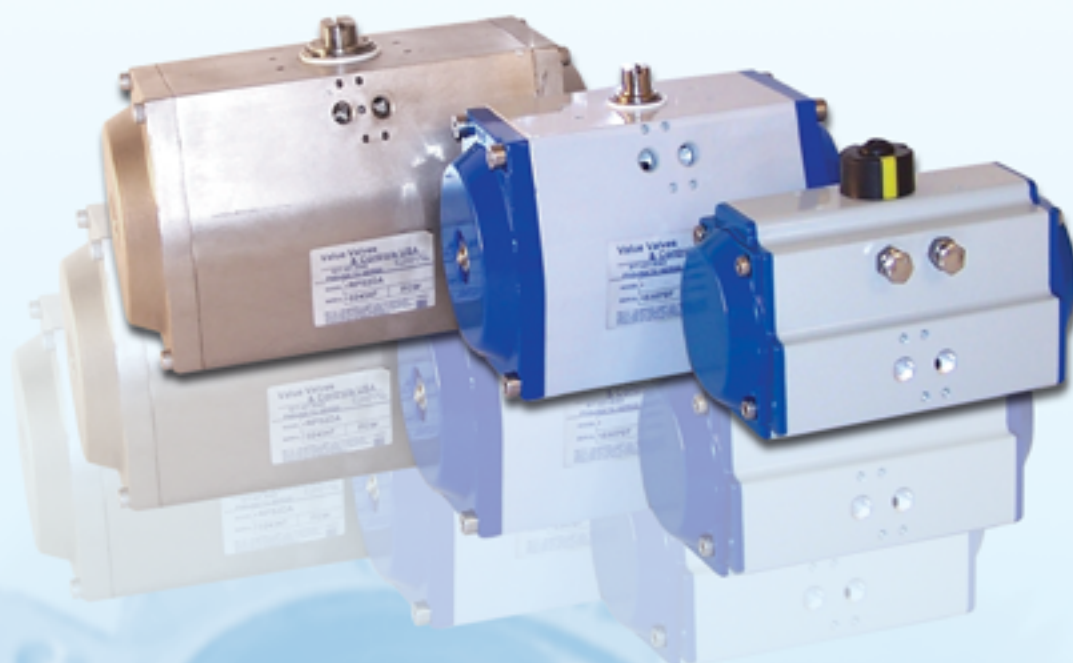


pneumatic OPERATORS



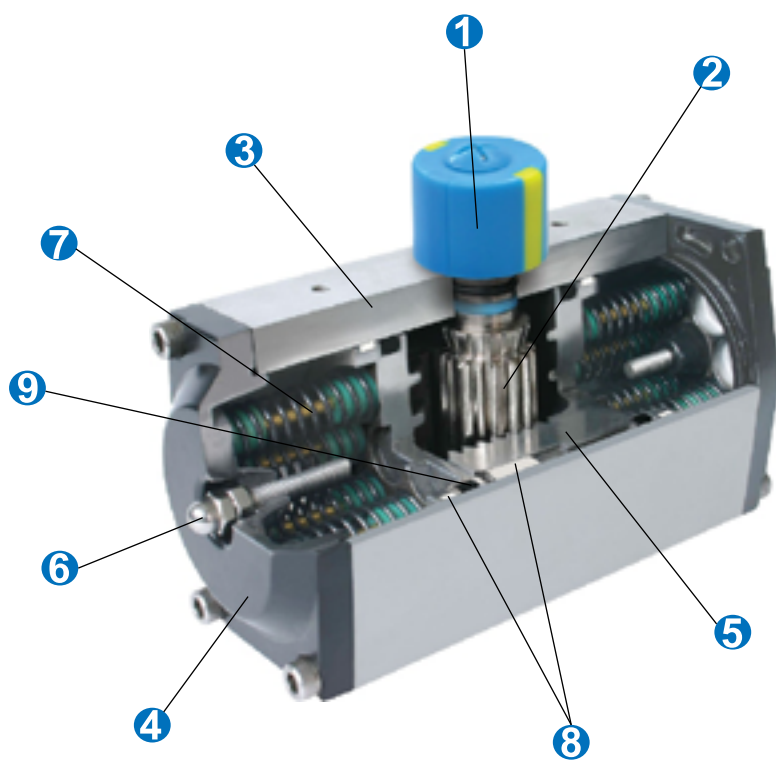
Reliant RPB Series



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Design and Features

RPB Series pneumatic actuators offer excellent quality and workmanship in a compact, efficient unit. Through state-of-the-art design, the RPB series features high reliability, high cycle life, durability, and ease of maintenance as well as end of CCW stroke adjustment. Excellent coatings make this a very good choice in most corrosive applications.



