ACTUATORS

Edition. 21.4

PNEUMATIC

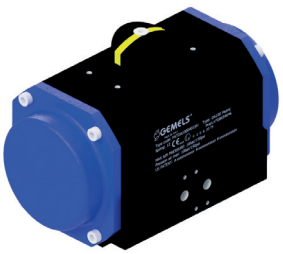
ULTRA COMPACT RACK&PINION PNEUMATIC ACTUATORS DA

ULTRA COMPACT RACK&PINION PNEUMATIC ACTUATORS SR

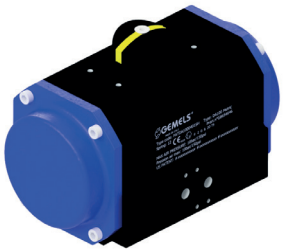
ULTRA COMPACT SCOTCH-YOKE PNEUMATIC ACTUATORS DA

ULTRA COMPACT SCOTCH-YOKE PNEUMATIC ACTUATORS SR

PNEUMATIC



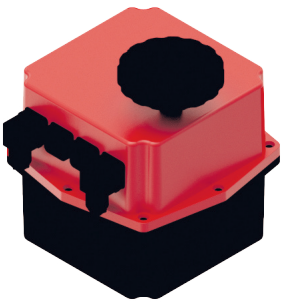
RACK&PINION PNEUMATIC ACTUATORS DA



RACK&PINION PNEUMATIC ACTUATORS SR

ELECTRIC

J4C ELECTRIC ACTUATOR from DN6 up to DN25

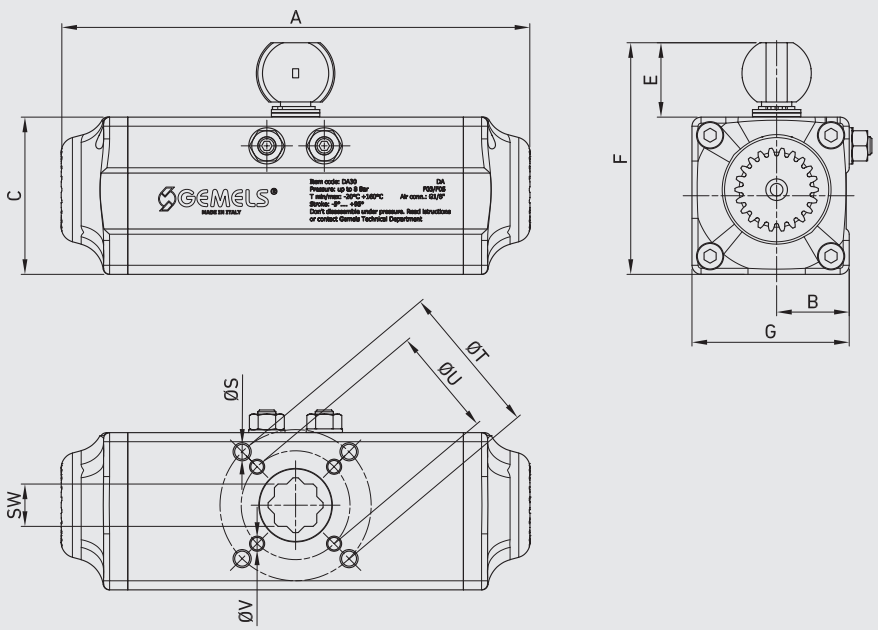


J4C ELECTRIC ACTUATOR from DN32 up to DN50

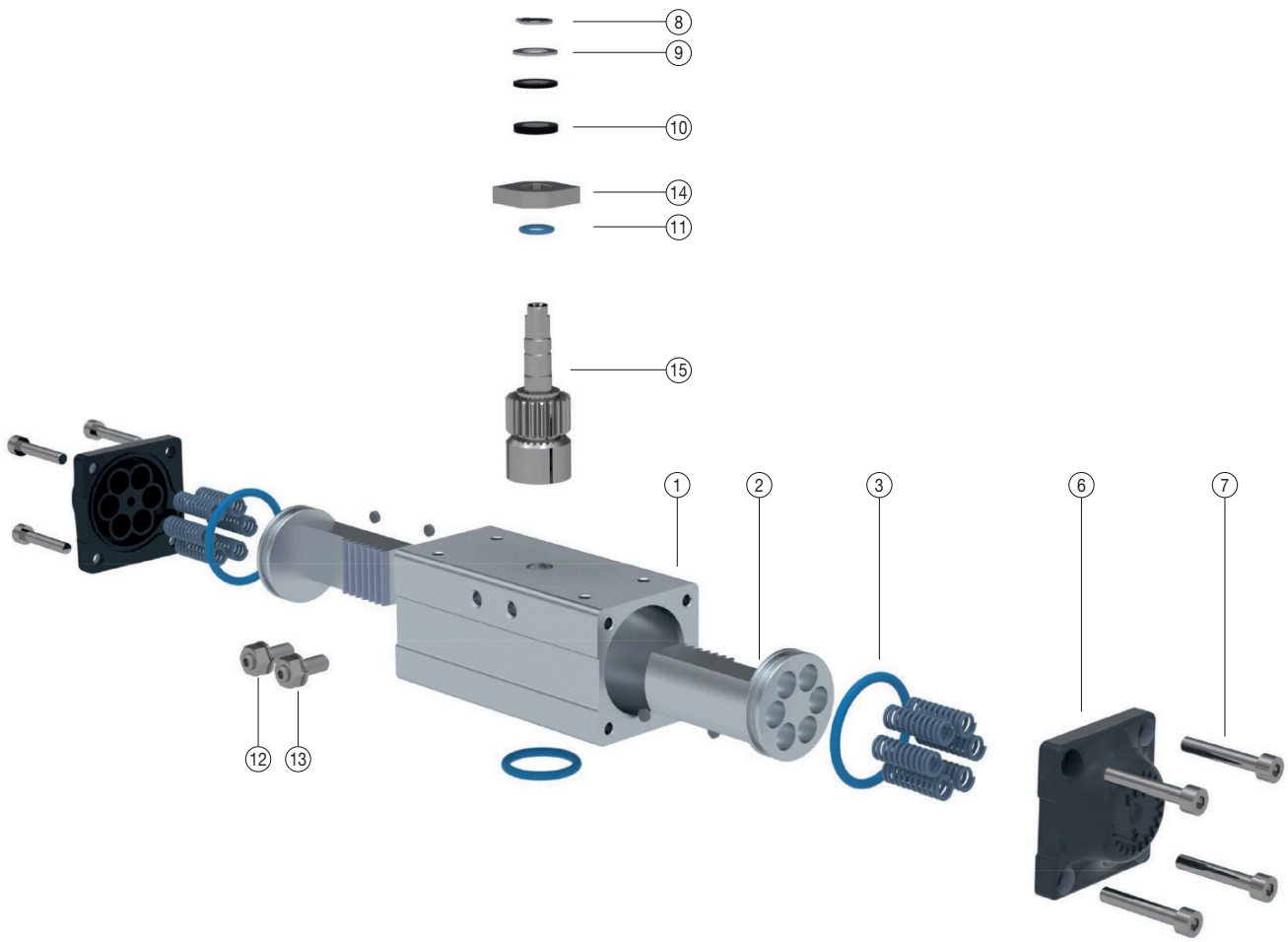
ULTRA COMPACT RACK&PINION PNEUMATIC ACTUATORS DA

- Port "A" Air to open (anti clockwise)
- Port "B" Air to close (clockwise)
- Air supply: 6 bar; maximum 8 bar
- Drive Medium = Air (Dry or lubricated); not corrosive Gas; light hydraulic oil
- Temperature= -50° to 160°C or -58 to 320° F
- Standard indicator position

- ATEX certification



ULTRA COMPACT RACK&PINION ACTUATORS



REF NO	DESCRIPTION	QTY	MATERIAL STD UNIT	COMMENTS
1	Cylinder Body	1	Aluminium Anod.	
2	Driveshaft	1	Steel	Alt. CNI 425
3	Piston	2	Aluminium	Alt. Hard Anodized/PTFE
4	Endcap	2	Aluminium Anod.	
5	Spring	12 max	SiCr	S1 Double Acting only
6	Endcap Bolt	8	Stainless Steel	DIN921
7	Open Stop Adj.Bolt	2	Stainless Steel	ISO4026
8	Open Stop Adj. Nut	2	Stainless Steel	DIN934
9	Endcap 'O'Ring	2	Buna Nitrile	Alt. Viton/Silicone/EPDM
10	Piston Back-up Bearing	2	PTFE+CG	
11	Piston 'O'Ring	2	Buna Nitrile	Alt. Viton/Silicone/EPDM
12	Piston Guidebar	1	Steel	
13	Shim ring	1	Stainless Steel	DIN988
14	Driveshaft Circlip	1	Steel	DIN471
15	Driveshaft O'Ring	2	Buna Nitrile	Alt. Viton/Silicone/EPDM
16	Driveshaft Bearing	4	PTFE+CG	

TORQUES (NM) ACTUATOR DOUBLE ACTING

		AIR SUPPLY						
MODEL	Mpa	0,3	0,4	0,5	0,55	0,6	0,7	0,8
	PSI	43,5	58	72,5	79,75	87	101,5	116
DA 15	Nm	7,1	9,5	11,8	13,3	14,2	16,6	19
	lbf-ft	5,24	7,01	8,70	9,81	10,47	12,24	14,01
DA 30	Nm	13,92	18,57	23,21	25,99	27,85	32,49	37,14
	lbf-ft	10,27	13,70	17,12	19,17	20,54	23,96	27,39
DA 60	Nm	28,49	37,98	47,48	53,18	56,98	66,47	75,97
	lbf-ft	21,01	28,01	35,02	39,22	42,03	49,03	56,03
DA 110	Nm	55,28	73,7	92,13	103,19	110,56	129,99	147,41
	lbf-ft	40,77	54,36	67,95	76,11	81,54	95,88	108,72
DA 220	Nm	111,42	148,57	185,71	207,99	222,85	259,99	297,17
	lbf-ft	82,18	109,58	136,97	153,41	164,37	191,76	219,18
DA 340	Nm	169,23	225,64	282,05	315,89	338,46	394,87	451,28
	lbf-ft	124,82	166,42	208,03	232,99	249,63	291,24	332,85

MAXIMUM OPERATING TIME PER SECOND (0.55 MPAG / 80 PSIG)

Actuator Size	DA15	D30	DA60	DA110	DA220	DA340
DA open	<1	<1	<1	<1	<1	<1
DA close	<1	<1	<1	<1	<1	<1
SR open	<1	<1	<1	<1	<1	<1
SR close	<1	<1	<1	<1	<1	<1

AIR CONSUMPTION PER STROKE

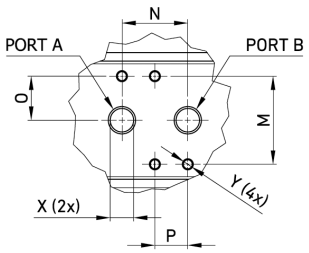
Actuator Size	DA15	D30	DA60	DA110	DA220	DA340
Port 'A' to open (liters)	0,03	0,14	0,08	0,28	0,28	0,55
Port 'B' to close (liters)	0,03	0,14	0,08	0,28	0,28	0,55
Port 'A' to open (cubic inch)	1,8	8,5	4,9	17,1	17,1	33,6
Port 'B' to close (cubic inch)	1,8	8,5	4,9	17,1	17,1	33,6

DA ACTUATORS (DOUBLE ACTING)

TYPE	ISO5211		A	B	C	E	F	G	M	N	O	P	ØS	T	ØV	U	X	Y	SW	WEIGHT		ITEM CODE
DA15	F03	mm	131	22,5	45	20	65	45	32	24	16	12	M5	36	-	-	G1/8 x 12	M5X8	9	kg	0,29	FATAJRDA015AA0H
		inch	5,16	0,89	1,77	0,79	2,56	1,77	1,26	0,94	0,63	0,47		1,42					0,35	lb	0,64	
DA30	F03/F05	mm	155	26	52	20	72	52	32	24	16	12	M6	50	M5	36	G1/8 x 12	M5X8	14	kg	0,78	FATAJRDA030AA0H
		inch	6,10	1,02	2,05	0,79	2,83	2,05	1,26	0,94	0,63	0,47		1,97		1,42			0,55	lb	1,72	
DA60	F05/F07	mm	198	32,5	65	20	85	65	32	24	20	12	M8	70	M6	50	G1/8 x 12	M5X8	17	kg	1,67	FATAJRDA060AA0H
		inch	7,80	1,28	2,56	0,79	3,35	2,56	1,26	0,94	0,79	0,47		2,76		1,97			0,67	lb	3,68	
DA110	F05/F07	mm	244	40	80	20	100	80	32	24	20	12	M8	70	M6	50	G1/4 x 12	M5X8	17	kg	2,9	FATAJRDA110AA0H
		inch	9,61	1,57	3,15	0,79	3,94	3,15	1,26	0,94	0,79	0,47		2,76		1,97			0,67	lb	6,39	
DA220	F07/F10	mm	301	50	100	20	120	100	32	24	26	12	M10	102	M8	70	G1/4 x 12	M5X8	22	kg	3,3	FATAJRDA220AA0H
		inch	11,85	1,97	3,94	0,79	4,72	3,94	1,26	0,94	1,02	0,47		4,02		2,76			0,87	lb	7,33	
DA340	F07/F10	mm	344	55	110	20	130	110	32	24	26	12	M10	102	M8	70	G1/4 x 12	M5X8	22	kg	4,3	FATAJRDA340AA0H
		inch	13,54	2,17	4,33	0,79	5,12	4,33	1,26	0,94	1,02	0,47		4,02		2,76			0,87	lb	9,53	

TORQUES (NM) ACTUATOR DOUBLE ACTING

TYPE	AIR SUPPLY		Nm	lbf-ft
DA15	MPa	0,6	14	10,33
	Psi	87		
DA30	MPa	0,6	28	20,65
	Psi	87		
DA60	MPa	0,6	57	42,04
	Psi	87		
DA110	MPa	0,6	110	81,13
	Psi	87		
DA220	MPa	0,6	223	164,48
	Psi	87		
DA340	MPa	0,6	339	250,03
	Psi	87		

