

WedgeRock RS PRODUCT SHEET

700019 Rev-05

MECHANICAL FAIL-SAFE OPERATOR FOR EMERGENCY SHUT DOWN APPLICATIONS



Features, Options & Configurability

- | | |
|---|--|
| <ul style="list-style-type: none"> • High efficiency gear train • Self-Locking • Mechanical stops for quarter turn rotation, $\pm 5^\circ$ adjustment at each stop • 90% filled, Greased for life, no maintenance • Elastomer seals at all ingress points, designed and tested to IP68 • Input shaft projection Parallel or Perpendicular to output • Adjustable fail stroke time • Namur mounting for indicator giving absolute valve position • Input lockout • Available Certifications: <ul style="list-style-type: none"> ○ Buy America Compliant ○ ATEX Compliant | <ul style="list-style-type: none"> • Modular design for quarter-turn applications accommodates: <ul style="list-style-type: none"> ○ Fail-Clockwise ○ Fail-Counterclockwise • Release Signal Options: <ul style="list-style-type: none"> ○ Electric ○ Hi-Lo Pressure Pilot • Capable of Partial Stroke testing • Operate with: <ul style="list-style-type: none"> ○ Electric valve actuator ○ Handwheel • Risers and Adaptors • Temperature range and materials configured per application • Machined for direct mount <ul style="list-style-type: none"> ○ Standard Flanges to MSS SP101 & ISO 5211 ○ Infinite Custom Bolt Pattern Options |
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PURPOSE ENGINEERED - QUALITY MANUFACTURED - PERFORMANCE TESTED

The information in this document is subject to change without notice. Updated documents can be requested or obtained from our website.

WedgeRock RS

GENERAL OVERVIEW

MANUAL AND MOTORIZED OPERATION						
MODEL	MAX BORE W/ SQUARE KEY PER ANSI B17.1	MAX BORE W/ RECTANGULAR KEY PER ANSI B17.1	MAX CIRCUMSCRIBED DIAMETER OF DRIVE FEATURE	MAX STEM ENGAGEMENT	STANDARD FLANGE	
	<i>IN</i> <i>(MM)</i>	<i>IN</i> <i>(MM)</i>	<i>IN</i> <i>(MM)</i>	<i>IN</i> <i>(MM)</i>	MIN	MAX
RS4	1.50 <i>(38)</i>	1.50 <i>(38)</i>	1.90 <i>(48)</i>	2.85 <i>(72)</i>	F/FA07	F/FA12
RS5	2.00 <i>(51)</i>	2.00 <i>(51)</i>	2.50 <i>(64)</i>	3.40 <i>(86)</i>	F/FA10	F/FA14
RS6	2.38 <i>(60)</i>	2.50 <i>(64)</i>	3.00 <i>(76)</i>	4.48 <i>(114)</i>	F/FA12	F/FA16
RS7	2.75 <i>(70)</i>	3.00 <i>(76)</i>	3.53 <i>(90)</i>	5.06 <i>(129)</i>	F/FA14	F16/FA19
RS8	3.25 <i>(83)</i>	3.50 <i>(89)</i>	4.13 <i>(105)</i>	6.00 <i>(152)</i>	F/FA16	F/FA25
RS9	4.00 <i>(102)</i>	4.25 <i>(108)</i>	5.07 <i>(129)</i>	6.88 <i>(175)</i>	F25/FA19	F/FA30
RS10	5.00 <i>(127)</i>	5.25 <i>(133)</i>	6.38 <i>(162)</i>	9.56 <i>(243)</i>	F/FA25	F/FA35
RS12	5.75 <i>(146)</i>	6.25 <i>(159)</i>	7.30 <i>(185)</i>	10.95 <i>(278)</i>	F/FA25	F/FA40
RS14	7.25 <i>(184)</i>	7.50 <i>(191)</i>	9.06 <i>(230)</i>	13.59 <i>(345)</i>	F/FA35	F/FA48
RS18	9.00 <i>(229)</i>	9.00 <i>(229)</i>	11.00 <i>(279)</i>	16.50 <i>(419)</i>	F/FA40	F/FA60
RS24	10.50 <i>(267)</i>	11.00 <i>(279)</i>	13.00 <i>(330)</i>	19.50 <i>(495)</i>	F/FA48	32" OD <i>(813mm)</i>
RS36	13.00 <i>(330)</i>	13.00 <i>(330)</i>	16.00 <i>(406)</i>	24.00 <i>(610)</i>	F/FA60	44" OD <i>(1118mm)</i>

Larger frame sizes available if required. Contact WedgeRock for more information.