7. Springs are small, individually encapsulated and coated allowing the actuator spring stroke to be tailored to the specific application with ease.

8. Large Delrin wear pads eliminate any metal to metal contact, and allow actuator to operate with minimal friction. Replacement is easy and inexpensive.

9. O-ring seals on the Rack and on the Pinion provide bubble tight seal to 120 psig. Removal is easy and inexpensive. Buna is standard, and high and low temperature O-rings are available.



1. Top stem is Namur mount for ease of mounting Namur accessories such as limit switches and positioners. Actuator comes standard with plastic position indicator.

2. Pinion is precision machined of alloy steel and nickel plated for maximum strength. Top and bottom dimensions are ISO 5211 and Namur. Stainless steel pinion is available.

3. Actuator body is precision extruded aluminum alloy ASTM 6005, hard anodized and powder polyester coated for maximum corrosion resistance. Also available is Stainless steel, PTFE coated or Nickel plated.

4. End caps are die-cast aluminum powder coated. Also available is Stainless steel, PTFE coated and Nickel plated.

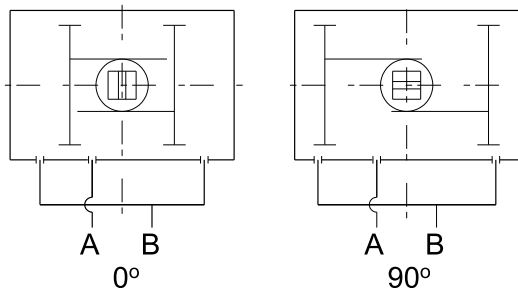
5. Dual racks are die-cast aluminum then hard anodized. Balanced racks provide long life in high cycle applications.

6. Travel stops allow ± 5 degrees in CCW direction.

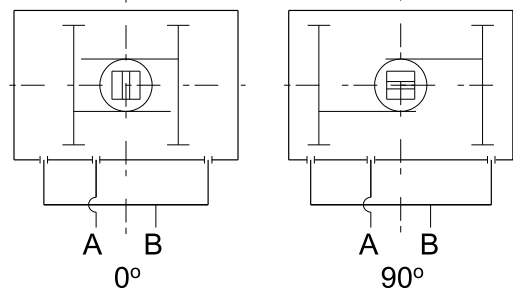
Operating Principle

Double Acting

Standard rotation



Reverse rotation



Standard Rotation:

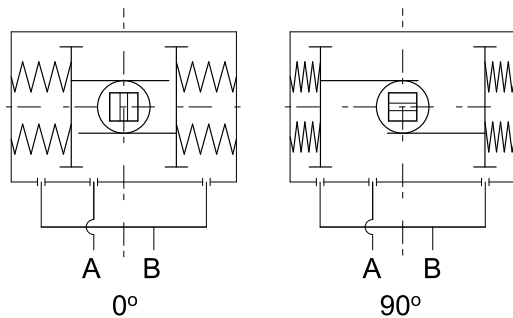
Air to port A forces the piston outward, causing the pinion to turn counterclockwise while air is being exhausted from port B. Air to port B forces the piston inward, causing the pinion to turn clockwise while air is being exhausted from port A.

Reverse Rotation:

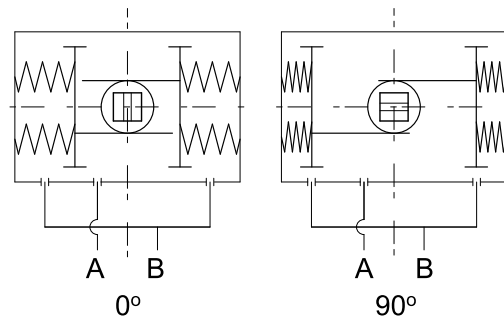
Air to port A forces the piston outward, causing the pinion to turn clockwise while the air is being exhausted from port B. Air to port B forces the piston inward, causing the pinion to turn counterclockwise while air is being exhausted from port A.