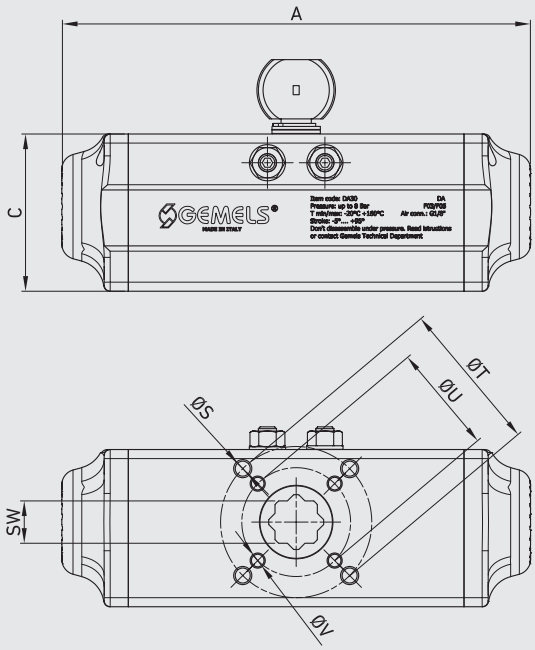


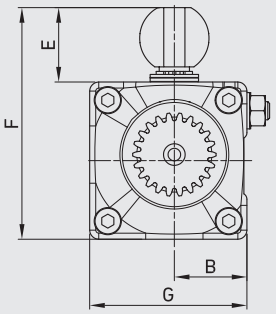
Solenoid mounting
for all actuators

ULTRA COMPACT RACK&PINION PNEUMATIC ACTUATORS SR

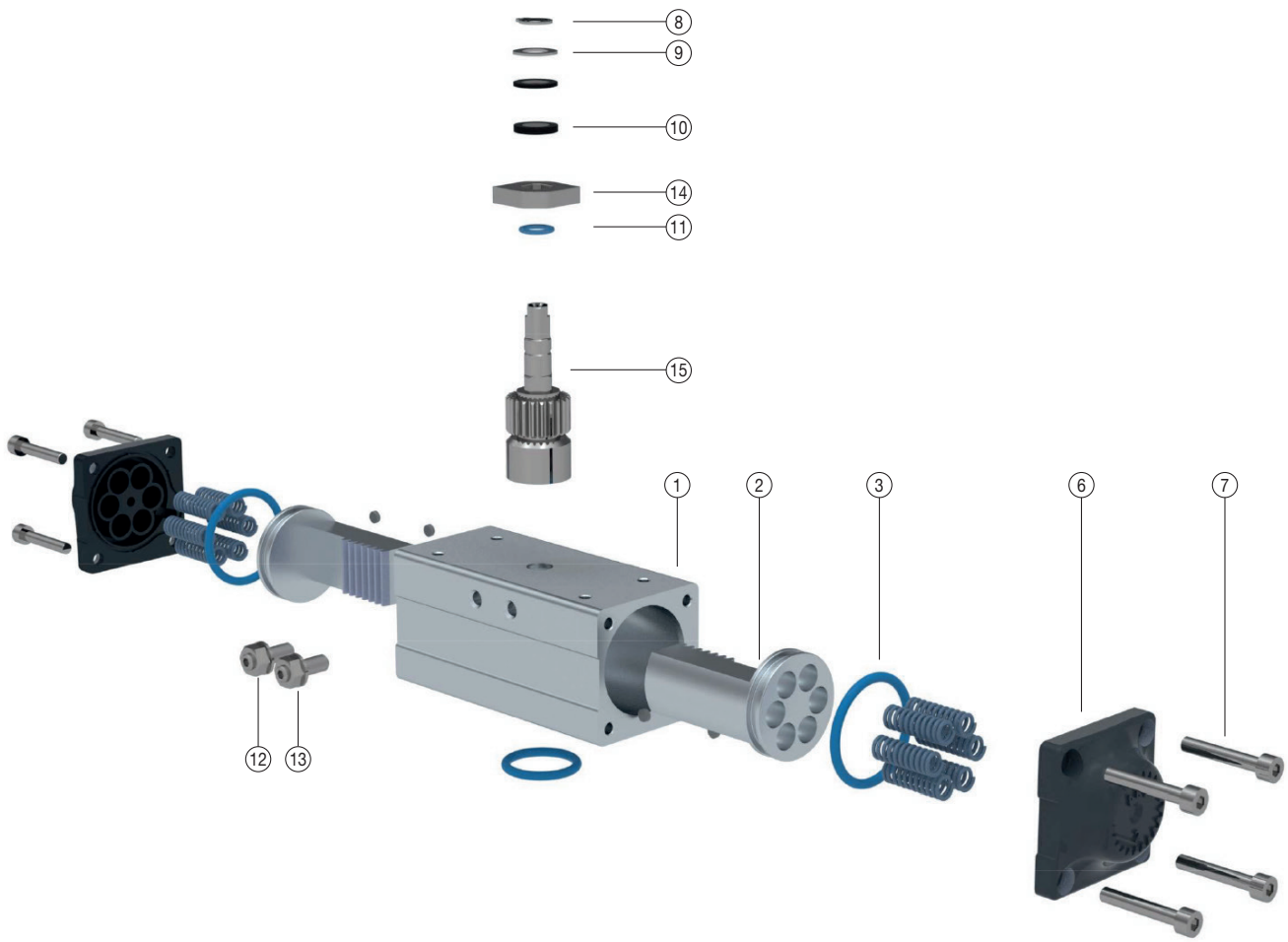
- Port "A" Air to open (anti clockwise)
- Port "B" Air to close (clockwise)
- Air supply: 6 bar; maximum 8 bar
- Drive Medium = Air (Dry or lubricated); not corrosive Gas; light hydraulic oil
- Temperature= -50° to 160°C or -58 to 320° F
- Standard indicator position

- ATEX certification





ULTRA COMPACT RACK&PINION ACTUATORS



REF NO	DESCRIPTION	QTY	MATERIAL STD UNIT	COMMENTS
1	Cylinder Body	1	Aluminium Anod.	
2	Driveshaft	1	Steel	Alt. CNI 425
3	Piston	2	Aluminium	Alt. Hard Anodized/PTFE
4	Endcap	2	Aluminium Anod.	
5	Spring	12 max	SiCr	S1 Double Acting only
6	Endcap Bolt	8	Stainless Steel	DIN921
7	Open Stop Adj.Bolt	2	Stainless Steel	ISO4026
8	Open Stop Adj. Nut	2	Stainless Steel	DIN934
9	Endcap 'O'Ring	2	Buna Nitrile	Alt. Viton/Silicone/EPDM
10	Piston Back-up Bearing	2	PTFE+CG	
11	Piston 'O'Ring	2	Buna Nitrile	Alt. Viton/Silicone/EPDM
12	Piston Guidebar	1	Steel	
13	Shim ring	1	Stainless Steel	DIN988
14	Driveshaft Circlip	1	Steel	DIN471
15	Driveshaft O'Ring	2	Buna Nitrile	Alt. Viton/Silicone/EPDM
16	Driveshaft Bearing	4	PTFE+CG	

TORQUES (NM) ACTUATOR SPRING RETURN

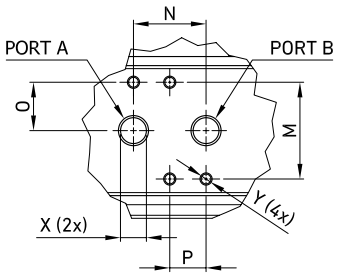
				AIR SUPPLY											
MODEL	Springs	Spring Torque		Mpa	0,2		0,3		0,4		0,5		0,6		
				PSI	29		43,5		58		72,5		87		
	Q,ty	Start	End		Start	End	Start	End	Start	End	Start	End	Start	End	
SR 11/(8)	4	3,60	2,20	Nm	3,60	2,20									
		2,66	1,62	lbf•ft	2,66	1,62									
	6	5,40	3,40	Nm			5,40	3,40							
		3,98	2,51	lbf•ft			3,98	2,51							
	8	7,20	4,70	Nm					7,20	4,70					
		5,31	3,47	lbf•ft					5,31	3,47					
	10	9,09	5,60	Nm							9,10	5,60			
		6,70	4,13	lbf•ft							6,71	4,13			
	12	10,80	6,80	Nm									10,80	6,80	
		7,97	5,02	lbf•ft									7,97	5,02	
SR 23/(13)	4	7,50	4,40	Nm	7,50	4,40									
		5,53	3,25	lbf•ft	5,53	3,25									
	6	11,30	6,60	Nm			11,30	6,60							
		8,33	4,87	lbf•ft			8,33	4,87							
	8	15,00	8,80	Nm					15,00	8,80					
		11,06	6,49	lbf•ft					11,06	6,49					
	10	18,80	11,00	Nm							18,80	11,00			
		13,87	8,11	lbf•ft							13,87	8,11			
	12	22,50	13,20	Nm									22,50	13,20	
		16,60	9,74	lbf•ft									16,60	9,74	
SR 45/(26)	4	15,30	8,50	Nm	15,30	8,50									
		11,28	6,27	lbf•ft	11,28	6,27									
	6	22,90	12,70	Nm			22,90	12,70							
		16,89	9,37	lbf•ft			16,89	9,37							
	8	30,50	17,00	Nm					30,50	17,00					
		22,50	12,54	lbf•ft					22,50	12,54					
	10	38,20	21,30	Nm							38,20	21,30			
		28,17	15,71	lbf•ft							28,17	15,71			
	12	45,00	25,50	Nm									45,00	25,50	
		33,19	18,81	lbf•ft									33,19	18,81	
SR 75/(35)	4	25,00	13,50	Nm	25,00	13,50									
		18,44	9,96	lbf•ft	18,44	9,96									
	6	37,50	20,30	Nm			37,50	20,30							
		27,66	14,97	lbf•ft			27,66	14,97							
	8	50,10	27,10	Nm					50,10	27,10					
		36,95	19,99	lbf•ft					36,95	19,99					
	10	62,66	33,93	Nm							62,66	33,93			
		46,22	25,03	lbf•ft							46,22	25,03			
	12	75,00	35,00	Nm									75,00	35,00	
		55,32	25,81	lbf•ft									55,32	25,81	
SR 189/(104)	4	-	-	Nm	-	-									
		-	-	lbf•ft	-	-									
	6	-	-	Nm			-	-							
		-	-	lbf•ft			-	-							
	8	-	-	Nm					-	-					
		-	-	lbf•ft					-	-					
	10	-	-	Nm							-	-			
		-	-	lbf•ft							-	-			
	12	-	-	Nm									-	-	
		-	-	lbf•ft									-	-	
SR 202/(107)	4	-	-	Nm	-	-									
		-	-	lbf•ft	-	-									
	6	-	-	Nm			-	-							
		-	-	lbf•ft			-	-							
	8	-	-	Nm					-	-					
		-	-	lbf•ft					-	-					
	10	-	-	Nm							-	-			
		-	-	lbf•ft							-	-			
	12	-	-	Nm									-	-	
		-	-	lbf•ft									-	-	

SR ACTUATORS (SPRING RETURN)

TYPE	ISO5211		A	C	E	F	G	M	N	ØS	T	ØV	U	X	Y	SW	WEIGHT	ITEM CODE
SR20	F03/F05	mm	195	52	20	72	63,5	32	24	M6	50	M5	36	G1/8	M5X8	11	kg 0,85	FATAAJSR020AA0H
		inch	7,68	2,05	0,79	2,83	2,50	1,26	0,94		1,97		1,42			0,43	lb 1,87	
SR35	F05/F07	mm	219	65	20	85	82	32	24	M8	70	M6	50	G1/8	M5X8	14	kg 1,325	FATAAJSR035AA0H
		inch	8,62	2,56	0,79	3,35	3,23	1,26	0,94		2,76		1,97			0,55	lb 2,92	
SR70	F05/F07	mm	300	80	20	100	96	32	24	M8	70	M6	50	G1/8	M5X8	17	kg 3,25	FATAAJSR070AA0H
		inch	11,81	3,15	0,79	3,94	3,78	1,26	0,94		2,76		1,97			0,67	lb 7,17	
SR200	F07/F10	mm	410	110	20	130	130,5	32	24	M10	102	M8	70	G1/8	M5X8	22	kg 7,15	FATAAJSR200AA0H
		inch	16,14	4,33	0,79	5,12	5,14	1,26	0,94		4,02		2,76			0,87	lb 15,76	

TORQUES (NM) ACTUATOR SPRING RETURN

TYPE	AIR SUPPLY		Nm	lbf-ft
SR 11/(8)	MPa	0,6	10,8	7,97
	Psi	87		
SR 23/(13)	MPa	0,6	22,5	16,60
	Psi	87		
SR 45/(26)	MPa	0,6	45	33,19
	Psi	87		
SR 75/(35)	MPa	0,6	75	55,32
	Psi	87		
SR 189/(104)	MPa	0,6	-	-
	Psi	87		
SR 202/(107)	MPa	0,6	-	-
	Psi	87		



