

ACTUATORS & CONTROLS

Rotary Diaphragm Actuator

AUTOMATOR

Series



Torque Range:

133 to 12,680 in-lbs

Operated by Air, Water, or
Mineral-Based Hydraulic Fluid

Quarter-Turn Rotary Actuators Designed
for Ball, Butterfly, & Plug Valves



Spring Diaphragm Rotary Actuators and Designed
to be used with minimal pressure.

Automator Actuators are designed for on-off Modulating
Service in either fail-open or fail-closed models

Weatherproof Construction:

The Actuator cover, adapter, and shaft bearings are
seated and gasketed to provide a weatherproof enclosure.

SRD Series Spring Diaphragm Actuator

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Air-Con SRD Spring Diaphragm Rotary Actuators

By utilizing proven spring material, advanced filler reinforced diaphragm technologies, precision engineering of the crankshaft, and the connecting rod design, the SRD Spring Diaphragm Rotary Actuators are developed specifically for quarter turn valve automation applications to provide safe and reliable operation even with minimal media supply pressure. The design separates the supply power media chamber from the spring sets allowing the actuator to be operated by unfiltered air, gas, water, or mineral-based hydraulic fluid. The housing is constructed using a ductile iron and carbon steel casting that is coated with a polyester powder process to ensure exceptional corrosion resistance in most field environments. The independent media chamber is also equipped with a Buna-N diaphragm reinforced with special compound polyamine fabric, allowing the actuators to work in the temperature conditions from as low as -40°F to +390°F.





Spring Diaphragm Rotary Actuators

Designed and developed for quarter-turn valve service. The spring diaphragm actuators provide safe reliable operation even where minimal supply pressures are available, yet *they are capable of operating at pressures up to 100 PSI.*

Operating Principle

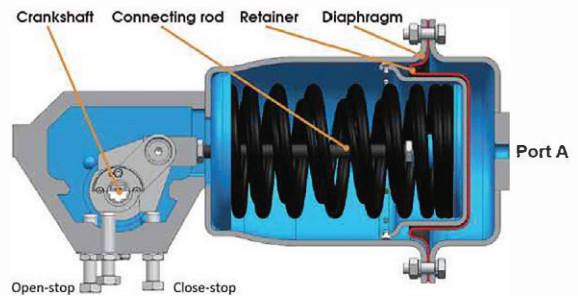
Spring Stroke

Upon loss of pressure (air) on port A, the stored energy in the compressed springs forces the diaphragm retainer and connection rod to move right and the crankshaft to rotate clockwise which can be limited by an adjustable close-stop.

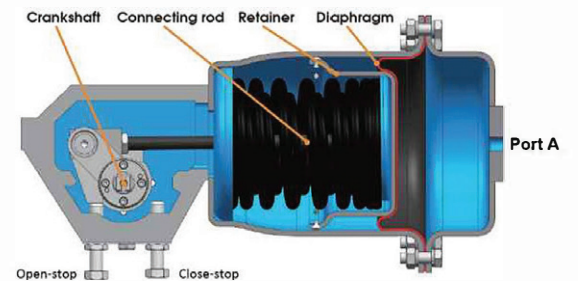
FIELD REVERSIBLE: Fail-Closed or Fail-Open operation is achieved by inverting the actuator.

Air Stroke

By supplying media (air) to port A, pressure forces the diaphragm retainer and connection rod to move left, causing the springs to be compressed. The crankshaft will be rotated counter clockwise which is limited by an adjustable open-stop.

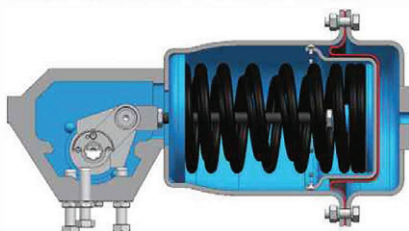


Spring Stroke

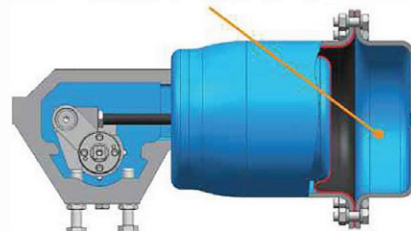


Air Stroke

Mechanical Lock-Spring Failure Mode



Independent Media Chamber



DESIGN FEATURES



- **Universal Mounting Pads – Direct Mount**

A combination of different mounting pad dimensions allow users to directly replace other existing spring diaphragm actuators or mount directly to new and existing quarter turn valves.

- **Namur Mount**

The design of the unit makes it easy to mount to various control accessories, such as limit switches, solenoid valves, positioners, and declutchable manual overrides.

- **Multiple Drive Bushings (Removable & Replaceable)**

The removable drive bushings allow users to mount SRD actuators to a number of different valve stem configurations whether in the field on existing valves or on new valve applications.

