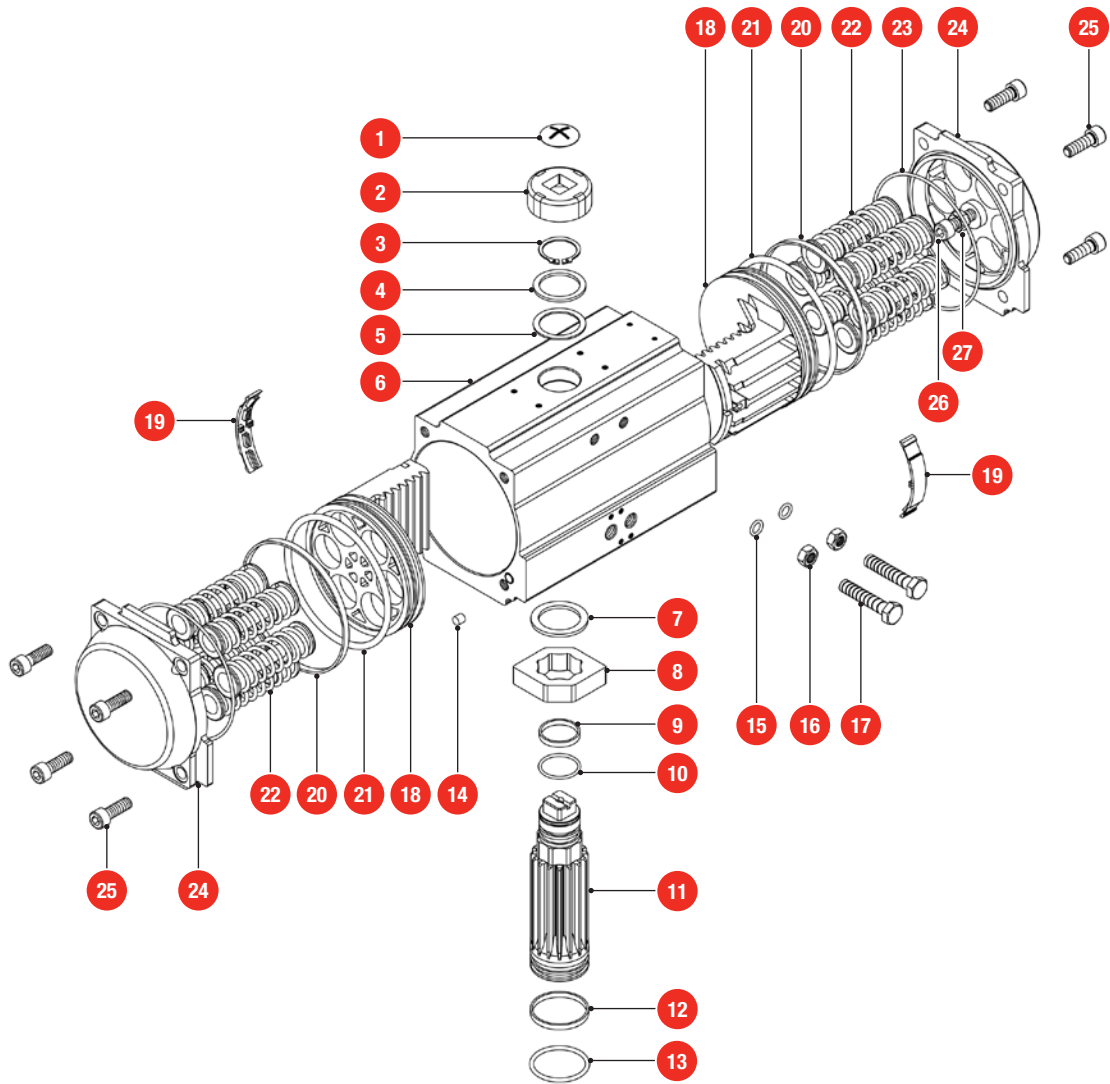

Installation, Operation and Maintenance Manual

for the
MOGAS Pneumatic Actuator



MOGAS[®]
SEVERE SERVICE BALL VALVES

Parts and Materials



Parts and Materials

Actuator Part Reference Number					
Item	Description	Quantity	Standard Material	Protection	Optional Material
1	Indicator screw	1	Plastic		
2	Indicator	1	Plastic		
3	Spring clip	1	Stainless steel		
4	Thrust washer	1	Stainless steel		
5	Outside washer	1	Engineered plastic		
6	Body	1	Extruded aluminum	Anodized	
7	Inside washer	1	Engineered plastic		
8	Cam	1	Alloy steel	Nickel plated	
9	O-ring (pinion top)	1	NBR		Viton / Silicone
10	Bearing (pinion top)	1	Engineered plastic		
11	Pinion	1	Alloy steel		
12	O-ring (pinion bottom)	1	Engineered plastic		
13	Bearing (pinion bottom)	1	NBR		Viton / Silicone
14	Plug	1	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 aluminum	Anodized	
19	Guide (piston)	2	Engineered plastic		
20	Bearing (piston)	2	Engineered plastic		
21	O-ring (piston)	2	NBR		Viton / Silicone
22	Spring	0-12	Spring steel	Coated	
23	O-ring (end cap)	2	NBR		Viton / Silicone
24	End cap	2	Cast aluminum	Powder coated	
25	Cap screw	8	Stainless steel		
26	Stop screw	2	Stainless steel		
27	Nut (stop screw)	2	Stainless steel		

Mounting Instructions

- 1 Remove any manual opening device from the valve, leaving the valve stem clear. Make sure that the shape and size of the stem or adapter fits the actuator output and that the rotation is not hindered. Ensure the actuator and valve are in the same position: counter clockwise (0°) or clockwise (90°).
- 2 Mount the actuator onto the valve, positioning it well on the stem. Make sure that the rotation direction is correct (refer to pages 5 and 7).



WARNING! USE THE FOLLOWING PRECAUTIONS!

Do not put your hands inside the valve.

Pre-compressed springs must not be disassembled from the caps. Doing so could be very dangerous.

Notes:

We strongly recommend checking the cleanliness of the air supply pipes, especially if plant filters are not present. A spring return actuator must be provided with a filter on the air outlet hole to prevent dust and other substances from sucking up into the actuator.

A spacer between the actuator and valve will be necessary with fluids at high temperature.



OPERATING MEDIA

Use dry or lubricated air or inert/non-corrosive gases that are compatible with internal actuator parts and lubricant. The operating media must have a dew point equal to -4°F (-20°C) or at least 50°F (10°C) below ambient temperature. The maximum particle size must not exceed $30\mu\text{m}$.



SUPPLY PRESSURE

The maximum supply pressure is 116 psi (8 bar).



OPERATING TEMPERATURE

Standard product from -4 to $+176^{\circ}\text{F}$ (-20 to $+80^{\circ}\text{C}$).
Low temperature actuator with silicon O-rings from -4 to $+176^{\circ}\text{F}$ (-20 to $+80^{\circ}\text{C}$).

High temperature actuator with FPM O-rings from $+5$ to $+300^{\circ}\text{F}$ (-15 to $+150^{\circ}\text{C}$).



STROKE

Standard construction: 90° rotation with stroke adjustment at 0° and $90^{\circ}\pm 5^{\circ}$ by using travel stops.

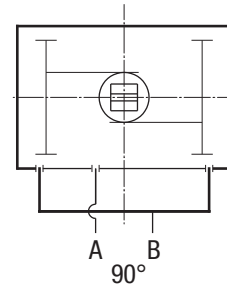
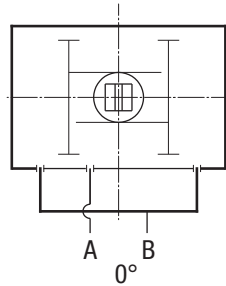
Double Acting Actuator

Operating Principle

CCW

Air to Port A forces the pistons outwards, causing the pinion to turn counterclockwise while the air is being exhausted from Port B.