WedgeRock RS

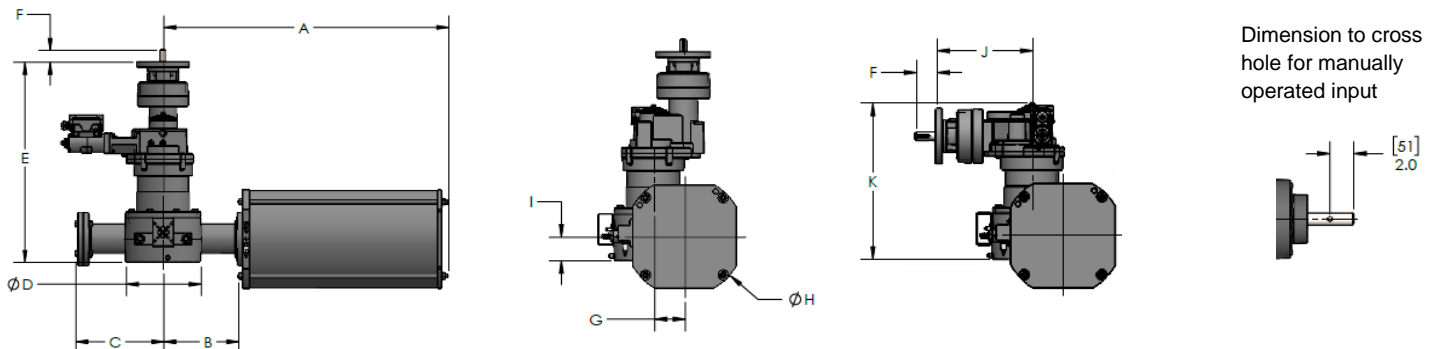
ENVELOPE DIMENSIONS

RS ENVELOPE DIMENSIONS AND WEIGHT

MODEL	A	B	C	D	E	F	G	H	I	J	K	WEIGHT
	IN (MM)	IN (MM)	IN (MM)	IN (MM)	IN (MM)	IN (MM)	IN (MM)	IN (MM)	IN (MM)	IN (MM)	IN (MM)	LBS (KG)
RS4 + RP4 + RSR5	18.9 (480)	5.5 (140)	5.8 (147)	5.9 (150)	19.5 (496)	2.6 (65)	2.0 (51)	6.0 (152)	2.8 (70)	12.0 (305)	12.8 (326)	216 (98)
RS5 + RP5 + RSR5	22.8 (579)	7.0 (178)	8.1 (205)	6.7 (169)	20.6 (524)	2.6 (65)	2.6 (66)	8.6 (219)	2.1 (53)	12.0 (305)	14.0 (355)	276 (125)
RS6 + RP6 + RSR5	32.4 (823)	8.6 (219)	10.1 (257)	8.8 (224)	23.1 (587)	2.6 (65)	3.3 (83)	13.0 (330)	2.8 (71)	12.0 (305)	16.4 (417)	485 (220)
RS7 + RP7 + RP5 + RSR5	37.3 (948)	9.8 (249)	11.5 (292)	9.8 (249)	26.2 (666)	2.6 (65)	3.9 (98)	15.0 (381)	3.0 (75)	12.0 (305)	19.5 (496)	628 (285)
RS8 + RP8 + RP6 + RSR5	44.9 (1,140)	11.3 (286)	13.2 (335)	11.4 (289)	29.0 (736)	2.6 (65)	4.3 (110)	18.3 (464)	4.6 (117)	12.0 (305)	22.3 (567)	990 (449)
RS9 + RP9 + RP6 + RSR5	46.1 (1,171)	11.9 (302)	16.8 (427)	15.0 (381)	32.8 (832)	2.6 (65)	5.7 (144)	18.0 (457)	3.8 (97)	12.0 (305)	26.1 (663)	1388 (629)
RS10 + RP10 + RP8 + RP6 + RSR5	54.6 (1,387)	13.9 (353)	20.2 (513)	16.8 (425)	42.1 (1,070)	2.6 (65)	6.3 (160)	22.0 (559)	5.2 (132)	12.0 (305)	35.4 (900)	2567 (1,164)
RS10 + RP10 + RP8 + RSR6	54.6 (1,387)	13.9 (353)	20.2 (513)	16.8 (425)	39.4 (1,000)	2.6 (65)	6.3 (160)	22.0 (559)	5.2 (132)	15.0 (382)	30.0 (762)	2639 (1,197)
RS12 + RP12 + RP8 + RP6 + RSR5	94.2 (2,394)	27.5 (698)	28.9 (733)	18.7 (475)	42.6 (1,082)	2.6 (65)	9.5 (241)	22.0 (559)	6.5 (165)	12.0 (305)	35.9 (913)	3186 (1,445)
RS12 + RP12 + RP8 + RSR6	94.2 (2,394)	27.5 (698)	28.9 (733)	18.7 (475)	42.2 (1,073)	2.6 (65)	9.5 (241)	22.0 (559)	6.5 (165)	15.0 (382)	32.9 (835)	3248 (1,473)
RS14 + RP14 + RP10 + RP8 + RSR5	AVAILABLE UPON REQUEST											
RS14 + RP14 + RP10 + RSR6	AVAILABLE UPON REQUEST											
RS18 + RP18 + RP12 + RP8 + RSR6	AVAILABLE UPON REQUEST											
RS24 + RP24 + RP14 + RP8 + RSR6	AVAILABLE UPON REQUEST											
RS36 + RP36 + RP18 + RP10 + RSR8	AVAILABLE UPON REQUEST											

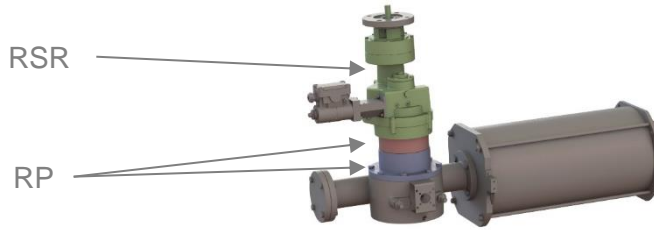
Dimensions represent most common configurations. Other dimensional configurations possible.

Weight may vary with final configuration.



