



URPA Series

Pneumatic Rack and Pinion Actuators for Spirax Sarco Ball Valves (M10Si, M10Vi, M10Ti, M33 and M40)

Description

The URPA series is a range of spring return (90 °) pneumatic rack and pinion actuators which automate Spirax Sarco ball valves in a wide range of industrial applications. Actuators will operate at temperatures between -10 °F to 195 °F and input pressures at 80 psig. Two types of service are available: Light Service and Heavy Service. Patented spring cartridges are preloaded and designed to remain self-contained.

Note: A Double Acting model (90 °, 120 °, 135 ° and 180 °) is available upon request.

Standards and approvals

The URPA series pneumatic rack and pinion actuators are manufactured in compliance with the following agency standards and approvals:

- UL & CSA approved
- Safety Integrity Level (SIL) 3 certified under IEC Standards 61508 and 61511
- ISO 9001:2008
- ATEX certified under Directive 94/9/CE

Accessory mounting patterns on the actuator body conform to NAMUR standards and the actuator drive shaft meets all ISO 5211 dimensional standards.

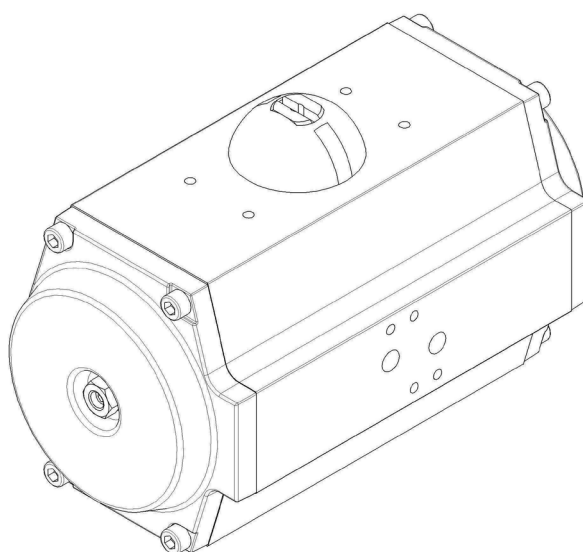
The pneumatic actuated ball valve range

Actuators combined with three-piece ball valves: M10Si, M10Vi and M10Ti

Actuators combined with two-piece ball valves: M33S, M33V and M33F

Actuators combined with one-piece ball valves: M40Si, M40Vi and M40Hi

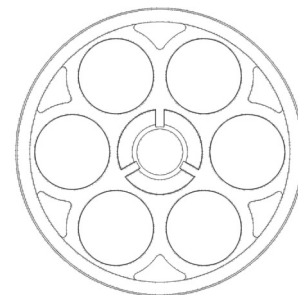
For all other ranges to be mounted with URPA actuators, please contact Spirax Sarco, Inc, Blythewood, SC



Spring cartridges

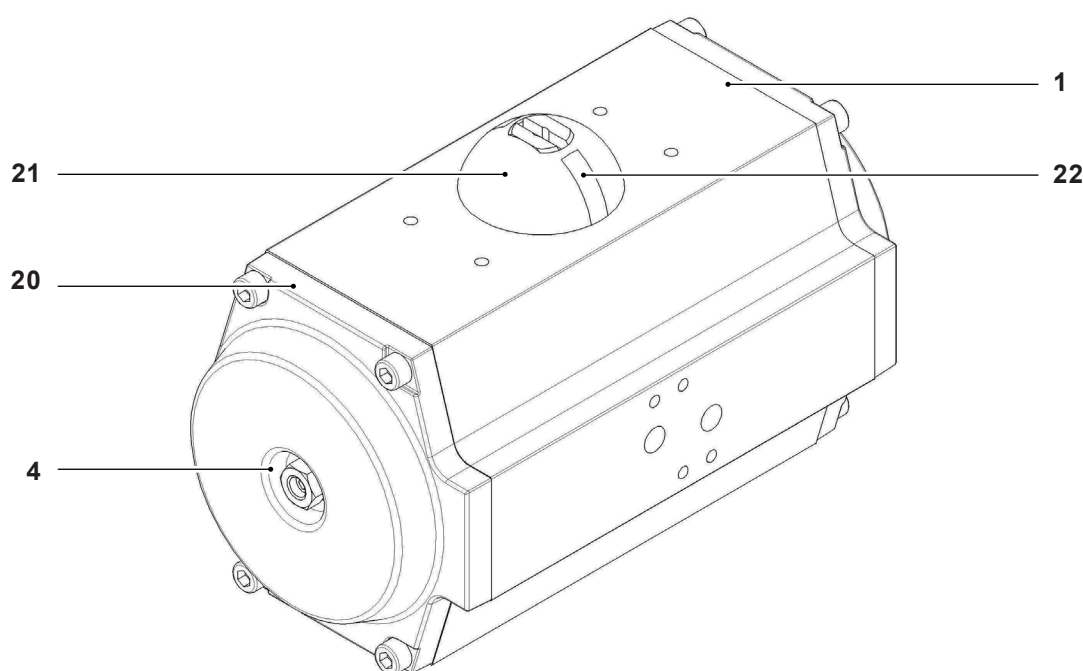
The patented spring cartridges are preloaded and uniquely designed to remain self-contained. The actuators can easily be changed in the field from double acting to spring return by simply inserting the required number of our spring cartridges into the actuator body.