- **High-Cycle Life Design & Low-Friction Bearing**

The actuators feature a rolling diaphragm design with a one piece diaphragm retainer and its UHMWPE bearing which helps achieve superior longevity of the life cycle and exceptionally smooth actuation due to the low friction generated during operations. **Cycle life is over one million cycles.**

- **Reversible in Field Fail-Open or Fail-Closed Option**

By simply inverting the actuator and bushings, the SRD actuators can be quickly and easily changed to fail-open or fail-closed position in the field.

- **Torque Ranges**

The SRD actuators provide various output torque ranges: from 133 in-lbs to 12,682 in-lbs depending on the actuator size, spring configuration, and available media supply pressures.

- **Supply Pressures**

The SRD Series Actuators can be operated with numerous designated media supply pressures ranging from 15 psig to 100 psig.

- **Supply Media**

The SRD Series Actuators can be operated by air, gas, water, or mineral-based hydraulic fluid.

- **Travel Stops**

There are two adjustable travel stops that allow actuators to be adjusted to the fully open or fully closed positions. With extended adjustment bolts, the actuators can be used to adjust a rotary control valve from 60-95 degrees.

- **Mechanical Lockout Option**

A lockout screw is used to positively lock the unit in the spring failure mode.

- **Corrosion Resistant**

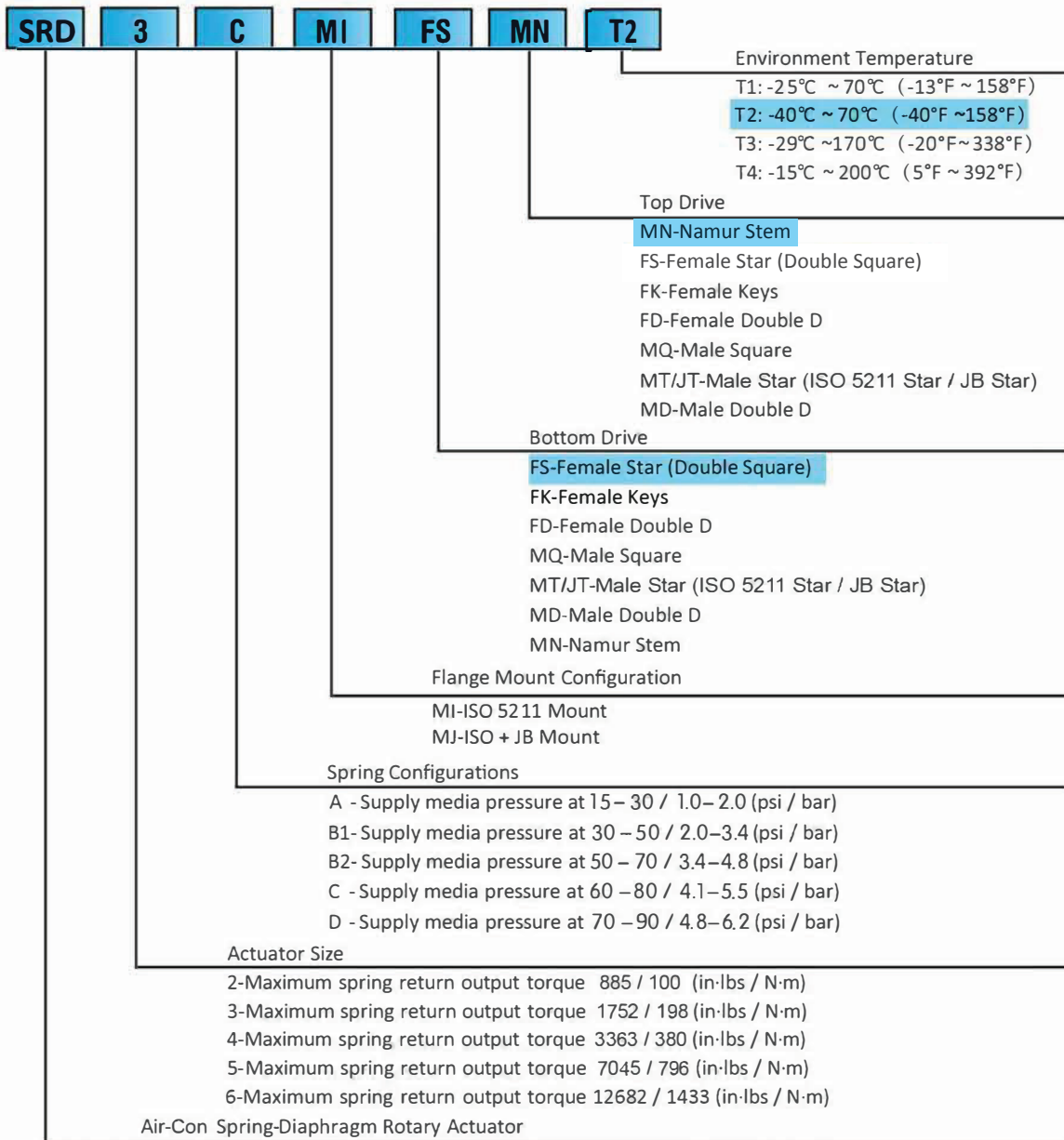
Standard surface body and cover are fully applied with a UV Protection polyester powder coating combined with stainless steel external fasteners providing durability and protection in a corrosive environment. A PTFE coating is also available as an option.