WedgeRock RP SERIES

AUXILIARY PLANETARY GEAR RATIOS



RSR SERIES PLANETARY REDUCTION GEAR

MODEL	INPUT SHAFT DIAMETER (KEY PER ANSI B17.1)	MIN STANDARD INPUT FLANGE	MAX STANDARD INPUT FLANGE
	IN (MM)		
RSR5	1.00 / 1.50 (25.4 / 38.1)	F/FA10	F/FA16
RSR6	1.00 / 1.50 (25.4 / 38.1)	F/FA14	F/FA16
RSR8	1.50 / 2.00 (38.1 / 50.8)	F/FA16	F/FA25

COMMON RATIOS FOR RP5 & RP6

RATIO ¹ [MOST COMMON]	2.50	[2.6]	2.71	2.78	2.85	[3.00]	3.18	[3.29]	3.40	3.67	4.00	[4.20]	4.43	[5.00]	5.80	[6.33]	[9.00]
MECHANICAL ADVANTAGE ²	2.4	[2.5]	2.6	2.7	2.8	[2.9]	3.1	[3.2]	3.3	3.6	3.9	[4.1]	4.3	[4.9]	5.6	[6.1]	[8.7]

COMMON RATIOS FOR RP8-RP24

RATIO ¹ [MOST COMMON]	[2.5]	2.60	2.71	2.78 [^]	2.85	[3.00]	3.18	3.29 [^]	3.40	3.67	[4.00]	4.20 [^]	4.43	[5.00]	5.80 [^]	6.33 ^{^^}	9.00 ^{^^^}
MECHANICAL ADVANTAGE ²	[2.4]	2.5	2.6	2.7	2.8	[2.9]	3.1	3.2	3.3	3.6	[3.9]	4.1	4.3	[4.9]	5.6	6.1	8.7

COMMON RATIOS FOR RP36

RATIO ¹ [MOST COMMON]	2.44	2.63	2.86	3.17	3.60	4.25	[5.33]	6.20
MECHANICAL ADVANTAGE ²	2.3	2.5	2.7	3.0	3.4	4.0	[5.1]	5.9

[^] Catalog torque rating to be reduced by 20% using this ratio

^{^^} Catalog torque rating to be reduced by 40% using this ratio

^{^^^} Catalog torque rating to be reduced by 60% using this ratio

COMMON RSR5 & RSR6 RATIOS

RATIO ¹ [MOST COMMON]	2.81	[2.93]	3.05	3.13	3.21	[3.38]	3.58	[3.7]	3.83	4.13	4.50	[4.73]	4.98	[5.63]	6.53	[7.12]	[10.13]
MECHANICAL ADVANTAGE ²	2.5	[2.6]	2.7	2.8	2.8	[3]	3.2	[3.3]	3.4	3.6	4.0	[4.2]	4.4	[5]	5.8	[6.3]	[8.9]

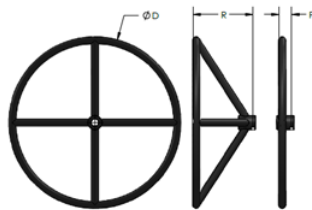
COMMON RSR8 RATIOS

RATIO ¹ [MOST COMMON]	[2.81]	2.93	3.05	3.13	3.21	[3.38]	3.58	3.70	3.83	4.13	[4.5]	4.73	4.98	[5.63]	6.53	7.12	10.13
MECHANICAL ADVANTAGE ²	[2.5]	2.6	2.7	2.8	2.8	[3]	3.2	3.3	3.4	3.6	[4]	4.2	4.4	[5]	5.8	6.3	8.9

1) Additional ratios available upon request.

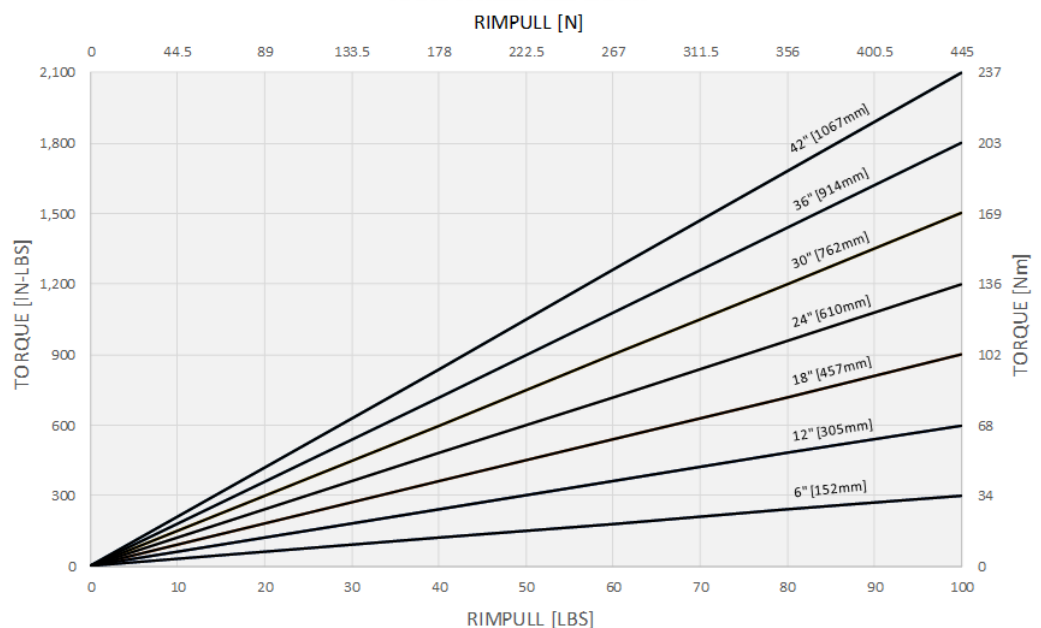
2) Mechanical advantage can fall short of published value by 10% until gearbox has worn in. Wear in should occur within 10 cycles.

