

A Series Pneumatic Actuators

Catalog 1005C-A

February 2014

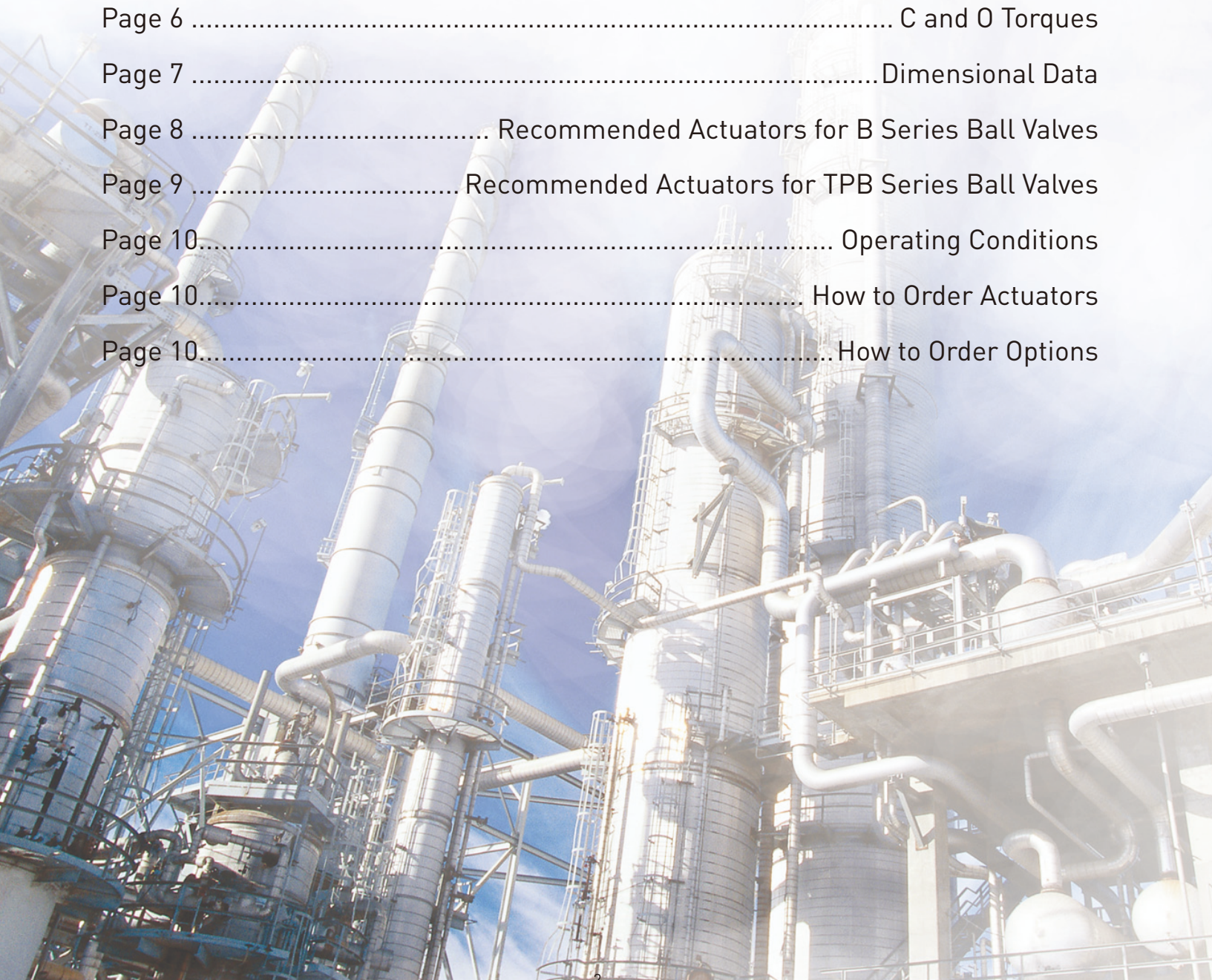
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Introduction

Parker A Series spring return (C/O) or double acting (D) rack and pinion actuators are compact, simply designed devices that are quality engineered to provide high torque outputs and a high cycle, trouble-free life.

A compact, dual opposed rack and pinion design and guide band suspension combine to produce a symmetrically balanced, center mount actuator. In addition, the actuator has a short powerful stroke, rapid response, and fully concentric operating load capability which ensures optimum performance.