According to the available air pressure, the URPA has different cartridge spring configurations. The actuator can accept up to 6 cartridge springs in each end cap, but not less than 2 spring cartridges per end cap. The number of cartridge springs loaded into the actuator affects the amount of torque the actuator will be able to generate during the closing and opening cycles. For more details, see the Installation and Maintenance Instructions.



Total # of Cartridge Springs	2	3	4	5	6
Spring Location (Right cap)	1/4	1/3/5	2/3/5/6	1/3/4/5/6	All Positions
Spring Location (Left cap)	1/4	1/3/5	2/3/5/6	1/3/4/5/6	All Positions

Materials

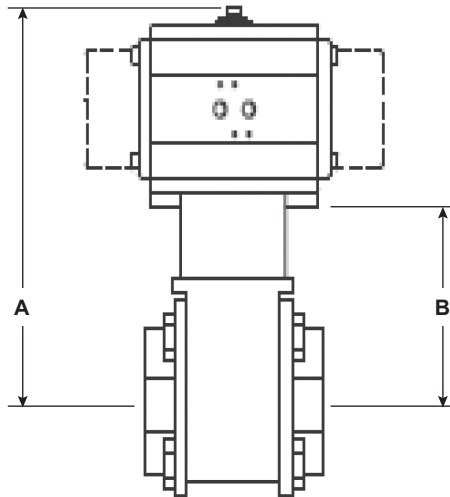


No	Part	Material
1	Body	Extruded Aluminium Alloy ASTM 6063 Anodized 10681
	Pinion	Steel IISMNP337 Electroless Nickle plated
4	End caps	Die Cast Aluminium Alloy EN AC-46100 UNII EN 1706:1999
20	Bolt	Stainless steel
21	Indicator cap	Polyamide
22	Colored indicator	Polyamide

URPA linkage kit components and materials

Frame	Stainless steel AISI 304	Washers	Stainless steel
Stem adapter	Stainless steel AISI 304	Frame-to-valve screws	Stainless steel Gr. 5
Frame-to-actuator screws	Stainless steel Gr. 5	Stem nut	Stainless steel

Pneumatic actuator selection tables for three-piece ball valves



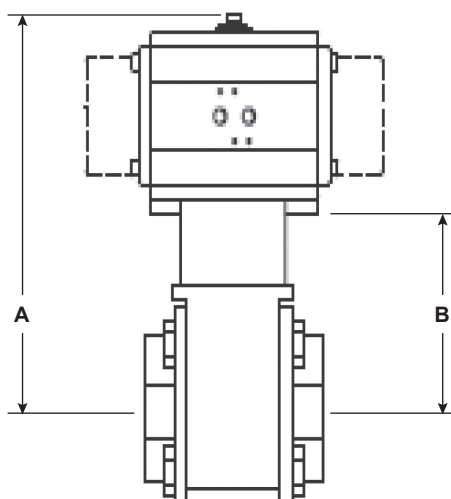
M10Si ISO and M10Ti ISO ball valves

Actuator operating pressure 80 psig

Size	Torque [N.m]	Light Service	
		Actuator	Linkage Kit
½"RB	3	URPA-K20K33	A/2
¾"RB & ½"FB	4	URPA-K20K33	A/2
1"RB & ¾"FB	8	URPA-K34K44	A/3
1 ¼"RB & 1"FB	15	URPA-K48K55	A/1
1 ½"RB & 1¼"FB	28	URPA-K105K44	B/6
2"RB & 1½"FB	35	URPA-K105K55	B/8
2 ½"RB & 2"FB	65	URPA-K237K44	C/10