WedgeRock HANDWHEELS



D	R	F
IN	IN	IN
(MM)	(MM)	(MM)
6	5.25	1.75
(152)	(133)	(44)
12	5.25	1.75
(305)	(133)	(44)
18	6.25	1.75
(457)	(159)	(44)
24	8.38	1.75
(610)	(213)	(44)
30	10.00	1.75
(762)	(254)	(44)
36	9.63	1.75
(914)	(244)	(44)
42	10.13	1.75
(1,067)	(257)	(44)

HANDWHEEL SIZE CHART



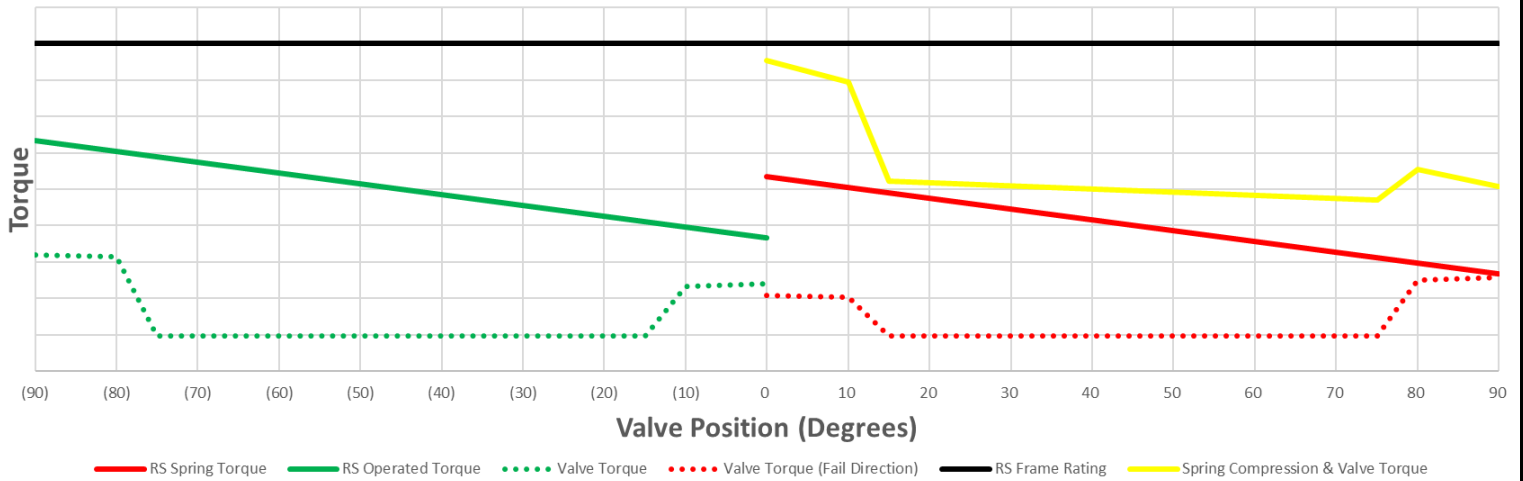
WedgeRock RS

OUTPUT TORQUE RATING FOR QUARTER TURN, FAIL-SAFE APPLICATIONS

Frame Size	Frame Rating In-Lbs/(Nm)	Spring Can	RS Output Torque In-Lbs/(Nm)						Planetary Gear Configuration	Gear Ratio								Mechanical Advantage							RS Input Torque for Max Rating							
			Fail (Spring)			Max Operated												+/- 10%														
			Start	Run	End	Start	Run	End										In-Lbs/(Nm)														
RS4	5,000 (565)	60	2,222 (251)	1,667 (188)	1,111 (126)	3,889 (439)	3,333 (377)	2,778 (314)	RP5-2.6 RSR5	2.9	7.6	8.8	12	15	19	26	2.6	6.5	7.5	11	13	16	23	1937 (219)	768 (87)	665 (75)	475 (54)	399 (45)	315 (36)	222 (25)		
		80	2,963 (335)	2,222 (251)	1,481 (167)	3,519 (398)	3,148 (356)	2,778 (314)																							2,222 (251)	1,296 (146)
		100	3,704 (418)	2,778 (314)	1,852 (209)	3,148 (356)	2,222 (251)	1,296 (146)																								
RS5	10,000 (1,130)	60	4,444 (509)	3,333 (377)	2,222 (251)	7,778 (879)	6,667 (753)	5,556 (629)	RP5-5.0 RSR5	5.6	15	17	24	28	36	51	5.0	13	14	20	24	30	43	2014 (228)	799 (90)	692 (78)	494 (56)	415 (47)	328 (37)	231 (26)		
		80	5,926 (670)	4,444 (502)	2,963 (335)	7,037 (795)	6,556 (740)	5,556 (629)																							4,444 (502)	2,593 (293)
		100	7,407 (837)	5,556 (628)	3,704 (418)	6,296 (711)	4,444 (502)	2,593 (293)																								
RS6	28,000 (3,164)	60	12,444 (1,406)	9,333 (1,055)	6,222 (703)	21,778 (2,461)	18,667 (2,109)	15,556 (1,758)	RP6-9.0 RSR5	10	26	30	43	51	64	91	9	23	26	36	43	55	78	3133 (354)	1242 (140)	1077 (122)	769 (87)	646 (73)	510 (58)	359 (41)		
		80	16,593 (1,875)	12,444 (1,406)	8,296 (937)	19,704 (2,262)	15,556 (1,758)	11,407 (1,289)																								
		100	20,741 (2,344)	15,556 (1,758)	10,370 (1,179)	17,630 (1,979)	12,444 (1,406)	7,259 (820)																								
RS7	45,000 (5,085)	60	20,000 (2,260)	15,000 (1,695)	10,000 (1,130)	35,000 (3,955)	30,000 (3,390)	25,000 (2,825)	RP7-5.0/ RP5-3.0/ RSR5	17	44	51	71	84	107	152	14	36	42	59	70	89	126	3114 (352)	1235 (140)	1070 (121)	764 (86)	642 (73)	507 (57)	357 (40)		
		80	26,667 (3,013)	20,000 (2,260)	13,333 (1,507)	31,667 (3,578)	25,000 (2,825)	18,333 (2,072)																								
		100	33,333 (3,766)	25,000 (2,825)	16,667 (1,883)	28,333 (3,202)	20,000 (2,260)	11,667 (1,318)																								
RS8	75,000 (8,475)	60	33,333 (3,766)	25,000 (2,825)	16,667 (1,883)	58,333 (6,591)	50,000 (5,650)	41,667 (4,708)	RP8-5.0/ RP5-5.0/ RSR5	28	73	84	118	141	178	253	24	61	70	98	117	148	210	3114 (352)	1235 (140)	1070 (121)	764 (86)	642 (73)	507 (57)	357 (40)		
		80	44,444 (5,022)	33,333 (3,766)	22,222 (2,511)	52,778 (5,964)	41,667 (4,708)	30,556 (3,453)																								
		100	55,556 (6,277)	41,667 (4,708)	27,778 (3,139)	47,222 (5,336)	33,333 (3,766)	19,444 (2,197)																								
RS9	135,000 (15,254)	60	60,000 (6,780)	45,000 (5,085)	30,000 (3,390)	105,000 (11,864)	90,000 (10,169)	75,000 (8,475)	RP9-5.0/ RP6-9.0/ RSR5	51	132	152	213	253	320	456	43	109	126	177	210	266	378	3114 (352)	1235 (140)	1070 (121)	764 (86)	642 (73)	507 (57)	357 (40)		
		80	80,000 (9,040)	60,000 (6,780)	40,000 (4,520)	95,000 (10,734)	75,000 (8,475)	55,000 (6,215)																								
		100	100,000 (11,299)	75,000 (8,475)	50,000 (5,650)	85,000 (9,605)	60,000 (6,780)	35,000 (3,955)																								