Features

- Position indicator with NAMUR is convenient for mounting accessories such as Limit Switch box, Positioner and so on.
- The pinion is high-precision and integrative, made from nickel-alloy steel, fully conform to the standards of ISO5211, DIN3337, NAMUR.
- Aluminum body, hard anodized externally and internally, for corrosion and wear resistance.
- 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.
- The two independent external travel stop adjustment bolts can adjust $\pm 5^\circ$ at both open and close directions easily and precisely.
- Preloaded coating springs are made from the high quality material for resistant to corrosion and longer service life, which can be demounted safely and conveniently to satisfy different requirements of torque by changing quantity of springs.
- Bearings & Guides are made from low friction, long-life compound material, to avoid the direct contact between metals. The maintenance and replacement are easy and convenient.
- NBR rubber O-rings provide trouble-free operation at standard temperature ranges. For high and low temperature, Viton or Silicone is used.

Specifications

Operating Pressure

Double acting: 2 to 8 bar

Single acting: 2.5 to 8 bar

C – Normally Closed Spring Return

D – Double Acting

O – Normally Open Spring Return

* Note: Above the pressure does not represent the pneumatic ball valve working pressure.

Travel

0° to 90° – Standard

0° to 180° – Special custom-made actuator

Temperature Range

Standard: -20° C to 80° C

Optional high and low temperature ranges available

Low temperature: -35° C to 80° C

High temperature: -15° C to 150° C

NOTE: Further information of actuator with 180° travel, please do not hesitate to contact PARKER.

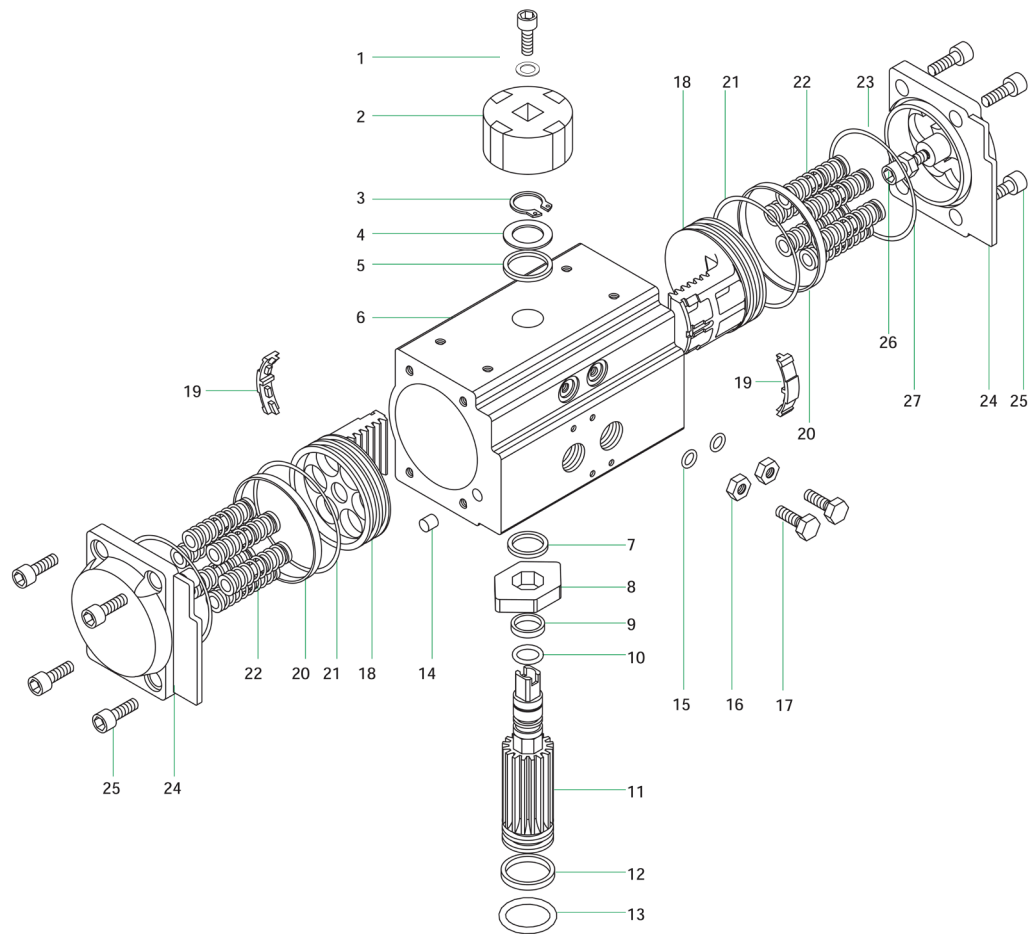


- Air supply connection is designed in accordance with NAMUR Standard to install solenoid valves.
- Bottom mounting connection is designed in accordance with ISO5211 and DIN3337 standards for direct mounting with valve gear boxes or mounting brackets.