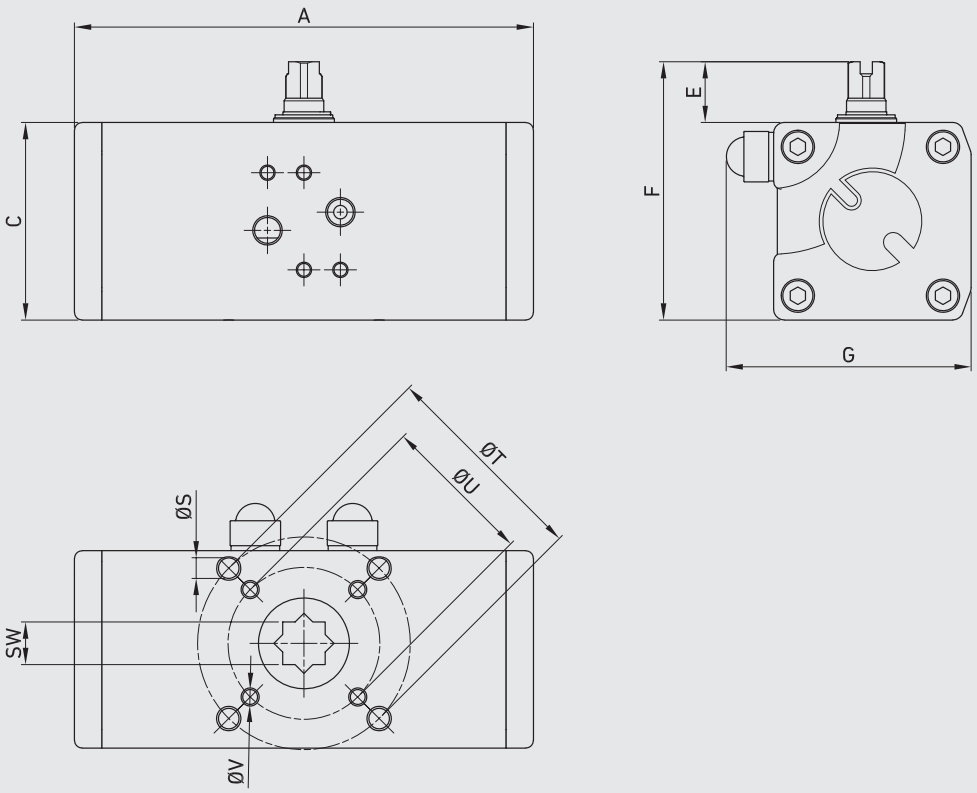
Solenoid mounting
for all actuators

ULTRA COMPACT SCOTCH-YOKE PNEUMATIC ACTUATORS DA

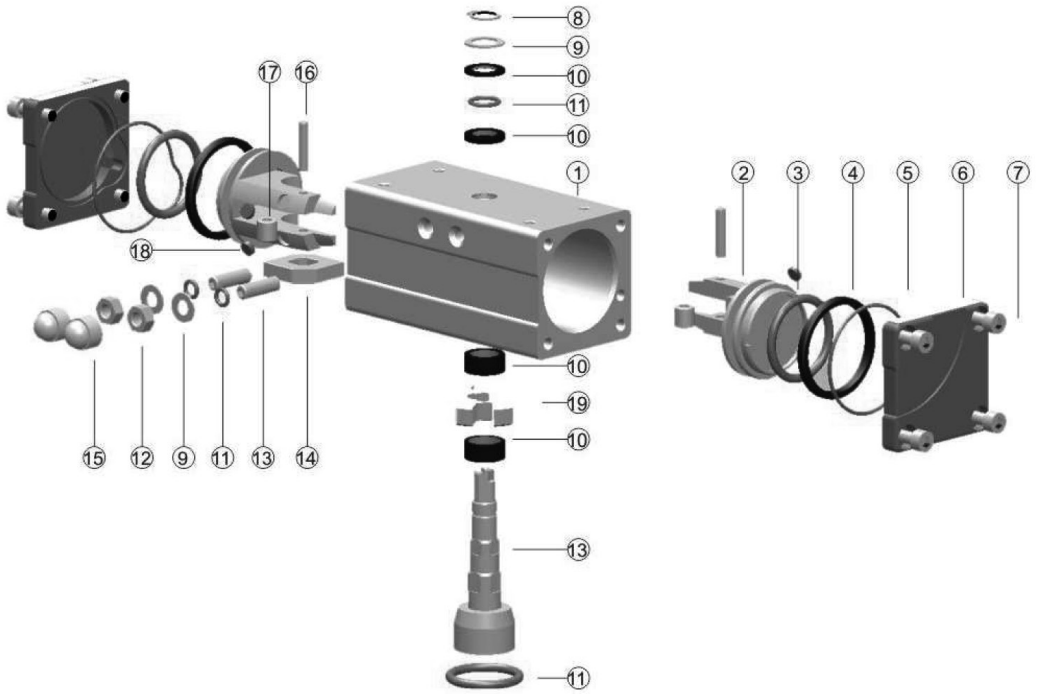
- Port "A" Air to open (anti clockwise)
- Port "B" Air to close (clockwise)
- Air supply: 6 bar; maximum 8 bar
- Drive Medium = Air (Dry or lubricated); not corrosive Gas; light hydraulic oil
- Temperature = -50° to 160°C or -58 to 320° F
- Standard indicator position

• ATEX certification

HIGH CYCLICITY



ULTRA COMPACT SCOTCH-YOKE ACTUATORS



REF NO	DESCRIPTION	QTY	MATERIAL STD UNIT	COMMENTS
1	Cylinder Body	1	Aluminium	
2	Piston	2	Aluminium	
3	O-ring piston	2	Buna Nitrile	Alt. VITON/Silikone
4	Glide band piston	2	PTFE Carbon	
5	Sealing end caps	2	Buna Nitrile	Alt. VITON/Silikone
6	End caps epoxy	2	Aluminium	
7	Screw end caps	8	DIN921 1.4301	Alt. AISI 304-A2
8	Retaining ring	1	DIN471 1.4301	Alt. AISI 304-A2
9	Shim ring	1	DIN988 1.4301	Alt. AISI 304-A2
10	Glide and distance rings	4	PTFE Carbon	
11	O-rings	2	Buna Nitrile	Alt. VITON/Silikone
12	Hexagon nuts	2	DIN934 1.4301	Alt. AISI 304-A2
13	Hexagon socket set screws	2	ISO4026 1.4301	Alt. AISI 304-A2
14	Travel stop disc	1	C10	
15	Protective cap for nut	2	LLD-PE	
16	Parallel pin	2	DIN6325 Steel	
17	Press fit bushes	2	DIN179 Steel	
18	Glide support piston	2	PTFE Carbon	
19	Crank	1	C10	

TORQUES (NM) ACTUATOR DOUBLE ACTING

		AIR SUPPLY						
MODEL	Mpa	0,3	0,4	0,5	0,56	0,6	0,7	0,8
	PSI	43,5	58	72,5	81,2	87	101,5	116
DA 10	Nm	6,4	8,5	10,6	11,9	12,8	14,9	17
	lbf-ft	4,72	6,27	7,82	8,78	9,44	10,99	12,54
DA 35	Nm	17,8	23,7	29,7	33,2	35,6	41,6	47,5
	lbf-ft	13,13	17,48	21,91	24,49	26,26	30,68	35,03
DA 75	Nm	38	50,7	63,4	71	76,1	88,8	101,5
	lbf-ft	28,03	37,39	46,76	52,37	56,13	65,50	74,86
DA 135	Nm	67,7	90,3	112,9	126,5	135,5	158,1	180,7
	lbf-ft	49,93	66,60	83,27	93,30	99,94	116,61	133,28
DA 520	Nm	259,4	345,9	432,4	484,2	518,8	605,3	691,8
	lbf-ft	191,32	255,12	318,92	357,13	382,65	446,45	510,24

MAXIMUM OPERATING TIME PER SECOND (0.55 MPAG / 80 PSIG)

Actuator Size	DA10	DA35	DA75	DA135	DA520
DA open	<1	<1	<1	<1	<1
DA close	<1	<1	<1	<1	<1
SR open	<1	<1	<1	<1	<1
SR close	<1	<1	<1	<1	<1

AIR CONSUMPTION PER STROKE

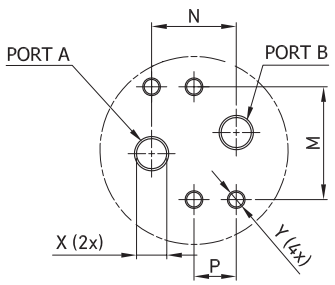
Actuator Size	DA10	DA35	DA75	DA135	DA520
Port 'A' to open (liters)	0,03	0,14	0,28	0,55	1,75
Port 'B' to close (liters)	0,03	0,14	0,28	0,55	1,75
Port 'A' to open (cubic inch)	1,8	8,5	17,1	33,6	106,8
Port 'B' to close (cubic inch)	1,8	8,5	17,1	33,6	106,8

DA ACTUATORS (DOUBLE ACTING)

TYPE	ISO5211		A	C	E	F	G	M	N	ØS	T	ØV	U	X	Y	SW	WEIGHT		ITEM CODE
DA10	F03	mm	76	45	20	65	55	32	24	M5	36	-	-	G1/8	M5X8	9	kg	0,29	FATAAJDA010AA0H
		inch	2,99	1,77	0,79	2,56	2,17	1,26	0,94		1,42					0,35	lb	0,64	
DA35	F03/F05	mm	122	52	20	72	65	32	24	M6	50	M5	36	G1/8	M5X8	11	kg	0,75	FATAAJDA035AA0H
		inch	4,80	2,05	0,79	2,83	2,56	1,26	0,94		1,97		1,42			0,43	lb	1,65	
DA75	F05/F07	mm	151	65	20	85	81	32	24	M8	70	M6	50	G1/8	M5X8	14	kg	1,32	FATAAJDA075AA0H
		inch	5,94	2,56	0,79	3,35	3,19	1,26	0,94		2,76		1,97			0,55	lb	2,91	
DA135	F05/F07	mm	198	80	20	100	96	32	24	M8	70	M6	50	G1/8	M5X8	17	kg	2,5	FATAAJDA135AA0H
		inch	7,80	3,15	0,79	3,94	3,78	1,26	0,94		2,76		1,97			0,67	lb	5,51	
DA520	F07/F10	mm	270	110	20	130	130,5	32	24	M10	102	M8	70	G1/8	M5X8	22	kg	6,25	FATAAJDA520AA0H
		inch	10,63	4,33	0,79	5,12	5,14	1,26	0,94		4,02		2,76			0,87	lb	13,78	

TORQUES (NM) ACTUATOR DOUBLE ACTING

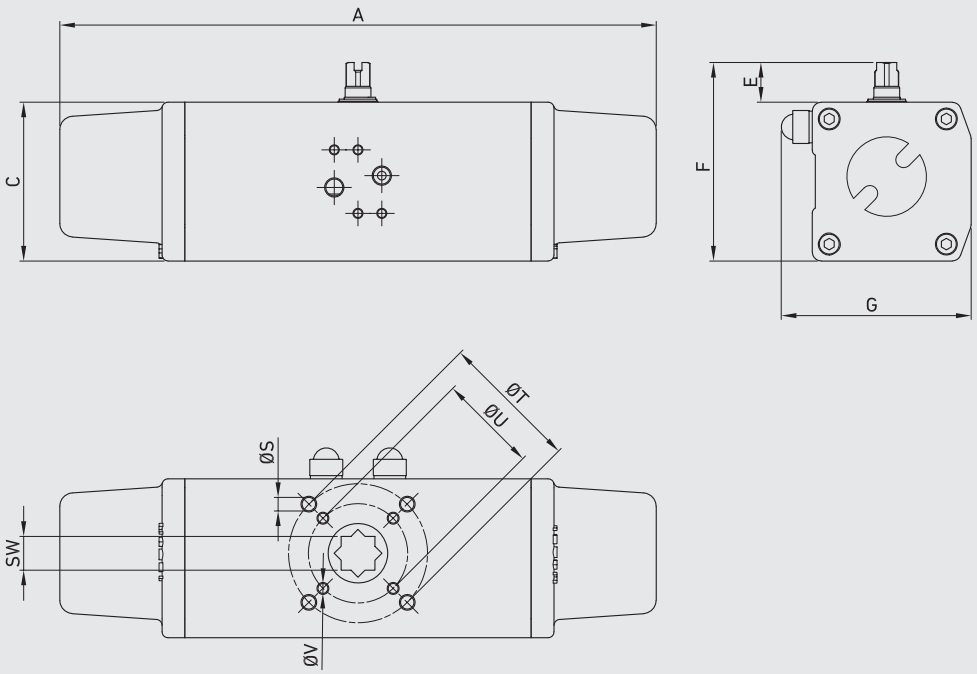
TYPE	AIR SUPPLY		Nm	lbf-ft
DA10	MPa	0,6	12,8	9,44
	Psi	87		
DA35	MPa	0,6	35,6	26,26
	Psi	87		
DA75	MPa	0,6	76,1	56,13
	Psi	87		
DA135	MPa	0,6	135,5	99,94
	Psi	87		
DA520	MPa	0,6	518,8	382,65
	Psi	87		



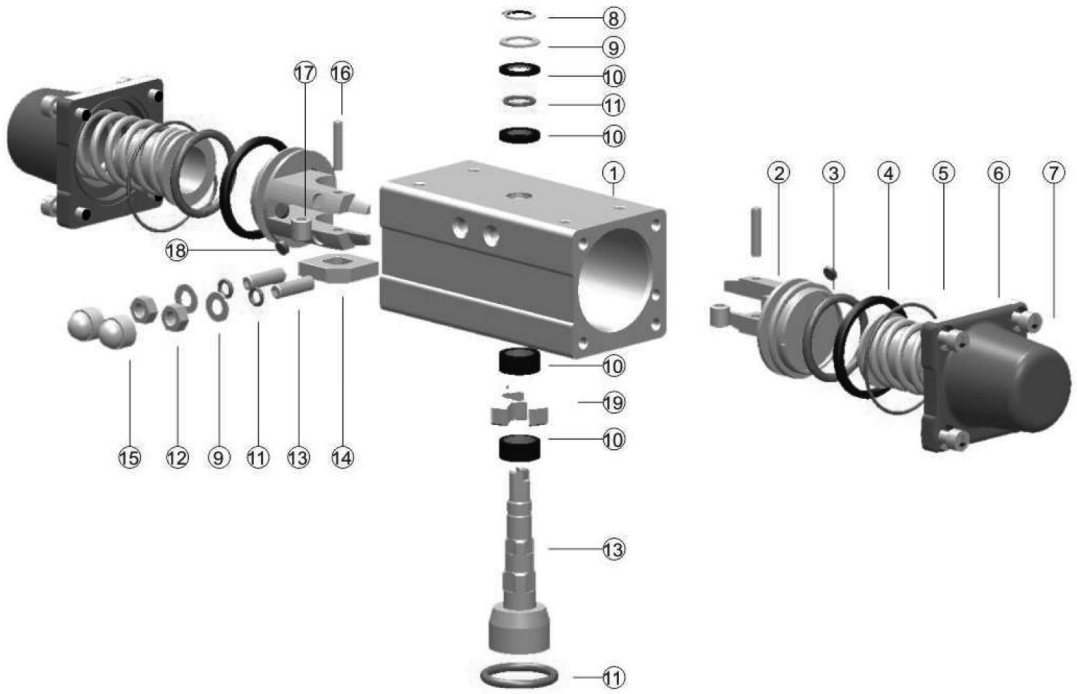
ULTRA COMPACT SCOTCH-YOKE PNEUMATIC ACTUATORS SR

