



B SERIES

***PNEUMATIC
ACTUATOR***

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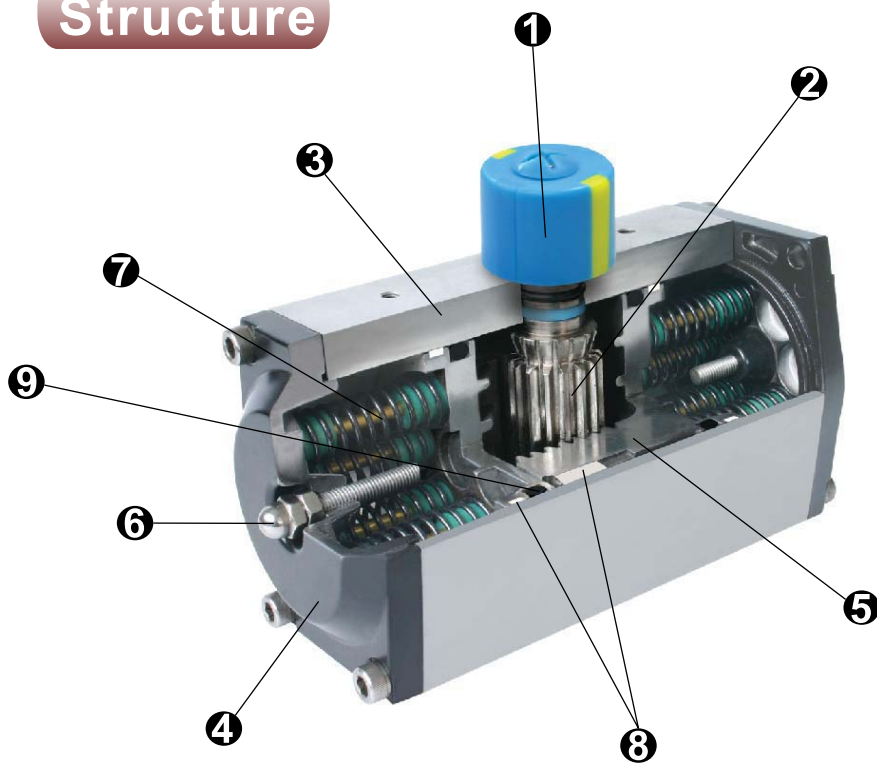
B Series Pneumatic Actuators

Design

B Series pneumatic actuators incorporate latest mechanical technology, materials available and our patented technology, through designing, developing, testing and engineering application, we have obtained a high grade product with the characteristics of reliability, high performance, long cycle life, large adjustment, and highest levels of corrosion protection, wide selection of model with easy and economy.



Structure



1. Indicator

Position indicator with NAMUR is convenient for mounting accessories such as limit switch box, positioner and so on.

2. Pinion

The pinion is high-precision and integrative, made from nickel alloy steel, full conform to the latest standards of ISO5211, DIN3337, NAMUR. The dimensions can be customized and the stainless steel is available.

3. Actuator body

According to the different requirements, the extruded aluminum alloy ASTM6005 body can be treated with hard anodized, powder polyester painted (different colors is available such as blue, orange, yellow etc.) or PTFE or nickel plated.

4. End caps

Die-casting aluminum powder polyester painted in different colors, PTFE or nickel plated.

5. Pistons

The twin rack pistons are made from die-casting aluminum treated with hard anodized or made from cast steel with galvanization. Symmetric mounting position, long cycle life and fast operation, reversing rotation by simply inverting the pistons.

6. Travel adjustment

External stroke adjustment screw can adjust $\pm 4^\circ$ at the position of 90° .

7. High performance springs

Preloaded coating springs are made from the high quality material for resistant to corrosion and longer cycle life, which can be demounted safely and conveniently to satisfy different requirements of torque by changing quantity of springs.

8. Bearings & guides

Made from low friction, long-life compound material, to avoid the direct contact between metals. The maintenance and replacement are easy and convenient.

9. O-rings

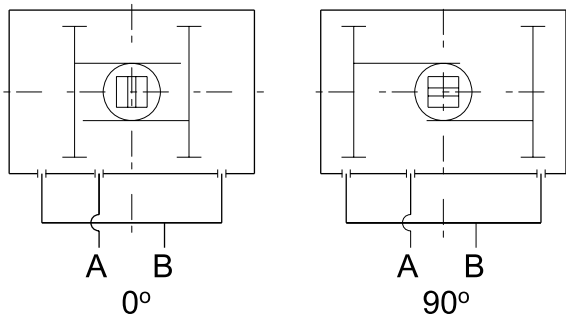
NBR rubber o-rings provide trouble-free operation at standard temperature ranges. For high and low temperature, viton or silicone is used.