Options

- Assembled with ball valve
- High Temperature seals
- Low Temperature seals
- Solenoid valve
- Rotary limit switch with valve position indicator
- Breather block
- Dual mount actuator





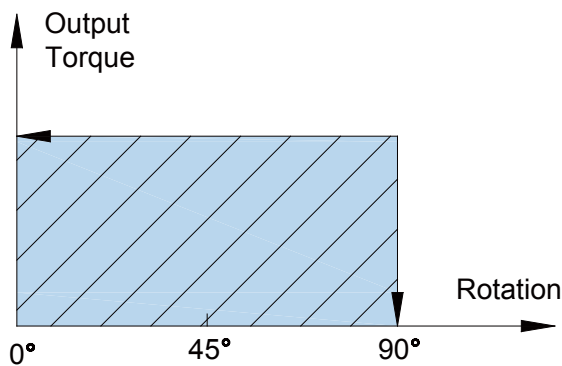
Materials of Construction

Item #	Description	Qty.	Standard Material	Protection	Optional Material
1	Indicator Screw and Washer	1	Stainless Steel		
2	Indicator	1	Plastic		
3	Spring Clip	1	Stainless Steel		
4	Thrust Washer	1	Stainless Steel		
5	Outside Washer	1	Engineering Plastics		
6	Body	1	Extruded Alluminum Alloy	Hard Anodized Etc	
7	Inside Washer	1	Engineering Plastics		
8	Cam	1	Alloy Steel		
9	O-Ring (Pinion Top)	1	NBR		Viton/Silicone
10	Bearing (Pinion Top)	1	Engineering Plastics		
11	Pinion	1	Alloy Steel	Nickel Plated	Stainless Steel
12	O-Ring (Pinion Bottom)	1	Engineering Plastics		
13	Bearing (Pinion Bottom)	1	NBR		Viton/Silicone
14	Plug	2	NBR		Viton/Silicone
15	O-Ring (Adjust Screw)	2	NBR		Viton/Silicone
16	Nut (Adjust Screw)	2	Stainless Steel		
17	Adjust Screw	2	Stainless Steel		
18	Piston	2	Cast Alluminum/Aasting	Anodized/Zinc Galvanized	Stainless Steel
19	Guide (Piston)	2	Engineering Plastics		
20	Bearing (Piston)	2	Engineering Plastics		
21	O-Ring (Piston)	2	NBR		Viton/Silicone
22	Spring	0~12	Spring Steel	Dip Coating	
23	O-Ring (End Cap)	2	NBR		Viton/Silicone
24	End Cap	2	Cast Alluminum	Powder Polyster Painted etc	
25	Cap Screw	8	Stainless Steel		
26	Stop Screw	2	Stainless Steel		
27	Nut (Stop Screw)	2	Stainless Steel		

Performance Characteristics (C, O and D)

Series	Diameter of Cylinder (mm)	Weight (kg)		Air Consumption (L)	
		D	C/O	Air volume Opening	Air volume Closing
A01	32	0.7	-	0.04	0.05
A02	40	1.0	1.1	0.08	0.11
A03	52	1.4	1.5	0.12	0.16
A04	63	2.0	2.1	0.21	0.23
A05	75	2.7	2.9	0.30	0.34
A06	83	3.1	3.6	0.43	0.47
A07	92	4.6	5.2	0.64	0.73
A08	105	6.8	6.9	0.95	0.88
A09	125	8.9	10.1	1.60	1.40
A10	140	13.0	15.0	2.50	2.20
A11	160	20.0	24.0	3.70	3.20
A12	190	31.0	35.0	5.90	5.40
A13	210	47.0	55.0	7.50	7.50
A14	240	67.0	80.0	11.0	9.0
A15	270	97.0	118.0	17.0	14.0

D Torques Double Acting Actuator

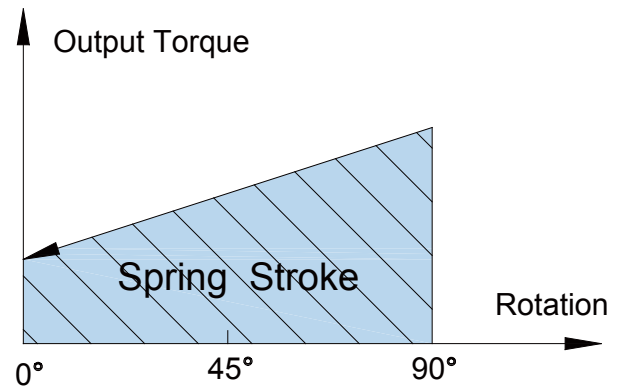
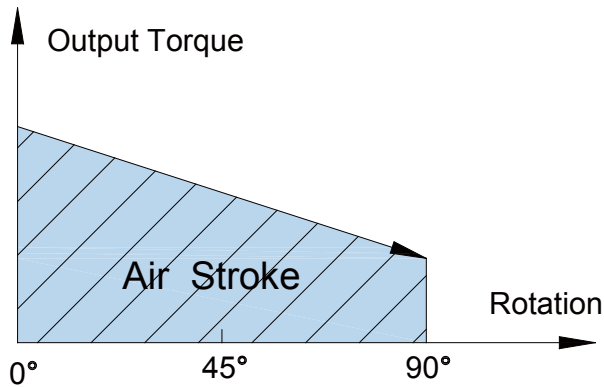