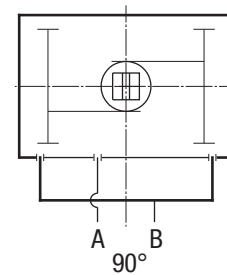
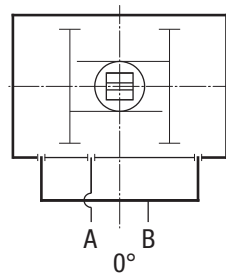
Air to Port B forces the pistons inwards, causing the pinion to turn clockwise while the air is being exhausted from Port A.



CW

Air to Port A forces the pistons outwards, causing the pinion to turn clockwise while the air is being exhausted from Port B.

Air to Port B forces the pistons inwards, causing the pinion to turn counterclockwise while the air is being exhausted from Port A.



Double Acting Actuator

Sizing

The suggested safety factor for double acting actuators under normal working conditions is 20 to 30%.

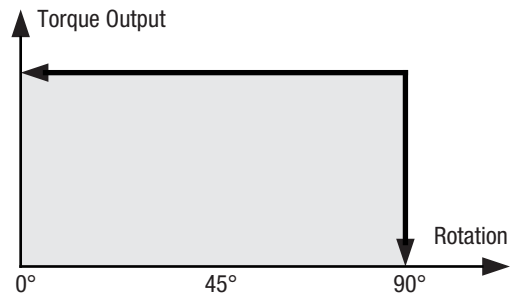
Example:

Valve torque needed =
885 in-lb (100 N.m)

The torque safety factor (1 + 30%) =
1150 in-lb (130 N.m)

Air supply = 72 psi (5 bar)

Using the below table, the minimum model is RT160DA.



Torque Output: Double Acting Actuators, in-lb (N.m)

Model	Air Supply Pressure, psi (bar)									
	30 (2)	40 (2.5)	50 (3)	60 (4)	70 (4.5)	80 (5)	90 (5.5)	100 (6)	110 (7)	120 (8)
RT012DA	43 (5)	57 (6)	71 (7)	85 (10)	100 (11)	114 (12)	128 (13)	142 (14)	157 (17)	171 (19)
RT020DA	72 (8)	96 (10)	120 (12)	144 (16)	169 (18)	193 (20)	217 (21)	241 (23)	265 (27)	289 (31)
RT035DA	127 (14)	170 (18)	212 (21)	254 (29)	297 (32)	339 (36)	382 (40)	424 (43)	467 (51)	509 (58)
RT050DA	180 (20)	240 (25)	301 (30)	361 (40)	421 (45)	481 (50)	541 (55)	601 (60)	661 (70)	721 (80)
RT075DA	276 (31)	368 (39)	460 (47)	552 (62)	644 (70)	736 (78)	828 (86)	920 (94)	1012 (109)	1104 (125)
RT110DA	407 (45)	543 (56)	678 (67)	814 (90)	950 (101)	1085 (112)	1221 (124)	1357 (135)	1492 (158)	1628 (1180)
RT160DA	589 (66)	785 (82)	982 (99)	1178 (132)	1374 (148)	1571 (165)	1767 (181)	1963 (198)	2160 (231)	2356 (264)
RT255DA	918 (100)	1224 (125)	1530 (150)	1837 (200)	2143 (225)	2449 (250)	2755 (275)	3061 (301)	3367 (351)	3673 (401)
RT435DA	1571 (171)	2094 (213)	2618 (256)	3142 (342)	3665 (384)	4189 (427)	4712 (470)	5236 (513)	5759 (598)	6283 (684)
RT665DA	2394 (266)	3191 (332)	3989 (399)	4787 (532)	5585 (598)	6383 (665)	7181 (731)	7978 (798)	8776 (931)	9574 (1064)
RT1000DA	3857 (425)	5143 (532)	6429 (638)	7715 (851)	9001 (957)	10287 (1064)	11572 (1170)	12858 (1276)	14144 (1489)	15430 (1702)
RT1200DA	4712 (532)	6283 (665)	7854 (798)	9425 (1064)	10995 (1197)	12566 (1330)	14137 (1463)	15708 (1596)	17278 (1862)	18849 (2128)
RT1800DA	6924 (769)	9232 (961)	11540 (1154)	13848 (1539)	16156 (1731)	18464 (1923)	20773 (2116)	23081 (2308)	25389 (2693)	27697 (3078)
RT2700DA	10516 (1169)	14021 (1462)	17527 (1754)	21032 (2339)	24538 (2631)	28043 (2924)	31548 (3216)	35054 (3508)	38559 (4093)	42064 (4678)
RT3800DA	13666 (1526)	18222 (1908)	22777 (2289)	27332 (3052)	31888 (3434)	36443 (3815)	40998 (4197)	45554 (4578)	50109 (5341)	54665 (6104)
RT5700DA	20461 (2285)	27282 (2856)	34102 (3427)	40923 (4570)	47743 (5141)	54563 (5712)	61384 (6283)	68204 (6854)	75025 (7997)	81845 (9139)
RT8000DA	29154 (3256)	38873 (4070)	48592 (4884)	58309 (6512)	68027 (7326)	77745 (8140)	87463 (8954)	97182 (9768)	106900 (11396)	116618 (13024)

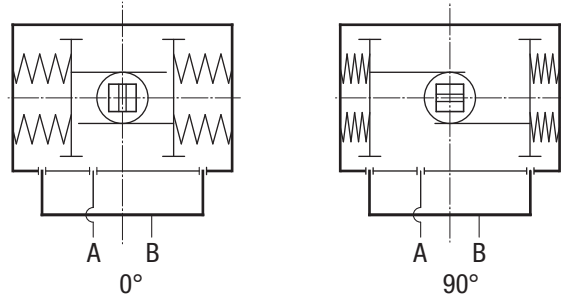
Spring Return Actuators

Operating Principle

CCW

Air to port A forces the pistons outwards, causing the springs to compress. The pinion turns counterclockwise while air is being exhausted from port B.

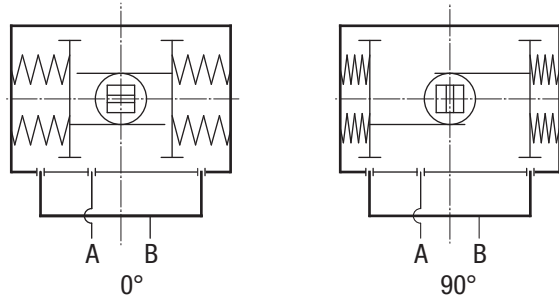
Loss of air pressure on port A, the stored energy in the springs forces the pistons inwards. The pinion turns clockwise while air is being exhausted from port A.



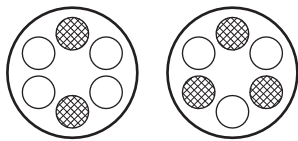
CW

Air to port A forces the pistons outwards, causing the springs to compress. The pinion turns counterclockwise while air is being exhausted from port B.

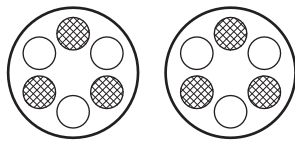
Loss of air pressure on port A, the stored energy in the springs forces the pistons inwards. The pinion turns clockwise while air is being exhausted from port A.