B Series Pneumatic Actuators

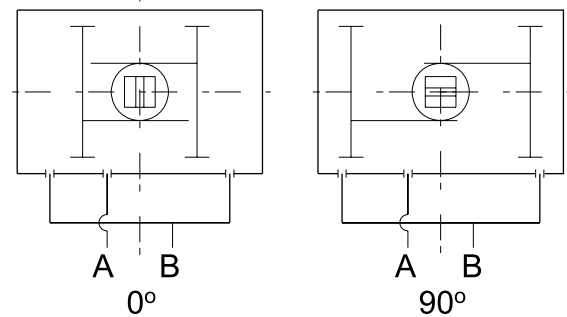
Operating Principle

Double acting

Standard rotation



Reverse rotation



Standard Rotation:

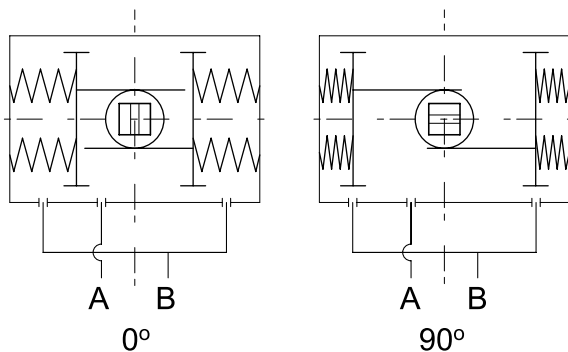
Air to port A forces the pistons outwards, causing the pinion to turn counterclockwise while the air is being exhausted from port B. Air to port B forces the pistons inwards, causing the pinion to turn clockwise while the air is being exhausted from port A.

Reverse Rotation:

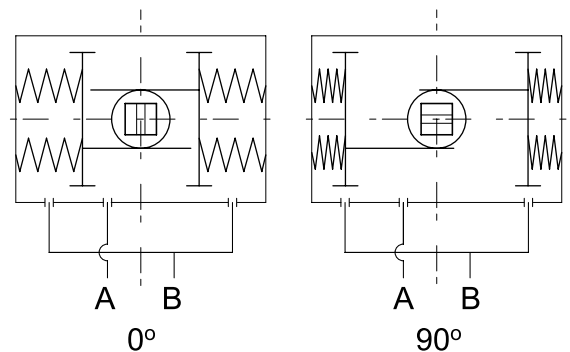
Air to port A forces the pistons outwards, causing the pinion to turn clockwise while the air is being exhausted from port B. Air to port B forces the pistons inwards, causing the pinion to turn counterclockwise while the air is being exhausted from port A.

Spring return

Standard rotation



Reverse rotation



Standard Rotation:

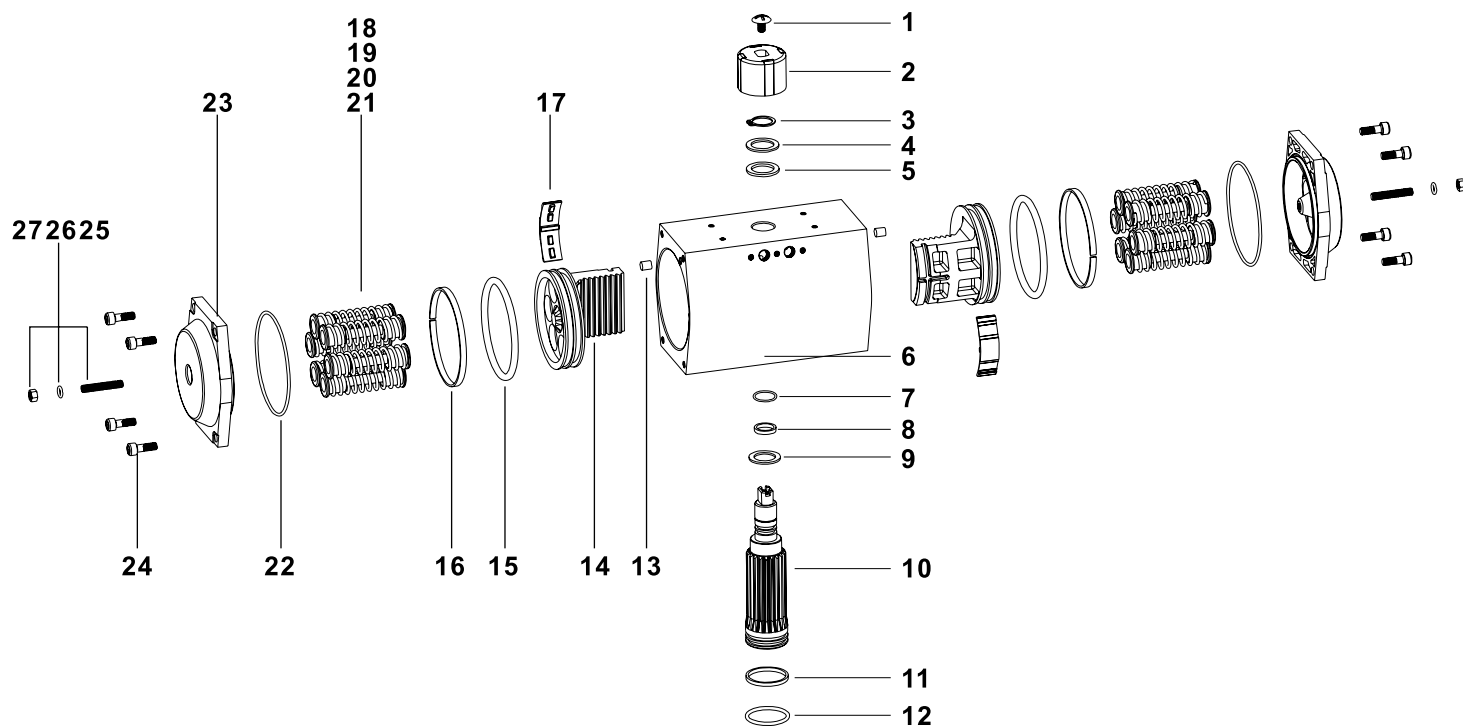
Air to port A forces the pistons outwards, causing the springs to compress, the pinion turns counterclockwise while air is being exhausted from port B. Loss of air pressure on port A, the stored energy in the springs forces the pistons inwards. The pinion turns clockwise while air is being exhausted from port A.