RS10	225,000 (25,424)	60	100,000 (11,299)	75,000 (8,475)	50,000 (5,650)	175,000 (19,778)	150,000 (16,949)	125,000 (14,124)	RP10-5.0/ RP8-5.0/ RP6-3.0/ RSR5	84	219	253	354	422	534	759	70	177	204	285	340	430	612	3211 (363)	1273 (144)	1103 (125)	788 (89)	662 (75)	523 (59)	368 (42)		
		80	133,333 (15,066)	100,000 (11,299)	66,667 (7,533)	158,333 (17,891)	125,000 (14,124)	91,667 (10,359)																								
		100	166,667 (18,832)	125,000 (14,124)	83,333 (9,416)	141,667 (16,008)	100,000 (11,299)	58,333 (6,591)																								
RS12	400,000 (45,198)	60	177,778 (20,088)	133,333 (15,066)	88,889 (10,044)	311,111 (35,154)	266,667 (30,132)	222,222 (25,110)	RP12-5.0/ RP8-5.0/ RP6-5.0/ RSR5	141	366	422	591	703	890	1266	117	295	340	476	566	717	1020	3425 (387)	1358 (153)	1177 (133)	841 (95)	706 (80)	558 (63)	392 (44)		
		80	237,037 (26,784)	177,778 (20,088)	118,519 (13,392)	281,481 (31,806)	222,222 (25,110)	162,963 (18,414)																								
		100	296,296 (33,480)	222,222 (25,110)	148,148 (16,740)	251,852 (28,458)	177,778 (20,088)	103,704 (11,718)																								
RS14	750,000 (84,746)	60	333,333 (37,665)	250,000 (28,249)	166,667 (18,832)	583,333 (65,913)	500,000 (56,897)	416,667 (47,081)	RP14-5.0/ RP10-5.0/ RP8-9.0/ RSR5	253	658	759	1063	1266	1627	2278	210	530	612	856	1020	1291	1835	3568 (403)	1415 (160)	1226 (139)	876 (99)	736 (83)	581 (66)	409 (46)		
		80	444,444 (50,220)	333,333 (37,665)	222,222 (25,110)	527,778 (59,636)	416,667 (47,081)	305,556 (34,526)																								
		100	555,556 (62,775)	416,667 (47,081)	277,778 (31,387)	472,222 (53,358)	333,333 (37,665)	194,444 (21,971)																								
RS18	1,350,000 (152,542)	60	600,000 (67,797)	450,000 (50,847)	300,000 (33,898)	1,050,000 (118,644)	900,000 (101,695)	750,000 (84,746)	RP18-5.0/ RP12-5.0/ RP8-3.0/ RSR6	84	219	253	354	422	534	759	70	177	204	285	340	430	612	19265 (2177)	7639 (863)	6620 (748)	4729 (534)	3972 (449)	3138 (355)	2207 (249)		
		80	800,000 (90,395)	600,000 (67,797)	400,000 (45,198)	950,000 (107,345)	750,000 (84,746)	550,000 (62,147)																								
		100	1,000,000 (112,994)	750,000 (84,746)	500,000 (56,497)	850,000 (96,045)	600,000 (67,797)	350,000 (39,549)																								
RS24	2,250,000 (254,237)	60	1,000,000 (112,994)	750,000 (84,746)	500,000 (56,497)	1,750,000 (197,240)	1,500,000 (169,492)	1,250,000 (141,243)	RP24-5.0/ RP14-5.0/ RP8-5.0/ RSR6	141	366	422	591	703	890	1266	117	295	340	476	566	717	1020	19265 (2177)	7639 (863)	6620 (748)	4729 (534)	3972 (449)	3138 (355)	2207 (249)		
		80	1,333,333 (150,659)	1,000,000 (112,994)	666,667 (75,330)	1,583,333 (178,908)	1,250,000 (141,243)	916,667 (103,578)																								
		100	1,666,667 (188,324)	1,250,000 (141,243)	833,333 (94,162)	1,416,667 (160,075)	1,000,000 (112,994)	583,333 (65,913)																								
RS36	4,500,000 (508,475)	60	1,777,778 (200,879)	1,333,333 (150,659)	888,889 (100,439)	3,111,111 (351,538)	2,666,667 (301,318)	2,222,222 (251,099)	RP36-5.0/ RP18-5.0/ RP10-5.0/ RSR8	141	366	422	591	703	890	1266	117	295	340	476	566	717	1020	38530 (4354)	15277 (1726)	13240 (1496)	9457 (1069)	7944 (898)	6275 (709)	4413 (499)		
		80	2,370,370 (269,839)	1,777,778 (200,879)	1,185,185 (133,919)	2,814,815 (319,058)	2,222,222 (251,099)	1,629,630 (184,439)																								
		100	2,962,963 (334,798)	2,222,222 (251,099)	1,481,481 (167,399)	2,518,519 (284,578)	1,777,778 (200,879)	1,037,037 (117,179)																								

- Notes:
- Mechanical advantage can fall short of published value by 10% until gearbox has worn in. Wear in should occur within 10 cycles.
 - Calculated input torque values from table yield the corresponding 1,000 cycle rated output torque of model.
 - More ratios available if required.
 - Other planetary gear configurations possible.

