



SERIES S2: Stainless Steel Rack & Pinion Actuators

TRIAC® Series S2 Stainless Steel Rack & Pinion Actuators offer an economical solution to harsh chemical environments and the corrosion resistant requirements of the pharmaceutical, food, beverage, pulp and paper, and petrochemical industries.

- 316 SST body, pinion and pistons
- Dual Travel Stops, providing adjustment in both open and closed positions
- ISO 5211 mounting dimensions
- NAMUR accessory mounting
- Electropolish finish
- Double acting and spring return
- Permanently lubricated
- Standard working temperature -40°F to 175°F
- Maximum working pressure 150 psig



**All Stainless
Ball Valve Assemblies**



Corrosion Resistant

S2 Series Stainless Steel Rack & Pinion Actuators

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Double Acting Torque (In-Lbs)

Model	Air Supply (psi)				
	40	60	80	100	120
S2-052	88	132	176	220	264
S2-063	171	257	343	428	514
S2-083	337	505	674	842	1,010
S2-105	719	1,078	1,437	1,797	2,156
S2-125	1,120	1,680	2,241	2,801	3,361
S2-140	1,916	2,875	3,833	4,791	5,749
S2-160	2,920	4,380	5,840	7,300	8,760
S2-210	5,974	8,947	12,078	15,018	18,033

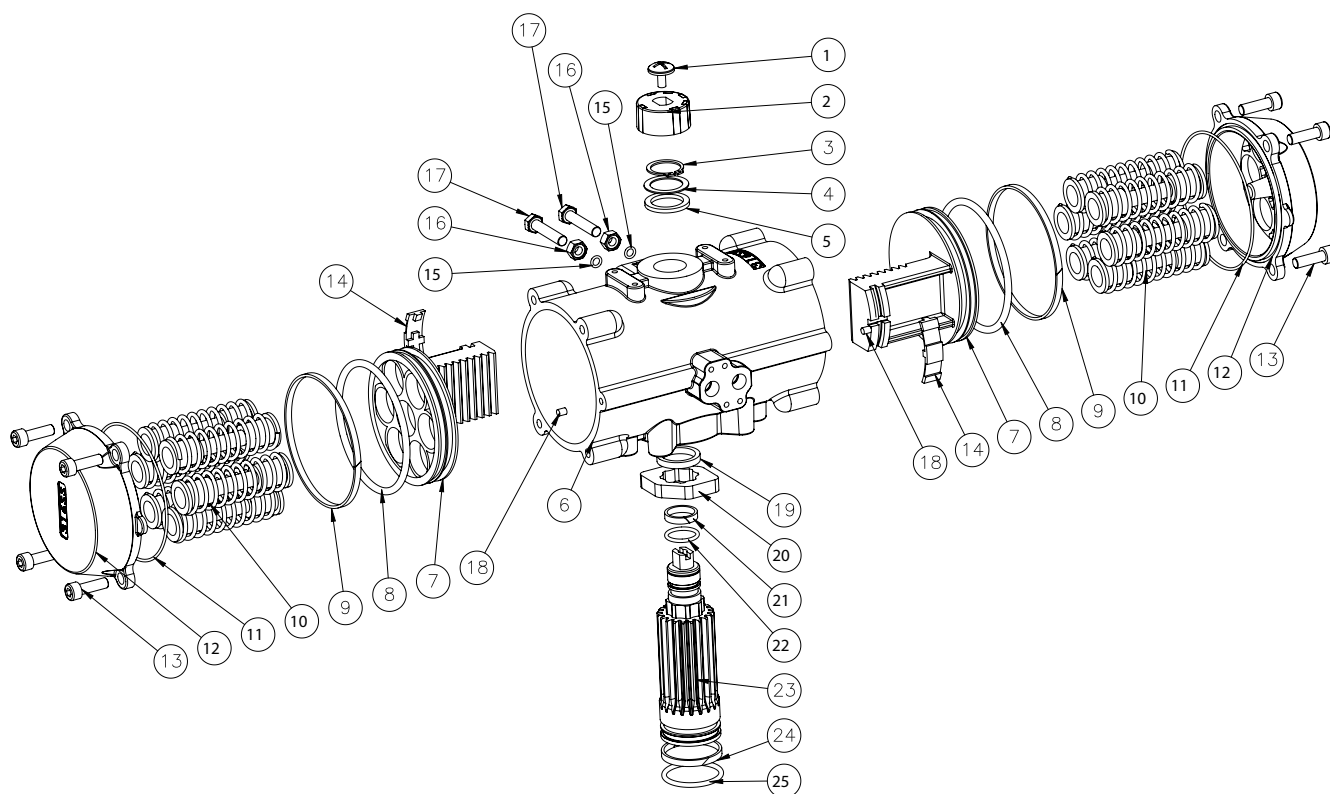


Spring Return Torque (In-Lbs)