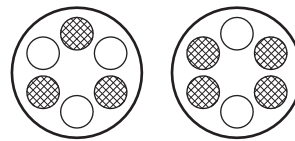
SPRING MOUNTING



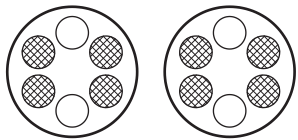
5 Springs



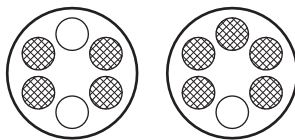
6 Springs



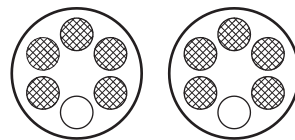
7 Springs



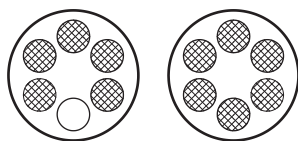
8 Springs



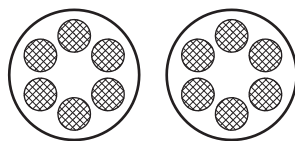
9 Springs



10 Springs



11 Springs



12 Springs

Spring Return Actuators

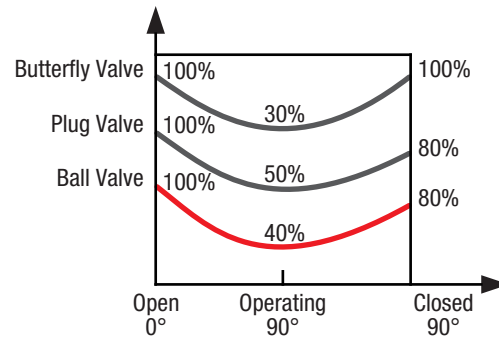
Sizing

The suggested safety factor for spring return actuator under normal working conditions is 30 to 50%.

Example:

Valve torque needed = 708 in-lb (80 N.m)
The torque safety factor (1 + 30%) =
920 in-lb (104 N.m)
Air Supply = 72 psi (5 bar)

According to the following torque table,
the output torque for RT435SR K7 is:
Air stroke 0° = 2726 in-lb (308 N.m)
Air stroke 90° = 2186 in-lb (247 N.m)
Spring stroke 90° = 1601 in-lb (181 N.m)
Spring stroke 0° = 1062 in-lb (120 N.m)



All torque output must be larger than needed.

Notes:

During the restoration, the spring return actuator's output torque will not be affected by the air input from Port B, but just the opposite; it will help the restoration of springs.

We can help you choose the best suited spring return actuator if we know the valve's torque for break, run and close/reseat.

Example:

The max torque needed by the butterfly valve = 920 in-lb (104 N.m)
The torque after opened (operating) 920 in-lb x 30% =
283 in-lb (104 N.m x 30% = 32 N.m)
Air Supply = 72 psi (5 bar)

Use the following table to select RT255SR K11.

Torque output is:

Air stroke 0° = 1203 in-lb > 920 in-lb (136 N.m > 104 N.m)
Air stroke 90° = 690 in-lb > 283 in-lb (78 N.m > 32 N.m)
Spring stroke 90° = 1531 in-lb > 283 in-lb (173 N.m > 32 N.m)
Spring stroke 0° = 1017 in-lb > 920 in-lb (115 N.m > 104 N.m)

The minimum model is RT160DA. The above data show the actuator's torque can satisfy the requirement of the butterfly valve.

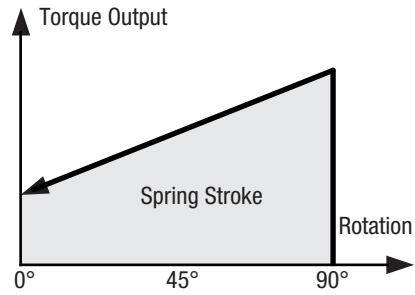
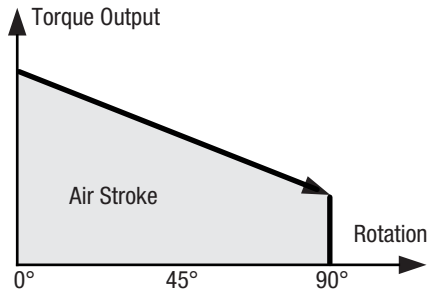
Notes:

Ensure the torque required to operate the valve is compatible with the actuator torque, which depends on both actuator type and air supply.

The required torque depends not only on the valve, but on the working conditions and the plant's safety margins.

Spring Return Actuators

Sizing



Torque Output: Spring Return Actuators, in-lb (N.m)

Model	Size	Spring Qty	Air pressure, psi (bar)																				Spring Output							
			30 (2)		40 (2.8)		50 (3.5)		60 (4.1)		70 (4.8)		80 (5.5)		90 (6.2)		100 (6.9)		110 (7.6)		120 (8.3)		0°	90°						
			0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°						
RT020SR	52	4	41 (2.8)	27 (1.9)																				31 (2.1)	45 (3.1)					
		5			57 (4.0)	40 (2.7)																			39 (2.7)	56 (3.9)				
		6			50 (3.4)	28 (2.0)	74 (5.1)	52 (3.6)																		46 (3.2)	68 (4.7)			
		7					66 (4.6)	41 (2.8)	90 (6.2)	65 (4.5)																	54 (3.7)	79 (5.4)		
		8					58 (4.0)	30 (2.1)	82 (5.7)	54 (3.7)	107 (7.4)	79 (5.4)															62 (4.3)	90 (6.2)		
		9							75 (5.1)	43 (2.9)	100 (6.9)	68 (4.7)	124 (8.5)	92 (6.3)	148 (10.2)	116 (8.0)											69 (4.8)	101 (7.0)		
		10							67 (4.6)	31 (2.2)	92 (6.3)	56 (3.9)	116 (8.0)	80 (5.5)	140 (9.6)	104 (7.2)	164 (11.3)	128 (8.9)	188 (13.0)	152 (10.5)	212 (14.6)	176 (12.2)				77 (5.3)	113 (7.8)			
		11									84 (5.8)	45 (3.1)	108 (7.5)	69 (4.8)	132 (9.1)	93 (6.4)	156 (10.8)	117 (8.1)	180 (12.4)	141 (9.7)	204 (14.1)	165 (11.4)				85 (5.8)	124 (8.5)			
		12											101 (6.9)	58 (4.0)	125 (8.6)	82 (5.6)	149 (10.2)	106 (7.3)	173 (11.9)	130 (9.0)	197 (13.5)	154 (10.6)				92 (6.4)	135 (9.3)			
		RT035SR	63	4	77 (5.3)	51 (3.5)								143 (9.9)		167 (11.5)												50 (3.4)	76 (5.2)	
				5			108 (7.4)	75 (5.2)																					62 (4.3)	95 (6.6)
				6			95 (6.6)	56 (3.9)	137 (9.5)	98 (6.7)																				75 (5.2)
7							125 (8.6)	79 (5.4)	167 (11.5)	121 (8.3)																		87 (6.0)	133 (9.2)	
8							112 (7.7)	60 (4.1)	154 (10.6)	102 (7.0)	197 (13.6)	145 (10.0)																100 (6.9)	152 (10.5)	
9									142 (9.8)	83 (5.7)	185 (12.7)	126 (8.7)	227 (15.6)	168 (11.6)	270 (18.6)	211 (14.5)												112 (7.7)	171 (11.8)	
10									129 (8.9)	64 (4.4)	172 (11.9)	107 (7.4)	214 (14.8)	149 (10.3)	257 (17.7)	192 (13.2)	299 (20.6)	234 (16.1)	342 (23.6)	277 (19.1)	384 (26.5)	319 (22.0)				125 (8.6)	190 (13.1)			
11											160 (11.0)	88 (6.1)	202 (13.9)	130 (9.0)	245 (16.9)	173 (11.9)	287 (19.8)	215 (14.8)	330 (22.7)	258 (17.8)	372 (25.6)	300 (20.7)				137 (9.5)	209 (14.4)			
12													189 (13.1)	111 (7.6)	232 (16.0)	154 (10.6)	274 (18.9)	196 (13.5)	317 (21.9)	239 (16.5)	359 (24.8)	281 (19.4)				150 (10.3)	228 (15.7)			