Reverse Rotation:

Air to port A forces the pistons outwards, causing the springs to compress, the pinion turns clockwise while air is being exhausted from port B. Loss of air pressure on port A, the stored energy in the springs forces the pistons inwards. The pinion turns counterclockwise while air is being exhausted from port A.

B Series Pneumatic Actuators

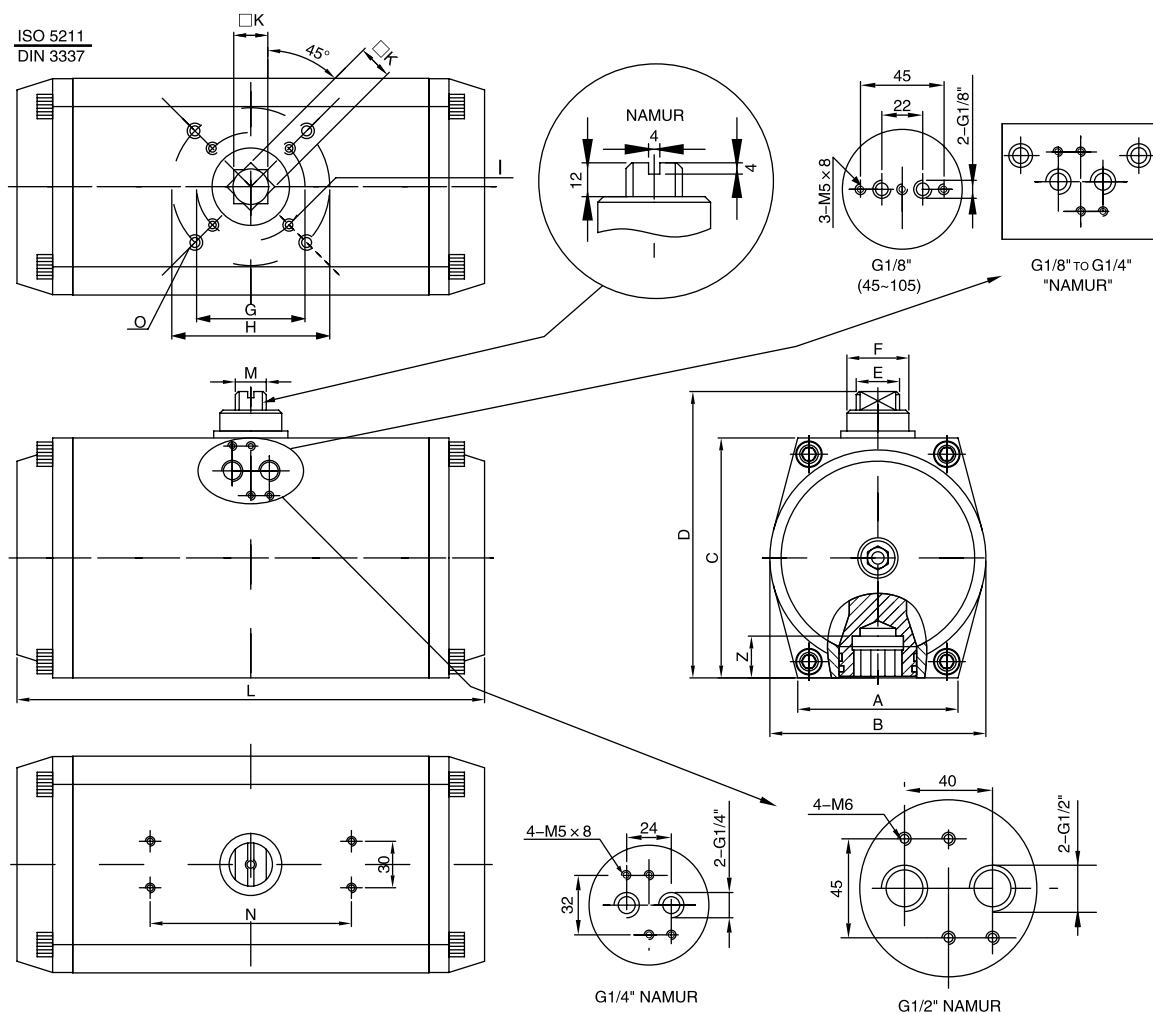
Parts and Material



No.	Description	Qty.	Standards Material	No.	Description	Qty.	Standards Material
1	Indicator Screw	1	Stainless steel	15	Piston O-ring	2	Viton/NBR
2	Indicator	1	plastic	16	Piston Bearing	2	Polyoxymethylene
3	Circlip	1	Stainless steel	17	Guide Piston	2	Nylon66
4	Washer	1	Stainless steel	18	Spring	*	Spring steel
5	Outside Washer	1	Polyoxymethylene	19	Spring Retainer(L)	*	Nylon66
6	Body	1	Aluminum alloy	20	Spring Retainer(R)	*	Nylon66
7	O-ring(Top)	1	Viton/NBR	21	Retainer Connector	*	Brass
8	Bearing Top	1	Polyoxymethylene	22	End-Cap O-ring	2	Viton/NBR
9	Inside Washer	1	Polyoxymethylene	23	End-Cap	2	Die-casting aluminum
10	Pinion	1	Alloy steel	24	End-Cap Stop Screw	8	Stainless steel
11	Bearing Bottom	1	Polyoxymethylene	25	Adjust Screw	2	Stainless steel
12	O-ring Bottom	1	Viton/NBR	26	Adjust Screw O-ring	2	Viton/NBR
13	Plug	2	NBR	27	Adjust Screw Nut	2	Stainless steel
14	Piston	2	Die-casting aluminum/steel				

B Series Pneumatic Actuators

Dimension



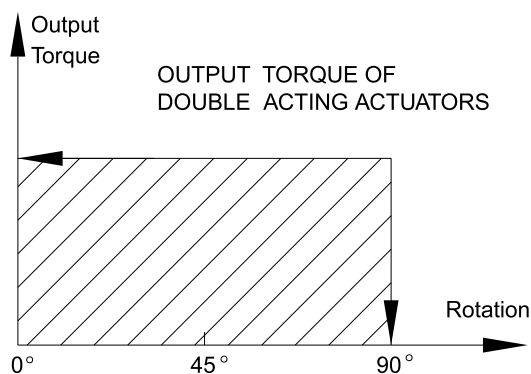
Unit: mm

Model	A	B	C	D	E	F	G	H	I	K	L	M	N	O	Z	Air Connection
B-45	48	58	65	95	12	14	Ø36	Ø50	M5x8	11	146	10	80	M6x10	14	G1/8"(1/8"NPT)
B-52	50	59	74	104	12	14	Ø36	Ø50	M5x8	11	146	10	80	M6x10	14	G1/8"(1/8"NPT)
B-63	60	72	88	118	12	18	Ø50	Ø70	M6x10	14	168	10	80	M8x13	18	G1/8"(1/8"NPT)
B-75	65	83	100	130	12	18	Ø50	Ø70	M6x10	14	184	10	80	M8x13	18	G1/8"(1/8"NPT)
B-83	67	90	109	139	14	18	Ø50	Ø70	M6x10	17	204	10	80	M8x13	21	G1/8"(1/8"NPT)
B-92	76	104	120	150	18	25	Ø50	Ø70	M6x10	17	260	14	80	M8x13	21	G1/8"(1/8"NPT)
B-105	90	115	133	163	19.5	25	Ø70	Ø102	M8x13	22	268	14	80	M10x16	26	G1/8"(1/8"NPT)
B-125	103.5	140	155	185	28	40	Ø70	Ø102	M8x13	22	298	20	130	M10x16	26	G1/4"(1/4"NPT)
B-140	107	152	171.5	201.5	28	40	Ø102	Ø125	M10x16	27	390	20	130	M12x20	31	G1/4"(1/4"NPT)
B-160	128	175.8	197	227	36	40	Ø102	Ø125	M10x16	27	458	28	130	M12x20	31	G1/4"(1/4"NPT)
B-190	135	206	230	260	45	60		Ø140		36	525	32	130	M16x25	50	G1/4"(1/4"NPT)
B-210	135	226	255	285	45	60		Ø140		36	532	32	130	M16x25	50	G1/4"(1/4"NPT)
B-240	155	256	289	320	45	60		Ø165		46	602	32	130	M20x25	60	G1/4"(1/4"NPT)
B-270	170	289	320	350	45	60		Ø165		46	722	32	130	M20x25	60	G1/2"(1/2"NPT)
B-300	196	324	348	378	45	60		Ø165		46	742	32	130	M20x25	60	G1/2"(1/2"NPT)
B-350	220	380	408	438	45	60		Ø165		46	860	32	130	M20x25	60	G1/2"(1/2"NPT)