- Port "A" Air to open (anti clockwise)
- Port "B" Air to close (clockwise)
- Air supply: 6 bar; maximum 8 bar
- Drive Medium = Air (Dry or lubricated); not corrosive Gas; light hydraulic oil
- Temperature= -50° to 160°C or -58 to 320° F
- Standard indicator position

- ATEX certification



ULTRA COMPACT SCOTCH-YOKE ACTUATORS



REF NO	DESCRIPTION	QTY	MATERIAL STD UNIT	COMMENTS
1	Cylinder Body	1	Aluminium	
2	Piston	2	Aluminium	
3	O-ring piston	2	Buna Nitrile	Alt. VITON/Silikone
4	Glide band piston	2	PTFE Carbon	
5	Sealing end caps	2	Buna Nitrile	Alt. VITON/Silikone
6	End caps epoxy	2	Aluminium	
7	Screw end caps	8	DIN921 1.4301	Alt. AISI 304-A2
8	Retaining ring	1	DIN471 1.4301	Alt. AISI 304-A2
9	Shim ring	1	DIN988 1.4301	Alt. AISI 304-A2
10	Glide and distance rings	4	PTFE Carbon	
11	O-rings	2	Buna Nitrile	Alt. VITON/Silikone
12	Hexagon nuts	2	DIN934 1.4301	Alt. AISI 304-A2
13	Hexagon socket set screws	2	ISO4026 1.4301	Alt. AISI 304-A2
14	Travel stop disc	1	C10	
15	Protective cap for nut	2	LLD-PE	
16	Parallel pin	2	DIN6325 Steel	
17	Press fit bushes	2	DIN179 Steel	
18	Glide support piston	2	PTFE Carbon	
19	Crank	1	C10	

TORQUES (NM) ACTUATOR SPRING RETURN

		AIR SUPPLY						
MODEL	Mpa	0,3	0,4	0,5	0,55	0,6	0,7	0,8
	PSI	43,5	58	72,5	79,75	87	101,5	116
SR 20	Nm	-	-	-	-	21,6	-	-
	lbf-ft	-	-	-	-	15,93	-	-
SR 42	Nm	-	-	-	-	42	-	-
	lbf-ft	-	-	-	-	30,98	-	-
SR 70	Nm	-	-	-	-	70,2	-	-
	lbf-ft	-	-	-	-	51,78	-	-
SR 200	Nm	-	-	-	-	201,4	-	-
	lbf-ft	-	-	-	-	148,54	-	-

MAXIMUM OPERATING TIME PER SECOND (0.55 MPAG / 80 PSIG)

Actuator Size	SR20	SR42	SR70	SR200
DA open	<1	<1	<1	<1
DA close	<1	<1	<1	<1
SR open	<1	<1	<1	<1
SR close	<1	<1	<1	<1

AIR CONSUMPTION PER STROKE

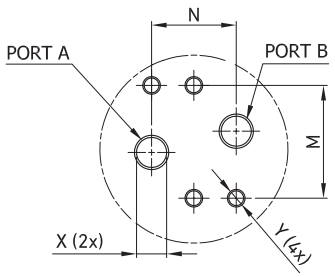
Actuator Size	SR20	SR42	SR70	SR200
Port 'A' to open (liters)	0,08	0,28	0,32	1
Port 'B' to close (liters)	0,08	0,28	0,32	1
Port 'A' to open (cubic inch)	4,9	17,1	19,5	61,0
Port 'B' to close (cubic inch)	4,9	17,1	19,5	61,0

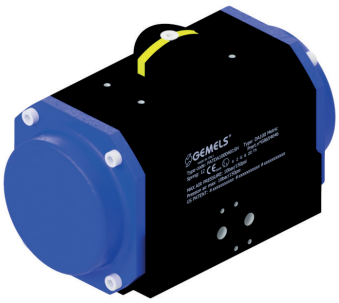
SR ACTUATORS (SPRING RETURN)

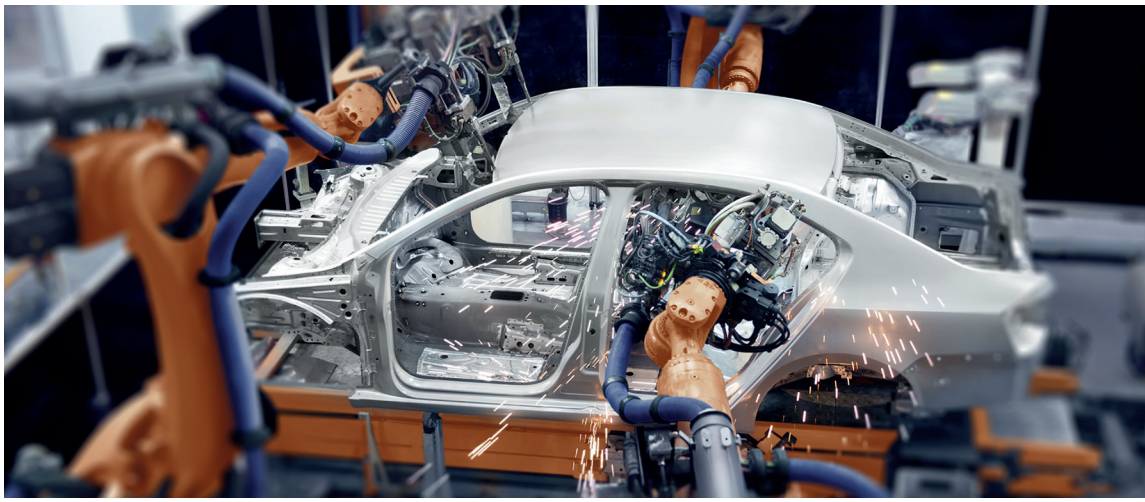
TYPE	ISO5211		A	C	E	F	G	M	N	ØS	T	ØV	U	X	Y	SW	WEIGHT	ITEM CODE
SR20	F03/F05	mm	195	52	20	72	63,5	32	24	M6	50	M5	36	G1/8	M5X8	11	kg 0,85	FATAAJSR020AA0H
		inch	7,68	2,05	0,79	2,83	2,50	1,26	0,94		1,97		1,42			0,43	lb 1,87	
SR42	F05/F07	mm	231	65	20	85	82	32	24	M8	70	M6	50	G1/8	M5X8	14	kg 1,325	FATAAJSR042AA0H
		inch	9,09	2,56	0,79	3,35	3,23	1,26	0,94		2,76		1,97			0,55	lb 2,92	
SR70	F05/F07	mm	300	80	20	100	96	32	24	M8	70	M6	50	G1/8	M5X8	17	kg 3,25	FATAAJSR070AA0H
		inch	11,81	3,15	0,79	3,94	3,78	1,26	0,94		2,76		1,97			0,67	lb 7,17	
SR200	F07/F10	mm	410	110	20	130	130,5	32	24	M10	102	M8	70	G1/8	M5X8	22	kg 7,15	FATAAJSR200AA0H
		inch	16,14	4,33	0,79	5,12	5,14	1,26	0,94		4,02		2,76			0,87	lb 15,76	

TORQUES (NM) ACTUATOR SPRING RETURN

TYPE	AIR SUPPLY		Nm	lbf-ft
SR20	MPa	0,6	21,6	15,93
	Psi	87		
SR42	MPa	0,6	35,7	26,33
	Psi	87		
SR70	MPa	0,6	70,2	51,78
	Psi	87		
SR200	MPa	0,6	201,4	148,54
	Psi	87		



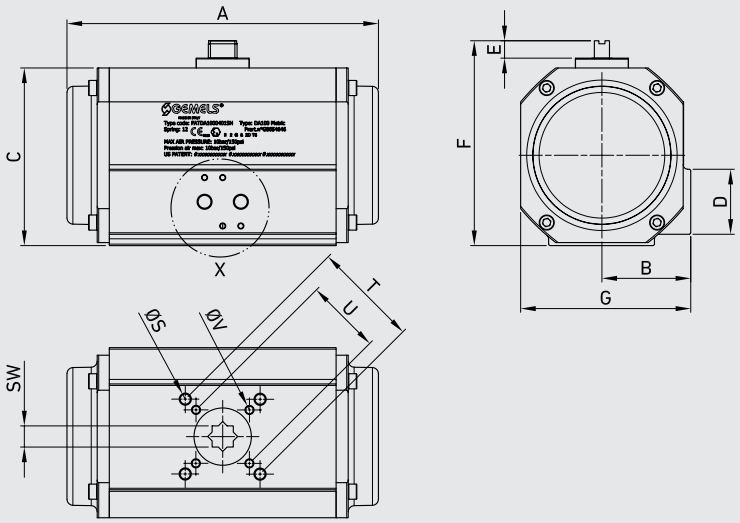




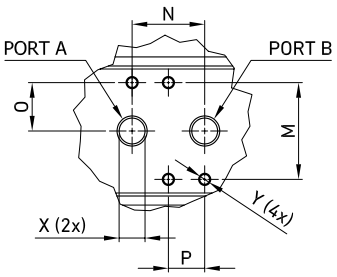
RACK&PINION PNEUMATIC ACTUATORS DA

- Port "A" Air to open (anti clockwise)
- Port "B" Air to close (clockwise)
- Air supply: 6 bar; maximum 7 bar
- Drive Medium = Air (Dry or lubricated); not corrosive Gas; light hydraulic oil
- Temperature= Buna nitrile o'seals -40° to 80°C or -40 to 176° F
- Standard indicator position
- Basic Operating Details

- ATEX certification



TYPE	AIR SUPPLY		Nm	lbf-ft
DA25	MPa	0,6	23,7	17,48
	Psi	87		
DA40	MPa	0,6	41,6	30,68
	Psi	87		
DA100	MPa	0,6	101,5	74,86
	Psi	87		
DA200	MPa	0,6	201,9	148,91
	Psi	87		
DA375	MPa	0,6	374	275,85
	Psi	87		
DA825	MPa	0,6	824	607,75
	Psi	87		



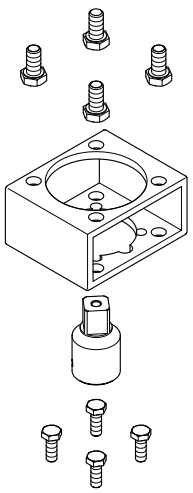
Solenoid mounting for all actuators

DA ACTUATORS (double acting)

TYPE	ISO5211		A	B	C	D	E	F	G	M	N	O	P	ØS	T	ØV	U	X	Y	SW	WEIGHT	ITEM CODE
DA25	F03-F05	mm	160	38	70	40	20	90	69,5	32	24	16	12	M6	50	M5	36	G1/8 x 12	M5X8	9	kg 1	FATDA0250401SH
		inch	6,30	1,50	2,76	1,57	0,79	3,54	2,74	1,26	0,94	0,63	0,47		1,97		1,42			0,35	lb 2,20	
DA40	F05	mm	138,5	47,5	90,5	41	20	110,5	87,5	32	24	16	12	-	-	M6	50	G1/8 x 12	M5X8	11	kg 1,8	FATDA0400401SH
		inch	5,45	1,87	3,56	1,61	0,79	4,35	3,44	1,26	0,94	0,63	0,47				1,97			0,43	lb 3,97	
DA100	F05-F07	mm	222,5	59	118	43	20	138	113	32	24	16	12	M8	70	M6	50	G1/8 x 12	M5X8	14	kg 2,8	FATDA1000401SH
		inch	8,76	2,32	4,65	1,69	0,79	5,43	4,45	1,26	0,94	0,63	0,47		2,76		1,97			0,55	lb 6,17	
DA200	F05-F07	mm	238	72	140,5	43	20	160,5	136,5	32	24	16	12	M8	70	M6	50	G1/4 x 12	M5X8	17	kg 7	FATDA2000401SH
		inch	9,37	2,83	5,53	1,69	0,79	6,32	5,37	1,26	0,94	0,63	0,47		2,76		1,97			0,67	lb 15,43	
DA375	F07-F10	mm	286	78	166,5	43	30	196,5	156	32	24	16	12	M10	102	M8	70	G1/4 x 12	M5X8	22	kg 10,5	FATDA3750401SH
		inch	11,26	3,07	6,56	1,69	1,18	7,74	6,14	1,26	0,94	0,63	0,47		4,02		2,76			0,87	lb 23,15	
DA825	F10-F12	mm	360	95,5	207,5	43	30	237,5	191	32	24	16	12	M12	125	M10	102	G1/4 x 12	M5X8	27	kg 22,4	FATDA8250401SH
		inch	14,17	3,76	8,17	1,69	1,18	9,35	7,52	1,26	0,94	0,63	0,47		4,92		4,02			1,06	lb 49,38	