Model	Springs per Side	Air Supply									
		Spring Torque		40 psi		60 psi		80 psi		100 psi	
		End	Break	End	Break	End	Break	End	Break	End	Break
S2-052	3	44	65	23	44	67	88	111	132	155	176
	4	58	87	-	-	45	74	89	118	133	162
	5	73	109	-	-	23	59	67	103	111	147
	6	88	131	-	-	-	-	45	88	89	132
S2-063	3	72	115	56	99	142	185	228	271	313	356
	4	96	154	-	-	103	161	189	247	274	332
	5	120	192	-	-	65	137	151	223	236	308
	6	144	230	-	-	-	-	113	199	198	284
S2-083	3	171	247	90	166	258	334	427	503	595	671
	4	228	329	-	-	176	277	345	446	513	614
	5	285	412	-	-	93	220	262	389	430	557
	6	342	494	-	-	-	-	180	332	348	500
S2-105	3	341	469	250	378	609	737	968	1,096	1,328	1,456
	4	454	626	-	-	452	624	811	983	1,171	1,343
	5	568	782	-	-	296	510	655	869	1,015	1,229
	6	681	938	-	-	-	-	499	756	859	1,116
S2-125	3	570	826	294	550	855	1,111	1,415	1,671	1,975	2,231
	4	760	1,101	-	-	579	920	1,140	1,481	1,700	2,041
	5	950	1,377	-	-	303	730	864	1,291	1,424	1,851
	6	1,139	1,652	-	-	-	-	589	1,102	1,149	1,662
S2-140	3	939	1,412	504	977	1,463	1,936	2,421	2,894	3,379	3,852
	4	1,252	1,882	-	-	993	1,623	1,951	2,581	2,909	3,539
	5	1,565	2,353	-	-	522	1,310	1,480	2,268	2,438	3,226
	6	1,878	2,823	-	-	-	-	1,010	1,955	1,968	2,913
S2-160	3	1,406	2,247	673	1,514	2,133	2,974	3,593	4,434	5,053	5,894
	4	1,875	2,996	-	-	1,384	2,505	2,844	3,965	4,304	5,425
	5	2,344	3,745	-	-	635	2,036	2,095	3,496	3,555	4,956
	6	2,813	4,494	-	-	-	-	1,346	3,027	2,806	4,487
S2-210	3	2,560	3,979	1,995	3,414	4,968	6,387	8,099	9,518	11,039	12,458
	4	3,413	5,306	-	-	3,641	5,534	6,772	8,665	9,712	11,605
	5	4,266	6,632	-	-	2,315	4,681	5,446	7,812	8,386	10,752
	6	5,119	7,958	-	-	-	-	4,120	6,959	7,060	9,899

Torques are actual. Please be sure to include appropriate safety factors for all service condition variables when sizing.

SERIES S2: Stainless Steel Rack & Pinion Actuators



Bill of Materials

No.	Description	Qty	Standard Material	Spare Parts
1	INDICATOR SCREW	1	ABS PLASTIC	
2	INDICATOR	1	ABS PLASTIC	
3	SNAP RING	1	AISI 316	*
4	THRUST WASHER	1	AISI 316	*
5	OUTSIDE WASHER	1	POLYOXYMETHYLENE	*
6	BODY	1	ASTM A351 GRADE CF8M	
7	PISTON	2	AISI 316	
8	PISTON O-RING	2	BUNA-N/FKM	*
9	PISTON BEARING	2	POLYOXYMETHYLENE	*
10	SPRING	0-12	SPRING: Epoxy Coated Spring Steel RETAINER: Nylon 66 RETAINER CONNECTOR: Brass	
11	END CAP O-RING	2	BUNA-N/FKM	*
12	END CAP	2	ASTM A351 GRADE CF8M	