Torque VS Valve Position of RS and Valve



Position	Valve Torque	Choose One		Safety Factor	Frame Sizing Check
		RS Fail -Close	RS Fail-Open		
Start to Open	 	 	 	 	
Run to Open	 	 	 	 	
End to Open	 	 	 	 	
Start to Close	 	 	 	 	
Run to Close	 	 	 	 	
End to Close	 	 	 	 	

Useful Equations

- #_{in} = Input Turns to Operate ¼ Turn
- D_{hw} = Handwheel Diameter
- MA = Mechanical Advantage
- N = Gear Ratio
- F_{rp} = Rimpull
- RPM = Input RPM
- T_{1/4} = Time to Operate ¼ Turn (Sec)
- T_{in} = Input Torque
- T_{out} = Output Torque

Input turns to operate ¼ turn

$$\#_{in} = \frac{N}{4}$$

Time to operate ¼ turn (Seconds)

$$T_{1/4} = \frac{15 \times N}{RPM}$$

Mechanical Advantage

$$MA = \frac{T_{out}}{T_{in}}$$

Required Input Torque

$$T_{in} = \frac{T_{out}}{MA}$$

Required Rimpull

$$F_{rp} = \frac{2 \times T_{in}}{D_{hw}}$$

Required Handwheel Diameter

$$D_{hw} = \frac{2 \times T_{in}}{F_{rp}}$$

Position	Indicates position of valve and RS being analyzed.
Valve Torque	Torque required by valve to operate without safety factor.
RS Fail-Close / Fail-Open	RS output torque per selected frame size. Fail(Spring) output torque filled in red boxes, Max Operated output torque filled in green boxes.
Safety Factor	Safety factor of RS capacity over valve requirement. RS Torque / Valve Torque
Frame Sizing Check	For fail-close, valve torque in the open direction added to the RS Fail output torque. For fail-open, valve torque in the close direction added to the RS fail output torque. The max torque found here can be divided by the desired input torque to find the minimum required mechanical advantage.
Frame Torque	Frame torque should always be higher than all three torques listed in the yellow boxes.

WedgeRock RS SERIES

TEMPERATURE AND SERVICE CONDITIONS



STANDARD COMPONENT MATERIAL SELECTION FOR SPECIFIED ENVIRONMENTS

COMPONENT	SERVICE CONDITION	
	STANDARD	OFFSHORE
	TOPSIDE	PLATFORM
HOUSINGS ¹	DUCTILE IRON AND CARBON STEEL	DUCTILE IRON AND CARBON STEEL
SPRING HOUSING	CARBON STEEL	CARBON STEEL
SPRING	COATED ALLOY STEEL	COATED ALLOY STEEL
INPUT SHAFT	STAINLESS STEEL	SUPER DUPLEX STAINLESS STEEL
STOPS	ALLOY STEEL	ALLOY STEEL
JAM NUT(S)	STEEL	SEALED STEEL
FASTENERS ²	GRADE 5	316SS
SEALS ³	BUNA	BUNA
LUBRICATION ⁴	GREASE	GREASE
FINISH ⁵	EPOXY PRIMER	EPOXY PRIMER

1-Models RS12 and larger may use carbon steel fabrications in place of ductile iron.

2-Standard fasteners for application. Option to use Grade 5, 316SS, B7(M), L7(M), or other materials per project specification. Grade 5 is zinc plated.

3-Standard seals for application unless otherwise specified. Refer to temperature service condition table.

4-Lubrication per temperature condition. Refer to temperature service condition table.

5-Standard finish unless otherwise specified. Standard epoxy 7-10 mils dft.

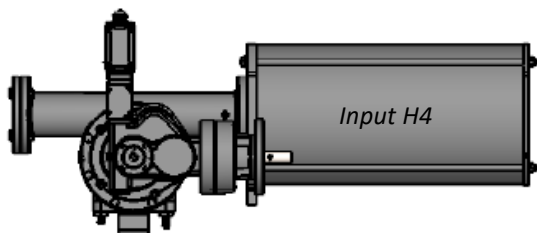
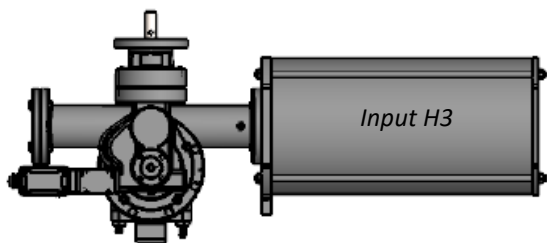
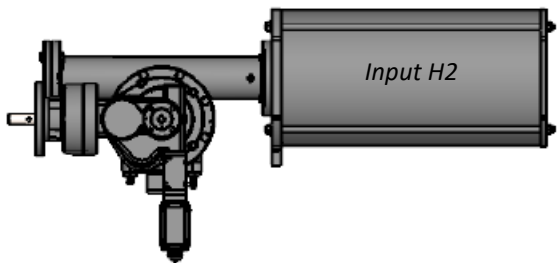
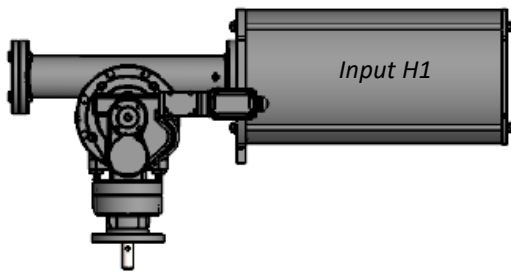
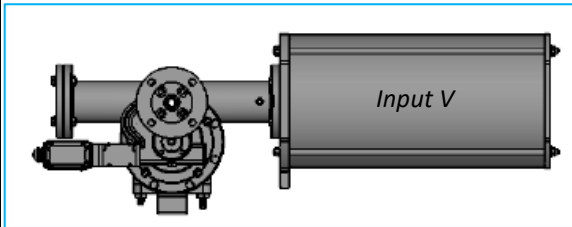
TEMPERATURE SERVICE CONDITIONS