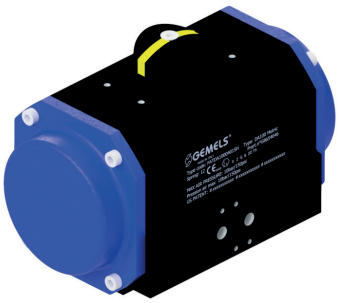
KIT WASHER
ONLY FOR GN-GB VALVES

KIT ACTUATOR
C0034406H FROM DN6 TO DN32
C0034306H FOR DN40-DN50



DA ACTUATORS KITS

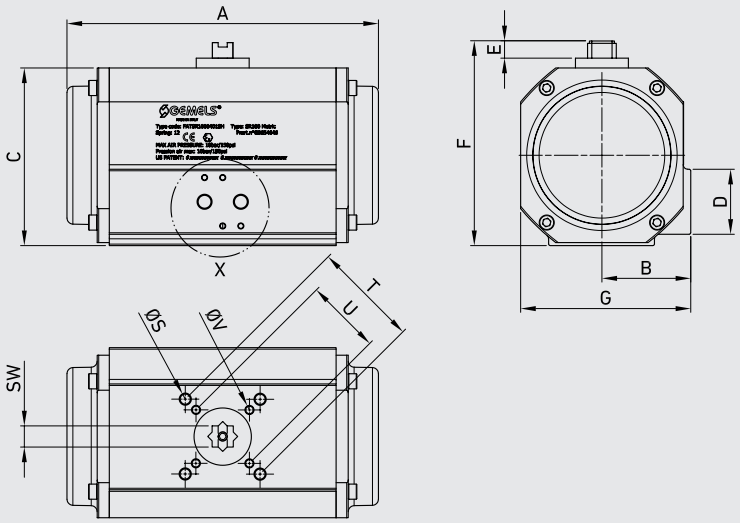
TYPE	BALL VALVES	DN	MATERIAL	ISO5211	WEIGHT	ITEM CODE
AK6	GE-GHP-GR-SB	06-10-13	CARBON STEEL	F03-F05	kg 0,25 lb 0,55	K0C00AK61X
AK6S	GN	06-10	CARBON STEEL	F03 F05-F03 F05	kg 0,30 lb 0,66	K0C00AK6S1X
AK6S2	GM1-GN	06-10-13	CARBON STEEL	F03-F05	kg 0,25 lb 0,55	K01A00194AAAA0H
AK13	GE-GHP-GR	13	CARBON STEEL	F03 F05-F03 F05	kg 0,31 lb 0,68	K0C00AK131X
AK20	GE-GB-GHP GN-GR-SB	20-25	CARBON STELL	F05 F07-F05	kg 0,52 lb 1,15	K0C00AK201X
AK32	SB	32-40	CARBON STEEL	F05 F07-F05	kg 0,60 lb 1,32	K0C00AK321X
AK40	GB-GHP-G GR-SB	32-40	CARBON STEEL	F05 F07-F05	kg 0,67 lb 1,48	K0C00AK401X
AK50	GB-GHP-GN GR-SB	50	CARBON STEEL	F05 F07-F05	kg 0,71 lb 1,57	K0C00AK501X
AK65	SB	65-80	CARBON STEEL	F05 F07-F05	kg 0,74 lb 1,63	K0C00AK651X
AK100	GR-SB	100-125	CARBON STEEL	F10 F12-F12	kg 2,05 lb 4,52	K0C00AK1001X

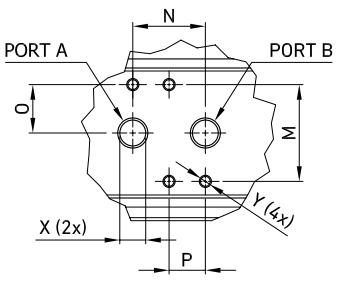


RACK&PINION PNEUMATIC ACTUATORS SR

- Port "A" Air to open (anti clockwise)
- Port "B" Air to close (clockwise)
- Air supply: 6 bar; maximum 7 bar
- Drive Medium = Air (Dry or lubricated); not corrosive Gas; light hydraulic oil
- Temperature= Buna nitrile o'seals -40° to 80°C or -40 to 176° F
- Standard indicator position

- ATEX certification





Solenoid mounting for all actuators

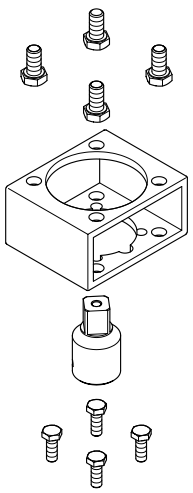
TYPE	AIR SUPPLY		AIR-START Nm	AIR-START lbf-ft	AIR-END Nm	AIR-END lbf-ft	SPRING-START Nm	SPRING-START lbf-ft	SPRING-END Nm	SPRING-END lbf-ft	N°SPRING
SR35/(18)	MPa	0,6	32,7	24,12	18,1	13,35	32,64	24,07	18	13,28	12
	Psi	87									
SR60/(40)	MPa	0,6	61,4	45,29	40,1	29,58	61,3	45,21	40	29,50	12
	Psi	87									
SR130/(72)	MPa	0,6	130,33	96,13	71,73	52,91	130,2	96,03	71,6	52,81	4X4
	Psi	87									
SR240/(132)	MPa	0,6	241,54	178,15	132,98	98,08	241,2	177,90	132,64	97,83	4X4
	Psi	87									
SR385/(210)	MPa	0,6	385,2	284,11	212,1	156,44	384,6	283,67	211,5	155,99	4X4
	Psi	87									
SR530/(290)	MPa	0,6	533	393,12	294	216,84	531	391,64	292	215,37	4X4
	Psi	87									

SR ACTUATORS (SPRING RETURN)

TYPE	ISO5211		A	B	C	D	E	F	G	M	N	O	P	ØS	T	ØV	U	X	Y	SW	WEIGHT	ITEM CODE
SR35/(18)	F05-F07	mm	203	49	87	40	20	107	90,5	32	24	16	12	M8	70	M6	50	G1/8x12	M5x8	11	kg 1,9	FATSR0500401SH
		inch	7,99	1,93	3,43	1,57	0,79	4,21	3,56	1,26	0,94	0,63	0,47		2,76		1,97			0,43	lb 4,19	
SR60/(40)	F05-F07	mm	222,5	59	118	43	20	138	113	32	24	16	12	M8	70	M6	50	G1/8x12	M5X8	14	kg 2,8	FATSR1000401SH
		inch	8,76	2,32	4,65	1,69	0,79	5,43	4,45	1,26	0,94	0,63	0,47				2,76			1,97	0,55 lb	
SR130/(72)	F07-F10	mm	238	72	140,5	43	20	160,5	136,5	32	24	16	12	M8	102	M6	70	G1/4x12	M5x8	17	kg 7	FATSR2000401SH
		inch	9,37	2,83	5,53	1,69	0,79	6,32	5,37	1,26	0,94	0,63	0,47		4,02		2,76			0,67	lb 15,43	
SR240/(132)	F07-F10	mm	286	78	166,5	43	30	196,5	156	32	24	16	12	M10	102	M8	70	G1/4x12	M5X8	22	kg 10,5	FATSR3750401SH
		inch	11,26	3,07	6,56	1,69	1,18	7,74	6,14	1,26	0,94	0,63	0,47		4,02		2,76			0,87	lb 23,15	
SR385/(210)	F10-F12	mm	334	95,5	207,5	43	30	237,5	191	32	24	16	12	M12	125	M10	102	G1/4x12	M5x8	27	kg 20,6	FATSR6000401SH
		inch	13,15	3,76	8,17	1,69	1,18	9,35	7,52	1,26	0,94	0,63	0,47		4,92		4,02			1,06	lb 45,42	
SR530/(290)	F10-Fl 2	mm	360	95,5	207,5	43	30	237,5	191	32	24	16	12	M12	125	M10	102	G1/4x12	M5X8	27	kg 22,4	FATSR8250401SH
		inch	14,17	3,76	8,17	1,69	1,18	9,35	7,52	1,26	0,94	0,63	0,47		4,92		4,02			1,06	lb 49,38	

KIT WASHER
ONLY FOR GN-GB VALVES

KIT ACTUATOR
C0034406H FROM DN6 TO DN32
C0034306H FOR DN40-DN50



SR ACTUATORS KITS

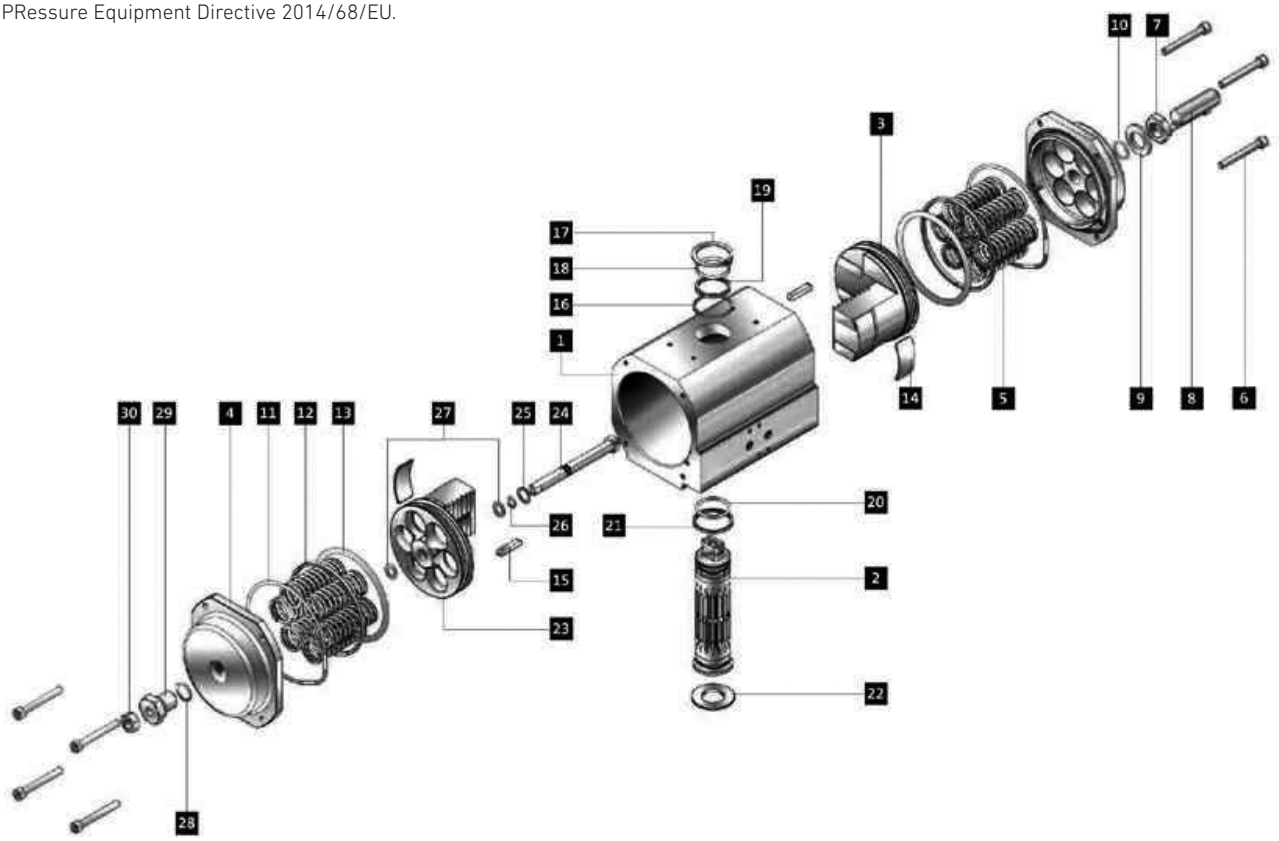
TYPE	BALL VALVES	DN	MATERIAL	ISO5211	WEIGHT	ITEM CODE
AK6	GE-GHP-GR-SB	06-10-13	CARBON STEEL	F03-F05	kg 0,25	K0C00AK61X
					lb 0,55	
AK6S	GN	06-10	CARBON STEEL	F03 F05-F03 F05	kg 0,30	K0C00AK6S1X
					lb 0,66	
AK6S2	GM1-GN	06-10-13	CARBON STEEL	F03-F05	kg 0,25	K01A00194AAAA0H
					lb 0,55	
AK13	GE-GHP-GR	13	CARBON STEEL	F03 F05-F03 F05	kg 0,31	K0C00AK131X
					lb 0,68	
AK20	GE-GB-GHP GN-GR-SB	20-25	CARBON STELL	F05 F07-F05	kg 0,52	K0C00AK201X
					lb 1,15	
AK32	SB	32-40	CARBON STEEL	F05 F07-F05	kg 0,60	K0C00AK321X
					lb 1,32	
AK40	GB-GHP-G GR-SB	32-40	CARBON STEEL	F05 F07-F05	kg 0,67	K0C00AK401X
					lb 1,48	
AK50	GB-GHP-GN GR-SB	50	CARBON STEEL	F05 F07-F05	kg 0,71	K0C00AK501X
					lb 1,57	
AK65	SB	65-80	CARBON STEEL	F05 F07-F05	kg 0,74	K0C00AK651X
					lb 1,63	
AK100	GR-SB	100-125	CARBON STEEL	F10 F12-F12	kg 2,05	K0C00AK1001X
					lb 4,52	

INTRODUCTION

STANDARDS

Gemels actuators are designed and in compliance with the following standards:

ISO5211: Orientation of actuator to valve mounting flange (i.e.F05,F07....)
VDI/VDE 3845: Namur mounting for accessories such as switchboxes, solenoid valves and positioners.
ATEX: Directive 2014/34/UE.
PED: PRessure Equipment Directive 2014/68/EU.