- **Maintenance Free Lubrication**

All actuators are lubricated at the factory during the time of production. No further lubrication is required during the life cycle.



How To Order By Part Number



Working Conditions

Maximum Operating Pressure: 7 bar (100 PSI)

Temperature Rating: -25°C to 70°C (-13°F to 158°F)

Optional Temperature Rating: -40°C to 70°C (-40°F to 158°F)

Optional Temperature Rating: -29°C to 170°C (-20°F to 338°F)

Optional Temperature Rating: -15°C to 200°C (5°F to 392°F)

Rotation Adjustment: $\pm 5^\circ$ adjustment at open or closed positions.

Supply Media: Air, gas, water, or mineral-based hydraulic fluid.

* Larger solenoid pilot valves may be used to increase operating speeds. Actual times may vary with different applications. Please consult the factory for more specific details based on application requirements.

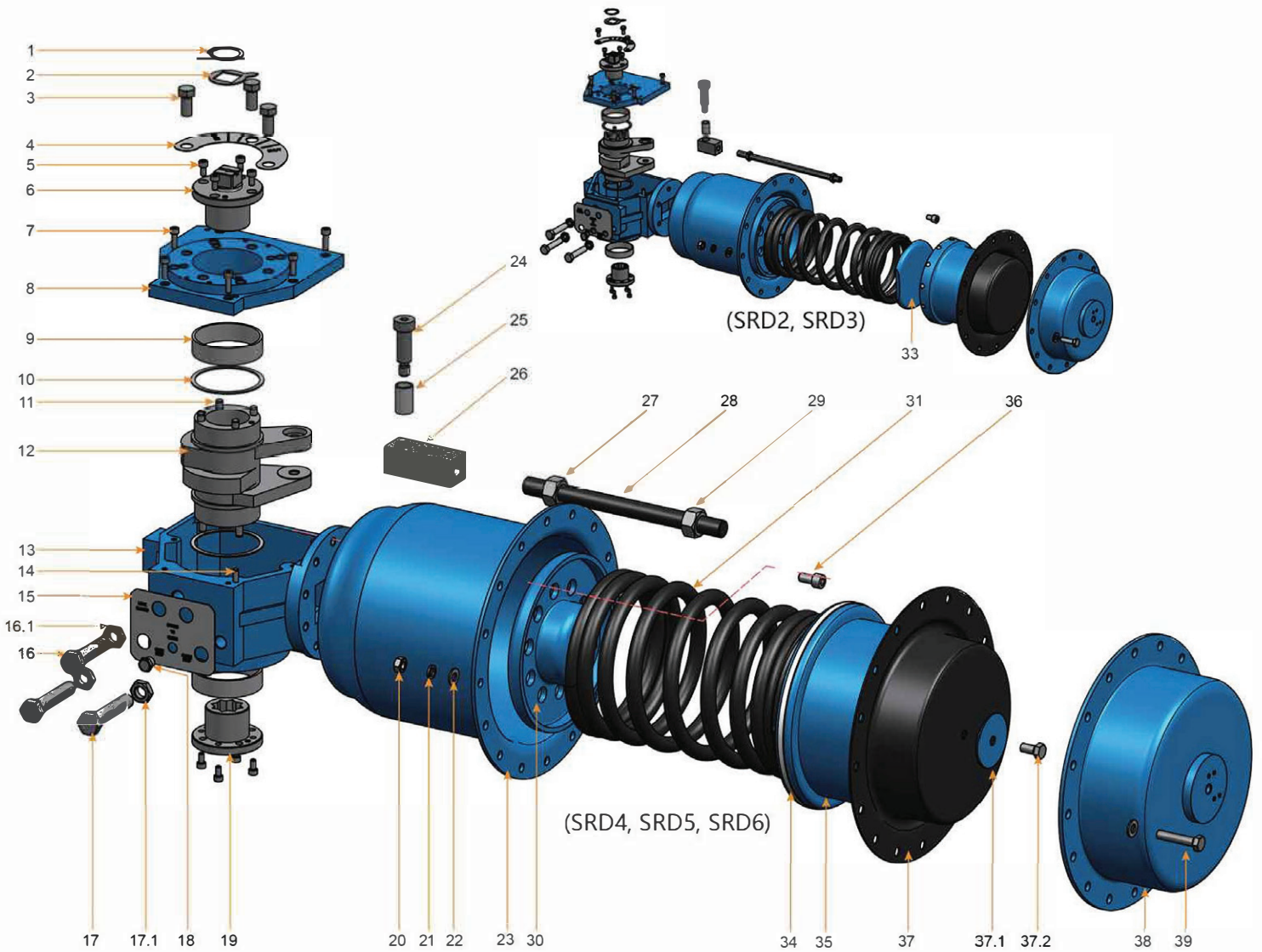
BILL OF MATERIALS & PARTS LIST



NO.	Part Name	Qty.			Material	Surface treatment
		ASD2/3	ASD4/5	ASD6		
1	Snap Ring	1	1	1	Stainless Steel 304	
2	Indicator Pointer	1	1	1	Stainless Steel 304	
3	Hex Head Cap Screws	3	3	3	Stainless Steel 304	
4	Indicator Plate	1	1	1	Stainless Steel 304	
5	Socket Head Bushing Screws	8	8	8	Stainless Steel 304	
6	Namur Stem	1	1	1	Carbon Steel	Nickel Coated Chemically
7	Socket Head Cap Screws	6	6	6	Stainless Steel 304	
8	Cover	1	1	1	Carbon Steel	Polyester Powder Coated
9	Driver Arm Bearings	2	2	2	Stainless Steel w/ Acetal (DELTRIN) Lining	
10	Thrust Bearings	2	2	2	Nylon	
11	Cylindrical Pins	8	8	8	Carbon Steel	
12	Driver Arm	1	1	1	Ductile Iron	Nickel Coated Chemically
13	Driver Housing	1	1	1	Ductile Iron	Polyester Powder Coated
14	Cylindrical Pins	2	2	2	Stainless Steel 304	
15	Nameplate	1	1	1	Stainless Steel 304	
16	Set Screw	1	1	1	Stainless Steel 304	