Unit: Nm

Output Torque of Double Acting Actuator										
Series	Air Supply Pressure (bar)									
	2	2.5	3	4	4.5	5	5.5	6	7	8
A01D	3	4	5	6	7	8	8	9	11	12
A02D	5	6	7	10	11	12	13	14	17	19
A03D	8	10	12	16	18	20	22	24	28	32
A04D	15	18	22	29	33	36	40	44	51	58
A05D	20	25	30	40	45	50	55	60	70	80
A06D	31	39	47	63	70	78	86	94	110	125
A07D	45	56	68	90	102	113	124	135	158	181
A08D	66	83	99	132	149	165	182	198	231	264
A09D	100	125	150	200	226	251	276	301	351	401
A10D	171	214	256	342	385	427	470	513	598	684
A11D	266	332	399	532	598	665	731	798	931	1064
A12D	426	532	638	851	958	1064	1170	1277	1490	1702
A13D	532	665	798	1064	1197	1330	1463	1596	1862	2128
A14D	769	962	1154	1539	1731	1924	2116	2308	2693	3078
A15D	1170	1462	1754	2339	2632	2924	3216	3509	4094	4679

C and O Torques

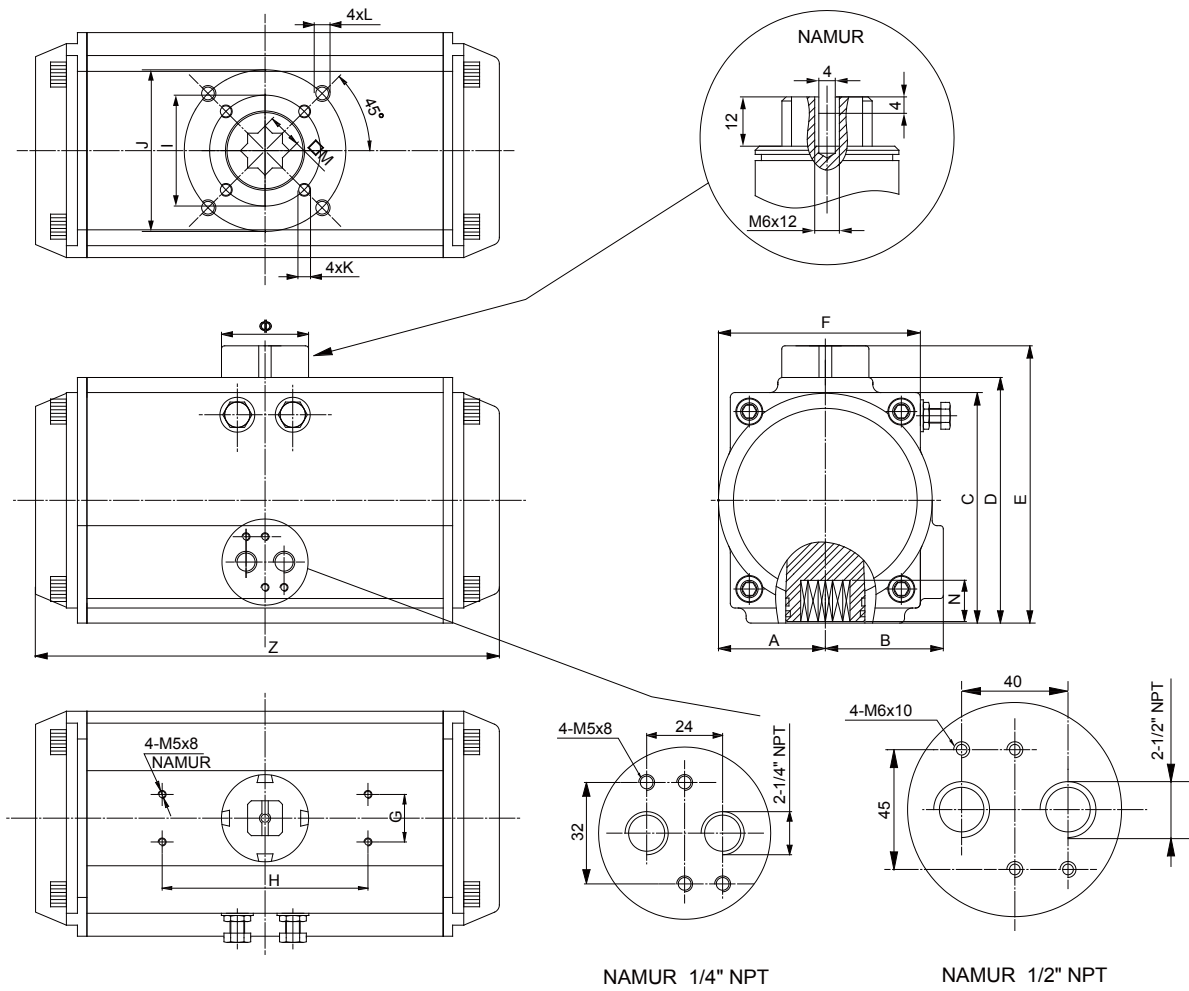
Spring Return Actuator



Unit: Nm

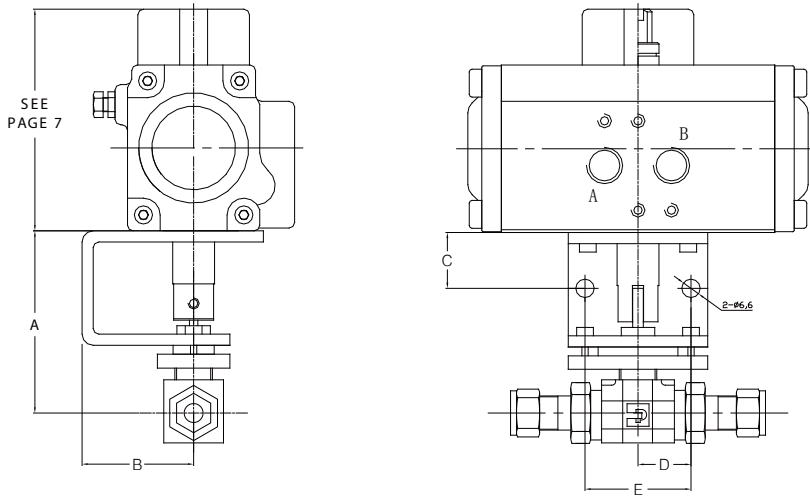
Output Torque of Spring Return Actuator													
Series	Spring Q'ty	Air Torque										Spring Torque	
		Air Supply Pressure (bar)											