*Spare parts included in repair kits

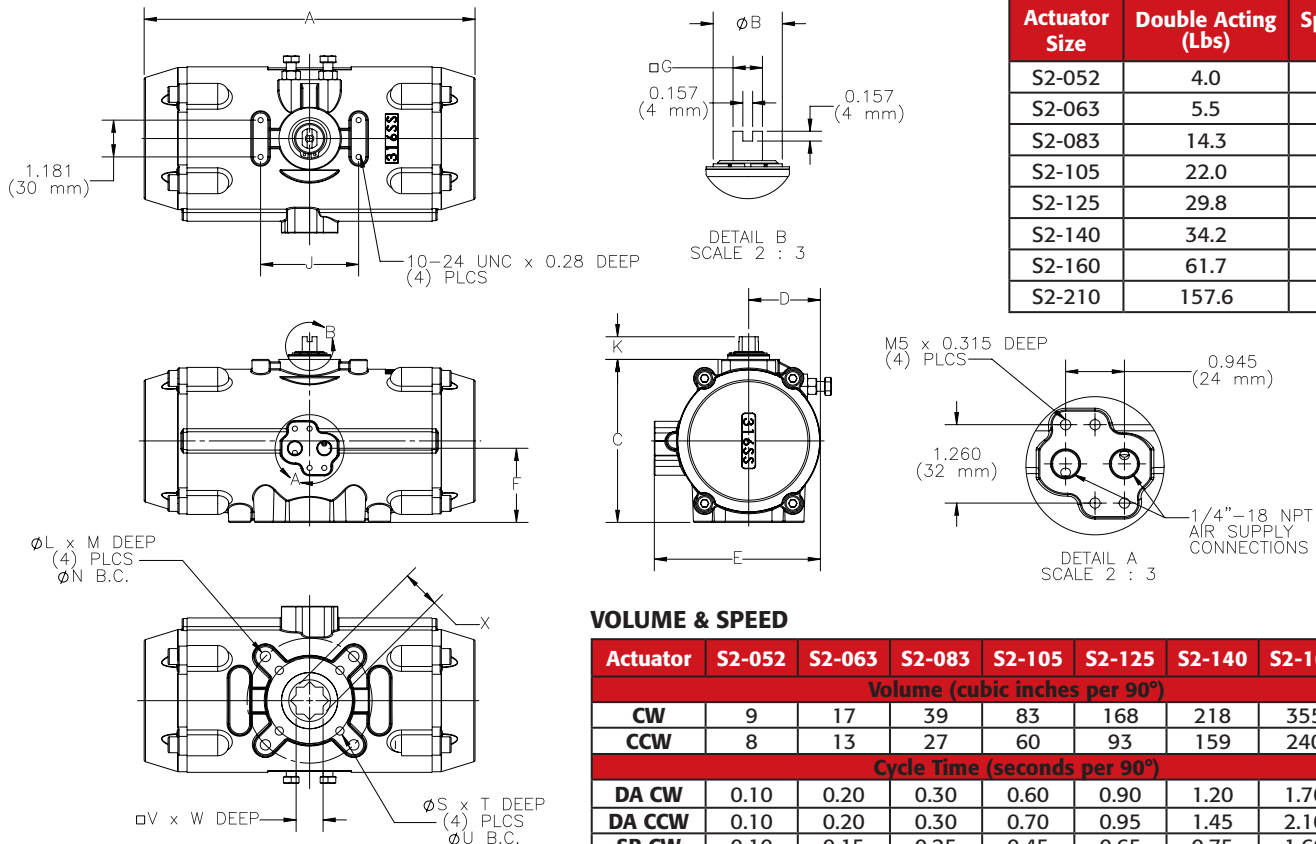
No.	Description	Qty	Standard Material	Spare Parts
13	END CAP BOLT	8	AISI 304	
14	GUIDE PLATE	2	NYLON 66	*
15	TRAVEL STOP O-RING	2	BUNA-N/FKM	*
16	TRAVEL STOP NUT	2	AISI 304	
17	TRAVEL STOP BOLT	2	AISI 304	
18	PLUG	2	BUNA-N/FKM	*
19	TOP PINION WASHER	1	POLYOXYMETHYLENE	*
20	TRAVEL CAM STOP	1	AISI 316	
21	TOP PINION BEARING	1	POLYOXYMETHYLENE	*
22	TOP PINION O-RING	1	BUNA-N/FKM	*
23	PINION	1	AISI 316	
24	BOTTOM PINION BEARING	1	POLYOXYMETHYLENE	*
25	BOTTOM PINION O-RING	1	BUNA-N/FKM	*

