

RP-BS-Series Rack and Pinion Actuator

Application

- Stainless steel rack and pinion utilized with industrial and sanitary valves for quarter turn actuation in industrial, food/beverage, and pharmaceutical applications

Features

- Replaceable top and bottom PTFE pinion bearings ensure low friction
- 304 SS construction for excellent chemical and corrosion resistance
- Travel stops provide $\pm 4^\circ$ travel adjustment
- Precision cast stainless steel pistons are guided through full face engagement with the pinion and piston guide
- NAMUR slotted shaft is standard to provide a self-centering positive drive for positioners or a variety of switches
- Drive pinion is one-piece stainless steel alloy shaft with precision machined gear teeth for precise control



Specifications

- Maximum pressure rating: **120 PSI**
- NBR elastomer (standard) temperature range: **-4°F to 180°F (-20°C to 82°C)**
- FKM elastomer (optional) temperature range: **-4°F to 302°F (-20°C to 150°C)**
- Available in:
 - Double acting
 - Spring return (standard CW - air actuated)
 - Spring return (optional CCW - air actuated)

Actuator Weights Chart

Model Size	Double Acting (lbs.)	Spring Return (lbs.)
045	5.0	5.5
060	8.0	8.5
085	14.0	14.5
105	25.5	27.0
125	38.5	40.5
140	63.5	65.5
160	80.0	83.0

RP-BS Spring Return Torque Chart (in-lbs.)

Size	Spring Per Side	Spring Torque	40 PSI		60 PSI		80 PSI		100 PSI		
			End	Break	End	Break	End	Break	End	Break	
RP-BS-045-SR	(5 STD)	End	Break	End	Break	End	Break	End	Break	End	Break
	3	35	57	14	36	50	72	86	108	121	143
	4	47	77			30	60	66	96	101	131
	5	60	96					47	83	82	118
RP-BS-065-SR	6	71	115							63	107
	3	67	136	35	104	120	189	206	275	291	360
	4	90	182			74	166	160	252	245	337
	5	112	227					115	230	200	315
RP-BS-080-SR	6	135	273							154	292
	3	167	273	97	203	282	388	467	573	652	758
	4	223	364			191	332	376	517	561	702
	5	279	456					284	461	469	646
RP-BS-105-SR	6	335	547							378	590
	3	346	574	50	278	362	590	675	903	987	1215
	4	461	766			170	475	483	788	795	1110
	5	576	956					293	673	605	985
RP-BS-125-SR	6	692	1141							420	869
	3	651	1141	73	563	681	1171	1288	1778	1895	2385
	4	869	1522			300	953	907	1560	1514	2167
	5	1080	1902					527	1349	1134	1956
RP-BS-140-SR	6	1301	2283							753	1735
	3	808	1859	175	1226	1192	2243	2209	3260	3226	4277
	4	1071	2487			564	1980	1581	2997	2598	4014
	5	1345	3107					961	2723	1978	3740
RP-BS-160-SR	6	1610	3726							1359	3475
	3	1522	2098	895	1580	2420	3131	4022	4682	4657	6233
	4	2035	3133			1720	2618	3122	4169	4822	5720
	5	2550	3690					2467	3654	3588	5205
	6	3054	4893							3333	4701

NOTE: 5 springs per side is standard

RP-BS Double Acting Torque Chart (in-lbs.)

Size	40 PSI	60 PSI	80 PSI	100 PSI	120 PSI
RP-BS-045-DA	71	107	143	178	214
RP-BS-065-DA	171	256	342	427	512
RP-BS-080-DA	370	555	740	925	1110
RP-BS-105-DA	624	936	1249	1561	1873
RP-BS-125-DA	1214	1822	2429	3036	3643
RP-BS-140-DA	2034	3051	4068	5085	6102
RP-BS-160-DA	3102	4653	6204	7755	9306