		4		5		6		7		8		90°	0°
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		
Start	End	Start	End	Start	End	Start	End	Start	End	Start	End		
A02C/O	2	6.1	3.7	7.4	5.4	9.2	7.0	-	-	-	-	6.0	3.7
A03C/O	10	7.4	3.6	11.5	6.7	15.5	11.6	19.5	15.6	-	-	12.4	8.5
A04C/O	10	14.0	8.2	22.8	15.6	30.0	22.8	37.3	30.1	44.7	37.4	20.9	13.7
A05C/O	10	19.0	11.1	28.8	21.2	39.0	31.2	49.1	41.2	59.1	51.2	29.0	21.1
A06C/O	10	31.0	16.6	46.7	32.3	62.4	48.0	78.1	63.7	93.8	79.3	46.0	31.6
A07C/O	10	43.6	21.5	66.2	44.1	88.8	66.7	111.3	89.2	134.0	111.8	68.7	46.7
A08C/O	10	68.9	33.4	102.0	66.5	135.1	99.6	168.2	132.6	201.2	165.7	98.4	63.3
A09C/O	10	96	44	146	94	196	144	247	194	297	245	157	105
A10C/O	10	170	84	256	169	341	255	427	340	512	426	258	172
A11C/O	10	253	115	386	248	519	381	652	514	785	647	417	279
A12C/O	10	451	233	664	446	877	658	1090	871	1302	1084	618	400
A13C/O	10	514	304	780	570	1046	836	1312	1102	1578	1368	760	550
A14C/O	10	718	431	1103	816	1488	1201	1872	1586	2257	1970	1108	821
A15C/O	10	1220	767	1805	1352	2390	1937	2974	2521	3560	3107	1572	1119