Spring Return

Standard rotation



Reverse rotation



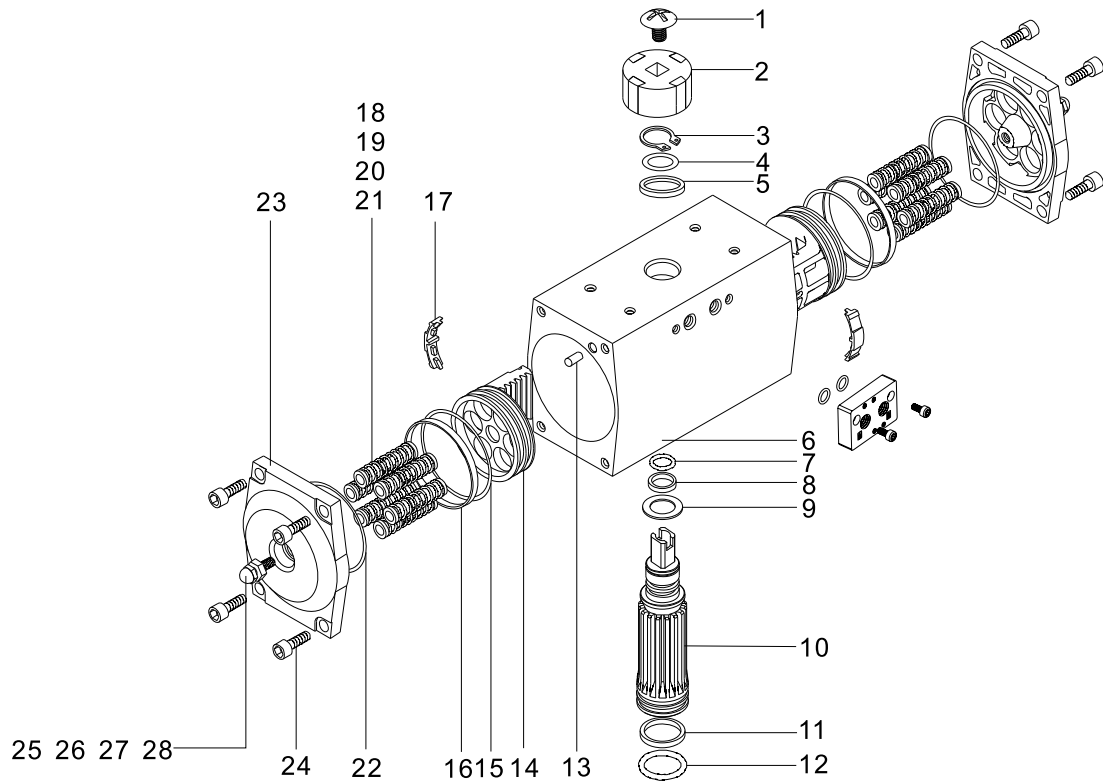
Standard Rotation:

Air to port A forces the piston outward, causing the springs to compress. The pinion turns counterclockwise while air is being exhausted from port B. On loss of air to port A, the springs force the piston inward. The pinion turns clockwise while air is being exhausted from port A.

Reverse Rotation:

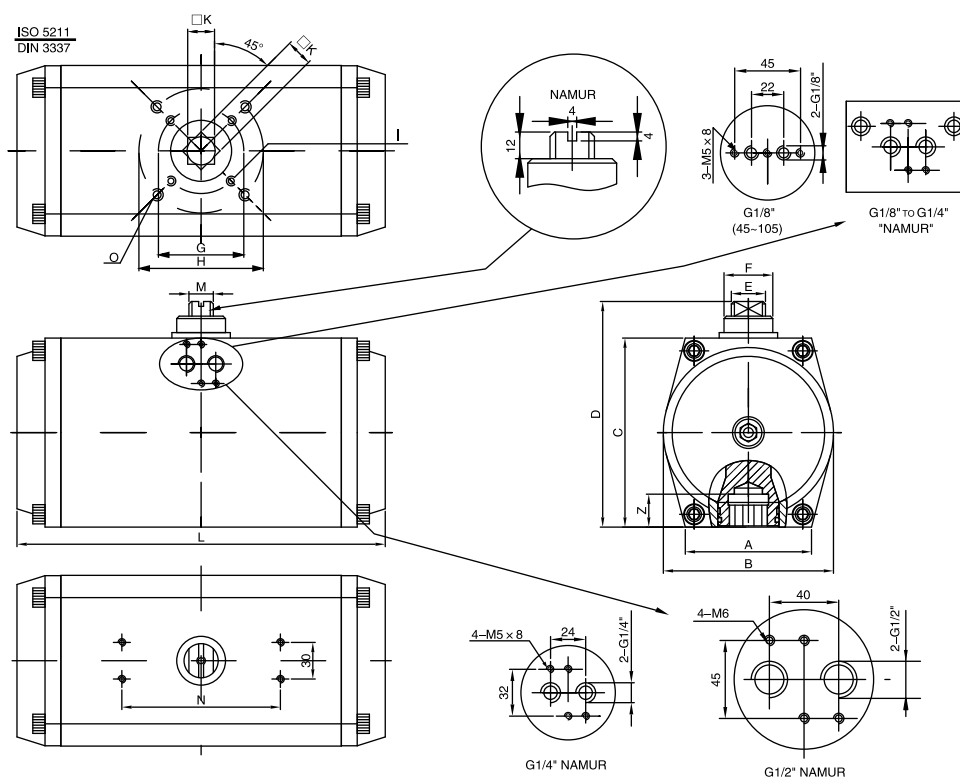
Air to port A forces the piston outward, causing the springs to compress. The pinion turns clockwise while air is being exhausted from port B. On loss of air to port A, the springs force the piston inward. The piston turns counterclockwise while air is being exhausted from port A.

Materials of Construction



No.	Description	Qty	Standard Material
1	Indicator Screw	1	Stainless Steel
2	Indicator	1	Plastic
3	Snap Ring	1	Stainless Steel
4	Washer	1	Stainless Steel
5	Outside Washer	1	Polyoxymethylene
6	Body	1	Aluminum Alloy
7	O-ring (Top)	1	Viton / NBR
8	Bearing (Top)	1	Polyoxymethylene
9	Inside Washer	1	Polyoxymethylene
10	Pinion	1	Allow Steel
11	Bearing (Bottom)	1	Polyoxymethylene
12	O-ring (Bottom)	1	Viton / NBR
13	Plug	2	NBR
14	Piston	2	Die-Casting Aluminum
15	Piston O-ring	2	Viton / NBR
16	Piston Bearing	2	Polyoxymethylene
17	Guide Piston	2	Nylon 66
18	Spring	*	Spring Steel
19	Spring Retainer (L)	*	Nylon 66
20	Spring Retainer (R)	*	Nylon 66
21	Retainer Connector	*	Brass
22	End-Cap O-ring	2	Viton / NBR
23	End-Cap	2	Die-Casting Aluminum
24	End-Cap Stop Screw	8	Stainless Steel
25	Adjust Screw	2	Stainless Steel
26	Adjust Screw Nut	2	Stainless Steel
27	Adjust Screw Washer	2	Stainless Steel
28	Adjust Screw O-ring	2	Viton / NBR

Dimensional Drawings & Dimensional Table



Model	A	B	C	D	E	F	G	H
RPB14	1.89	2.29	2.56	3.75	0.47	0.55	1.42	1.97
RPB20	1.97	2.33	2.92	4.10	0.47	0.55	1.42	1.97
RPB30	2.37	2.84	3.47	4.66	0.47	0.71	1.97	2.76
RPB50	2.56	3.27	3.95	5.13	0.47	0.71	1.97	2.76
RPB75	2.64	3.55	4.30	5.49	0.55	0.71	1.97	2.76
RPB110	3.00	4.10	4.74	5.92	0.71	0.98	1.97	2.76
RPB160	3.55	4.54	5.25	6.43	0.77	0.98	2.76	4.02
RPB250	4.08	5.53	6.12	7.30	1.10	1.58	2.76	4.02
RPB428	4.22	6.00	6.77	7.95	1.10	1.58	4.02	4.93
RPB653	5.05	6.94	7.78	8.96	1.42	1.58	4.02	4.93
RPB1053	5.33	8.13	9.08	10.27	1.77	2.37		5.53
RPB1286	5.33	8.92	10.07	11.25	1.77	2.37		5.53
RPB1890	6.12	10.11	11.41	12.64	1.77	2.37		6.51
RPB2870	6.71	11.41	12.64	13.82	1.77	2.37		6.51
RPB3938	7.74	12.79	13.74	14.93	1.77	2.37		6.51
RPB5896	8.69	15.01	16.11	17.30	1.77	2.37		6.51

