.0
30	178.5	154.5	127	11.5	70	74	57	40	17	M12×1.0
50	212	185.9	152	15	80	84	66	46	20	M14×1.5

Type\Item	EA(With internal shock absorber)	EA(With adjustment bolt)	EB	EC	G	J	JA	JB	JC
10	31	20	20.5	14	5	11	6.5	60	27
20	52	28.3	27.5	16	9	14	8.5	76	34
30	51.5	27.5	29	18.5	9	14	8.5	84	37
50	60	33.9	38	22	10	17.5	12	100	50

Type\Item	K	KA	KC	P	PA	PB	Q	QA	QB	R	RA	S	SA	T	TA
10	M8×1.25	12	6.5	M5×0.8	34.5	28	M5×0.8	4.5	29	20(H9)	4.5	45(h9)	8	46(h9)	4.5
20	M10×1.5	15	8.5	M5×0.8	47	30	M5×0.8	6	30	28(H9)	6.5	60(h9)	10	61(h9)	6.5
30	M10×1.5	15	8.5	1/8"	50	32	M5×0.8	6.5	34	32(H9)	5	65(h9)	10	67(h9)	6.5
50	M12×1.75	18	10.5	1/8"	63	38	M5×0.8	10	38	35(H9)	5.5	75(h9)	12	77(h9)	7.5

Type\Item	U	UA	V	VA	W	WA	WB	X	XA	XB	Y	YA	YB	YC
10	15(H9)	3	M5×0.8	8	M5×0.8	8	32	3(H9)	3.5	16	3(H9)	3.5	56	40
20	17(H9)	2.5	M6×1.0	8	M6×1.0	10	43	4(H9)	4.5	21.5	4(H9)	4.5	74	50
30	22(H9)	3	M6×1.0	8	M6×1.0	10	48	4(H9)	5	24	4(H9)	4.5	80	58
50	26(H9)	3	M8×1.25	8	M8×1.25	12	55	5(H9)	6	27.5	5(H9)	5.5	92	68

HRQ70~200



HRQ□-A (With internal shock absorber)

Type\Item	A(With adjustment bolt)	A(With internal shock absorber)	AC	AD	B	BA	BC	C	CA	CB	CD
70	206.8	244	170	17	92	88	84	75	53	22	36
100	225.7	263	189	17	102	99	95	86	59	27	42
200	279.5	316.5	240	24	120	117	113	106	74	32	57

Type\Item	E	EA(With adjustment bolt)	EA(With internal shock absorber)	EB	G	J	JA	JB	JC
70	M20×1.5	36.8	74	42	16	17.5	12	110	57
100	M20×1.5	36.7	74	50	19	17.5	12	130	66
200	M27×1.5	39.5	76.5	60	24	20	12.5	150	80

Type\Item	K	KA	KC	P	PA	PB	Q	QA	R	RA	S	SA	T	TA	U	UA
70	M12×1.75	18	10.5	1/8"	75	44.5	M5×0.8	25.5	46(H9)	5	88(h9)	12.5	90(h9)	9	22(H9)	3.5
100	M12×1.75	18	10.5	1/8"	85	50.5	M5×0.8	29.5	56(H9)	6	98(h9)	14.5	100(h9)	12	24(H9)	3.5
200	M16×2.0	25	14	1/8"	103	63	M5×0.8	36.5	64(H9)	9	116(h9)	16.5	118(h9)	15	32(H9)	5.5

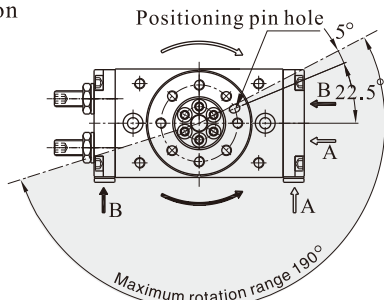
Type\Item	V	VA	W	WA	WB	X	XA	XB	Y	YA	YB	YC	Z	ZA
70	M8×1.25	10	M8×1.25	12.5	67	5(H9)	5.5	33.5	5(H9)	3.5	110	80	5(H9)	3.5
100	M8×1.25	10	M10×1.5	14.5	77	6(H9)	6.5	38.5	6(H9)	4.5	120	100	6(H9)	4.5
200	M12×1.75	13	M12×1.75	16.5	90	8(H9)	8.5	45	8(H9)	4.5	140	110	8(H9)	6.5

Installation and application

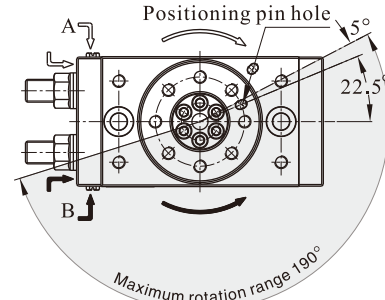
1. Rotation Direction and Rotation Angle

1.1) Rotation Direction

HRQ2/3/7



HRQ10~200

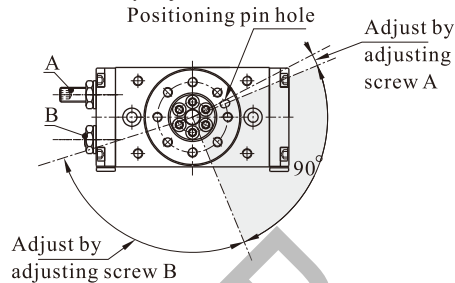


A) By adjusting the adjustment bolt, the rotation end can be set within the range shown in the up drawing: Maximum rotation is 190° ;
 B) The rotary table turns in the clockwise direction when the A port is pressurized, and in the counter-clockwise direction when the B port is pressurized.