REF NO	DESCRIPTION	QTY	MATERIAL STD UNIT	COMMENTS
1	Body	1	Aluminium Anod.	-
2	Driveshaft	1	Steel	Alt. CNI 425
3	Piston	2	Aluminium	Alt. Hard Anodized/PTFE
4	Endcap with Stop Adj.	2	Aluminium Anod.	-
5	Spring	12 max	SiCr	S1 Double Acting only
6	Endcap Bolt	8	Stainless Steel	-
7	Open Stop Adj.Bolt	1	Stainless Steel	-
8	Open Stop Adj. Nut	1	Stainless Steel	-
9	Open Stop Adj. Washer	1	Polyethylene	-
10	Open Stop Adj.'O'Ring	1	Buna Nitrile	Alt. Viton/Silicone/EPDM
11*	Endcap 'O'Ring	2	Buna Nitrile	Alt. Viton/Silicone/EPDM
12*	Piston Back-up Bearing	2	POM Delrin	-
13*	Piston 'O'Ring	2	Buna Nitrile	Alt. Viton/Silicone/EPDM
14*	Piston Wearpad	2	POM Delrin	-
15*	Piston Guidebar	2	Steel	-

REF NO	DESCRIPTION	QTY	MATERIAL STD UNIT	COMMENTS
16*	Driveshaft Washer	1	Polyethylene	-
17*	Driveshaft Circlip	1	Steel	-
18*	Driveshaft Upper 'O'Ring	1	Buna Nitrile	Alt. Viton/Silicone/EPDM
19*	Driveshaft Upper Bearing	1	POM Delrin	-
20*	Driveshaft Lower 'O'Ring	1	Buna Nitrile	Alt. Viton/Silicone/EPDM
21*	Driveshaft Lower Bearing	1	POM Delrin	-
22	Centralization Ring	1	POM Delrin	-
23 (G10)	Piston (Closed Stop Adj.)	1	Aluminium	Alt. Hard Anodized/PTFE
24 (G10)	Closed Stop Adj.Bolt	1	Stainless Steel	-
25 (G10)	Closed Stop Adj.Damper	1	POM Delrin	-
26 (G10)	Stop Bolt 'O' Ring	1	Buna Nitrile	Alt. Viton/Silicone/EPDM
27 (G10)	Piston Stop Bolt 'O'Ring	2	Buna Nitrile	Alt. Viton/Silicone/EPDM
28 (G10)	Stop Bolt Retainer 'O'Ring	1	Buna Nitrile	Alt. Viton/Silicone/EPDM
29 (G10)	Stop Bolt Retainer	1	Stainless Steel	-
30 (G10)	Closed Stop Adj.Nut	1	Stainless Steel	-

ACTUATOR OPERATION

Maximum Operating Time Per Second (0.55 MPaG / 80 PSIG)

Actuator Size	FATDA0500401SH FATSR0500401SH	FATDA1000401SH FATSR1000401SH	FATDA2000401SH FATSR2000401SH	FATDA3750401SH FATSR3750401SH	FATDA6000401SH FATSR6000401SH	FATDA8250401SH FATSR8250401SH
DA open	<1	<1	2	2,5	3,5	4
DA close	<1	<1	2	2,5	3,5	4
SR open	<1	<1	2	2,5	3,5	4
SR close	<1	<1	1,5	2	3	3

Air Consumption per Stroke

Actuator Size	FATDA0500401SH FATSR0500401SH	FATDA1000401SH FATSR1000401SH	FATDA2000401SH FATSR2000401SH	FATDA3750401SH FATSR3750401SH	FATDA6000401SH FATSR6000401SH	FATDA8250401SH FATSR8250401SH
Port 'A' to open (liters)	0,18	0,38	0,9	1,69	2,8	3,05
Port 'B' to close (liters)	0,24	0,5	1	1,9	3,4	3,7
Port 'A' to open (cubic inch)	10,98	23,18	54,92	103,13	170,86	186,12
Port 'B' to close (cubic inch)	14,65	30,52	61,02	115,95	207,47	225,79

Overall Actuator Weight

Actuator Size	3	10	35	70
DA Kilograms (kg)	1.0	2.8	10.4	20.2
SR Kilograms (kg)	1.1	2.9	11.9	23.9
DA pounds (lbs)	2.2	6.2	22.8	44.4
SR pounds (lbs)	2.4	6.4	26.1	52.5

Minimum Recommended Solenoid Valve Cv

Actuator Size	3	10	35	70
Solenoid Cv	0.2	0.2	0.5	0.8

TECHNICAL DATA

GDA = DoubleActing
DA Port 'A' = Air To Open (Anti-Clockwise)
DA Port 'B' = Air To Close (Clockwise)
Fail Safe Open = Rotate Pistons 180° About Own Axis
Drive Medium = Air (Dry or Lubricated); Non Corrosive Gas; Light Hydraulic Oil
GSR = SpringReturn
SR Port 'A' = Air To Oper (Anti-Clockwise compressing Springs)
SR Port 'B' = Spring To Close (Clockwise)

Temperature:
- Buna Nitrile 'O' Seals
  -40 to +100°C
  or -40 to +212°F
- Viton 'O' Seals
  -25 to +250°C
  or -13 to +482°F

DOUBLE ACTING

OPENING STROKE

• Looking at the front of the Actuator, PORT 'A' is on the left and PORT 'B' is on the right.
• To open the Actuator, connect the air supply to PORT 'A' to fill the central chamber of the Actuator.
• The two opposing Pistons will open and rotate the driveshaft in a counter-clockwise direction.
• When the pistons reach the end of their travel, the actuator driveshaft will be in the open position.

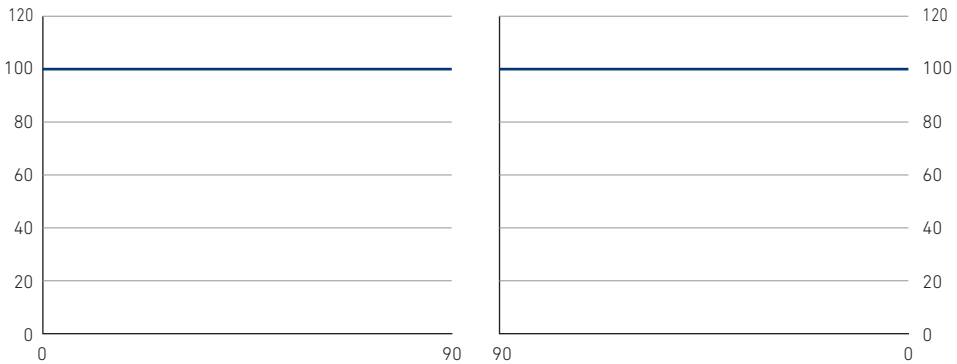
CLOSING STROKE

• Looking at the front of the Actuator, PORT 'A' is on the left and PORT 'B' is on the right.
• To close the Actuator, connect the air supply to PORT 'B' to fill the outer chambers of the Actuator
• The two opposing Pistons will close and rotate the actuator driveshaft in a clockwise direction.
• When the pistons reach the end of their travel, the actuator driveshaft will be in the closed position.

TORQUE VALUE GEMELS ACTUATORS

TORQUE DIAGRAM DOUBLE ACTING ACTUATOR

With reference to the above diagram, is possible to note that the torque of a double acting actuator remain constant throught-out the complete action.



TORQUES (Nm) ACTUATOR GEMELS DOUBLE ACTING

MODEL		AIR SUPPLY					
	Mpa	0,3	0,4	0,5	0,55	0,6	0,7
	PSI	43,5	58	72,5	79,75	87	101,5
DA 25	Nm	11,9	15,8	19,8	21,7	23,7	27,7
	lbf-ft	8,78	11,65	14,60	16,01	17,48	20,43
DA40	Nm	20,8	27,7	34,6	38,1	41,6	48,5
	lbf-ft	15,34	20,43	25,52	28,10	30,68	35,77
DA 50	Nm	25,4	33,8	42,3	46,5	50,7	59,2
	lbf-ft	18,73	24,93	31,20	34,30	37,39	43,66
DA 100	Nm	50,7	67,6	84,5	93	101,4	118,3
	lbf-ft	37,39	49,86	62,32	68,59	74,79	87,25
DA 200	Nm	101	134,6	168,3	185,1	201,9	235,6
	lbf-ft	74,49	99,28	124,13	136,52	148,91	173,77
DA 375	Nm	187	249	312	343	374	437
	lbf-ft	137,92	183,65	230,12	252,98	275,85	322,31
DA 580	Nm	298	398	497	547	597	696
	lbf-ft	219,79	293,55	366,57	403,45	440,32	513,34
DA 825	Nm	412	550	687	756	825	962
	lbf-ft	303,87	405,66	506,70	557,60	608,49	709,53

SPRING RETURN

OPENING STROKE

- Looking at the front of the Actuator, PORT 'A' is on the left and PORT 'B' is on the right.
- To open the Actuator, connect the air supply to PORT 'A' to fill the central chamber of the Actuator.
- The two opposing Pistons will open, compressing the springs in the outer chambers and rotate the driveshaft in a counter-clockwise direction.
- When the pistons reach the end of their travel, the springs will be fully compressed and the actuator driveshaft will be in the open position.

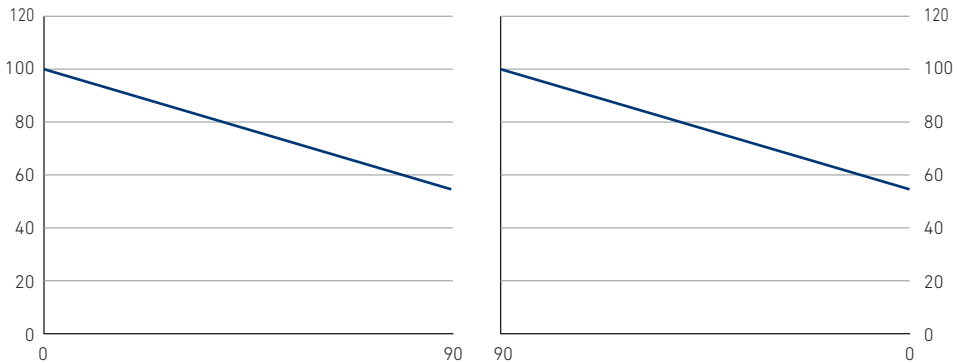
CLOSING STROKE

- Looking at the front of the Actuator, PORT 'A' is on the left and PORT 'B' is on the right.
- To close the Actuator, disconnect the air supply from PORT 'A'. This will allow the compressed springs to push the pistons back to their starting position.
- As the springs decompress the two opposing Pistons will close and rotate the actuator driveshaft in a clockwise direction.
- When the pistons reach the end of their travel, the actuator driveshaft will be in the closed position.

TORQUE VALUE GEMELS ACTUATORS

TORQUE DIAGRAM DOUBLE ACTING ACTUATOR

With reference to the above diagram the torque of a Spring Return actuator is not constant but decreasing. This is due to the action of the springs.



TORQUES (Nm) ACTUATOR GEMELS SPRING RETURN

Note: For a continuous improvement, Gemels reserves the right to operate changes without prior notice.
For the values highlighted, or are missing, or with a minus sign (-), it is reported that with the number of standard springs, at 3 bar, the actuator is not able to to overcome the force of the internal springs, therefore the actuator can not to perform one complete rotation.
Therefore with air supply of 3 Bar, it will be necessary evaluate the reduction of the number of springs or buy a bigger model.

TYPE	Springs Q,ty	Spring Torque		AIR SUPPLY													
				Mpa	0,3		0,4		0,5		0,55		0,6		0,7	
				PSI	43,5		58		72,5		79,75		87		101,5	
		Start	End		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
SR35/(18)	1	2,72	1,50	Nm	23,90	22,60	32,30	31,10	40,80	39,50	45,00	43,80	49,20	48,00	57,70	56,40
		2,01	1,11	lbf-ft	17,63	16,67	23,82	22,94	30,09	29,13	33,19	32,31	36,29	35,40	42,56	41,60
	2	5,44	3,00	Nm	22,40	19,90	30,80	28,40	39,30	36,80	43,50	41,00	47,70	45,30	56,20	53,70
		4,01	2,21	lbf-ft	16,52	14,68	22,72	20,95	28,99	27,14	32,08	30,24	35,18	33,41	41,45	39,61
	3	8,16	4,50	Nm	20,90	17,20	29,30	25,60	37,80	34,10	42,00	38,30	46,20	42,50	54,70	51,00
		6,02	3,32	lbf-ft	15,42	12,69	21,61	18,88	27,88	25,15	30,98	28,25	34,08	31,35	40,34	37,62
	4	10,88	6,00	Nm	19,40	14,50	27,80	22,90	36,30	31,40	40,50	35,60	44,70	39,80	53,20	48,30
		8,02	4,43	lbf-ft	14,31	10,69	20,50	16,89	26,77	23,16	29,87	26,26	32,97	29,35	39,24	35,62
	5	13,60	7,50	Nm	17,90	11,80	26,30	20,20	34,80	28,70	39,00	32,90	43,20	37,10	51,70	45,60
		10,03	5,53	lbf-ft	13,20	8,70	19,40	14,90	25,67	21,17	28,76	24,27	31,86	27,36	38,13	33,63
	6	16,32	9,00	Nm	16,40	9,00	24,80	17,50	33,30	25,90	37,50	30,20	41,70	34,40	50,20	42,80
		12,04	6,64	lbf-ft	12,10	6,64	18,29	12,91	24,56	19,10	27,66	22,27	30,76	25,37	37,03	31,57
	7	19,04	10,50	Nm	-	-	23,30	14,80	31,80	23,20	36,00	27,40	40,20	31,70	48,70	40,10
		14,04	7,74	lbf-ft	-	-	17,19	10,92	23,45	17,11	26,55	20,21	29,65	23,38	35,92	29,58
	8	21,76	12,00	Nm	-	-	21,80	12,00	30,30	20,50	34,50	24,70	38,70	28,90	47,20	37,40
		16,05	8,85	lbf-ft	-	-	16,08	8,85	22,35	15,12	25,45	18,22	28,54	21,32	34,81	27,58
	9	24,48	13,50	Nm	-	-	-	-	28,80	17,80	33,00	22,00	37,20	26,20	45,70	34,70
		18,06	9,96	lbf-ft	-	-	-	-	21,24	13,13	24,34	16,23	27,44	19,32	33,71	25,59
	10	27,20	15,00	Nm	-	-	-	-	27,30	15,10	31,50	19,30	35,70	23,50	44,20	32,00
		20,06	11,06	lbf-ft	-	-	-	-	20,14	11,14	23,23	14,23	26,33	17,33	32,60	23,60
	11	29,92	16,50	Nm	-	-	-	-	-	-	30,00	16,60	34,20	20,80	42,70	29,20
		22,07	12,17	lbf-ft	-	-	-	-	-	-	22,13	12,24	25,22	15,34	31,49	21,54
	12	32,64	18,00	Nm	-	-	-	-	-	-	28,50	13,80	32,70	18,10	41,20	26,50
		24,07	13,28	lbf-ft	-	-	-	-	-	-	21,02	10,18	24,12	13,35	30,39	19,55
SR60/(40)	1	5,12	3,34	Nm	47,40	45,60	64,30	62,50	81,20	79,40	89,60	87,80	98,10	96,30	115,00	113,20
		3,78	2,46	lbf-ft	34,96	33,63	47,43	46,10	59,89	58,56	66,09	64,76	72,35	71,03	84,82	83,49
	2	10,24	6,68	Nm	44,00	40,50	60,90	57,40	77,80	74,30	86,30	82,70	94,70	91,20	111,60	108,10
		7,55	4,93	lbf-ft	32,45	29,87	44,92	42,34	57,38	54,80	63,65	61,00	69,85	67,27	82,31	79,73
	3	15,36	10,02	Nm	40,70	35,30	57,60	52,20	74,50	69,10	82,90	77,60	91,40	86,00	108,30	102,90
		11,33	7,39	lbf-ft	30,02	26,04	42,48	38,50	54,95	50,97	61,14	57,23	67,41	63,43	79,88	75,89
	4	20,48	13,36	Nm	37,30	30,20	54,20	47,10	71,10	64,00	79,60	72,50	88,00	80,90	104,90	97,80
		15,11	9,85	lbf-ft	27,51	22,27	39,98	34,74	52,44	47,20	58,71	53,47	64,91	59,67	77,37	72,13
	5	25,60	16,70	Nm	34,00	25,10	50,90	42,00	67,80	58,90	76,30	67,40	84,70	75,80	101,60	92,70
		18,88	12,32	lbf-ft	25,08	18,51	37,54	30,98	50,01	43,44	56,28	49,71	62,47	55,91	74,94	68,37
	6	30,72	20,04	Nm	30,70	20,00	47,60	36,90	64,50	53,80	72,90	62,20	81,40	70,70	98,30	87,60
		22,66	14,78	lbf-ft	22,64	14,75	35,11	27,22	47,57	39,68	53,77	45,88	60,04	52,15	72,50	64,61
	7	35,84	23,38	Nm	-	-	44,20	31,80	61,10	48,70	69,60	57,10	78,00	65,60	94,90	82,50
		26,43	17,24	lbf-ft	-	-	32,60	23,45	45,06	35,92	51,33	42,11	57,53	48,38	69,99	60,85
	8	40,96	26,72	Nm	-	-	40,90	26,60	57,80	43,50	66,20	52,00	74,70	60,40	91,60	77,30
		30,21	19,71	lbf-ft	-	-	30,17	19,62	42,63	32,08	48,83	38,35	55,10	44,55	67,56	57,01
	9	46,08	30,06	Nm	-	-	-	-	54,40	38,40	62,90	46,90	71,30	55,30	88,20	72,20
		33,99	22,17	lbf-ft	-	-	-	-	40,12	28,32	46,39	34,59	52,59	40,79	65,05	53,25
	10	51,20	33,40	Nm	-	-	-	-	51,10	33,30	59,60	41,80	68,00	50,20	84,90	67,10
		37,76	24,63	lbf-ft	-	-	-	-	37,69	24,56	43,96	30,83	50,15	37,03	62,62	49,49
	11	56,32	36,74	Nm	-	-	-	-	-	-	56,20	36,60	64,70	45,10	81,60	62,00
		41,54	27,10	lbf-ft	-	-	-	-	-	-	41,45	26,99	47,72	33,26	60,18	45,73
	12	61,44	40,08	Nm	-	-	-	-	-	-	52,90	31,50	61,30	40,00	78,20	56,90
		45,32	29,56	lbf-ft	-	-	-	-	-	-	39,02	23,23	45,21	29,50	57,68	41,97