16.1	Hex Jam Nut	1	1	1	Stainless Steel 304	
17	Stop Screws	2	2	2	Stainless Steel	
17.1	Hex Jam Nuts	2	2	2	Stainless Steel 304	
18	Breather	1	1	1	Stainless Steel 316	
19	Drive Bushing	1	1	1	Carbon Steel	Nickel Coated Chemically
20	Lock Nuts	12	12	24	Stainless Steel	
21	Spring Washers	12	12	24	Stainless Steel	
22	Gaskets	24	24	48	Stainless Steel	
23	Spring Housing	1	1	2	Carbon Steel	Polyester Powder Coated
24	Shoulder Screws	1	1	2	Carbon Steel (12.8)	
25	Clevis Bearings	1	1	2	Stainless Steel w/ Acetal (DELTRIN) Lining	
26	Clevis	1	1	2	Carbon Steel	
27	Hex Jam Nuts	1	1	2	Stainless Steel 304	
28	Actuator Rods	1	1	2	Carbon Steel	
29	Hex Jam Nuts	1	1	2	Carbon Steel	
30	Spring Retainers	1	1	2	Carbon Steel	Polyester Powder Coated
31 / 32	Compression Springs	1	1	2	55Mn Spring Steel 55Mn	Polishing Capacitance Coated
33	Spring Retainer Plate	1	-	-	Carbon Steel	Polyester Powder Coated
34	Diaphragm Retainer Bearing Pins	12	-	-	UHMW PE	
34	Diaphragm Retainer Bearings	-	1	2	POM (DELTRIN)	
35	Diaphragm Retainers	1	1	2	Carbon Steel	Polyester Powder Coated
36	Hex Head Cap Screws	4	4	8	Carbon Steel	
37	Diaphragms	1	1	2	NBR / Nylon66 Fabric Blend (-25°C-70°C)	
	Diaphragms (optional)	1	1	2	LNBR / Nylon66 Fabric Blend (-40°C-70°C)	
	Diaphragms (optional)	1	1	2	EPDM4 / Polyester Fabric Blend (-29°C-170°C)	
	Diaphragms (optional)	1	1	2	Viton / NOMEX Fabric Blend (-15°C-200°C)	
37.1	Retaining Washers	-	1	2	Stainless steel	
37.2	Hex Head Cap Screws	-	1	2	Stainless steel	
38	Diaphragm Covers	1	1	2	Carbon Steel	Polyester Powder Coated
39	Hex Head Cap Screws	12	12	24	Stainless Steel 304	



EXPLODED VIEW



Warning:

The two EYE BOLTS are provided to assist in valve mounting assembly only. USE EYE BOLTS with lifting straps for safe handling. Refer to the IOM for Handling Installation Instruction.