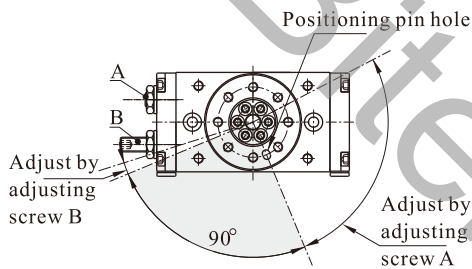
1.2) Rotation Range Example(90° Rotation)

HRQ2/3/7

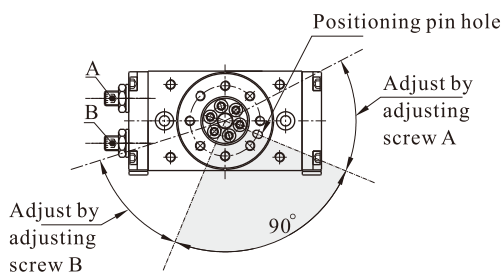
Adjustment amount by adjustment bolt B



Adjustment amount by adjustment bolt A

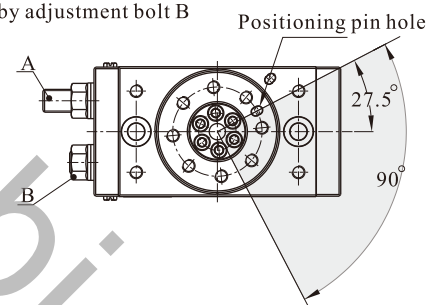


Adjustment amount by adjustment bolt A, B

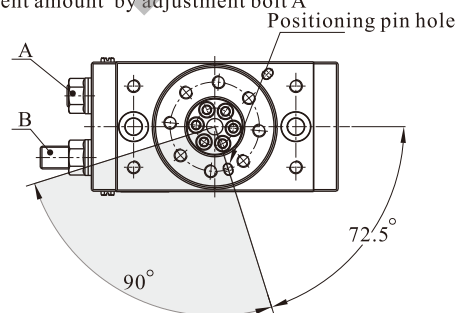


HRQ10~200

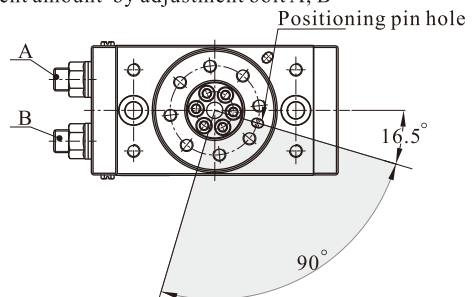
Adjustment amount by adjustment bolt B



Adjustment amount by adjustment bolt A



Adjustment amount by adjustment bolt A, B



Model	Adjustment angle per rotation of angle(adjustment screw)	Model	Adjustment angle per rotation of angle(adjustment screw or shock absorber)
HRQ2	11.5°	HRQ10	10.2°
HRQ3	10.9°	HRQ20	6.5°
HRQ7	10.2°	HRQ30	6.5°
		HRQ50	8.2°
		HRQ70	7.0°
		HRQ100	6.1°
		HRQ200	4.9°

1.3) The rotation angle can also be set on a type with internal absorber.

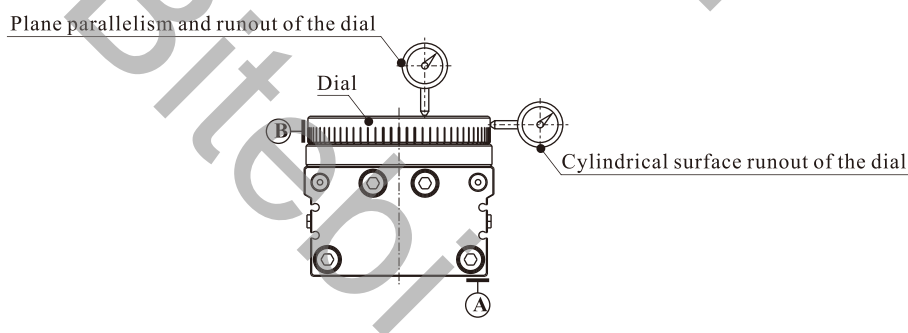
2. The range of rotation angle has been adjusted to the maximum in the factory, please do not enlarge the rotation angle any more.
3. The movement energy should not exceed the allowed maximum energy, or the inner parts will be damaged.
4. The rotary parts need no lubrication.
5. Series HRQ is equipped with a rubber bumper or shock absorber. Therefore, perform rotation adjustment in the pressurized condition (minimum operation pressure: 0.1 Mpa or more for adjustment bolt and internal shock absorber types, and 0.2 MPa or more for external shock absorber type.)
6. Refer to the table below for tightening torques of the shock absorber setting nut.

Shock absorber size	Max. tightening torque(Nm)
M10	3.5
M12	8.0
M14	11.0
M20	24.0
M27	63.0

7. Never loosen the bottom screw of the shock absorber. (It is not an adjustment screw.) That may cause oil leakage.
8. Shock absorbers are consumable parts.
When a decrease in energy absorption capacity is noticed, it must be replaced.

Rotary table cylinder	Shock absorber
HRQ10	ACA1006-A
HRQ20\HRQ30	ACA1215-A
HRQ50	ACA1416-A
HRQ70\HRQ100	ACA2020-A
HRQ200	ACA2725-A

9. Strictly control run out and parallelism of the dial according to the requirements of the following table.



Items	Specific requirements	Relative datum
Plane parallelism of the dial	0.1	A
Plane runout of the dial	0.1	A
Cylindrical surface runout of the dial	0.1	B