S2 Series Repair Kits

Description	Item Number	Temp.
Nitrile Buna	S2-RKB-(actuator size)	-40°F to 175°F
FKM	S2-RKV-(actuator size)	-4°F to 300°F

SERIES S2: Stainless Steel Rack & Pinion Actuators

Dimensional Information



S2 Series Actuators (weight)

Actuator Size	Double Acting (Lbs)	Spring Return (Lbs)
S2-052	4.0	4.4
S2-063	5.5	6.0
S2-083	14.3	15.1
S2-105	22.0	23.7
S2-125	29.8	32.1
S2-140	34.2	38.8
S2-160	61.7	67.5
S2-210	157.6	179.7

VOLUME & SPEED

Actuator	S2-052	S2-063	S2-083	S2-105	S2-125	S2-140	S2-160	S2-210
Volume (cubic inches per 90°)								
CW	9	17	39	83	168	218	355	681
CCW	8	13	27	60	93	159	240	439
Cycle Time (seconds per 90°)								
DA CW	0.10	0.20	0.30	0.60	0.90	1.20	1.70	2.50
DA CCW	0.10	0.20	0.30	0.70	0.95	1.45	2.10	2.75
SR CW	0.10	0.15	0.25	0.45	0.65	0.75	1.60	1.70
SR CCW	0.20	0.30	0.50	1.10	1.60	2.10	2.15	4.70

$$\text{Air Consumption (scf per 90°)} = \frac{\text{Volume (cubic inches)}}{1,728} \times \frac{\text{Supply Pressure (psi)} + 14.7}{14.7}$$

NOTES: Accessory mounting holes are not intended for Manual Gear Overrides or Stop Blocks. Cycle times shown are under no load conditions, 80 psi supply pressure and with a TVCS solenoid. Air line size, air capacity, and valve torque characteristics affect these cycle times. Faster or slower cycle times can be accomplished using special control components.

DIMENSIONS

Actuator Model	A	ØB	C	D	E	F	□G	J	K	ØL	M	ØN	ØS	T	ØU	□V	W	X	ISO 5211
S2-052	5.75	0.87	2.83	1.22	3.07	1.22	0.47	3.15	0.787	1/4-20 UNC	0.39	1.969	10-24 UNC	0.28	1.417	0.433	0.58	0.58	F03/F05
S2-063	6.81	1.06	3.46	1.46	3.58	1.55	0.47	3.15	0.787	5/16-18 UNC	0.47	2.756	1/4-20 UNC	0.39	1.969	0.551	0.59	0.74	F05/F07
S2-083	8.03	1.06	4.25	1.87	4.42	1.89	0.47	3.15	0.787	5/16-18 UNC	0.47	2.756	1/4-20 UNC	0.39	1.969	0.749	0.66	0.96	F05/F07
S2-105	10.63	1.11	5.24	2.30	5.31	2.38	0.47	3.15	0.787	3/8-16 UNC	0.63	4.016	5/16-18 UNC	0.47	2.756	0.866	0.97	1.15	F07/F10
S2-125	11.89	1.37	6.10	2.70	6.12	2.81	0.79	5.12	1.181	3/8-16 UNC	0.63	4.016	5/16-18 UNC	0.47	2.756	0.866	0.97	1.15	F07/F10
S2-140	15.51	1.56	6.77	2.99	6.75	3.15	0.79	5.12	1.181	1/2-13 UNC	0.79	4.921	3/8-16 UNC	0.63	4.016	1.063	1.18	1.46	F10/F12
S2-160	17.95	1.56	7.80	3.41	7.58	3.66	0.79	5.12	1.181	1/2-13 UNC	0.79	4.921	3/8-16 UNC	0.63	4.016	1.063	1.18	1.46	F10/F12
S2-210	22.36	2.76	10.12	4.49	10.00	4.78	1.18	5.12	1.181	5/8-11 UNC	0.87	5.512	-	-	-	1.417	1.58	1.97	F14