SERVICE CONDITION	SEAL MATERIAL	LUBRICANT	MIN OPERATING TEMP*	MAX OPERATING TEMP*
			°F (°C)	°F (°C)
STANDARD SERVICE	BUNA	STANDARD GREASE	-40 (-40)	225 (107)
HIGH-TEMP SERVICE	VITON	HIGH-TEMP GREASE	-15 (-26)	400 (204)
LOW-TEMP SERVICE	LOW TEMP BUNA	LOW-TEMP GREASE	-55 (-48)	225 (107)

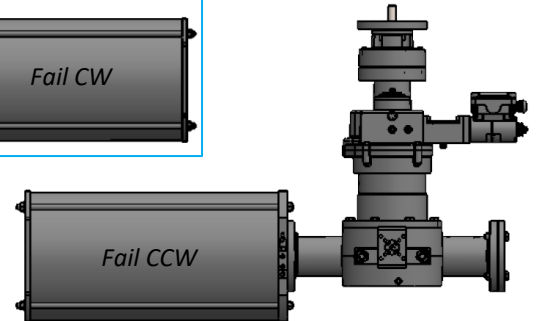
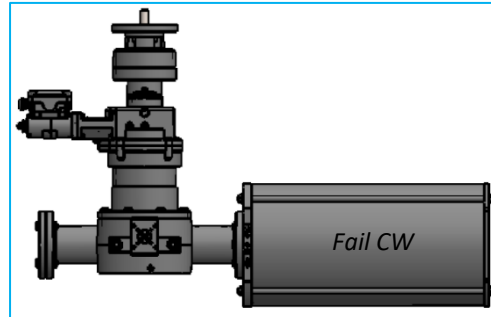
*Operating temperature for mechanical RS assembly only. Choice of release mechanism may affect overall temperature rating. For example, a solenoid's temperature rating may be -4°F[-20°C] to 104°F[40°C], limiting the overall assembly's temperature rating. Consult with factory.

WedgeRock RS SERIES

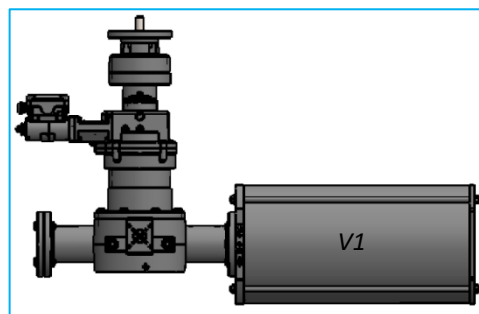
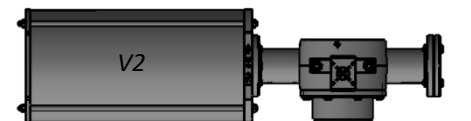
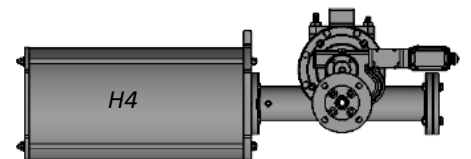
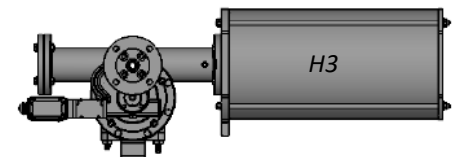
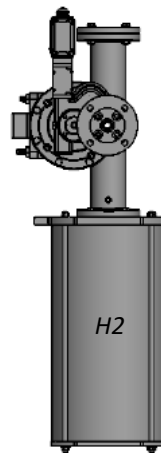
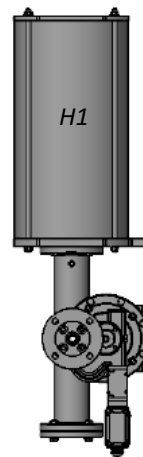
INPUT SHAFT PROJECTION OPTIONS [STANDARD]



SPRING CAN CONFIGURATION FOR FAIL CW / CCW [STANDARD]



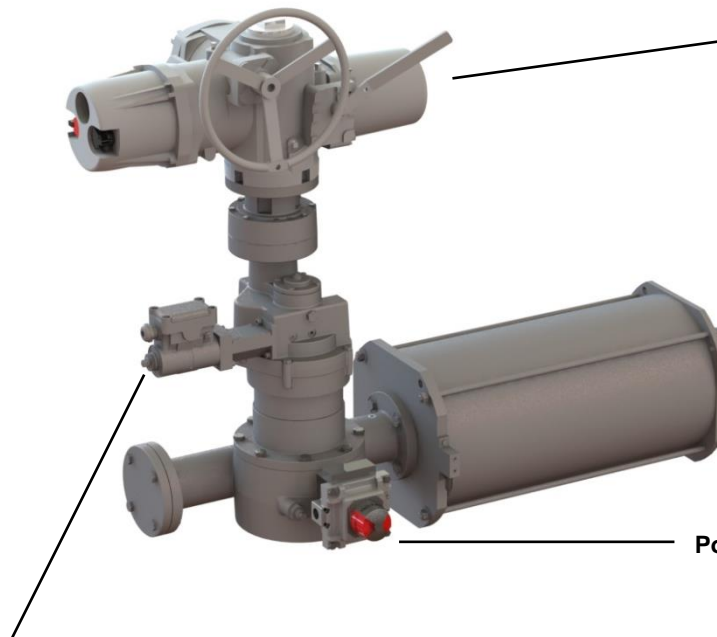
ORIENTATION TO ALLOW FOR PROPER VENT CONFIGURATION [STANDARD]