Size	Torque [N.m]	Heavy Service	
		Actuator	Linkage Kit
½"RB	3	URPA-K20K33	A/2
¾"RB & ½"FB	6	URPA-K20K55	A/2
1"RB & ¾"FB	13	URPA-K48K44	A/3
1 ¼"RB & 1"FB	20	URPA-K75K44	A/5
1 ½"RB & 1¼"FB	50	URPA-K157K55	B/7
2"RB & 1½"FB	60	URPA-K157K55	B/9
2 ½"RB & 2"FB	75	URPA-K237K55	C/10

Pneumatic actuator selection tables for two-piece ball valves

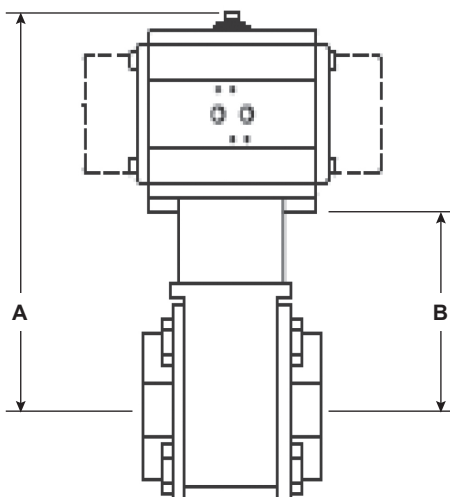


M33V ISO, M33S ISO and M33F ISO

Actuator operating pressure 80 psi g (5.5 bar g)

Size	Torque [N.m]	Light Service		Dimensions (Flanged) inches (mm)			Size	Torque [N.m]	Heavy Service		Dimensions (Flanged) inches (mm)		
		Actuator	Linkage Kit	A1	B1	B2			Actuator	Linkage Kit	A1	B1	B2
2" ANSI 150	50	URPA-K157K55	B/11	14.2 (361)	8.0 (203)	8.0 (203)	2" ANSI 150	70	URPA-K237K55	B/11	14.2 (361)	8.0 (203)	8.0 (203)
2" ANSI 300	50	URPA-K157K55	B/11				2" ANSI 300	70	URPA-K237K55	B/11			
2 ½" ANSI 150	85	URPA-K331K55	C1/12	15.5 (394)	8.4 (213)	8.4 (213)	2 ½" ANSI 150	180	URPA-K633K55	C1/13	17.4 (442)	8.4 (213)	8.4 (213)
3" ANSI 150	120	URPA-K406K55	C1/13	17.3 (439)	8.7 (221)	8.7 (221)	3" ANSI 150	180	URPA-K633K55	C1/13			
4" ANSI 150	200	URPA-K633K55	D/14	18.8 (478)	9.8 (249)	9.8 (249)	4" ANSI 150	220	URPA-K633K55	D/14			
6" ANSI 150	500	URPA-K1831K44	E/17	25.8 (655)	12.8 (325)	12.8 (325)	6" ANSI 150	500	URPA-K1831K44	E/17	25.8 (655)	12.8 (325)	12.8 (325)
6" ANSI 300	500	URPA-K1831K44	E/17				6" ANSI 300	500	URPA-K1831K44	E/17			
8" ANSI 150	800	URPA-K2928K55	F/17	27.2 (691)	14.1 (358)	14.1 (358)	8" ANSI 150	750	URPA-K2928K55	F/17	27.2 (691)	14.1 (358)	14.1 (358)
8" ANSI 300	800	URPA-K2928K55	F/17				8" ANSI 300	750	URPA-K2928K55	F/17			

Pneumatic actuator selection tables for one-piece ball valves



M40Vi ISO, M40Si ISO and M40Fi ISO

Actuator operating pressure 80 psi g (5.5 bar g)