SRD Actuator Output Torques (lbf.in)

Size	Air Stroke at Pressure (PSI)									Spring Stroke
	15	20	30	40	50	60	70	80	90	End of Spring(ETC)
	End of Air (ETO)									
SRD2A	92	254	632							150
SRD2B1			73	366	619					425
SRD2B2					314	607	890			575
SRD2C						473	774	1074		779
SRD2D							579	906	1196	885
SRD3A	201	460	1062							363
SRD3B1			275	872	1436					885
SRD3B2					987	1599	2199			1186
SRD3C						965	1558	2202		1434
SRD3D							1041	1687	2304	1797
SRD4B1			732	2180	3321					1682
SRD4B2					1625	2939	4228			2319
SRD4C						2251	3632	4936		2814
SRD4D							1994	3365	4501	3646
SRD5B1			961	3209	5296					3664
SRD5B2					3141	5627	8278			4921
SRD5C						5448	8055	10653		6151
SRD5D							4673	7280	9657	7133
SRD6B1			1730	5772	9541					6593
SRD6B2					4919	9075	13209			8496
SRD6C						8878	13351	17800		9894
SRD6D							8278	12420	16869	12682

C/F for model SRD6

Easily fitted with a variety of Accessories:

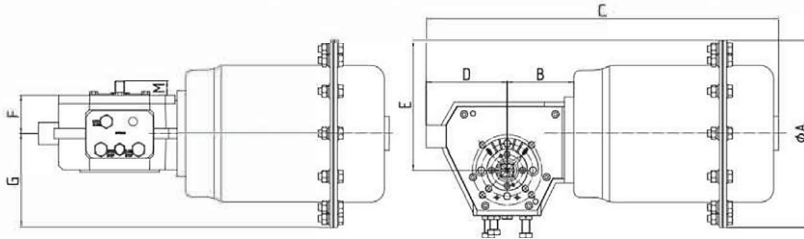
- Direct mount sandwich manual overrides
- Limit Switches
- Position Indicators
- Solenoid Valves
- Flow Controllers
- Positioning and programmable cycling controllers to satisfy most automatic valve requirements



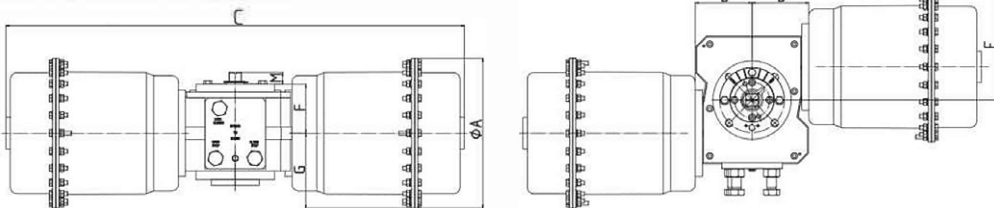
DIMENSIONS & SPECIFICATIONS

Dimensions

SRD2, SRD3, SRD4, SRD5 Dimensions



SRD6 Dimensions



Actuator Size	Approximate Dimensions (mm)							
	ØA	B	C	D	E	F	G	M
SRD-2	227	75	440	91	148	52	114	20
SRD-3	274	98	520	119	190	56	137	20
SRD-4	320	108	592	140	216	75	160	20
SRD-5	382	130	721	160	276	90	191	20
SRD-6	382	145	1170	145	276	125	191	30

Actuator Size	Approximate Dimensions (in)							
	ØA	B	C	D	E	F	G	M
SRD-2	8.94	2.95	17.32	3.58	5.83	2.05	4.49	0.8
SRD-3	10.79	3.85	20.47	4.69	7.48	2.20	5.39	0.8
SRD-4	12.60	4.25	23.31	5.51	8.50	2.95	6.30	0.8
SRD-5	15.04	5.12	28.39	6.30	10.87	3.54	7.52	0.8
SRD-6	15.04	5.71	46.06	5.71	10.87	4.90	7.52	1.18

Technical Specifications

Actuator Size	Air Volume Requirements		
	Total Volume(L)	Swept Volume(L)	Effective Diaphragm Area(cm ²)
SRD-2	1.57 (96 in ³)	1.08 (66 in ³)	155 (24 in ²)
SRD-3	3.13 (191 in ³)	2.18 (133 in ³)	245 (38 in ²)
SRD-4	6.03 (368 in ³)	4.34 (265 in ³)	387 (60 in ²)
SRD-5	11.72 (715 in ³)	8.70 (531 in ³)	619 (96 in ²)
SRD-6	23.44 (1430 in ³)	17.40 (1062 in ³)	1238 (192 in ²)

Actuator Size	Operating Speed (s)*		WT (kg/lb)
	Air Stroke	Spring Stroke	
SRD-2C	1.6	1.0	21/46
SRD-3C	3.4	1.6	33/73
SRD-4C	6.0	3.3	61/134
SRD-5C	8.0	6.3	107/236
SRD-6C	8.0	6.3	177/390