WedgeRock Mechanical Spring Return (RS) Operation

All Electric Spring Return Solution

Patent Pending



Electric Actuator (not supplied)

- Provides torque to move valve and compress spring.
- Electric actuator must be configured to use external position indicator as it will be decoupled from the valve in fail-safe mode and lose position.

Position Indication (not supplied)

- Coupled to Valve Stem.
- Feedback signal to electric actuator providing true valve position.
- Provides local true valve position to operator.

Spring Release Solenoid

- Starts fail-safe operation upon loss of signal.
- Typical electric solenoid specifications:
Signal Voltage- 24VDC
- Other signal options available

Example Modes of Operation

(Methods of operation may depend on hardware used or criteria for system failure.)

Example 1

Standard Operation

- Valve is operated in one direction only by the electric actuator.
(Operation compresses the spring.)
- Valve is operated in the opposing direction by the spring when solenoid signal is removed.

Fail-Safe Operation

- Upon loss of signal to solenoid, the spring is released to a fail-safe position.
- When signal returns, normal operation can resume.

Example 2

Standard Operation

- Valve is operated both open and shut by the electric actuator.
(Operation compresses and decompresses the spring.)

Fail-Safe Operation

- Upon loss of signal to solenoid, the spring releases to a fail-safe position.
- When power returns, the electric actuator can either recognize position from a position transmitter or reset by operating to the fail position, then the signal is restored to the solenoid re-engaging the spring. (Operation of the actuator while the solenoid has lost signal will not change the valve position from the fail state.)

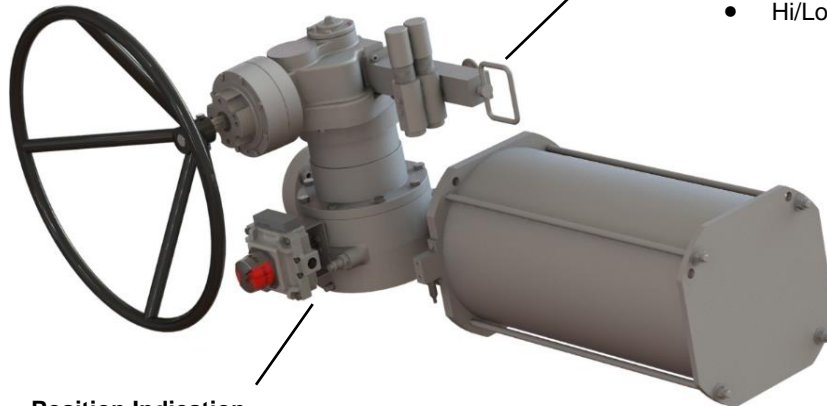
WedgeRock Mechanical Spring Return (RS) Operation

All Manual Spring Return Solution

Patent Pending

Manual Input

- Handwheel provided per application for operation.



Spring Release Line Pressure Operated (LPO)

- Starts fail-safe operation when pressure limit setting is exceeded.
 - High pressure limit setting
 - Low pressure limit setting
- Hi/Lo pressure settings from 10 to 10,000 psi.

Position Indication

- Coupled to Valve Stem.
- Provides local true valve position to operator.

Example Modes of Operation

(Methods of operation may depend on specific application.)

Example 1

Standard Operation

- Valve is operated in one direction only using handwheel. (Operation compresses the spring.)
- Operating in opposing direction
 - Valve is operated in the opposing direction by the spring when manual override button depressed on LPO.
 - Operate handwheel in opposing direction decompressing spring.

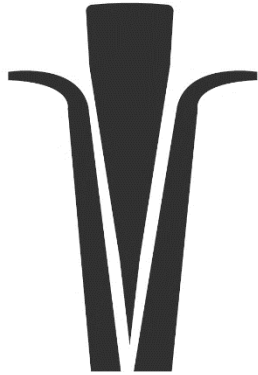
Fail-Safe Operation

- Upon pressure signal falling or exceeding set limits in the LPO, the spring is released to a fail-safe position.

LPP Reset

- When pressure returns within acceptable limits, a handle is pulled and the LPO is disengaged from the RS. The handwheel is then able to operate the RS and position the valve as needed.
- Optionally, if for example a pipeline has no pressure and the low limit is set to some value, the LPP can be configured to pull the handle to disengage the LPO from the RS before the pipeline pressure returns within set limits. The handwheel is then able to operate the RS and position the valve as needed. Once pressure returns within limits, the LPO will be able to release the spring of the RS and operate to a fail-safe position should the pressure exceed the set limits.

ABOUT WEDGEROCK



The WedgeRock name and logo symbolize the elegance of a simple and effective design and the grit, focus, and determination required to make things happen – the work required to get big things moving. Pragmatism and hard work are central to our culture and reflected in everything we do.

Don't let our dirty hands and old school approach fool you. WedgeRock brings industry leading innovation to your engineered projects in standard lead times.

With a focused approach, WedgeRock provides solutions for the most demanding torque and thrust application. Whether you need to operate valves thousands of meters below the ocean surface, or a purpose designed gear operator for your valve line, give us a call or send an email to get the partnership started.

OUR MISSION

WedgeRock provides performance engineered actuation solutions for demanding applications.