Size	Torque [N.m]	Light Service		Dimensions (Flanged) inches (mm)		
		Actuator	Linkage Kit	A1	B1	B2
1" ANSI 150	8	URPA-K34K44	A1/3	10.5 (267)	6.3 (160)	6.4 (163)
1" ANSI 300	8	URPA-K34K44	A1/3			
1 1/4" ANSI 150	12	URPA-K48K44	A/16	11.2 (284)	6.5 (165)	6.6 (168)
1 1/4" ANSI 300	12	URPA-K48K44	A/16			
1 1/2" ANSI 150	22	URPA-K75K55	B/8	11.9 (302)	6.9 (175)	7.1 (180)
2" ANSI 150	30	URPA-K105K55	B/8	12.4 (315)	7.0 (178)	7.3 (185)
2 1/2" ANSI 150	40	URPA-K157K44	B/11	14.2 (361)	8.0 (203)	8.0 (203)
3" ANSI 150	65	URPA-K237K44	C1/12	14.4 (366)	8.1 (206)	8.1 (206)
4" ANSI 150	120	URPA-K406K55	C1/13	17.3 (439)	8.7 (221)	9.0 (229)
6" ANSI 150	160	URPA-K633K44	D/15	18.8 (478)	9.8 (249)	10.3 (262)
6" ANSI 300	160	URPA-K633K44	D/15			

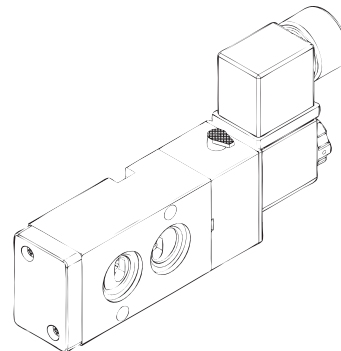
Size	Torque [N.m]	Heavy Service		Dimensions (Flanged) inches (mm)		
		Actuator	Linkage Kit	A1	B1	B2
1" ANSI 150	20	URPA-K75K44	A1/4	11.3	6.3 (160)	6.4 (163)
1" ANSI 300	20	URPA-K75K44	A1/4			
1 1/4" ANSI 150	25	URPA-K75K55	A/18	11.5 (292)	6.5 (165)	6.6 (168)
1 1/4" ANSI 300	25	URPA-K75K55	A/18			
1 1/2" ANSI 150	45	URPA-K157K55	B/9	13.1 (333)	6.9 (175)	7.1 (180)
2" ANSI 150	50	URPA-K157K55	B/9	13.3 (338)	7.0 (178)	7.3 (185)
2 1/2" ANSI 150	70	URPA-K237K55	B/11	14.2 (361)	8.0 (203)	8.0 (203)
3" ANSI 150	90	URPA-K331K55	C1/12	15.2 (386)	8.1 (206)	8.1 (206)
4" ANSI 150	120	URPA-K406K55	C1/13	17.3 (439)	8.7 (221)	9.0 (229)
6" ANSI 150	160	URPA-K633K44	D/15	18.8 (478)	9.8 (249)	10.3 (262)
6" ANSI 300	160	URPA-K633K44	D/15			

Optional extras

Solenoid valve: a range of direct Namur electrical valves. 5/2 or 3/2 NC operation. Intended for use with URPA actuators. These can be used to drive actuators with compressed air or non-corrosive gas. UL, CSA and CE certification is available.

Performance Data

CV Rating	Body	Positions	Airports
1.4	Anodized aluminum SS available	5/2 or 3/2 NC	¼" NPT
Working Temperature	Working Medium	Working Life	Frequency
23 °F - 176 °F (-5 °C - 80 °C)	Less than 40 microns of filtered and dried air	1 million cycles	5 cycles per second
Number of coils 1 - Single Coil			
Enclosure rating Nema 4, 4x (UL CSA)			
Voltage 110/120 VAC			
24 VDC Standard (6.9 Watt)			
Option SC - Speed Control Needle Valve			



Note: IP65 and IP67 Electric Protection Explosion proof solenoid valves and ASI option available on request.

Limit switch box: a range of limit switch boxes are available to indicate ball valve position. It also allows switching points to be adjustable over the full range of actuators.