B Series Pneumatic Actuators

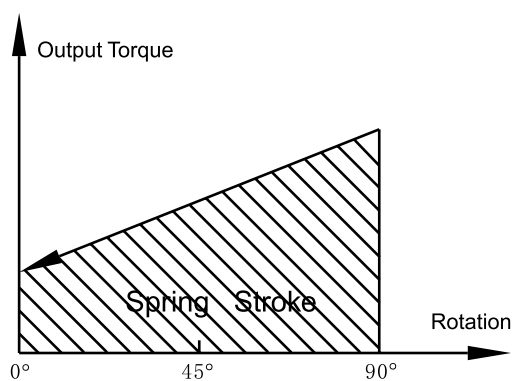
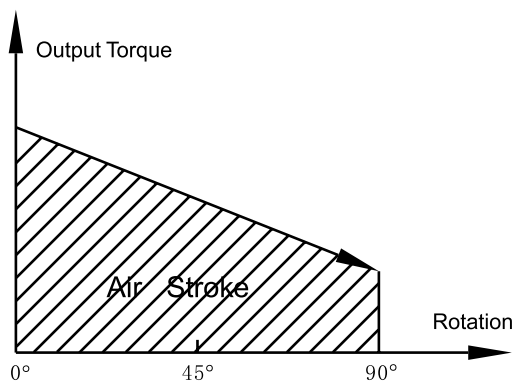
Output torque

For double acting actuator



OUTPUT TORQUE OF B SERIES PNEUMATIC ACTUATOR WITH DOUBLE ACTING(Unit:Nm)										
Model	Air pressure(Bar)									
	2	2.5	3	4	4.5	5	5.5	6	7	8
B-45DA	6.0	7.6	9.1	12.1	13.6	15.1	16.6	18.1	21.1	24.2
B-52DA	8.1	10.1	12.1	16.1	18.1	20.2	22.2	24.2	28.2	32.3
B-63DA	14.2	17.8	21.3	28.4	32.0	35.5	39.1	42.6	49.7	56.8
B-75DA	20.1	25.2	30.2	40.3	45.3	50.3	55.4	60.4	70.5	80.5
B-83DA	30.8	38.5	46.2	61.6	69.4	77.1	84.8	92.5	107.9	123.3
B-92DA	45.4	56.8	68.2	90.9	102.3	113.6	125.0	136.3	159.1	181.8
B-105DA	65.8	82.2	98.7	131.6	148.0	164.4	180.9	197.3	230.2	263.1
B-125DA	103	128	154	205	231	256	282	308	359	410
B-140DA	175	219	263	351	395	439	482	526	614	702
B-160DA	267	334	401	535	601	668	735	802	935	1069
B-190DA	431	538	646	861	969	1077	1185	1292	1508	1723
B-210DA	526	658	789	1052	1184	1316	1447	1579	1842	2105
B-240DA	773	966	1160	1546	1740	1933	2126	2320	2706	3093
B-270DA	1174	1468	1761	2349	2642	2936	3229	3523	4110	4697
B-300DA	1526	1908	2289	3052	3434	3815	4197	4578	5341	6104
B-350DA	2285	2856	3427	4570	5141	5712	6283	6854	7997	9139