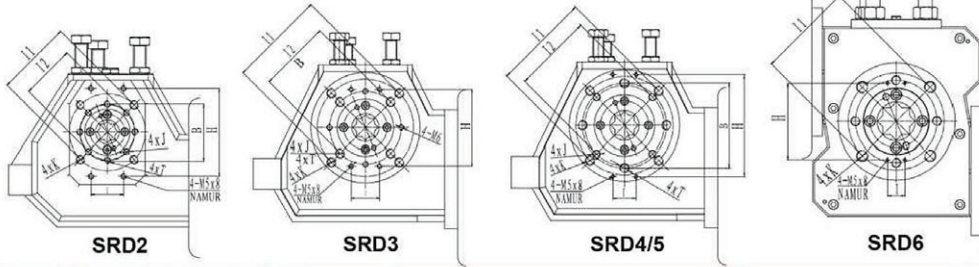
* Testing operated under 70 psi air pressure with 50 cfm flow capacity for input and exhaust.

DIMENSIONS



Mounting Dimensions

The SRD Series Actuator mounting dimensions are made to ISO 5211 standards. All SRD actuators come with the NAMUR mounting pads as a standard for accessory mounting.



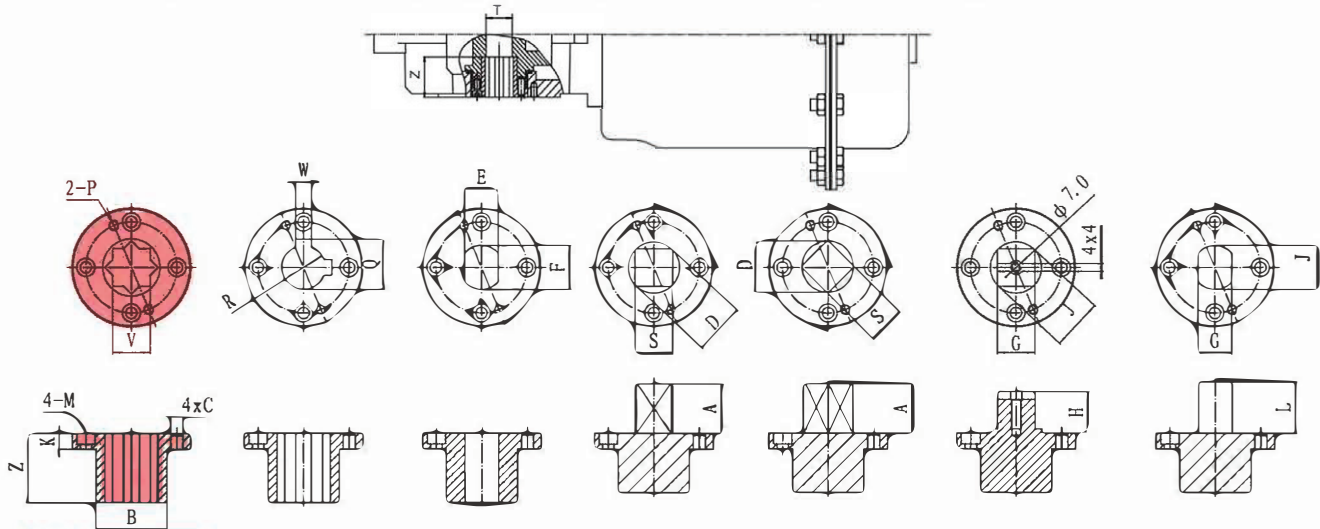
Unit: in (mm)

Actuator Size	Flange Mount Configuration		Actuator Size	ISO 5211 Mount				JB* Mount		Namur (VDI/VE 3845)	
	ISO 5211 Mount (MI)	ISO + Mount (MJ)		ØI1	K	ØI2	J	ØB	T	H	I
SRD2	F05 + F07	F05+JB51+F07	SRD2	2.76 (F07)	M8X13	1.97 (F05)	M6X10	2.00 (51)	1/4-20unc-2B	3.15 (80)	1.18 (30)
SRD3	F10	JB76+F10	SRD3	4.02 (F10)	M10X16	-	-	3.00 (76)	3/8-16unc-2B	3.15 (80)	1.18 (30)
SRD4	F10 + F12	F10+JB108+F12	SRD4	4.92 (F12)	M12X20	4.02 (F10)	M10X16	4.25 (108)	1/2-13unc-2B	5.12 (130)	1.18 (30)
SRD5	F10 + F14	F10+JB108+F14	SRD5	5.51 (F14)	M16X25	4.02 (F10)	M10X16	4.25 (108)	1/2-13unc-2B	5.12 (130)	1.18 (30)
SRD6	F16	-	SRD6	6.50 (F16)	M20X25	-	-	-	-	5.12 (130)	1.18 (30)

*Industry common mount dimensions.