TORQUES (Nm) ACTUATOR GEMELS SPRING RETURN

TYPE	Springs Outer	Springs Inner	Spring Torque Start	Spring Torque End	AIR SUPPLY	Mpa	0,3		0,4		0,5		0,55		0,6		0,7	
						PSI	43,5		58		72,5		79,75		87		101,5	
							Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
SR130/(72)	1	0	21,70	11,90	Nm		89,00	79,30	122,70	112,90	156,30	146,60	173,20	163,40	190,00	180,20	223,70	213,90
			16,01	8,78	lbf-ft		65,64	58,49	90,50	83,27	115,28	108,13	127,75	120,52	140,14	132,91	164,99	157,76
	1	1	32,60	17,90	Nm		83,10	68,40	116,70	102,10	150,40	135,70	167,20	152,60	184,00	169,40	217,70	203,00
			24,04	13,20	lbf-ft		61,29	50,45	86,07	75,30	110,93	100,09	123,32	112,55	135,71	124,94	160,57	149,72
	2	0	43,40	23,90	Nm		77,10	57,60	110,80	91,20	144,40	124,90	161,20	141,70	178,10	158,50	211,70	192,20
			32,01	17,63	lbf-ft		56,87	42,48	81,72	67,27	106,50	92,12	118,89	104,51	131,36	116,90	156,14	141,76
	2	1	54,30	29,80	Nm		71,10	46,70	104,80	80,40	138,40	114,00	155,30	130,90	172,10	147,70	205,80	181,30
			40,05	21,98	lbf-ft		52,44	34,44	77,30	59,30	102,08	84,08	114,54	96,55	126,93	108,94	151,79	133,72
	2	2	65,10	35,80	Nm		65,20	35,90	98,80	69,50	132,50	103,20	149,30	120,00	166,10	136,80	199,80	170,50
			48,02	26,40	lbf-ft		48,09	26,48	72,87	51,26	97,73	76,12	110,12	88,51	122,51	100,90	147,36	125,75
	3	0	65,10	35,80	Nm		65,20	35,90	98,80	69,50	132,50	103,20	149,30	120,00	166,10	136,80	199,80	170,50
			48,02	26,40	lbf-ft		48,09	26,48	72,87	51,26	97,73	76,12	110,12	88,51	122,51	100,90	147,36	125,75
	3	1	76,00	41,80	Nm		59,20	25,00	92,90	58,70	126,50	92,30	143,30	109,20	160,20	126,00	193,80	159,60
			56,05	30,83	lbf-ft		43,66	18,44	68,52	43,29	93,30	68,08	105,69	80,54	118,16	92,93	142,94	117,71
	3	2	86,80	47,70	Nm		53,20	14,20	86,90	47,80	120,50	81,50	137,40	98,30	154,20	115,10	187,90	148,80
			64,02	35,18	lbf-ft		39,24	10,47	64,09	35,26	88,88	60,11	101,34	72,50	113,73	84,89	138,59	109,75
	3	3	97,70	53,70	Nm		47,30	3,30	80,90	37,00	114,60	70,60	131,40	87,50	148,20	104,30	181,90	137,90
			72,06	39,61	lbf-ft		34,89	2,43	59,67	27,29	84,52	52,07	96,92	64,54	109,31	76,93	134,16	101,71
	4	0	86,80	47,70	Nm		53,20	14,20	86,90	47,80	120,60	81,50	137,40	98,30	154,20	115,10	187,90	148,80
			64,02	35,18	lbf-ft		39,24	10,47	64,09	35,26	88,95	60,11	101,34	72,50	113,73	84,89	138,59	109,75
	4	1	97,70	53,70	Nm		47,30	3,30	80,90	37,00	114,60	70,60	131,40	87,50	148,20	104,30	181,90	137,90
			72,06	39,61	lbf-ft		34,89	2,43	59,67	27,29	84,52	52,07	96,92	64,54	109,31	76,93	134,16	101,71
	4	2	108,50	59,70	Nm		41,30	-7,50	75,00	26,10	108,60	59,80	125,40	76,60	142,30	93,40	175,90	127,10
			80,03	44,03	lbf-ft		30,46	-5,53	55,32	19,25	80,10	44,11	92,49	56,50	104,95	68,89	129,74	93,74
	4	3	119,40	65,60	Nm		35,30	-18,40	69,00	15,30	102,60	48,90	119,50	65,80	136,30	82,60	170,00	116,20
			88,06	48,38	lbf-ft		26,04	-13,57	50,89	11,28	75,67	36,07	88,14	48,53	100,53	60,92	125,39	85,70
	4	4	130,20	71,60	Nm		29,40	-29,20	63,00	4,40	96,70	38,10	113,50	54,90	130,30	71,70	164,00	105,40
			96,03	52,81	lbf-ft		21,68	-21,54	46,47	3,25	71,32	28,10	83,71	40,49	96,10	52,88	120,96	77,74
SR240/(132)	1	0	40,20	22,10	Nm		165,00	146,90	227,30	209,30	289,70	271,60	320,90	302,80	352,10	334,00	414,40	396,30
			29,65	16,30	lbf-ft		121,70	108,35	167,65	154,37	213,67	200,32	236,68	223,33	259,69	246,35	305,64	292,30
	1	1	60,30	33,20	Nm		153,90	126,80	216,30	189,20	278,70	251,50	309,80	282,70	341,00	313,90	403,40	376,20
			44,47	24,49	lbf-ft		113,51	93,52	159,53	139,55	205,56	185,50	228,50	208,51	251,51	231,52	297,53	277,47
	2	0	80,40	44,20	Nm		142,90	106,70	205,20	169,10	267,60	231,40	298,80	262,60	330,00	293,80	392,30	356,10
			59,30	32,60	lbf-ft		105,40	78,70	151,35	124,72	197,37	170,67	220,38	193,68	243,39	216,70	289,34	262,65
	2	1	100,50	55,30	Nm		131,80	86,60	194,20	149,00	256,50	211,30	287,70	242,50	318,90	273,70	381,30	336,00
			74,12	40,79	lbf-ft		97,21	63,87	143,23	109,90	189,18	155,85	212,20	178,86	235,21	201,87	281,23	247,82
	2	2	120,60	66,30	Nm		120,80	66,50	183,10	128,90	245,50	191,20	276,70	222,40	307,90	253,60	370,20	315,90
			88,95	48,90	lbf-ft		89,10	49,05	135,05	95,07	181,07	141,02	204,08	164,03	227,09	187,05	273,04	233,00
	3	0	120,60	66,30	Nm		120,80	66,50	183,10	128,90	245,50	191,20	276,70	222,40	307,90	253,60	370,20	315,90
			88,95	48,90	lbf-ft		89,10	49,05	135,05	95,07	181,07	141,02	204,08	164,03	227,09	187,05	273,04	233,00
	3	1	140,70	77,40	Nm		109,70	46,40	172,10	108,80	234,40	171,10	265,60	202,30	296,80	233,50	359,20	295,80
			103,77	57,09	lbf-ft		80,91	34,22	126,93	80,25	172,88	126,20	195,90	149,21	218,91	172,22	264,93	218,17
	3	2	160,80	88,40	Nm		98,70	26,30	161,00	88,70	223,40	151,00	254,60	182,20	285,80	213,40	348,10	275,70
			118,60	65,20	lbf-ft		72,80	19,40	118,75	65,42	164,77	111,37	187,78	134,38	210,79	157,40	256,74	203,35
	3	3	180,90	99,50	Nm		87,60	6,20	150,00	68,60	212,30	130,90	243,50	162,10	274,70	193,30	337,10	255,60
			133,42	73,39	lbf-ft		64,61	4,57	110,63	50,60	156,58	96,55	179,60	119,56	202,61	142,57	248,63	188,52
	4	0	160,80	88,40	Nm		98,70	26,30	161,00	88,70	223,40	151,00	254,60	182,20	285,70	213,40	348,10	275,70
			118,60	65,20	lbf-ft		72,80	19,40	118,75	65,42	164,77	111,37	187,78	134,38	210,72	157,40	256,74	203,35
	4	1	180,90	99,50	Nm		87,60	6,20	150,00	68,60	212,30	130,90	243,50	162,10	274,70	193,30	337,10	255,60
			133,42	73,39	lbf-ft		64,61	4,57	110,63	50,60	156,58	96,55	179,60	119,56	202,61	142,57	248,63	188,52
	4	2	201,00	110,50	Nm		76,60	-13,90	138,90	48,50	201,30	110,80	232,50	142,00	263,60	173,20	326,00	235,50
			148,25	81,50	lbf-ft		56,50	-10,25	102,45	35,77	148,47	81,72	171,48	104,73	194,42	127,75	240,44	173,70
	4	3	221,10	121,60	Nm		65,50	-34,00	127,90	28,40	190,20	90,70	221,40	121,90	252,60	153,10	315,00	215,40
			163,07	89,69	lbf-ft		48,31	-25,08	94,33	20,95	140,28	66,90	163,30	89,91	186,31	112,92	232,33	158,87
		4	241,20	132,60	Nm		54,50	-54,10	116,80	8,30	179,20	70,60	210,40	101,80	241,50	133,00	303,90	195,30
			177,90	97,80	lbf-ft		40,20	-39,90	86,15	6,12	132,17	52,07	155,18	75,08	178,12	98,10	224,14	144,05

Note: For a continuous improvement, Gemels reserves the right to operate changes without prior notice.
For the values highlighted, or are missing, or with a minus sign (-), it is reported that with the number of standard springs, at 3 bar, the actuator is not able to to overcome the force of the internal springs, therefore the actuator can not to perform one complete rotation.
Therefore with air supply of 3 Bar, it will be necessary evaluate the reduction of the number of springs or buy a bigger model.

WARNING: NEVER DISASSEMBLE A PRESSURISED UNIT!

Always isolate the actuator pneumatically or hydraulically and electrically.

Always remove all accessories and mounting hardware prior to maintenance.

Other Information
Actuator Lubricant: BERULUB FR16
Spring Lubrications: VALVOLINE L-EP2
Always insure you wear the correct safety equipment as stipulated by your local organisation and applicable laws

TORQUES (Nm) ACTUATOR GEMELS SPRING RETURN

Note: For a continuous improvement, Gemels reserves the right to operate changes without prior notice.
For the values highlighted, or are missing, or with a minus sign (-), it is reported that with the number of standard springs, at 3 bar, the actuator is not able to to overcome the force of the internal springs, therefore the actuator can not to perform one complete rotation.
Therefore with air supply of 3 Bar, it will be necessary evaluate the reduction of the number of springs or buy a bigger model.