For spring return actuator



OUTPUT TORQUE OF ALPHA SERIES PNEUMATIC ACTUATOR WITH SPRING RETURN(UNIT:Nm)																			
Model	Spring Q. ty	Air pressure(Bar)																	
		2.0		2.5		3.0		4.0		5.0		6.0		7.0		8.0		Spring'output	
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
B-45SR	5	3.0	1.2	4.6	2.8													4.6	2.9
	6	2.3	0.2	3.9	1.8	5.4	3.3											5.5	3.5
	7			3.3	0.8	4.8	2.3	7.8	5.3									6.5	4.1
	8					4.2	1.3	7.2	4.3	10.2	7.3							7.4	4.6
	9							6.6	3.4	9.6	6.4	12.6	9.4					8.3	5.2
	10							6.0	2.4	9.0	5.4	12.0	8.4	15.0	11.4	18.1	14.5	9.2	5.8
	11									8.4	4.4	11.4	7.4	14.4	10.4	17.5	13.5	10.1	6.4
B-52SR	12									7.8	3.5	10.8	6.5	13.8	9.5	16.9	12.6	11.1	7.0
	5	3.7	1.6	5.7	3.6													6.2	4.2
	6	2.8	0.3	4.8	2.3	6.8	4.3											7.4	5.1
	7			3.9	1.0	5.9	3.0	9.9	7.0									8.6	5.9
	8					5.0	1.7	9.0	5.7	13.1	9.8							9.9	6.8
	9							8.1	4.4	12.2	8.5	16.2	12.5					11.1	7.6
	10							7.2	3.1	11.3	7.2	15.3	11.2	19.3	15.2	23.4	19.3	12.4	8.5
B-63SR	11									10.4	5.9	14.4	9.9	18.4	13.9	22.5	18.0	13.6	9.3
	12									9.5	4.6	13.5	8.6	17.5	12.6	21.6	16.7	14.8	10.1
	5	7.0	3.2	10.6	6.8													10.4	6.8
	6	5.6	1.0	9.2	4.6	12.7	8.1											12.5	8.2
	7			7.7	2.4	11.2	5.9	18.3	13.0									14.6	9.6
	8					9.8	3.7	16.9	10.8	24.0	17.9							16.7	10.9
	9							15.4	8.6	22.5	15.7	29.6	22.8					18.8	12.3
	10							14.0	6.4	21.1	13.5	28.2	20.6	35.3	27.7	42.4	34.8	20.9	13.7
	11									19.7	11.3	26.8	18.4	33.9	25.5	41.0	32.6	22.9	15.0
	12									18.2	9.1	25.3	16.2	32.4	23.3	39.5	30.4	25.0	16.4

B Series Pneumatic Actuators

OUTPUT TORQUE OF ALPHA SERIES PNEUMATIC ACTUATOR WITH SPRING RETURN(UNIT:Nm)																			
Model	Spring Q.ty	Air pressure(Bar)																	
		2.0		2.5		3.0		4.0		5.0		6.0		7.0		8.0		Spring'output	
		0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	90° Start	0° End
B-75SR	5	9.0	4.9	14.1	10.0													14.5	10.5
	6	6.8	1.8	11.9	6.9	16.9	11.9											17.4	12.7
	7			9.7	3.9	14.7	8.9	24.8	19.0									20.3	14.8
	8					12.4	5.8	22.5	15.9	32.5	25.9							23.2	16.9
	9							20.3	12.9	30.3	22.9	40.4	33.0					26.1	19.0
	10							18.1	9.8	28.1	19.8	38.2	29.9	48.3	40.0	58.3	50.0	29.0	21.1
	11									25.9	16.8	36.0	26.9	46.1	37.0	56.1	47.0	31.9	23.2
	12									23.7	13.7	33.8	23.8	43.9	33.9	53.9	43.9	34.7	25.3
B-83SR	5	14.2	6.6	21.9	14.3													23.0	15.8
	6	10.8	1.7	18.5	9.4	26.2	17.1											27.6	19.0
	7			15.2	4.6	22.9	12.3	38.3	27.7									32.2	22.1
	8					19.6	7.4	35.0	22.8	50.5	38.3							36.8	25.3
	9							31.6	18.0	47.1	33.5	62.5	48.9					41.4	28.5
	10							28.3	13.2	43.8	28.7	59.2	44.1	74.6	59.5	90.0	74.9	46.0	31.6
	11									40.5	23.8	55.9	39.2	71.3	54.6	86.7	70.0	50.6	34.8
	12									37.1	19.0	52.5	34.4	67.9	49.8	83.3	65.2	55.2	38.0
B-92SR	5	20.8	9.2	32.2	20.6													34.4	23.3
	6	15.9	2.0	27.3	13.4	38.7	24.8											41.2	28.0
	7			22.4	6.1	33.8	17.5	56.5	40.2									48.1	32.7
	8					28.9	10.3	51.6	33.0	74.3	55.7							55.0	37.3
	9							46.7	25.8	69.4	48.5	92.1	71.2					61.9	42.0