Bushing Dimensions *

Drive bushings are available in keyway, double D, female double square, male square, star, and namur mount.



FS - Double Square

FK - Keyed

FD - Double D

MQ - Square

MT/JT - Star

MN - Namur Stem

MD - Double D

Standard

Unit: in (mm)

Size	Female drive						Male drive									
	Double Square (FS)	Keys (FK)			Double D (FD)		Square / ISO 5211 Star (MQ / MT)			JB Star (JT**)			Namur / Double D (MN / MD)			
	V	R	Q	W	E	ØF	S	A	ØD	S	A	ØD	G	H	L	ØJ
SRD2	0.55 (14)	0.55 (14)	0.64 (16.3)	0.20 (5)	0.55(14)	0.71(18.1)	0.67(17)	0.75(19)	0.87(22)	0.55(14)	0.63(16)	0.69(18)	0.55(14)	0.79(20)	0.98 (25)	0.71(18)
SRD3	0.87(22)	0.87 (22)	0.98 (24.8)	0.24 (6)	0.87(22)	1.11(28.2)	0.87(22)	0.94(24)	1.10(28)	0.75(19)	0.94(24)	0.98(25)	0.87(22)	0.79(20)	1.54 (39)	1.10(28)
SRD4	1.06(27)	1.42 (36)	1.55 (39.3)	0.39 (10)	1.06(27)	1.43(36.2)	1.06(27)	1.14(29)	1.42(36)	0.98(25)	0.87(22)	1.23(31)	1.06(27)	0.79(20)	1.89 (48)	1.42(36)
SRD5	1.42(36)	1.65 (42)	1.78 (45.3)	0.47(12)	1.42(36)	1.90(48.2)	1.42(36)	1.50(38)	1.89(48)	0.98(25)	0.87(22)	1.23(31)	1.42(36)	0.79(20)	2.52(64)	1.89(48)
SRD6	1.81(46)	1.97 (50)	2.12(53.8)	0.55(14)	1.81(46)	2.37(60.2)	1.81(46)	1.89(48)	2.36(60)	-	-	-	1.81(46)	1.18(30)	3.23(82)	2.36(60)

Size	Bush Connections					
	ØB	K	Z	M / P	ØC	ØT
SRD2	0.98(25)	0.24(6)	1.18 (30)	M4x8	0.16 (4)	0.79(20)
SRD3	1.42(36)	0.31(8)	1.38 (35)	M5x10	0.24 (6)	0.98(25)
SRD4	1.97(50)	0.39(10)	1.77 (45)	M6x12	0.31 (8)	1.46(37)
SRD5	2.20(56)	0.47(12)	2.17 (55)	M8x14	0.39 (10)	1.65(42)
SRD6	2.83(72)	0.59(15)	3.23 (82)	M12x16	0.49 (12)	2.56(65)

*Double Square is the standard for Air-Con Automator Series

**C/F for other drive bushing

* Customization available for drive types.

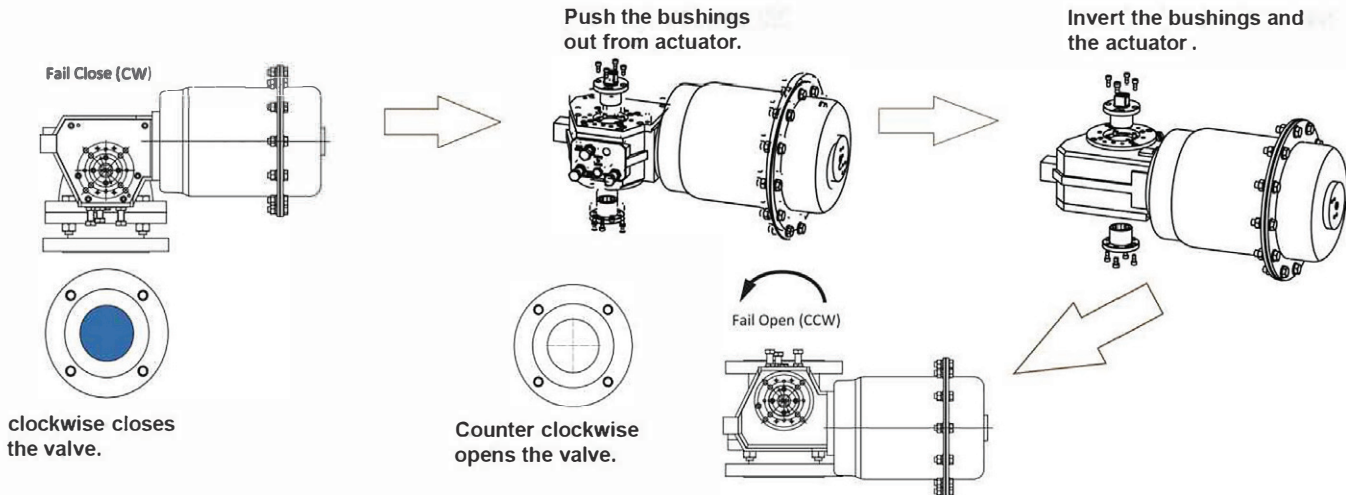
** These dimensions are exactly the same as the industry common mount dimensions (JB).