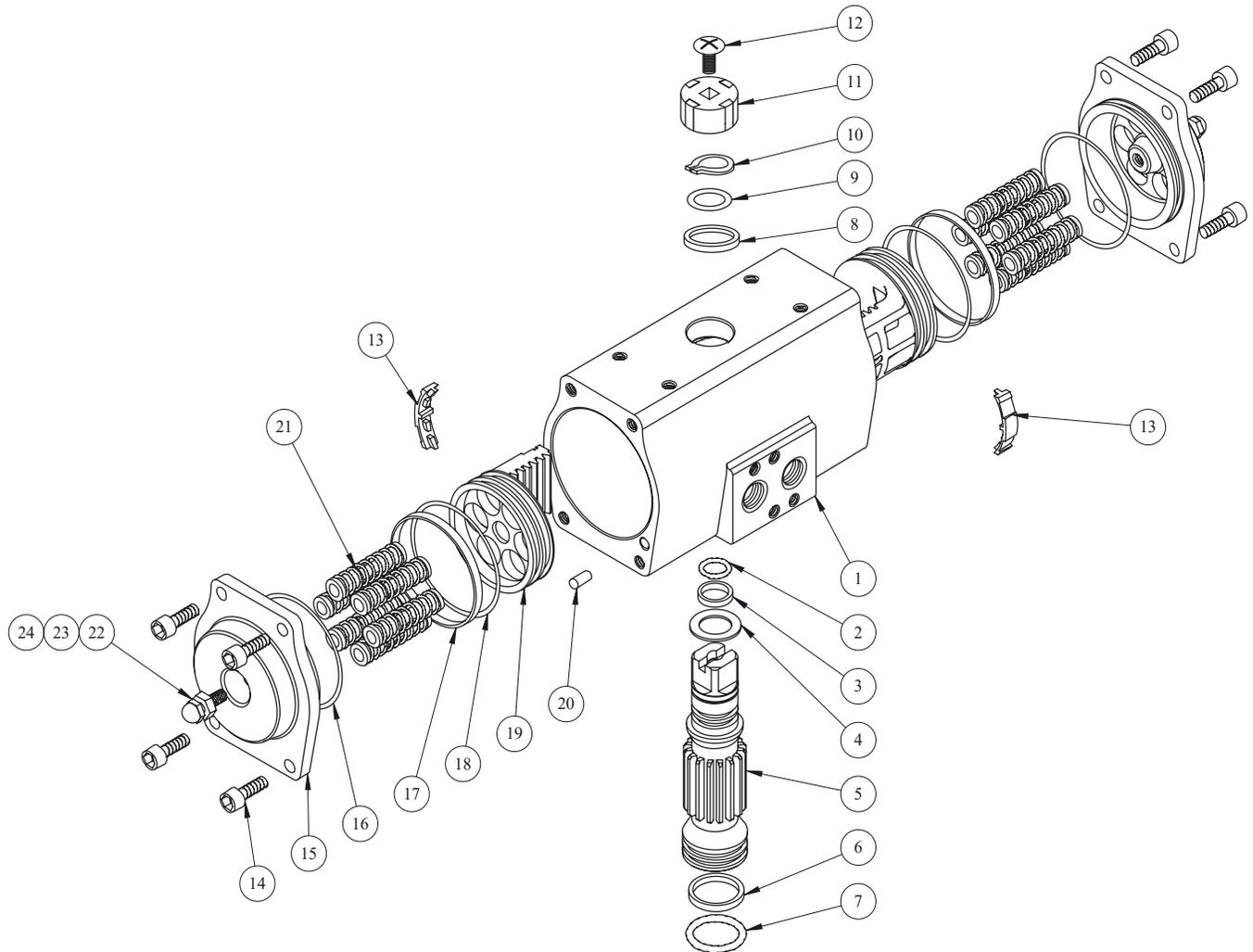
RP-BS-Series Rack and Pinion Actuator - Part Number Key

RP-BS-Series 304 Stainless Steel Actuator Part Number Key Example: RP-BS-045-DA		Series	Model	Configuration	Spring Set	Seal Options	Rotation
		RP-BS	- 045	- DA			
Series	Code	RP-BS	-	045	-	DA	
RP-BS	RP-BS						
Model-Size	Code						
045	045						
065	065						
080	080						
105	105						
125	125						
140	140						
160	160						
Configuration	Code						
Double Acting	DA						
Spring Return	SR						
Spring Set	Code						
3	3						
4	4						
5 (standard)	blank						
6	6						
Seal Options	Code						
NBR (standard)	blank						
FKM	V						
Rotation	Code						
CCW air to spring (standard)	blank						
CW air to spring	R						

RP-BS-Series Rack and Pinion Actuator - Spring Set Kit Part Number Key

RP-BS-Series Series Spring Set Kit Part Number Key Example: RP-BS-045SS5		Series	Model	Kit	Spring Set Quantity
		RP-BS	- 045	SS	5
Series	Code	RP-BS	-	045	SS
RP-BS	RP-BS				
Model-Size	Code				
045	045				
065	065				
080	080				
105	105				
125	125				
140	140				
160	160				
Kit	Code				
Spring Set Kit	SS				
Spring Set Quantity	Code				
3	3				
4	4				
5 (standard)	5				
6	6				