	10							41.8	18.5	64.5	41.2	87.2	63.9	110.0	86.7	132.7	109.4	68.7	46.7
	11									59.5	34.0	82.2	56.7	105.0	79.5	127.7	102.2	75.6	51.4
	12									54.6	26.8	77.3	49.5	100.1	72.3	122.8	95.0	82.5	56.0
B-105SR	5	32.5	14.0	48.9	30.4													49.2	31.6
	6	25.8	3.6	42.2	20.0	58.7	36.5											59.1	38.0
	7			35.6	9.7	52.1	26.2	85.0	59.1									68.9	44.3
	8					45.4	15.8	78.3	48.7	111.1	81.5							78.7	50.6
	9							71.7	38.4	104.5	71.2	137.4	104.1					88.6	56.9
	10							65.0	28.0	97.8	60.8	130.7	93.7	163.6	126.6	196.5	159.5	98.4	63.3
	11									91.1	50.4	124.0	83.3	156.9	116.2	189.8	149.1	108.3	69.6
	12									84.5	40.1	117.4	73.0	150.3	105.9	183.2	138.8	118.1	75.9
B-125SR	5	47.9	20.5	72.9	45.5													78.4	52.4
	6	36.9	4.0	61.9	29.0	87.9	55.0											94.1	62.8
	7			50.8	12.5	76.8	38.5	127.8	89.5									109.7	73.3
	8					65.8	22.0	116.8	73.0	167.8	124.0							125.4	83.8
	9							105.8	56.5	156.8	107.5	208.8	159.5					141.1	94.2
	10							94.8	40.0	145.8	91.0	197.8	143.0	248.8	194.0	299.8	245.0	156.8	104.7
	11									134.8	74.5	186.8	126.5	237.8	177.5	288.8	228.5	172.4	115.2
	12									123.7	58.0	175.7	110.0	226.7	161.0	277.7	212.0	188.1	125.7
B-140SR	5	84.7	39.3	128.7	83.3													129.0	85.8
	6	66.6	12.1	110.6	56.1	154.6	100.1											154.8	102.9
	7			92.6	29.0	136.6	73.0	224.6	161.0									180.5	120.1
	8					118.5	45.8	206.5	133.8	294.5	221.8							206.3	137.3
	9							188.5	106.7	276.5	194.7	363.5	281.7					232.1	154.4
	10							170.4	79.5	258.4	167.5	345.4	254.5	433.4	342.5	521.4	430.5	257.9	171.6
	11									240.3	140.4	327.3	227.4	415.3	315.4	503.3	403.4	283.7	188.7
	12									222.3	113.2	309.3	200.2	397.3	288.2	485.3	376.2	309.5	205.9
B-160SR	5	120.0	47.7	187.0	114.7													208.3	139.7
	6	90.6	3.9	157.6	70.9	224.6	137.9											250	168
	7			128.2	27.0	195.2	94.0	329.2	228.0									292	196
	8					165.8	50.2	299.8	184.2	432.8	317.2							333	223
	9							270.4	140.3	403.4	273.3	537.4	407.3					375	251
	10							241.0	96.4	374.0	229.5	508.0	363.5	641.0	496.5	775.0	630.5	417	279
	11									344.6	185.6	478.6	319.6	611.6	452.6	745.6	586.6	458	307
	12									315.2	141.7	449.2	275.7	582.2	408.7	716.2	542.7	500	335
B-190SR	5	220	105	327	212													293	190
	6	178	40	285	147	393	255											352	227
	7			243	82	351	190	566	405									410	265
	8					309	125	524	340	740	556							469	303
	9							482	275	698	491	913	706					527	341
	10							440	210	656	426	871	641	1087	857	1302	1072	586	379
	11									614	361	829	576	1045	792	1260	1007	645	417
	12									572	296	787	511	1003	727	1218	942	703	455
B-210SR	5	237	126	369	258													360	260
	6	179	46	311	178	442	309											432	313
	7			253	99	384	230	647	493									503	365
	8					326	150	589	413	853	677							575	417
	9							531	333	795	597	1058	860					647	469
	10							473	253	737	517	1000	780	1263	1043	1526	1306	719	521
	11									679	437	942	700	1205	963	1468	1226	791	573
	12									621	357	884	620	1147	883	1410	1146	863	625