INSTALLATION

Fail-close to Fail-open

As for SRD series actuators, Fail-close or Fail-open operation can be quickly changed in the field by simply inverting bushings and the actuator.



Sizing selections for Flo-Tite's Sentinel Series Segmented Control Valves.

Valve Type	Valve Mounting Information			class	Torque		With 1.3 safety factor (NM)	Air Pressure	SRD Model	SRD Mounting Information		
	Flange	Stem	Stem Height		NM	In-Lbs				Flange	Adaptor	Adaptor Depth
1"	F07	17*17	17	Class 150	25	221	32.5	40 psi	SRD3B1-MI-FS-MN+Adaptor 22M17	F07+F10	22*22	35
								60psi	SRD3B2-MI-FS-MN+Adaptor 22M17			
								80psi	SRD3C-MI-FS-MN+Adaptor 22M17			
1 1/4"	F07+F10	22*22	22		25	221	32.5	40 psi	SRD3B1-MI-FS-MN	F07+F10	22*22	35
								60psi	SRD3B2-MI-FS-MN			
								80psi	SRD3C-MI-FS-MN			
1 1/2"	F07+F10	22*22	22		30	266	39	40 psi	SRD3B1-MI-FS-MN	F07+F10	22*22	35
								60psi	SRD3B2-MI-FS-MN			
								80psi	SRD3C-MI-FS-MN			
2"	F07+F10	22*22	22		35	310	45.5	40 psi	SRD3B1-MI-FS-MN	F07+F10	22*22	35
								60psi	SRD3B2-MI-FS-MN			
								80psi	SRD3C-MI-FS-MN			
2 1/2"	F07+F10	22*22	22		60	531	78	40 psi	SRD3B1-MI-FS-MN	F07+F10	22*22	35
								60psi	SRD3B2-MI-FS-MN			
								80psi	SRD3C-MI-FS-MN			
3"	F07+F10	22*22	22		80	708	104	40 psi	SRD4B1-MI-FS-MN+Adaptor 27M22	F10+F12	27*27	45
								60psi	SRD3B2-MI-FS-MN			
								80psi	SRD3C-MI-FS-MN			
4"	F07+F12	27*27	27		140	1239	182	40 psi	SRD4B1-MI-FS-MN	F10+F12	27*27	45
								60psi	SRD4B2-MI-FS-MN			
								80psi	SRD4C-MI-FS-MN			
5"	F10+F14	36*36	36		160	1416	208	40 psi	SRD5B1-MI-FS-MN	F10+F14	36*36	55
								60psi	SRD5B2-MI-FS-MN			
								80psi	SRD5C-MI-FS-MN			
6"	F10+F14	36*36	36		220	1947	286	40 psi	SRD5B1-MI-FS-MN	F10+F14	36*36	55
								60psi	SRD5B2-MI-FS-MN			
								80psi	SRD5C-MI-FS-MN			
8"	F10+F14	36*36	36		350	3098	455	40 psi	×	F10+F14	36*36	55
								60psi	SRD5B2-MI-FS-MN			
								80psi	SRD5C-MI-FS-MN			
10"				660	5841	858	40 psi	×				
							60psi	×				
							80psi	×				
12"				1200	10621	1560	40 psi	×				
							60psi	×				
							80psi	×				



Large Selection of Quarter Turn Valve Actuators



PRO-TORQ

Electric actuators up to 40,500 In-lbs of torque. Explosion proof option.



PNEUMATIC ACTUATORS

World's largest sized rack and pinion pneumatic actuators.



KOMPACT 4

Compact design where physical space is a concern.



AUTOMATOR DIAPHRAGM ACTUATOR

Spring-Diaphragm actuator designed & developed for valves that require precise control.



SCOTCH YOKE ACTUATOR

Ideal for larger butterfly or ball valves.



SPECIAL STROKE ACTUATORS

Ideal for control and Multi-Port Valves.



AIRMAX PISTON ACTUATOR

Ideal for control valves Double Acting or Spring Return.



INOX SERIES

Stainless Steel and Nickel Infused Body Options Ideal for washdown services Double Acting or Spring Return.

AirCon's products are used in almost every energy related industry, including oil and gas production, oil and gas transmission, and petroleum refining. Other markets include chemical, petrochemical, pulp and paper, food and beverage, and water systems.



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