SERIES S2: Stainless Steel Rack & Pinion Actuators

HOW TO ORDER Series S2 Actuators:

S2- TRIAC® S2 Series Stainless Steel Actuator with dual travel stops

000 Actuator size (052, 063, 083, 105, 125, 140, 160, 210)

DA Double Acting Configuration

DAR Double Acting (Reverse Acting) Configuration

SR Spring Return Fail Clockwise Configuration

SO Spring Return Fail Counter-clockwise Configuration

Blank Buna-N Seals (standard) -40°F to 175°F

V FKM Seals (high temperature option) -4°F to 300°F

Blank 5 spring per side (standard)

0 Specify Number of Spring per side (1-6)

Example: **S2-063SRV** : (Triac S2 Series Stainless Steel Actuator with dual travel stops, Spring Return fail-clockwise, with FKM seals)

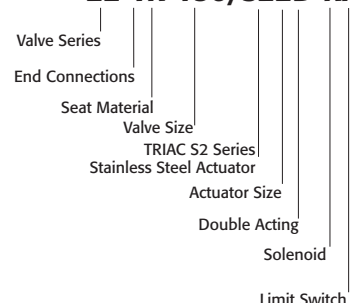


Actuator Size Legend to be used in automated part numbers

Size	Actuator Model	Size	Actuator Model
S21D	S2-052DA	S21S	S2-052SR
S22D	S2-063DA	S22S	S2-063SR
S23D	S2-083DA	S23S	S2-083SR
S24D	S2-105DA	S24S	S2-105SR
S25D	S2-125DA	S25S	S2-125SR
S26D	S2-140DA	S26S	S2-140SR
S27D	S2-160DA	S27S	S2-160SR
S28D	S2-210DA	S28S	S2-210SR

SAMPLE AUTOMATED PART NUMBER

22-TX-150/S22D-XX



See valve part number matrix for complete part number and options.

SERIES S2: Stainless Steel Rack & Pinion Actuators

Solenoids

Solenoids	DESCRIPTION			
MODEL	MATERIAL	ENCLOSURE RATING	APPROVALS	
4 Way, 2 Position, Single Coil (DA/SR)				
TVSS-X411-4N-A120	316 SST	Type 4, 4X	CSA, CE	Weather Proof
TVSS-X411-7N-A120	316 SST	Type 4, 4X, 7, 9	CSA, UL, CE	Explosion Proof
4 Way, 2 Position, Dual Coil (DA)				
TVSS-X421-4N-A120	316 SST	Type 4, 4X	CSA, CE	Weather Proof
TVSS-X421-7N-A120	316 SST	Type 4, 4X, 6, 7, 9	CSA, UL, CE	Explosion Proof

Additional voltage options: 240VAC (-A240); 24VAC (-A24); 24VDC (-D24)

Air Volume Boosters

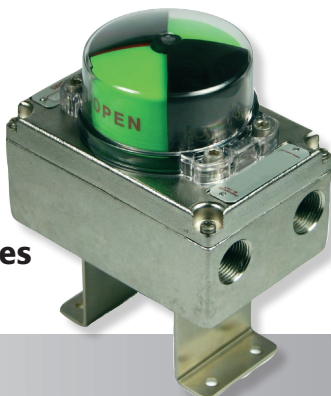
AVB-22: 1/2" NPT port

AVB-32: 3/4" NPT port



Limit Switches

ES Series



EW Series



ACCESSORIES

Available in Stainless Steel

Filter Regulators

Stainless Steel Filter Regulators with Stainless Steel Gauge



< FR-20:
1/4" NPT port

> FR-22: 1/2" NPT port
> FR-23: 3/4" NPT port



APL-910





SERIES S2: Stainless Steel Rack & Pinion Actuators

PAINLESS STAINLESS

All Stainless Ball Valve Assemblies



22 Series Stainless Steel Assembly



77 Series Stainless Steel Assembly



88 Series Stainless Steel Assembly



D9 Series Stainless Steel Assembly