Model	I	K	L	M	N	O	Z	Air Connection
RPB14	M 5X8	0.43	5.76	0.39	3.16	M 6X10	0.55	1/8"
RPB20	M 5X8	0.43	5.76	0.39	3.16	M 6X10	0.55	1/8"
RPB30	M 6X10	0.55	6.63	0.39	3.16	M 8X13	0.71	1/8"
RPB50	M 6X10	0.55	7.26	0.39	3.16	M 8X13	0.71	1/8"
RPB75	M 6X10	0.67	8.05	0.39	3.16	M 8X13	0.82	1/8"
RPB110	M 6X10	0.67	10.27	0.55	3.16	M 8X13	0.82	1/8"
RPB160	M 8X13	0.86	10.58	0.55	3.16	M 10X16	1.02	1/8"
RPB250	M 8X13	0.86	11.77	0.79	5.13	M 10X16	1.02	1/4"
RPB428	M 10X16	1.06	15.40	0.79	5.13	M 10X20	1.22	1/4"
RPB653	M 10X16	1.06	18.09	1.10	5.13	M 10X20	1.22	1/4"
RPB1053		1.42	20.73	1.26	5.13	M 16X25	1.97	1/4"
RPB1286		1.42	21.01	1.26	5.13	M 16X25	1.97	1/4"
RPB1890		1.81	23.77	1.26	5.13	M 20X25	2.37	1/4"
RPB2870		1.81	28.51	1.26	5.13	M 20X25	2.37	1/2"
RPB3938		1.81	29.30	1.26	5.13	M 20X25	2.37	1/2"

RPB Torques - Double Acting

Model	40	60	80	100	120
RPB14	81	107	146	187	214
RPB20	107	142	198	250	286
RPB30	192	256	347	447	511
RPB50	267	357	491	624	712
RPB75	414	552	753	966	1104
RPB110	604	804	1109	1408	1609
RPB160	873	1165	1608	2037	2328
RPB250	1361	1815	2606	3176	3630
RPB428	2328	3105	4288	5433	6209
RPB653	3548	4731	6530	8279	9462
RPB1053	5718	7624	10530	13342	15249
RPB1286	6985	9314	12864	16299	18627
RPB1890	10264	13686	18902	23950	27371
RPB2870	15588	20785	28702	36374	41570
RPB3938	21383	28511	39380	49895	57023
RPB5896	32016	42688	58962	74704	85376

RPB Torques - Spring Return

Model	Spring Start	Spring End	60		80		100		120	
			Start	End	Start	End	Start	End	Start	End
RPB14										
5	69	44	138	113						
6	83	53	129	99						
7	98	62	120	84	180	144				
8	111	69	113	71	173	131	248	206		
9	125	78	104	57	164	117	239	192	285	239
10	138	87			155	104	230	179	276	225
11	152	96			146	90	221	165	267	212
12	167	105					212	150	258	197
RPB20										
5	93	63	179	149						
6	111	77	165	131						
7	129	89	153	113	235	221				
8	149	102	140	93	221	206	321	275		
9	167	114	128	75	209	192	309	257	371	318
10	186	128			196	176	296	237	357	299
11	204	140			184	162	284	219	345	281
12	222	152					272	201	333	263
RPB30										
5	156	102	332	278						
6	188	123	311	246						
7	219	144	290	215	434	359				
8	251	164	270	183	414	327	594	507		
9	282	185	249	152	393	296	573	476	681	584
10	314	206			372	264	552	444	660	552
11	344	225			353	234	533	414	641	522
12	375	246					512	383	620	491