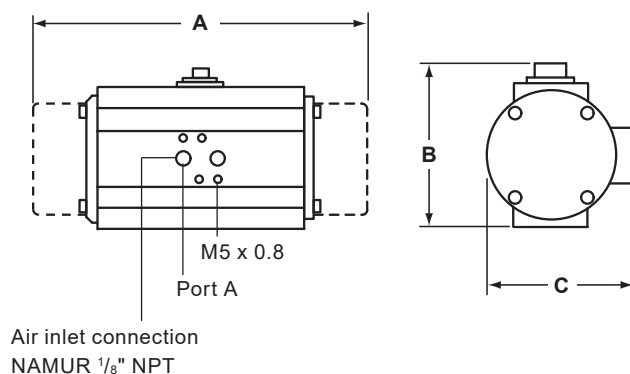
Available types

SENITEC NEMA 4	Copolyester NAMUR
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Technical data

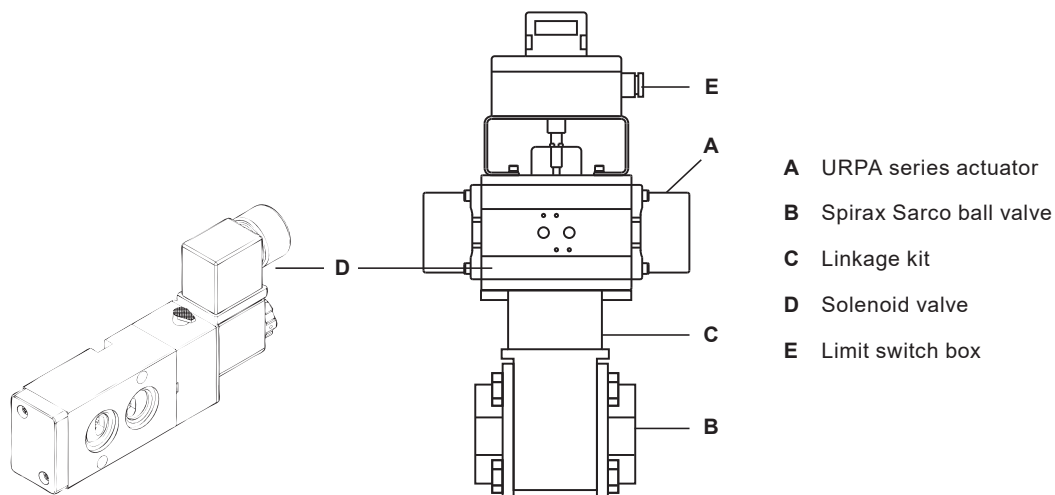
Maximum pressure	120 psi g (8.3 bar g)
Minimal pressure	45 psi g (3.1 bar g)
Operating pressure range	80 psi g (5.5 bar g) (standard)
Note: Other operating pressure ranges available on request	
Operating temperature range	-22 °F to 212 °F (-30 °C - 100 °C)
Operating media	Compressed air (clean and dry)
	Non corrosive gas
	Light hydraulic oil (must be compatible with 'O' rings)
Rotation 90 ±5 °	Anti-clockwise with port 'A' pressurised

Dimensions/weights (approximate) in inches (mm) and lbs (kg)



Actuator	A	B	C	Weight
URPA-K20K33	4.6 (117)	3.4 (86.4)	2.4 (61.0)	4.41 (2.0)
URPA-K34K44	5.4 (137)	4.3 (109)	3.2 (81.3)	6.61 (3.0)
URPA-K48K44	6.3 (160)	4.7 (119)	3.6 (91.4)	9.48 (4.3)
URPA-K48K55				
URPA-K75K44	7.1 (180)	5.0 (127)	3.9 (99.1)	12.1 (5.5)
URPA-K105K44	8.2 (208)	5.4 (137)	4.4 (112)	16.3 (7.4)
URPA-K157K55	8.7 (221)	6.3 (160)	4.7 (119)	23.4 (10.6)
URPA-K237K44	11.5 (292)			33.1 (15.0)
URPA-K331K55	11.9 (302)			
URPA-K406K55	13.3 (338)	8.6 (218)	6.8 (173)	68.3 (31.0)
URPA-K633K44	14.9 (378)	9.0 (229)		75.0 (34.0)
URPA-K633K55				
URPA-K1831K44	24 (610)	13.1 (333)	10.7 (272)	292 (132.3)
URPA-K2928K55				

Typical assembly



Spare parts

The spare parts available are detailed below. No other parts are supplied as spares.

Available spares

URPA series maintenance kit	'O' rings set
	Pinion washers

How to order

You will need to refer to the selection tables on this technical sheet before placing an order.

Example: Pneumatic Rack and Pinion Actuator needed to fit a 1½" M10Si2FB. Available air operating pressure is 80 psi

How to order example:

1 - URPA-K105K44 Actuator
1 - B/6 Linkage Kit