B Series Pneumatic Actuators

OUTPUT TORQUE OF ALPHA SERIES PNEUMATIC ACTUATOR WITH SPRING RETURN(UNIT:Nm)																			
Model	Spring Q.ty	Air pressure(Bar)																	
		2.0		2.5		3.0		4.0		5.0		6.0		7.0		8.0		Spring'output	
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
B-240SR	5	341	190	534	383													525	389
	6	255	73	448	266	642	460											630	467
	7			361	150	555	344	941	730									735	544
	8					469	227	855	613	1242	1000							840	622
	9							768	496	1155	883	1542	1270					945	700
	10							682	380	1069	767	1456	1154	1842	1540	2229	1927	1050	778
	11									983	650	1370	1037	1756	1423	2143	1810	1155	855
B-270SR	5	585	346	879	640													745	530
	6	467	181	761	475	1054	768											894	636
	7			644	309	937	602	1525	1190									1043	742
	8					819	437	1407	1025	1994	1612							1192	848
	9							1289	859	1876	1446	2463	2033					1341	954
	10							1171	694	1758	1281	2345	1868	2932	2455	3519	3042	1490	1060
	11									1640	1115	2227	1702	2814	2289	3401	2876	1639	1166
B-300SR	5	715	347	1097	729													1061	730
	6	553	112	935	494	1316	875											1273	876
	7			772	258	1153	639	1916	1402									1485	1022
	8					991	403	1754	1166	2517	1929							1697	1168
	9							1592	930	2355	1693	3118	2456					1909	1314
	10							1430	695	2193	1458	2956	2221	3719	2984	4482	3747	2122	1460
	11									2030	1222	2793	1985	3556	2748	4319	3511	2334	1606
B-350SR	5	982	393	1553	964													1702	1173
	6	721	15	1292	586	1863	1157											2043	1408
	7			1031	208	1602	779	2745	1922									2383	1642
	8					1341	401	2484	1544	3626	2686							2724	1877
	9							2224	1165	3366	2307	4508	3449					3064	2112
	10							1963	787	3105	1929	4247	3071	5390	4214	6532	5356	3405	2346
	11									2844	1551	3986	2693	5129	3836	6271	4978	3745	2581
B-350SR	12									2584	1172	3726	2314	4869	3457	6011	4599	4086	2816