Model	Spring Start	Spring End	60		80		100		120	
			Start	End	Start	End	Start	End	Start	End
RPB50										
5	218	158	447	387						
6	261	191	414	344						
7	305	222	383	300	583	501				
8	348	254	351	257	552	457	804	710		
9	392	285	320	213	520	414	773	666	923	816
10	435	317			489	370	741	623	891	773
11	479	348			457	327	710	579	860	729
12	521	380					678	537	828	687
RPB75										
5	345	237	699	591						
6	414	285	651	522						
7	483	332	605	453	917	765				
8	552	380	557	384	869	696	1259	1086		
9	621	428	509	315	821	627	1211	1017	1445	1251
10	690	474			774	558	1164	948	1398	1182
11	759	522			726	489	1116	879	1350	1113
12	828	570					1068	810	1302	1044
RPB110										
5	516	350	1014	848						
6	618	420	944	746						
7	722	491	873	642	1327	1096				
8	825	560	804	554	1258	993	1827	1562		
9	929	630	734	435	1188	889	1757	1458	2097	1697
10	1031	701			1117	787	1686	1356	2027	1593
11	1134	771			1047	684	1616	1253	1956	1490
12	1238	840					1547	1149	1887	0
RPB160										
5	738	474	1500	1236						
6	887	570	1404	1088						
7	1034	665	1310	941	1966	1597				
8	1181	759	1215	794	1872	1450	2694	2273		
9	1329	854	1121	645	1777	1302	2600	2124	3093	2618
10	1476	950			1681	1155	2504	1977	2997	2471
11	1625	1044			1587	1006	2409	1829	2903	2322
12	1772	1125					2315	1682	2808	2175
RPB250										
5	1176	786	2291	1901						
6	1412	942	2135	1665						
7	1646	1100	1977	1431	3003	2457				
8	1881	1257	1820	1196	2845	2221	4127	3503		
9	2117	1413	1664	960	2689	1986	3971	3267	4740	4037
10	2352	1571			2532	1750	3813	3032	4583	3801
11	2586	1728			2374	1516	3656	2798	4425	3567
12	2822	1886					3498	2562	4268	3332
RPB428										
5	1935	1287	3975	3327						
6	2322	1544	3719	2940						
7	2708	1802	3461	2555	5215	4309				
8	3095	2060	3203	2168	4957	3922	7149	6114		
9	3482	2316	2946	1781	4700	3535	6893	5727	8208	7043
10	3869	2574			4433	3148	6635	5340	7950	6656
11	4256	2831			4186	2761	6378	4953	7694	6269
12	4643	3089					6120	4566	7436	5882