Spring Return Actuators

Sizing

Torque Output: Spring Return Actuators, in-lb (N.m)

Model	Size	Spring Qty	Air pressure, psi (bar)																				Spring Output								
			30 (2)		40 (2.8)		50 (3.5)		60 (4.1)		70 (4.8)		80 (5.5)		90 (6.2)		100 (6.9)		110 (7.6)		120 (8.3)		0°	90°							
			0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°							
RT050SR	75	4	103 (7.1)	74 (5.1)																				77 (5.3)	106 (7.3)						
		5			144 (9.9)	108 (7.4)																			96 (6.6)	132 (9.1)					
		6			125 (8.6)	82 (5.6)	186 (12.8)	143 (9.8)																		115 (8.0)	158 (10.9)				
		7					166 (11.5)	116 (8.0)	226 (15.6)	176 (12.2)																	135 (9.3)	185 (12.7)			
		8					147 (10.1)	90 (6.2)	207 (14.3)	150 (10.3)	267 (18.4)	210 (14.5)															154 (10.6)	211 (14.6)			
		9							188 (13.0)	123 (8.5)	248 (17.1)	183 (12.6)	308 (21.2)	243 (16.8)	368 (25.4)	303 (20.9)												173 (11.9)	238 (16.4)		
		10							169 (11.6)	97 (6.7)	229 (15.8)	157 (10.8)	289 (19.9)	217 (15.0)	349 (24.0)	277 (19.1)	409 (28.2)	337 (23.2)	469 (32.3)	397 (27.4)	529 (36.5)	457 (31.5)					192 (13.3)	264 (18.2)			
		11									210 (14.4)	131 (9.0)	270 (18.6)	191 (13.1)	330 (22.7)	251 (17.3)	390 (26.9)	311 (21.4)	450 (31.0)	371 (25.6)	510 (35.1)	431 (29.7)					211 (14.6)	290 (20.0)			
		12												250 (17.3)	164 (11.3)	310 (21.4)	224 (15.5)	370 (25.5)	284 (19.6)	430 (29.7)	344 (23.7)	490 (33.8)	404 (27.9)					231 (15.9)	317 (21.8)		
		RT075SR	83	4	161 (11.1)	108 (7.5)																						115 (8.0)	168 (11.6)		
				5			224 (15.4)	158 (10.9)																					144 (9.9)	210 (14.5)	
				6			195 (13.4)	116 (8.0)	287 (19.8)	208 (14.4)																				173 (11.9)	252 (17.4)
7							258 (17.8)	166 (11.5)	350 (24.1)	258 (17.8)																		202 (13.9)	294 (20.3)		
8							229 (15.8)	124 (8.6)	321 (22.2)	216 (14.9)	413 (28.5)	308 (21.3)																231 (15.9)	336 (23.1)		
9									292 (20.2)	174 (12.0)	384 (26.5)	266 (18.4)	476 (32.9)	358 (24.7)	568 (39.2)	450 (31.1)												260 (17.9)	378 (26.0)		
10									264 (18.2)	132 (9.1)	356 (24.5)	224 (15.5)	448 (30.9)	316 (21.8)	540 (37.2)	408 (28.2)	632 (43.5)	500 (34.5)	724 (49.9)	592 (40.8)	816 (56.2)	684 (47.2)					288 (19.9)	420 (28.9)			
11											327 (22.5)	182 (12.6)	419 (28.9)	274 (18.9)	511 (35.2)	366 (25.3)	603 (41.6)	458 (31.6)	695 (47.9)	550 (38.0)	787 (54.2)	642 (44.3)					317 (21.9)	462 (31.8)			
12														390 (26.9)	233 (16.0)	482 (33.2)	325 (22.4)	574 (39.6)	417 (28.7)	666 (45.9)	509 (35.1)	758 (52.3)	601 (41.4)					346 (23.9)	503 (34.7)		
RT110SR	92			4	237 (16.3)	156 (10.8)																							170 (11.7)	251 (17.3)	
				5			330 (22.8)	230 (15.8)																						213 (14.7)	313 (21.6)
				6			288 (19.8)	167 (11.5)	423 (29.1)	302 (20.8)																				255 (17.6)	376 (25.9)
		7					380 (26.2)	239 (16.5)	516 (35.6)	375 (25.9)																		298 (20.5)	439 (30.2)		
		8					338 (23.3)	177 (12.2)	474 (32.7)	313 (21.6)	610 (42.0)	449 (30.9)																340 (23.5)	501 (34.6)		
		9							431 (29.7)	250 (17.2)	567 (39.1)	386 (26.6)	702 (48.4)	521 (35.9)	838 (57.8)	657 (45.3)												383 (26.4)	564 (38.9)		
		10							388 (26.8)	187 (12.9)	524 (36.2)	323 (22.3)	659 (45.5)	458 (31.6)	795 (54.8)	594 (41.0)	931 (64.2)	730 (50.4)	1066 (73.5)	865 (59.7)	1202 (82.9)	1001 (69.0)					426 (29.3)	627 (43.2)			
		11									482 (33.2)	261 (18.0)	617 (42.5)	396 (27.3)	753 (51.9)	532 (36.7)	889 (61.3)	668 (46.0)	1024 (70.6)	803 (55.3)	1160 (80.0)	939 (64.7)					468 (32.3)	689 (47.5)			
		12												574 (39.6)	333 (23.0)	710 (49.0)	469 (32.3)	846 (58.4)	605 (41.7)	981 (67.7)	740 (51.0)	1117 (77.0)	876 (60.4)					511 (35.2)	752 (51.8)		

Spring Return Actuators

Sizing

Torque Output: Spring Return Actuators, in-lb (N.m)