Weight

Model	B-45	B-52	B-63	B-75	B-83	B-92	B-105	B-125	B-140	B-160	B-190	B-210	B-240	B-270	B-300	B-350
DA	1.05	1.10	1.80	2.16	2.85	4.30	6.15	8.80	12.15	20.10	38.10	45.10	63.00	93.80	110.00	186.50
SR	1.12	1.23	1.95	2.43	3.15	5.05	6.95	9.25	15.30	23.80	44.80	53.60	76.80	115.00	130.00	234.40

Operating Conditions

- Operating media
Dry or lubricated air, the non-corrosive gas or oil
- Air supply pressure
Double acting: 2~8Bar;Spring return:2~8Bar

B Series Pneumatic Actuators

3. Operating temperature

Standard(NBR O-ring): -20°C~+80°C

Low temperature(Silicone O-ring): -35°C~+80°C

High temperature(Viton O-ring): -15°C~+150°C

4. Travel adjustment

Have adjustment range of $\pm 4^\circ$ for the rotation at 90°

5. Lubrication

Under normal operating condition, need not accrete lubricant

6. Application

Either indoor or outdoor

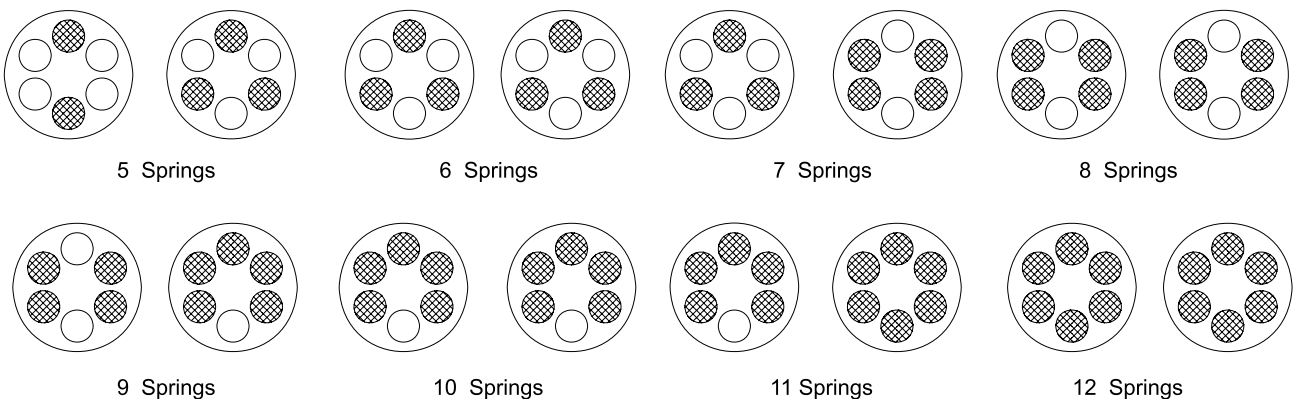
7. Highest pressure

The maximum input pressure is 10 Bar

Manual Operation

Remove any manual opening device from the valve, leaving the valve stem clear. Make sure that the shape of the stem fit the actuator output and that the rotation is not hindered in any way. Mount the actuator onto the valve, certaining it well on the stem. Make sure that the rotation direction is correct, in any case do not insert your hands inside the valve. We strongly suggest checking the cleanness of the air-supply pipes, especially when the plant is not provided with filters. A spacer between actuator and valve will be necessary with fluids at high temperature.

Springs mounting form for spring return actuators:



B Series Pneumatic Actuators

Maintenance

1. It is recommended that periodic checks be performed to make sure that all fasteners remain tight.
2. The actuator is supplied ready-lubricated no further lubrication is required. If lubrication is deemed necessary, use EP-1 grease.
3. Under certain working conditions (heavy duty, non-compatible operating media or abnormal operating conditions) internal seals should be checked periodically and replaced when necessary.
4. On spring return actuators, spring fatigue may set in requiring the replacement of springs. Spring should always be replaced in full sets.

NOTE

If an actuator is properly assembled and used, it will be maintenance free, as it has been lubricated enough to last a normal working life under normal working conditions. Should it get necessary to replace its seals, we suggest turning to our company where the product will be overhauled first, and then tested. On request, our company will be willing to provide its customers with kits and instructions.