RP-BS-Series Rack and Pinion Actuator - Bill of Materials

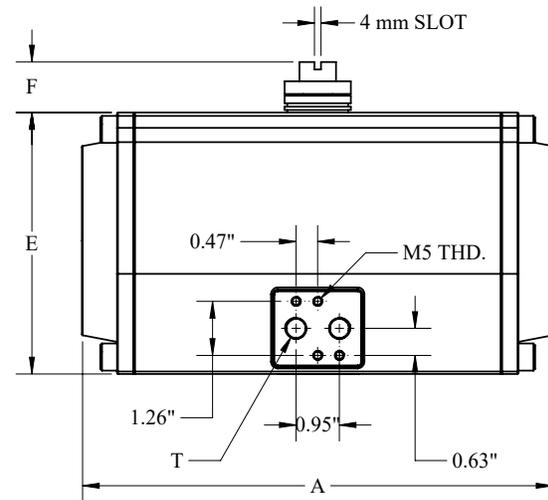
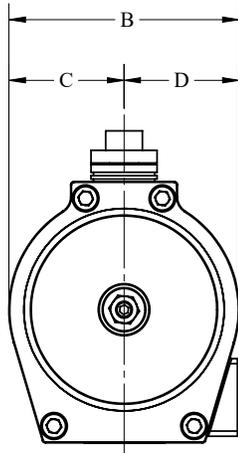
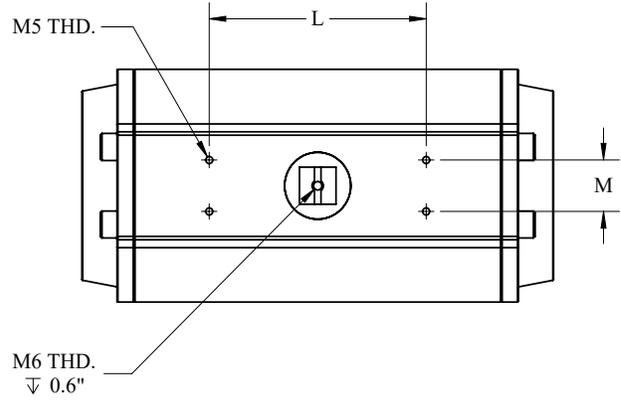
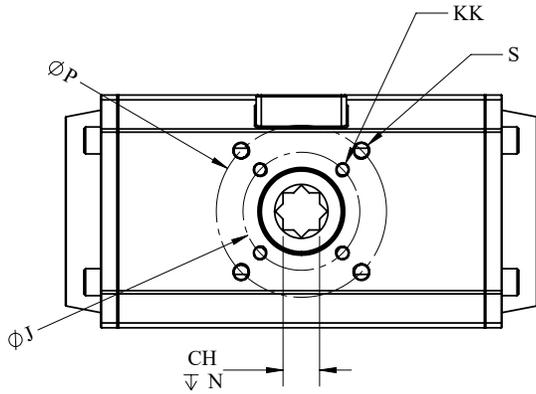


Item	Description	Material	Quantity
1	Body	CF8	1
2	O-ring (pinion top)	NBR	1
3	Bearing (pinion top)	Polyoxymethylene	1
4	Inside washer	Polyoxymethylene	1
5	Pinion	304 SS	1
6	Bearing (pinion bottom)	Polyoxymethylene	1
7	O-ring (pinion bottom)	NBR	1
8	Outside washer	Polyoxymethylene	1
9	Thrust washer	304 SS	1
10	Circlip	304 SS	1
11	Indicator	Plastic (ABS)	1
12	Indicator screw	Plastic (ABS)	1

13	Guide (piston)	Nylon 66	2
14	End cap screw	304 SS	8
15	End cap	CF8	2
16	O-ring (end cap)	NBR	2
17	Bearing (piston)	Polyoxymethylene	2
18	O-ring (piston)	NBR	2
19	Piston	304 SS	2
20	Plug	NBR	2
21*	Spring	Piano wire	0-12
22	Adjustment screw	304 SS	2
23	O-ring (adjustment screw)	NBR	2
24	Nut (adjustment screw)	304 SS	2

* For spring return only

RP-BS-Series Rack and Pinion Actuator - Dimensions



Size	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	CH (mm)	J	L (in)	N (in)	M (in)	P	S	T	KK
045	7.6	2.6	1.2	1.2	2.6	0.8	11	F03	3.2	0.6	1.2	F05	M6x10	1/4" NPT	M5x8
065	7.3	2.9	1.4	1.4	3.2	0.8	14	F05	3.2	0.6	1.2	-	M6x10	1/4" NPT	-
080	8.4	4.0	1.9	1.9	4.2	0.8	17	F05	3.2	0.7	1.2	F07	M8x13	1/4" NPT	M6x10
105	10.5	4.8	2.3	2.3	5.2	0.8	22	F07	3.2	0.8	1.2	-	M8x13	1/4" NPT	-
125	12.2	5.4	2.7	2.7	6.1	1.2	22	F07	5.1	1.0	1.2	F10	M10x16	1/4" NPT	M8x13
140	19.3	6.3	3.1	3.1	6.9	1.2	27	F10	5.1	1.2	1.2	F12	M12x20	1/4" NPT	M10x16
160	21.1	6.9	3.4	3.4	7.8	1.2	27	F10	5.1	1.2	1.2	F12	M12x21	1/4" NPT	M10x16

RP-BS-Series Rack and Pinion Actuator - Repair Kits

Kit Type	Part Number
Seal/Bearing Kit (NBR Standard)	RP-045SS-RKB
	RP-065SS-RKB
	RP-080SS-RKB
	RP-105SS-RKB
	RP-125SS-RKB
	RP-140SS-RKB
Seal/Bearing Kit (FKM Optional)	RP-045SS-RKV
	RP-065SS-RKV
	RP-080SS-RKV
	RP-105SS-RKV
	RP-125SS-RKV
	RP-140SS-RKV

NOTE: All kits are qty 1 kit/actuator

Repair kits contain the following item numbers from the bill of materials: 2, 3, 4, 6, 7, 8, 13, 17, and 18

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