Model	Size	Spring Qty	Air pressure, psi (bar)																		Spring Output										
			30 (2)		40 (2.8)		50 (3.5)		60 (4.1)		70 (4.8)		80 (5.5)		90 (6.2)		100 (6.9)		110 (7.6)		120 (8.3)		0°	90°							
			0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°							
RT160SR	105	4	358 (24.7)	230 (15.9)																			231 (15.9)	359 (24.7)							
			5			497 (34.2)	336 (23.2)																		288 (19.9)	449 (30.9)					
			6			439 (30.3)	247 (17.0)	636 (43.8)	444 (30.6)																	346 (23.9)	538 (37.1)				
			7					578 (39.9)	354 (24.4)	774 (53.4)	550 (37.9)																404 (27.8)	628 (43.3)			
			8					521 (35.9)	264 (18.2)	717 (49.4)	460 (31.7)	913 (62.9)	656 (45.2)														461 (31.8)	718 (49.5)			
			9							659 (45.4)	371 (25.5)	855 (58.9)	567 (39.1)	1052 (72.5)	764 (52.6)	1248 (86.0)	960 (66.2)										519 (35.8)	807 (55.7)			
			10							601 (41.5)	281 (19.4)	797 (55.0)	477 (32.9)	994 (68.6)	674 (46.5)	1190 (82.1)	870 (60.0)	1386 (95.6)	1066 (73.5)	1583 (109.2)	1263 (87.1)	1779 (122.7)	1459 (100.6)			577 (39.8)	897 (61.9)				
			11									740 (51.0)	387 (26.7)	937 (64.6)	584 (40.3)	1133 (78.1)	780 (53.8)	1329 (91.6)	976 (67.3)	1526 (105.2)	1173 (80.9)	1722 (118.7)	1369 (94.4)			634 (43.7)	987 (68.0)				
			12											879 (60.6)	494 (34.1)	1075 (74.1)	690 (47.6)	1271 (87.6)	886 (61.1)	1468 (101.2)	1083 (74.7)	1664 (114.7)	1279 (88.2)			692 (47.7)	1077 (74.2)				
			RT255SR	125	4	536 (37.0)	346 (23.9)																				382 (26.3)	572 (39.4)			
						5			747 (51.5)	510 (35.1)																			477 (32.9)	714 (49.3)	
						6			651 (44.9)	367 (25.3)	957 (66.0)	673 (46.4)																		573 (39.5)	857 (59.1)
7								862 (59.4)	530 (36.5)	1169 (80.6)	837 (57.7)																	668 (46.1)	1000 (69.0)		
8								766 (52.8)	387 (26.7)	1073 (74.0)	694 (47.8)	1379 (95.1)	1000 (68.9)															764 (52.6)	1143 (78.8)		
9										978 (67.4)	551 (38.0)	1284 (88.5)	857 (59.1)	1590 (109.6)	1163 (80.2)	1896 (130.7)	1469 (101.3)											859 (59.2)	1286 (88.7)		
10										882 (60.8)	408 (28.1)	1188 (81.9)	714 (49.2)	1494 (103.0)	1020 (70.3)	1800 (124.1)	1326 (91.4)	2106 (145.2)	1632 (112.5)	2412 (166.3)	1938 (133.6)	2718 (187.4)	2244 (154.7)			955 (65.8)	1429 (98.5)				
11												1093 (75.4)	571 (39.4)	1399 (96.5)	877 (60.5)	1705 (117.6)	1183 (81.6)	2011 (138.7)	1489 (102.7)	2317 (159.8)	1795 (123.8)	2623 (180.9)	2101 (144.9)			1050 (72.4)	1572 (108.4)				
12														1304 (89.9)	734 (50.6)	1610 (111.0)	1040 (71.7)	1916 (132.1)	1346 (92.8)	2222 (153.2)	1652 (113.9)	2528 (174.3)	1958 (135.0)			1145 (79.0)	1715 (118.2)				
RT435SR	140	4				945 (65.2)	631 (43.5)																					626 (43.1)	940 (64.8)		
						5			1312 (90.5)	918 (63.3)																				782 (53.9)	1176 (81.1)
						6			1156 (79.7)	683 (47.1)	1680 (115.8)	1207 (83.2)																			938 (64.7)
			7					1523 (105.0)	972 (67.0)	2047 (141.1)	1496 (103.2)																	1095 (75.5)	1646 (113.5)		
			8					1367 (94.2)	737 (50.8)	1891 (130.4)	1261 (86.9)	2414 (166.4)	1784 (123.0)															1251 (86.3)	1881 (129.7)		
			9							1734 (119.6)	1026 (70.7)	2257 (155.6)	1549 (106.8)	2781 (191.8)	2073 (142.9)	3304 (227.8)	2596 (179.0)											1408 (97.1)	2116 (145.9)		
			10							1578 (108.8)	791 (54.5)	2101 (144.9)	1314 (90.6)	2625 (181.0)	1838 (126.7)	3148 (217.0)	2361 (162.8)	3672 (253.2)	2885 (198.9)	4195 (289.2)	3408 (235.0)	4719 (325.4)	3932 (271.1)			1564 (107.8)	2351 (162.1)				
			11									1945 (134.1)	1079 (74.4)	2469 (170.2)	1603 (110.5)	2992 (206.3)	2126 (146.6)	3516 (242.4)	2650 (182.7)	4039 (278.5)	3173 (218.7)	4563 (314.6)	3697 (254.9)			1720 (118.6)	2586 (178.3)				
			12											2312 (159.4)	1368 (94.3)	2835 (195.5)	1891 (130.4)	3359 (231.6)	2415 (166.5)	3882 (267.7)	2938 (202.5)	4406 (303.8)	3462 (238.7)			1877 (129.4)	2821 (194.5)				

Spring Return Actuators

Sizing

Torque Output: Spring Return Actuators, in-lb (N.m)

Model	Size	Spring Qty	Air pressure, psi (bar)																				Spring Output						
			30 (2)		40 (2.8)		50 (3.5)		60 (4.1)		70 (4.8)		80 (5.5)		90 (6.2)		100 (6.9)		110 (7.6)		120 (8.3)		0°	90°					
			0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°							
RT665SR	160	4	1376 (94.8)	875 (60.3)																			1018 (70.2)	1519 (104.7)					
					1918 (132.2)	1292 (89.1)																			1273 (87.8)	1899 (130.9)			
					1663 (114.7)	912 (62.9)	2461 (169.7)	1710 (117.9)																		1528 (105.3)	2279 (157.1)		
							2207 (152.2)	1331 (91.7)	3005 (207.2)	2129 (146.8)																1782 (122.9)	2658 (183.3)		
							1952 (134.6)	951 (65.6)	2750 (189.6)	1749 (120.6)	3548 (244.6)	2547 (175.6)														2037 (140.4)	3038 (209.5)		
									2496 (172.1)	1369 (94.4)	3294 (227.1)	2167 (149.4)	4092 (282.1)	2965 (204.4)	4890 (337.1)	3763 (259.4)										2291 (158.0)	3418 (235.7)		
									2241 (154.5)	989 (68.2)	3039 (209.5)	1787 (123.2)	3837 (264.5)	2585 (178.2)	4635 (319.6)	3383 (233.3)	5432 (374.5)	4180 (288.2)	6230 (429.5)	4978 (343.2)	7028 (484.6)	5776 (398.3)				2546 (175.5)	3798 (261.9)		
									2784 (192.0)	1407 (97.0)	3582 (247.0)	2205 (152.1)	4380 (302.0)	3003 (207.1)	5177 (357.0)	3800 (262.0)	5975 (412.0)	4598 (317.0)	6773 (467.0)	5396 (372.1)	2801 (193.1)	4178 (288.0)							
											3328 (229.4)	1826 (125.9)	4126 (284.5)	2624 (180.9)	4923 (339.4)	3421 (235.8)	5721 (394.4)	4219 (290.9)	6519 (449.5)	5017 (345.9)						3055 (210.7)	4557 (314.2)		
			RT1000SR	190	4	2398 (165.3)	1601 (110.4)																			1459 (100.6)	2256 (155.5)		
								3319 (228.9)	2323 (160.2)																			1824 (125.7)	2820 (194.4)
								2954 (203.7)	1759 (121.3)	4240 (292.4)	3045 (210.0)																		2189 (150.9)
							3876 (267.2)	2481 (171.1)	5162 (355.9)	3767 (259.8)																2553 (176.0)	3948 (272.2)		
							3511 (242.1)	1917 (132.2)	4797 (330.7)	3203 (220.9)	6083 (419.4)	4489 (309.5)														2918 (201.2)	4512 (311.1)		
							4432 (305.6)	2640 (182.0)	5718 (394.3)	3926 (270.7)																3283 (226.3)	5075 (349.9)		
							4067 (280.4)	2076 (143.1)	5353 (369.1)	3362 (231.8)	6639 (457.8)	4648 (320.4)	7924 (546.4)	5933 (409.0)	9210 (635.0)	7219 (497.7)	10496 (723.7)	8505 (586.4)	11782 (812.4)	9791 (675.0)					3648 (251.5)	5639 (388.8)			
									4989 (344.0)	2798 (192.9)	6275 (432.6)	4084 (281.6)	7560 (521.2)	5369 (370.2)	8846 (609.9)	6655 (458.8)	10132 (698.6)	7941 (547.5)	11418 (787.2)	9227 (636.2)					4012 (276.6)	6203 (427.7)			
											5910 (407.5)	3520 (242.7)	7195 (496.1)	4805 (331.3)	8481 (584.7)	6091 (419.9)	9767 (673.4)	7377 (508.6)	11053 (762.1)	8663 (597.3)					4377 (301.8)	6767 (466.6)			
RT1200SR	210	4				2707 (186.6)	1944 (134.0)																			2005 (138.2)	2768 (190.9)		
								3777 (260.4)	2822 (194.6)																			2506 (172.8)	3461 (238.6)
								3276 (225.8)	2130 (146.9)	4847 (334.2)	3701 (255.2)																		3007 (207.4)
							4345 (299.6)	3009 (207.5)	5916 (407.9)	4580 (315.8)																3509 (241.9)	4845 (334.0)		
							3844 (265.0)	2317 (159.8)	5415 (373.4)	3888 (268.1)	6985 (481.6)	5458 (376.3)														4010 (276.5)	5537 (381.8)		
							4914 (338.8)	3196 (220.4)	6484 (447.0)	4766 (328.6)	8055 (555.4)	6337 (436.9)	9626 (663.7)	7908 (545.2)												4511 (311.0)	6229 (429.5)		
							4413 (304.2)	2504 (172.6)	5983 (412.5)	4074 (280.9)	7554 (520.8)	5645 (389.2)	9125 (629.1)	7216 (497.5)	10696 (737.4)	8787 (605.8)	12266 (845.7)	10357 (714.1)	13837 (954.0)	11928 (822.4)					5012 (345.6)	6921 (477.2)			
									5481 (377.9)	3382 (233.2)	7052 (486.2)	4953 (341.5)	8623 (594.6)	6524 (449.8)	10194 (702.9)	8095 (558.1)	11764 (811.1)	9665 (666.4)	13335 (919.4)	11236 (774.7)					5514 (380.2)	7613 (524.9)			
											6551 (451.7)	4261 (293.8)	8122 (560.0)	5832 (402.1)	9693 (668.3)	7403 (510.4)	11263 (776.6)	8973 (618.6)	12834 (884.9)	10544 (727.0)					6015 (414.7)	8305 (572.6)			