TYPE	Springs Outer	Springs Inner	Spring Torque Start	Spring Torque End	AIR SUPPLY													
					Mpa	0,3		0,4		0,5		0,55		0,6		0,7	
					PSI	43,5		58		72,5		79,75		87		101,5	
						Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
SR385/(210)	1	0	64,1	35,3	Nm	263,1	234,3	362,6	333,7	462	433,2	511,8	482,9	561,5	532,6	660,9	632,1
			47,28	26,04	lbf-ft	194,05	172,81	267,44	246,12	340,75	319,51	377,48	356,17	414,14	392,82	487,45	466,21
	1	1	96,2	52,9	Nm	245,5	202,2	344,9	301,7	444,4	401,1	494,1	450,9	543,8	500,6	643,3	600
			70,95	39,02	lbf-ft	181,07	149,13	254,38	222,52	327,77	295,84	364,43	332,57	401,09	369,22	474,47	442,54
	2	0	128,2	70,5	Nm	227,9	170,2	327,3	269,6	426,8	369,1	476,5	418,8	526,2	468,5	625,7	568
			94,56	52,00	lbf-ft	168,09	125,53	241,40	198,85	314,79	272,23	351,45	308,89	388,10	345,55	461,49	418,93
	2	1	160,3	88,1	Nm	210,2	138,1	309,7	237,6	409,1	337	458,9	386,8	508,6	436,5	608,1	535,9
			118,23	64,98	lbf-ft	155,04	101,86	228,42	175,24	301,74	248,56	338,47	285,29	375,12	321,94	448,51	395,26
	2	2	192,3	105,8	Nm	192,6	106,1	292,1	205,5	391,5	305	441,2	354,7	491	404,4	590,4	503,9
			141,83	78,03	lbf-ft	142,05	78,26	215,44	151,57	288,75	224,96	325,41	261,61	362,14	298,27	435,46	371,66
	3	0	192,3	105,8	Nm	192,6	106,1	292,1	205,5	391,5	305	441,3	354,7	491	404,4	590,4	503,9
			141,83	78,03	lbf-ft	142,05	78,26	215,44	151,57	288,75	224,96	325,49	261,61	362,14	298,27	435,46	371,66
	3	1	224,4	123,4	Nm	175	74	274,4	173,5	373,9	272,9	423,6	322,7	473,3	372,4	572,8	471,8
			165,51	91,01	lbf-ft	129,07	54,58	202,39	127,97	275,77	201,28	312,43	238,01	349,09	274,67	422,47	347,98
	3	2	256,4	141	Nm	157,4	42	256,8	141,4	356,3	240,9	406	290,6	455,7	340,3	555,2	439,8
			189,11	104,00	lbf-ft	116,09	30,98	189,41	104,29	262,79	177,68	299,45	214,33	336,11	250,99	409,49	324,38
	3	3	288,5	158,6	Nm	139,7	9,9	239,2	109,4	338,6	208,8	388,4	258,6	438,1	308,3	537,5	407,7
			212,79	116,98	lbf-ft	103,04	7,30	176,42	80,69	249,74	154,00	286,47	190,73	323,13	227,39	396,44	300,70
	4	0	256,4	141	Nm	157,4	42	256,8	141,4	356,3	240,9	406	290,6	455,7	340,3	555,2	439,8
			189,11	104,00	lbf-ft	116,09	30,98	189,41	104,29	262,79	177,68	299,45	214,33	336,11	250,99	409,49	324,38
	4	1	288,5	158,6	Nm	139,7	9,9	239,2	109,4	338,6	208,8	388,4	258,6	438,1	308,3	537,6	407,7
			212,79	116,98	lbf-ft	103,04	7,30	176,42	80,69	249,74	154,00	286,47	190,73	323,13	227,39	396,51	300,70
	4	2	320,5	176,3	Nm	122,1	-22,1	221,6	77,3	321	176,8	370,7	226,5	420,5	276,2	519,9	375,7
			236,39	130,03	lbf-ft	90,06	-16,30	163,44	57,01	236,76	130,40	273,41	167,06	310,14	203,71	383,46	277,10
	4	3	352,6	193,9	Nm	104,5	-54,2	203,9	45,3	303,4	144,7	353,1	194,5	402,8	244,2	502,3	343,6
			260,06	143,01	lbf-ft	77,08	-39,98	150,39	33,41	223,78	106,72	260,43	143,46	297,09	180,11	370,48	253,43
	4	4	384,6	211,5	Nm	86,8	-86,2	186,3	13,2	285,8	112,7	335,5	162,4	385,2	212,1	484,7	311,6
			283,67	155,99	lbf-ft	64,02	-63,58	137,41	9,74	210,79	83,12	247,45	119,78	284,11	156,44	357,50	229,82
SR530/(290)	1	0	89	49	Nm	364	324	501	461	639	599	707	668	776	736	914	874
			65,64	36,14	lbf-ft	268,47	238,97	369,52	340,02	471,30	441,80	521,45	492,69	572,35	542,84	674,13	644,63
	1	1	133	73	Nm	339	280	477	417	614	555	683	623	752	692	889	829
			98,10	53,84	lbf-ft	250,03	206,52	351,82	307,56	452,86	409,35	503,75	459,50	554,65	510,39	655,69	611,44
	2	0	177	97	Nm	315	235	452	373	590	510	659	579	727	648	865	785
			130,55	71,54	lbf-ft	232,33	173,33	333,38	275,11	435,16	376,16	486,05	427,05	536,21	477,94	637,99	578,98
	2	1	221	122	Nm	291	191	428	329	566	466	634	535	703	603	841	741
			163,00	89,98	lbf-ft	214,63	140,87	315,68	242,66	417,46	343,70	467,61	394,59	518,50	444,75	620,29	546,53
	2	2	266	146	Nm	266	147	404	284	541	422	610	491	679	559	816	697
			196,19	107,68	lbf-ft	196,19	108,42	297,97	209,47	399,02	311,25	449,91	362,14	500,80	412,30	601,85	514,08
	3	0	266	146	Nm	266	147	404	284	541	422	610	491	679	559	816	697
			196,19	107,68	lbf-ft	196,19	108,42	297,97	209,47	399,02	311,25	449,91	362,14	500,80	412,30	601,85	514,08
	3	1	310	170	Nm	242	103	379	240	517	378	586	446	654	515	792	652
			228,64	125,39	lbf-ft	178,49	75,97	279,54	177,01	381,32	278,80	432,21	328,95	482,36	379,84	584,15	480,89
	3	2	354	195	Nm	218	58	355	196	493	333	561	402	630	471	767	608
			261,10	143,82	lbf-ft	160,79	42,78	261,83	144,56	363,62	245,61	413,77	296,50	464,66	347,39	565,71	448,44
	3	3	398	219	Nm	193	14	331	152	468	289	537	358	606	426	743	564
			293,55	161,53	lbf-ft	142,35	10,33	244,13	112,11	345,18	213,15	396,07	264,05	446,96	314,20	548,01	415,98
	4	0	354	195	Nm	218	58	355	196	493	333	561	402	630	471	768	608
			261,10	143,82	lbf-ft	160,79	42,78	261,83	144,56	363,62	245,61	413,77	296,50	464,66	347,39	566,45	448,44
	4	1	398	219	Nm	193	14	331	152	468	289	537	358	606	426	743	564
			293,55	161,53	lbf-ft	142,35	10,33	244,13	112,11	345,18	213,15	396,07	264,05	446,96	314,20	548,01	415,98
	4	2	443	243	Nm	169	-30	306	107	444	245	513	314	581	382	719	520
			326,74	179,23	lbf-ft	124,65	-22,13	225,69	78,92	327,48	180,70	378,37	231,59	428,52	281,75	530,31	383,53
	4	3	487	268	Nm	145	-74	282	63	420	201	488	269	557	338	694	475
			359,19	197,67	lbf-ft	106,95	-54,58	207,99	46,47	309,78	148,25	359,93	198,40	410,82	249,30	511,87	350,34
	4	4	531	292	Nm	120	-119	258	19	395	156	464	225	533	294	670	431
			391,64	215,37	lbf-ft	88,51	-87,77	190,29	14,01	291,34	115,06	342,23	165,95	393,12	216,84	494,17	317,89

WARNING: NEVER DISASSEMBLE A PRESSURISED UNIT!

Always isolate the actuator pneumatically or hydraulically and electrically.

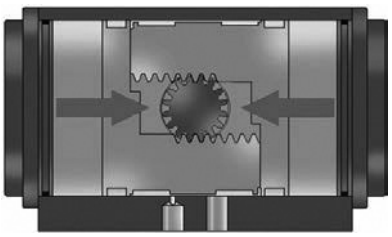
Always remove all accessories and mounting hardware prior to maintenance.

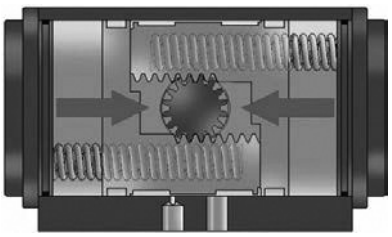
Other Information
Actuator Lubricant: BERULUB FR16
Spring Lubrications: VALVOLINE L-EP2
Always insure you wear the correct safety equipment as stipulated by your local organisation and applicable laws

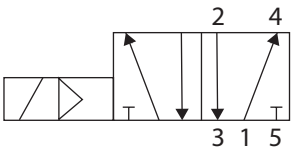
SOLENOID VALVE MOUNTING: NAMUR TYPE

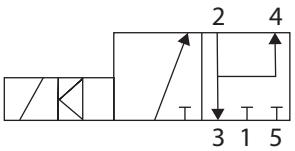
Please ensure you read the IOM manual that is supplied with the solenoid valve in order to ensure correct function. This section is a guide to the function of a solenoid valve in conjunction with a pneumatic quarter turn actuator. The solenoid valves mentioned here are **"namur mounted"** with a modular **"5/2 way / 3/2 way"** (meaning either mode is possible with the same valve).
Certain facts need to be taken into consideration when mounting a namur solenoid valve to a quarter turn pneumatic actuator:

- Port "2" and "4" are always on the namur interface of the solenoid valve
- Port "2" and "4" are always connected to the namur interface of the quarter turn pneumatic actuator
- Port "1" is where instrument air is always connected to the solenoid valve
- Port "1" is always referred to as the air inlet or pressure port on a solenoid valve





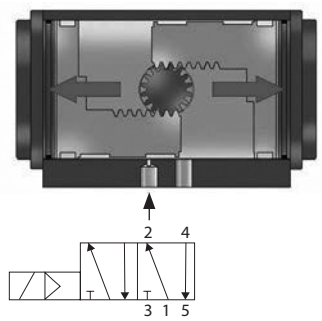




The above diagrams show a double acting actuator with 5/2 way solenoid valve (10.1) and a spring return actuator with a 5/2 way valve set up to function as a 3/2 way valve (10.2). Both valves are shown in the de-energised state (coil inactive, no electrical current). In both cases the solenoid valves port "2" is connected to the actuators port "A" through which air will vent out of port "3". When connecting a namur solenoid valve, the pneumatic diagram will determine how to connect the ports. Only solenoid valve ports "2" and '4' can be connected to the actuator. Whichever of the two ports shows a vertical arrow pointing away from it, is the port that needs to be connected to the actuators central chamber, in this case port "A".

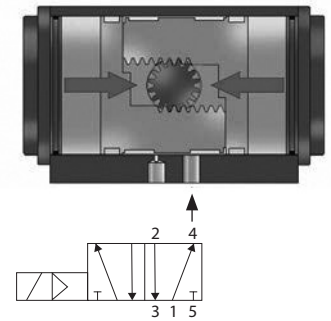
Please ensure you read the IOM manual that is supplied with the solenoid valve in order to ensure correct function. This section is a guide to the function of a solenoid valve in conjunction with a pneumatic quarter turn actuator. The solenoid valves mentioned here are **"namur mounted"** with a modular **"5/2 way / 3/2 way"** (meaning either mode is possible with the same valve).

OPERATION WITH SOLENOID VALVES: DOUBLE ACTING



SOLENOID COIL ENERGISED

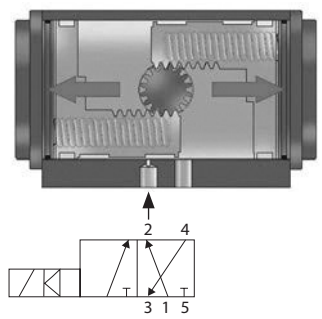
- This allows air to flow from solenoid inlet port "1" to solenoid port "2" which is connected to actuator port "A".
- As the air enters the center chamber of the actuator, the pistons start to move towards the open position (as indicated by the large red arrows).
- Atmospheric air from the outer chambers will vent out of actuator port "B", which is connected to solenoid port "4" and the exhausts via solenoid port "5".
- Solenoid port "3" is not used.



SOLENOID COIL DE-ENERGISED

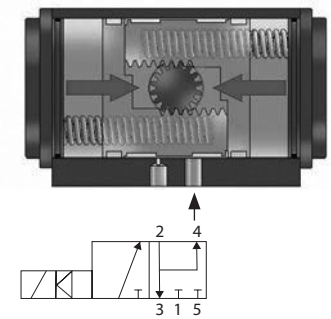
- This allows air to flow from solenoid inlet port "1" to solenoid port "4" which is connected to actuator port "B".
- As the air enters the outer chambers of the actuator, the pistons start to move towards the closed position (as indicated by the large red arrows).
- Atmospheric air from the inner chamber will vent out of actuator port "A", which is connected to solenoid port "2" and the exhausts via solenoid port "3".
- Solenoid port "5" is not used.

OPERATION WITH SOLENOID VALVES: SPRING RETURN



SOLENOID COIL ENERGISED

- This allows air to flow from solenoid inlet port "1" to solenoid port "2" which is connected to actuator port 'A'.
- As the air enters the center chamber of the actuator, the pistons start to move towards the open position and compressing the springs in the outer chambers (as indicated by the large red arrows).
- Atmospheric air from the outer chambers will vent out of actuator port "B", which is connected to solenoid port "4" and then exhausts via solenoid port "3".
- Solenoid port "5" is not used.



SOLENOID COIL DE-ENERGISED

- This closes solenoid port "1" and stops inlet air from flowing.
- The springs in the outer chambers will move the pistons back to the closed position (as indicated by the large red arrows).
- Residual air from the inner chamber will vent out of actuator port "A", which is connected to solenoid port "2" and the exhausts via solenoid port "3".
- Solenoid port "5" is not used.
- Solenoid port "2" and port "4" are also connected in a loop so no dirty air may enter the actuator (this is available only on some solenoid valves).

MOUNTING VARIATIONS

Below are the two common variations to mounting a 90 degree or 180 degree actuator to a valve.
Mounting actuators in these varying positions is due to space constraints in the global assembly or simply due to consistency with prior assemblies already in existence. Please note how the indicator puck always correctly shows the position of the valve disc and hence showing the flowpath of the medium running through the pipe.

13.1 in-line, closed position

Mounted in-line or parallel to the pipe, the actuator and valve are in the standard closed position.

13.2 in-line, open position

Mounted in-line or parallel to the pipe, the actuator and valve are in the standard open position.

13.3 crossmount, closed position

Mounted crossmount or offset to the pipe, the actuator and valve are in the standard closed position.

13.4 crossmount, open position

Mounted crossmount or offset to the pipe, the actuator and valve are in the standard open position.