Model	Spring Start	Spring End	60		80		100		120	
			Start	End	Start	End	Start	End	Start	End
RPB653										
5	3125	2096	5924	4895						
6	3750	2520	5499	4269						
7	4380	2940	5079	3639	7751	6196				
8	4995	3345	4674	3024	7346	5066	10688	9038		
9	5625	3765	4254	2394	6926	4436	10268	8408	12272	10412
10	6255	4185			6506	3821	9849	7778	11852	9782
11	6870	4605			6086	3821	9428	7163	11432	9167
12	7500	5025					9008	6533	11012	8537
RPB1053										
5	4395	2850	10073	8528						
6	5280	3405	9518	7643						
7	6150	3975	8948	6773	13255	11080				
8	7035	4545	8378	5888	12685	10195	18069	15579		
9	7905	5115	7808	5018	12115	9325	17499	14709	20730	17940
10	8790	5685			11545	8440	16929	13824	20160	17055
11	9675	6255			10975	7555	16359	12939	19590	16170
12	10545	6825					15789	12069	19020	15300
RPB1286										
5	5400	3900	11886	10386						
6	6480	4695	11091	9306						
7	7545	5475	10311	8241	15573	13503				
8	8625	6255	9531	7161	14793	12423	21371	19001		
9	8205	7035	8751	6081	14003	11343	20591	17921	24537	21867
10	10785	7815			13233	10263	19811	16841	23757	20787
11	11865	8595			12453	9183	19031	15761	22977	19707
12	12945	9375					18251	14681	22197	18627
RPB1890										
5	7875	5835	17361	15321						
6	9450	7005	16191	13746						
7	11025	8160	15036	12171	22768	19903				
8	12600	9330	13866	10596	21598	18328	31263	27993		
9	14175	10500	12696	9021	20428	16753	30093	26418	35892	32217
10	15750	11670			19258	15178	28923	24843	34722	30642
11	17325	12825			18103	13603	27768	23268	33567	29067
12	18900	13995					26598	21693	32397	28992
RPB2870										
5	11175	7950	27279	24054						
6	13410	9540	25689	21819						
7	15645	11130	24099	19584	35842	31327				
8	17880	12720	22509	17349	34252	29092	48930	43770		
9	20115	14310	20919	15114	32662	26857	47340	41535	56148	50343
10	22350	15900			31072	24622	45750	39300	54558	48108
11	24585	17490			29482	22387	44160	37065	52968	45873
12	26820	19080					57570	34830	51378	43638
RPB3938										
5	15915	10950	37374	32409						
6	19095	13140	35184	29229						
7	22275	15330	32994	26049	49104	42159				
8	25455	17520	30804	22869	46914	38979	67049	59114		
9	28635	19710	28614	19689	44724	35799	64859	55934	76940	68015
10	31830	21900			42534	32604	62669	52739	74750	64820
11	35010	24090			40344	31424	60479	49559	72560	61640
12	38190	26280					58289	46379	70370	58460
RPB5896										
5	25530	17595	54758	46823						
6	30645	21120	51233	41708						
7	35745	24630	47723	36608	71841	60726				
8	40860	28155	44198	31493	68316	55611	98462	85757		
9	45960	31680	40673	26393	64791	50511	94937	80657	113025	98745
10	51075	35190			61281	45396	91427	75542	109515	93630
11	56175	38715			57756	40296	87902	70442	105990	88530
12	61290	42240					84377	65327	102465	83265

Operation and Maintenance

Operation

Media:

Clean Dry Air, lubricated or non-lubricated
Clean Gas or Oil

Air Supply Pressure:

40 to 120 psig
Max input 150 psig

Operating Temperature:

Standard Buna N O-Ring 0 to 200 F
Optional Low Temp Silicone O-Ring -30 to 200 F
Optional High Temp Viton O-Ring 0 to 300 F

Travel Adjustment:

+ 4 degrees at 90

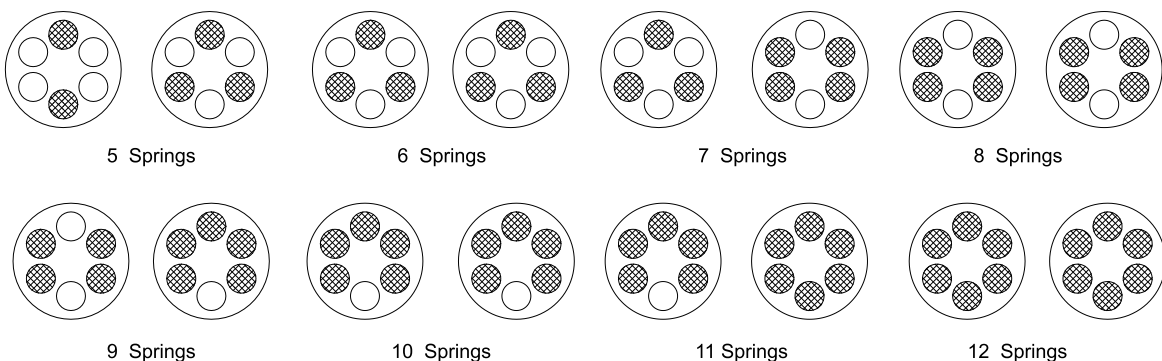
Lubrication:

Not required

Maintenance

RPB actuators are inherently maintenance free and require no additional lubrication to offer years of trouble free service. We recommend periodic checking for air leaks and loose bolts. Spring return actuators with 3 way solenoid valves that pull in outside air are subject to atmospheric corrosion. We recommend checking and replacing spring sets in this application. Utilizing 4 way solenoids will increase spring life and assist the spring closing, if acceptable.

Spring Positioning for Spring Return Actuators





Butterfly Valves & Controls Inc.

671 Industrial Blvd, Grapevine, Texas 76051

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