Spring Return Actuators

Sizing

Torque Output: Spring Return Actuators, in-lb (N.m)

Model	Size	Spring Qty	Air pressure, psi (bar)																		Spring Output								
			30 (2)		40 (2.8)		50 (3.5)		60 (4.1)		70 (4.8)		80 (5.5)		90 (6.2)		100 (6.9)		110 (7.6)		120 (8.3)		0°	90°					
			0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°					
RT1800SR	240	4	3931 (271.0)	2884 (198.8)																			2993 (206.4)	4040 (278.6)					
			5			5491 (378.6)	4181 (288.3)																	3741 (257.9)	5051 (348.2)				
			6			4743 (327.0)	3171 (218.7)	7051 (486.1)	5479 (377.8)																4489 (309.5)	6061 (417.9)			
			7					6302 (434.5)	4469 (308.1)	8610 (593.7)	6777 (467.3)															5238 (361.1)	7071 (487.5)		
			8					5554 (382.9)	3459 (238.5)	7862 (542.1)	5767 (397.6)	10170 (701.2)	8075 (556.8)												5986 (412.7)	8081 (557.2)			
			9							7114 (490.5)	4757 (328.0)	9422 (649.6)	7065 (487.1)	11730 (808.8)	9373 (646.3)	14039 (968.0)	11682 (805.5)								6734 (464.3)	9091 (626.8)			
			10								6366 (438.9)	3747 (258.3)	8674 (598.0)	6055 (417.5)	10982 (757.2)	8363 (576.6)	13291 (916.4)	10672 (735.8)	15599 (1075.5)	12980 (894.9)	17907 (1234.6)	15288 (1054.1)	20215 (1393.8)	17596 (1213.2)	7482 (515.9)	10101 (696.4)			
			11										7926 (546.4)	5045 (347.8)	10234 (705.6)	7353 (507.0)	12543 (864.8)	9662 (666.2)	14851 (1023.9)	11970 (825.3)	17159 (1183.0)	14278 (984.4)	19467 (1342.2)	16586 (1143.6)	8230 (567.5)	11111 (766.1)			
			12												9485 (654.0)	6343 (437.3)	11794 (813.2)	8652 (596.5)	14102 (972.3)	10960 (755.6)	16410 (1131.5)	13268 (914.8)	18718 (1290.6)	15576 (1073.9)	8979 (619.1)	12121 (835.7)			
			RT2700SR	270	4	6436 (443.8)	4783 (329.8)																			4080 (281.3)	5733 (395.3)		
						5			8921 (615.1)	6854 (472.6)																		5100 (351.6)	7167 (494.1)
						6			7901 (544.8)	5421 (373.8)	11407 (786.5)	8927 (615.5)																6120 (421.9)	8600 (592.9)
7								10388 (716.2)	7494 (516.7)	13893 (957.9)	10999 (758.3)															7139 (492.2)	10033 (691.8)		
8								9368 (645.9)	6060 (417.9)	12873 (887.5)	9565 (659.5)	16378 (1129.2)	13070 (901.2)												8159 (562.6)	11467 (790.6)			
9										11853 (817.2)	8132 (560.7)	15358 (1058.9)	11637 (802.4)												9179 (632.9)	12900 (889.4)			
10										10833 (746.9)	6699 (461.9)	14338 (988.6)	10204 (703.5)	17844 (1230.3)	13710 (945.3)	21349 (1471.9)	17215 (1186.9)	24855 (1713.7)	20721 (1428.7)	28360 (1955.3)	24226 (1670.3)	31865 (2197.0)	27731 (1912.0)	10199 (703.2)	14333 (988.2)				
11												13318 (918.2)	8771 (604.7)	16824 (1160.0)	12277 (846.4)	20329 (1401.6)	15782 (1088.1)	23835 (1643.4)	19288 (1329.8)	27340 (1885.0)	22793 (1571.5)	30845 (2126.7)	26298 (1813.1)	11219 (773.5)	15766 (1087.1)				
12														15804 (1089.6)	10843 (747.6)	19309 (1331.3)	14348 (989.3)	22815 (1573.0)	17854 (1231.0)	26320 (1814.7)	21359 (1472.7)	29825 (2056.4)	24864 (1714.3)	12239 (843.9)	17200 (1185.9)				
RT3800SR	300	4				8046 (554.8)	5500 (379.2)																			5620 (387.5)	8166 (563.0)		
						5			11197 (772.0)	8014 (552.6)																	7025 (484.4)	10208 (703.8)	
						6			9792 (675.1)	5973 (411.8)	14347 (989.2)	10528 (725.9)																8430 (581.2)	12249 (844.5)
			7					12942 (892.3)	8486 (585.1)	17497 (1206.4)	13041 (899.2)														9835 (678.1)	14291 (985.3)			
			8					11537 (795.4)	6445 (444.4)	16092 (1109.5)	11000 (758.4)	20647 (1423.6)	15555 (1072.5)												11240 (775.0)	16332 (1126.1)			
			9							14687 (1012.6)	8958 (617.7)	19242 (1326.7)	13513 (931.7)												12645 (871.8)	18374 (1266.8)			
			10							13282 (915.8)	6917 (476.9)	17837 (1229.8)	11472 (791.0)	22393 (1543.9)	16028 (1105.1)	26948 (1858.0)	20583 (1419.1)	31504 (2172.1)	25139 (1733.3)	36059 (2486.2)	29694 (2047.3)	40615 (2800.3)	34250 (2361.4)	14050 (968.7)	20415 (1407.6)				
			11									16432 (1132.9)	9430 (650.2)	20988 (1447.1)	13986 (964.3)	25543 (1761.1)	18541 (1278.4)	30099 (2075.3)	23097 (1592.5)	34654 (2389.3)	27652 (1906.6)	39210 (2703.4)	32208 (2220.7)	15455 (1065.6)	22457 (1548.3)				
			12											19583 (1350.2)	11945 (823.6)	24138 (1664.3)	16500 (1137.6)	28694 (1978.4)	21056 (1451.8)	33249 (2292.4)	25611 (1765.8)	37805 (2606.6)	30167 (2079.9)	16860 (1162.5)	24498 (1689.1)				