Dimensional Data



Unit: Nm

Series	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Z	Φ	Air Connection
A01	22.5	22.5	-	45	65	45	30	80	Φ36	-	M5x8	-	9	11	118	Φ40	NAMUR 1/8" NPT
A02	28.5	36.5	-	60	80	52	30	80	Φ36	Φ50	M5x8	M6x10	11	14	122	Φ40	NAMUR 1/4" NPT
A03	30	41.5	65.5	72	92	65	30	80	Φ36	Φ50	M5x8	M6x10	11	14	147	Φ40	NAMUR 1/4" NPT
A04	36	47	81	87.5	107.5	72	30	80	Φ50	Φ70	M6x10	M8x13	14	18	168	Φ40	NAMUR 1/4" NPT
A05	42	53	94	99.5	119.5	81	30	80	Φ50	Φ70	M6x10	M8x13	14	18	184	Φ40	NAMUR 1/4" NPT
A06	46	57	98.5	108.7	128.7	92	30	80	Φ50	Φ70	M6x10	M8x13	17	21	204	Φ40	NAMUR 1/4" NPT
A07	50	58.5	111	116.5	136.5	98	30	80	Φ50	Φ70	M6x10	M8x13	17	21	262	Φ40	NAMUR 1/4" NPT
A08	57.5	64	122.5	133	153	109.5	30	80	Φ70	Φ102	M8x13	M10x16	22	26	268	Φ40	NAMUR 1/4" NPT
A09	67.5	74.5	145.5	155	175	127.5	30	80	Φ70	Φ102	M8x13	M10x16	22	26	301	Φ55	NAMUR 1/4" NPT
A10	75	77	161	172	192	137.5	30	80	Φ102	Φ125	M10x16	M12x20	27	31	390	Φ55	NAMUR 1/4" NPT
A11	87	87	184	197	217	158	30	80	Φ102	Φ125	M10x16	M12x20	27	31	458	Φ55	NAMUR 1/4" NPT
A12	103	103	213	230	260	189	30	130	-	Φ140	-	M16x25	36	40	525	Φ80	NAMUR 1/4" NPT
A13	113	113	235.5	255	285	210	30	130	-	Φ140	-	M16x25	36	40	532	Φ80	NAMUR 1/4" NPT
A14	130	130	264.5	289	319	245	30	130	-	Φ165	-	M20x25	46	50	602	Φ80	NAMUR 1/4" NPT
A15	147	147	299	326	356	273	30	130	-	Φ165	-	M20x25	46	50	722	Φ80	NAMUR 1/2" NPT



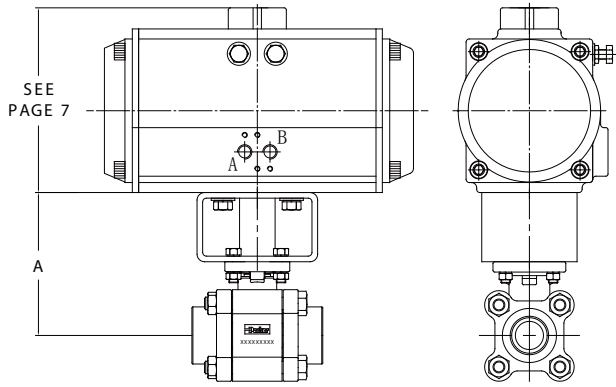
Valve Dimensional Data for B Series Ball Valve

Unit: mm

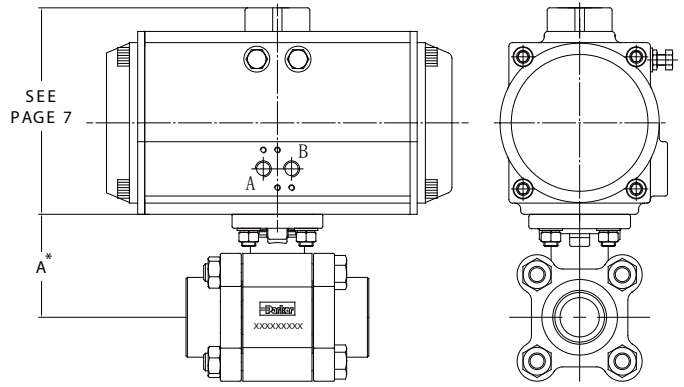
Series	A	B	C	D	E
B2	56.6	40.9	20.3	19	38
B6	63.2				
B8	73.9				