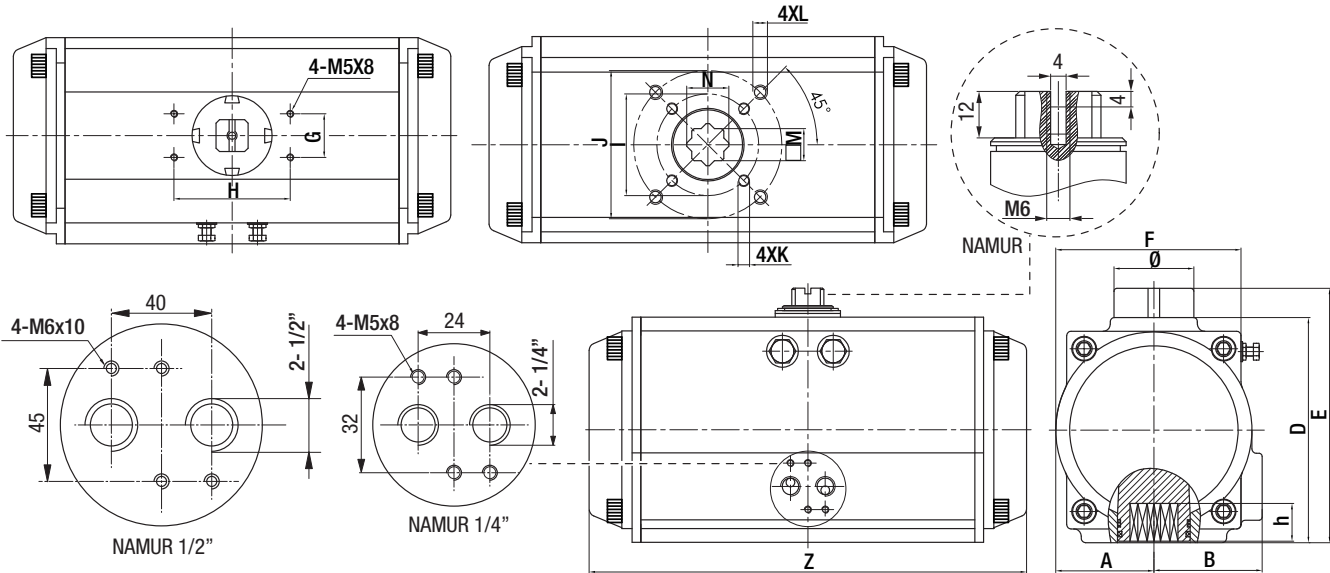
Spring Return Actuators

Sizing

Torque Output: Spring Return Actuators, in-lb (N.m)

Model	Size	Spring Qty	Air pressure, psi (bar)																				Spring Output							
			30 (2)		40 (2.8)		50 (3.5)		60 (4.1)		70 (4.8)		80 (5.5)		90 (6.2)		100 (6.9)		110 (7.6)		120 (8.3)		0°	90°						
			0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°						
RT5700SR	350	4	11430 (788.1)	7356 (507.2)																				9031 (622.6)	13105 (903.5)					
		5			15994 (1102.7)	10901 (751.6)	22814 (1572.9)	17721 (1221.8)																	11288 (778.3)	16381 (1129.4)				
		6			13736 (947.1)	7625 (525.7)	20556 (1417.3)	14445 (995.9)																		13546 (934.0)	19657 (1355.3)			
		7					18298 (1261.6)	11169 (770.1)	25119 (1731.9)	17990 (1240.3)																	15804 (1089.6)	22933 (1581.2)		
		8							22862 (1576.3)	14714 (1014.5)	29682 (2046.5)	21534 (1484.7)														18061 (1245.3)	26209 (1807.1)			
		9							20604 (1420.6)	11437 (788.6)	27424 (1890.8)	18257 (1258.8)	34244 (2361.0)	25077 (1729.0)	41065 (2831.3)	31898 (2199.3)											20319 (1400.9)	29486 (2033.0)		
		10							18346 (1264.9)	8161 (562.7)	25166 (1735.2)	14981 (1032.9)	31986 (2205.4)	21801 (1503.1)	38807 (2675.7)	28622 (1973.4)	45627 (3145.9)	35442 (2443.7)	52448 (3616.2)	42263 (2913.9)	59268 (4086.4)	49083 (3384.2)				22577 (1556.6)	32762 (2258.8)			
		11									22909 (1579.5)	11705 (807.0)	29729 (2049.7)	18525 (1277.3)	36550 (2520.0)	25346 (1747.5)	43370 (2990.2)	32166 (2217.8)	50191 (3460.5)	38987 (2688.1)	57011 (3930.8)	45807 (3158.3)				24834 (1712.3)	36038 (2484.7)			
		12												27471 (1894.1)	15249 (1051.4)	34292 (2364.4)	22070 (1521.7)	41112 (2834.6)	28890 (1991.9)	47933 (3304.9)	35711 (2462.2)	54753 (3775.1)	42531 (2932.4)				27092 (1867.9)	39314 (2710.6)		
		RT8000SR	400	5	16528 (1139.5)	9357 (645.2)																						12626 (870.6)	19797 (1364.9)	
				6	14002 (965.4)	5398 (372.2)	23721 (1635.5)	15117 (1042.3)																					15152 (1044.7)	23756 (1637.9)
				7			21196 (1461.4)	11158 (769.3)	30914 (2131.5)	20876 (1439.3)																				17677 (1218.8)
8							28389 (1957.3)	16916 (1166.3)																				20202 (1392.9)	31675 (2183.9)	
9							25864 (1783.2)	12957 (893.3)	35582 (2453.3)	22675 (1563.4)	45300 (3123.3)	32393 (2233.4)																22727 (1567.0)	35634 (2456.9)	
10									33056 (2279.2)	18715 (1290.4)	42774 (2949.2)	28433 (1960.4)																	25253 (1741.1)	39594 (2729.9)
11									30531 (2105.1)	14756 (1017.4)	40249 (2775.1)	24474 (1687.4)	49967 (3445.1)	34192 (2357.5)	59685 (4115.1)	43910 (3027.5)													27778 (1915.2)	43553 (3002.9)
12									28006 (1930.9)	10797 (744.4)	37724 (2601.0)	20515 (1414.4)	47442 (3271.0)	30233 (2084.5)	57160 (3941.0)	39951 (2754.5)													30303 (2089.3)	47512 (3275.9)
13											35199 (2426.9)	16555 (1141.5)	44917 (3096.9)	26273 (1811.5)	54635 (3766.9)	35991 (2481.5)	64354 (4437.0)	45710 (3151.6)											32828 (2263.4)	51472 (3548.8)
14													42391 (2922.8)	22314 (1538.5)	52109 (3592.8)	32032 (2208.5)	61828 (4262.9)	41751 (2878.6)	71546 (4933.0)	51469 (3548.7)	81264 (5603.0)	61187 (4218.7)							35354 (2437.5)	55431 (3821.8)
15															49584 (3418.7)	28073 (1935.5)	59303 (4088.8)	37792 (2605.6)	69021 (4758.8)	47510 (3275.7)	78739 (5428.9)	57228 (3945.7)							37879 (2611.7)	59390 (4094.8)
16																	56778 (3914.7)	33832 (2332.7)	66496 (4584.7)	43550 (3002.7)	76214 (5254.8)	53268 (3672.7)							40404 (2785.8)	63350 (4367.8)

Dimensions



Dimensions

Model	A in (mm)	B in (mm)	C in (mm)	D in (mm)	E in (mm)	F in (mm)	G in (mm)	H in (mm)	I Ø in (mm)	J Ø in (mm)	K	L	M in (mm)	N in (mm)	Z in (mm)	Ø in (mm)	Weight lb (kg)			NAMUR
																	Spring Return	Double Acting	Air Supply	
RT020	1.18 (30)	1.63 (41.5)	2.58 (65.5)	2.83 (72)	3.62 (92)	2.56 (65)	1.18 (30)	3.15 (80)	1.42 (36)	1.97 (50)	M5x8	M6x10	0.43 (11)	0.55 (14)	5.79 (147)	1.57 (40)	3.3 (1.5)	3.1 (1.4)	NPT 1/4"	
RT035	1.42 (36)	1.85 (47)	3.19 (81)	3.44 (87.5)	4.23 (107.5)	2.83 (72)	1.18 (30)	3.15 (80)	1.97 (50)	2.76 (70)	M6x10	M8x13	0.55 (14)	0.71 (18)	6.61 (168)	1.57 (40)	4.6 (2.1)	4.4 (2)	NPT 1/4"	
RT050	1.65 (42)	2.09 (53)	3.70 (94)	3.92 (99.5)	4.70 (119.5)	3.19 (81)	1.18 (30)	3.15 (80)	1.97 (50)	2.76 (70)	M6x10	M8x13	0.55 (14)	0.71 (18)	7.24 (184)	1.57 (40)	6.4 (2.9)	6.0 (2.7)	NPT 1/4"	
RT075	1.81 (46)	2.24 (57)	3.88 (98.5)	4.28 (108.7)	5.07 (128.7)	3.62 (92)	1.18 (30)	3.15 (80)	1.97 (50)	2.76 (70)	M6x10	M8x13	0.67 (17)	0.83 (21)	8.03 (204)	1.57 (40)	7.9 (3.6)	6.8 (3.1)	NPT 1/4"	
RT110	1.97 (50)	2.30 (58.5)	4.37 (111)	4.59 (116.5)	5.37 (136.5)	3.86 (98)	1.18 (30)	3.15 (80)	1.97 (50)	2.76 (70)	M6x10	M8x13	0.67 (17)	0.83 (21)	10.31 (262)	1.57 (40)	11.5 (5.2)	10.1 (4.6)	NPT 1/4"	
RT160	2.26 (57.5)	2.52 (64)	4.82 (122.5)	5.24 (133)	6.02 (153)	4.32 (109.5)	1.18 (30)	3.15 (80)	2.76 (70)	4.02 (102)	M8x13	M10x16	0.87 (22)	1.02 (26)	10.55 (268)	1.57 (40)	15.2 (6.9)	13.9 (6.3)	NPT 1/4"	
RT255	2.66 (67.5)	2.93 (74.5)	5.73 (145.5)	6.10 (155)	6.89 (175)	5.02 (127.5)	1.18 (30)	3.15 (80)	2.76 (70)	4.02 (102)	M8x13	M10x16	0.87 (22)	1.02 (26)	11.85 (301)	2.17 (55)	22 (10.1)	20 (8.9)	NPT 1/4"	
RT435	2.95 (75)	3.03 (77)	6.34 (161)	6.77 (172)	7.56 (192)	5.41 (137.5)	1.18 (30)	3.15 (80)	4.02 (102)	4.92 (125)	M10x16	M12x20	1.06 (27)	1.22 (31)	15.35 (390)	2.17 (55)	33 (15)	29 (13)	NPT 1/4"	
RT665	3.42 (87)	3.43 (87)	7.24 (184)	7.76 (197)	8.54 (217)	6.22 (158)	1.18 (30)	3.15 (80)	4.02 (102)	4.92 (125)	M10x16	M12x20	1.06 (27)	1.22 (31)	18.03 (458)	2.17 (55)	53 (24)	44 (20)	NPT 1/4"	
RT1000	4.05 (103)	4.06 (103)	8.39 (213)	9.06 (230)	10.24 (260)	7.44 (189)	1.18 (30)	5.12 (130)		5.51 (140)		M16x25	1.42 (36)	1.57 (40)	20.67 (525)	3.15 (80)	77 (35)	68 (31)	NPT 1/4"	
RT1200	4.45 (113)	4.45 (113)	9.27 (235.5)	10.04 (255)	11.22 (285)	8.27 (210)	1.18 (30)	5.12 (130)		5.51 (140)		M16x25	1.42 (36)	1.57 (40)	20.94 (532)	3.15 (80)	121 (55)	104 (47)	NPT 1/4"	
RT1800	5.12 (130)	5.12 (130)	10.41 (264.5)	11.38 (289)	12.56 (319)	9.65 (245)	1.18 (30)	5.12 (130)		7.00 (165)		M20x25	1.81 (46)	1.97 (50)	23.70 (602)	3.15 (80)	176 (80)	148 (67)	NPT 1/2"	
RT2700	5.79 (147)	5.79 (147)	11.77 (299)	12.83 (326)	14.02 (356)	10.75 (273)	1.18 (30)	5.12 (130)		7.00 (165)		M20x25	1.81 (46)	1.97 (50)	728.43 (722)	3.15 (80)	260 (118)	214 (97)	NPT 1/2"	
RT3800	6.38 (162)	6.38 (162)	13.70 (348)	13.70 (348)	14.88 (378)	12.76 (324)	1.18 (30)	5.12 (130)	7.00 (165)	8.46 (215)	M20x25	M20x25	1.81 (46)	2.36 (60)	29.21 (742)	3.15 (80)	286 (130)	243 (110)	NPT 1/2"	
RT5700	7.48 (190)	7.48 (190)	15.83 (402)	15.83 (402)	17.01 (432)	14.96 (380)	1.18 (30)	5.12 (130)	7.00 (165)	8.46 (215)	M20x25	M20x25	1.81 (46)	2.36 (60)	33.86 (860)	3.15 (80)	515 (234)	410 (186)	NPT 1/2"	
RT8000	7.48 (190)	7.48 (190)	15.83 (402)	15.83 (402)	17.01 (432)	14.96 (380)	1.18 (30)	5.12 (130)	7.00 (165)	8.46 (215)	M20x25	M20x25	1.81 (46)	2.36 (60)	33.86 (860)	3.15 (80)	515 (234)	410 (186)	NPT 1/2"	

Service

MAINTENANCE

If our actuator is properly assembled and used, it will be maintenance free. It has been lubricated to last a normal working life under normal working conditions.

Should it get necessary to replace its seals, consult MOGAS Service.

RETURN MERCHANDISE AUTHORIZATIONS (RMA)

All actuators that are **returned** require a Return Merchandise Authorization (RMA).

Contact the MOGAS Service department to obtain authorization and to receive shipping instructions. The RMA request may also be submitted online by accessing the **Service** page of our website (www.mogas.com).

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