Recommended Actuators for B Series Ball Valves

Valve	Double Acting	Spring Return	Spring Return
Series	D	O	C
B2LJ	A02D	A02O	A02C
B2LJ2	A02D	A02O	A02C
B2XJ	A02DX	N/A	N/A
B2XJ2	A02DX	N/A	N/A
B6LJ	A02D	A02O	A02C
B6LJ2	A02D	A02O	A02C
B6LS2	A02D	A02O	A02C
B6LPKR	A02D	A02O	A02C
B6LSPKR	A02D	A02O	A02C
B6XJ	A02DX	N/A	N/A
B6XJ2	A02DX	N/A	N/A
B6XS2	A02DX	N/A	N/A
B6XPKR	A02DX	N/A	N/A
B6XSPKR	A02DX	N/A	N/A
B8LJ	A02D	A02O	A02C
B8LJ2	A02D	A03O	A03C
B8LS2	A02D	A03O	A03C
B8LPKR	A02D	A03O	A03C
B8LSPKR	A03D	A04O	A04C
B8XJ	A02DX	N/A	N/A
B8XJ2	A02DX	N/A	N/A
B8XS2	A02DX	N/A	N/A
B8XPKR	A02DX	N/A	N/A
B8XSPKR	A03DX	N/A	N/A



Pneumatic TPB Valve
(With Bracket)



Pneumatic TPB Valve
(Without Bracket)

Recommended Actuators for TPB Series Ball Valves

Valve	Double Acting	Spring Return	Spring Return	Height Dimension of Bracket — "A" (Unit: mm)	
Series	D	O	C	D	O/C
TPB4LT	A03D	A040	A04C	86	
TPB4LPK	A04D	A050	A05C		
TPB4LM	A04D	A050	A05C		
TPB6LT	A03D	A040	A04C	86	
TPB6LPK	A04D	A050	A05C		
TPB6LM	A04D	A050	A05C		
TPB8LT	A03D	A040	A04C	88	
TPB8LPK	A04D	A050	A05C		
TPB8LM	A04D	A050	A05C		
TPB12LT	A03D	A050	A05C	93	
TPB12LPK	A05D	A070	A07C		
TPB12LM	A05D	A060	A06C		
TPB16LT	A04D	A060	A06C	99	
TPB16LPK	A06D	A080	A08C		
TPB16LM	A05D	A070	A07C		
TPB20LT	A05D	A070	A07C	62*	
TPB20LPK	A07D	A090	A09C		
TPB20LM	A06D	A080	A08C		
TPB24LT	A06D	A080	A08C	70*	150
TPB24LPK	A07D	A090	A09C		
TPB24LM	A08D	A100	A10C		
TPB32LT	A08D	A090	A09C	90*	
TPB32LPK	A08D	A100	A10C		
TPB32LM	A08D	A100	A10C		
TPB40LPK	A09D	A110	A11C	105*	
TPB48LPK	A10D	A120	A12C	119*	219
TPB64LPK	A11D	A130	A13C	144*	244

NOTE: For the suffix "*" of height dimension, means the bracket is not necessary for the assembly of pneumatic actuator. The pneumatic actuator is connecting to TPB valve directly.

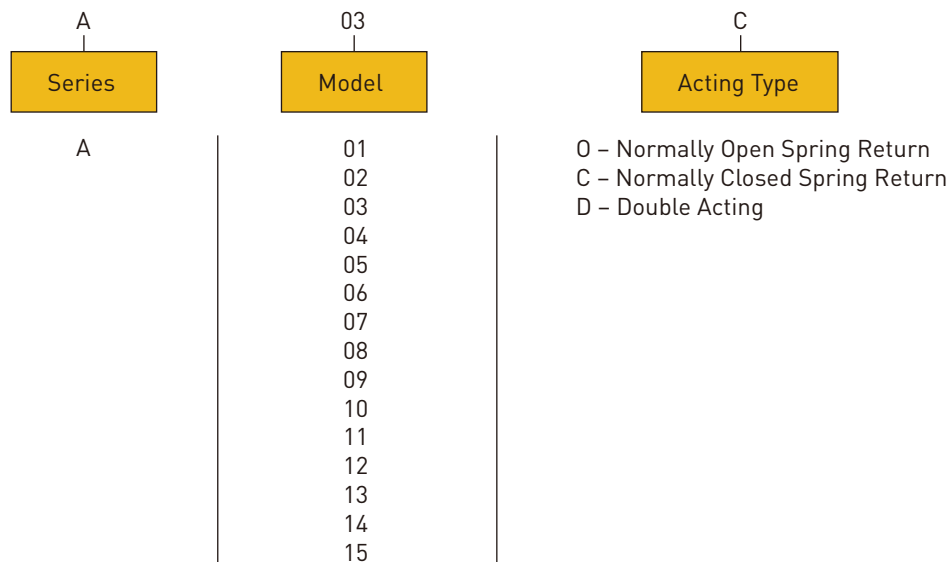
Operating Conditions

1.	Operating media
	Dry or lubricated air, or the non-corrosive gases
	The maximum particle diameter must less than 30 μ m
2.	Air supply pressure
	The minimum supply pressure is 2.5 Bar
	The maximum supply pressure is 8 Bar
3.	Operating temperature
	Standard:-20° C~+80° C
	Low temperature:-35° C~+80° C
	High temperature:-15° C~+150° C
4.	Travel adjustment
	Have adjustment range of ±5° for the rotation at 0° and 90°
5.	Application
	Either indoor or outdoor

How to Order Actuators

The correct part number is easily derived from the following number sequence. The four product characteristics required are coded as shown below.

Example: A03C Describes an A series pneumatic actuator with 03 model for cylinder, normally closed spring return for spring return actuator, and with 10 springs in spring chamber.



How to Order Options

Assembled With Ball Valve

- Factory Assembled With Ball Valve

Add the actuator model designation as a suffix to the ball valve part number.

Example: 4Z-B6LJ2-SS-A02C Describes a B6L ball valve with a normally closed actuator.

8F-TPB8L-T-T-SS-A04C Describes a TPB8L ball valve with a normally closed actuator.

- **Actuator Assembled With Mounting Brackets**

Specify the ball valve series and seat material followed by the actuator.

Example: B6LJ2-A02C

- **For Only Mounting Bracket Kits**

Add the valve series and actuator model designation as a suffix to MK-.

Example: MK-B6LA02 Describes a mounting kit for a B6 Series ball valve suitable to A02 Series actuator.

High Temperature Environment Seals – Extends the high temperature from 80° C to 150° C.

Add the suffix -HT to the end of the actuator part number. **Example:** 4Z-B6LJ2-SS-A02C-HT

Low Temperature Environment Seals – Extends the low temperature from -20° C to -35° C.

Add the suffix -LT to the end of the actuator part number. **Example:** 4Z-B6LJ2-SS-A02C-LT

Dual Mount Actuator – Two valves may be actuated with a single actuator. Available with both valves open, both closed, or one open and one closed.

Add the suffix -DVM to the end of the part number. [Example: 12A-B8LJ2-SS-A04C-DVM](#)

Accessories

- **Solenoid Valve** (Single coil) – Mounts directly to the actuator inlet plate, with voltages of 24 VDC and 220 VAC. Also explosion-proof option is available.
- **Limit Switch** – Rugged, fully enclosed unit contains two SPDT snap-acting switches operated by two independently adjustable cams on a rotating shaft coupled directly to the actuator auxiliary drive. Features a visual valve position indicator. Meets IP65 classifications for weather-resistant.
- **Breather Block** – A direct mount diverter module redirects instrument quality air to the spring chamber during the spring stroke (fail stroke) of C and O actuators. Ideal for corrosive, wet, or dusty environments. Also improves spring stroke speed and allows the solenoid valve to be mounted to it.

For order accessories, add one of the following suffixes to the end of the part number.

[Example: 4Z-B6-LJ2-SS-A02C-1B](#)

Suffix	Accessory
Single option	
-1A	Breather Block
-1B	Solenoid Valve (24 VDC)
-1C	Solenoid Valve (220 VAC)
-1D	Solenoid Valve (Ex d II C T6, 24 VDC)
-1E	Solenoid Valve (Ex d II C T6, 220 VAC)
-1F	Limit Switch (Two SPDT switches with mounting kit)
Double option	
-2A	Breather Block + Solenoid Valve (24 VDC)
-2B	Breather Block + Solenoid Valve (220 VAC)
-2C	Breather Block + Solenoid Valve (Ex d II C T6, 24 VDC)
-2D	Breather Block + Solenoid Valve (Ex d II C T6, 220 VAC)
-2E	Limit Switch + Solenoid Valve (24 VDC)
-2F	Limit Switch + Solenoid Valve (220 VAC)
-2G	Limit Switch + Solenoid Valve (Ex d II C T6, 24 VDC)
-2H	Limit Switch + Solenoid Valve (Ex d II C T6, 220 VAC)
Triple Option	
-3A	Breather Block + Limit Switch + Solenoid Valve (24 VDC)
-3B	Breather Block + Limit Switch + Solenoid Valve (220 VAC)
-3C	Breather Block + Limit Switch + Solenoid Valve (Ex d II C T6, 24 VDC)
-3D	Breather Block + Limit Switch + Solenoid Valve (Ex d II C T6, 220 VAC)

NOTE: Parker pneumatically actuated B Series Ball Valves should be ordered with elastomeric stem packing and seals or the optional live - loaded PTFE packing. This reduces the need for any further packing adjustment after receipt from the factory.

 **WARNING**

FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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Parker Hannifin Instrumentation



ENGINEERING YOUR SUCCESS.