ACHEN®

CERTIFICATE OF INSURANCE

ISO9001:2000

AA Series

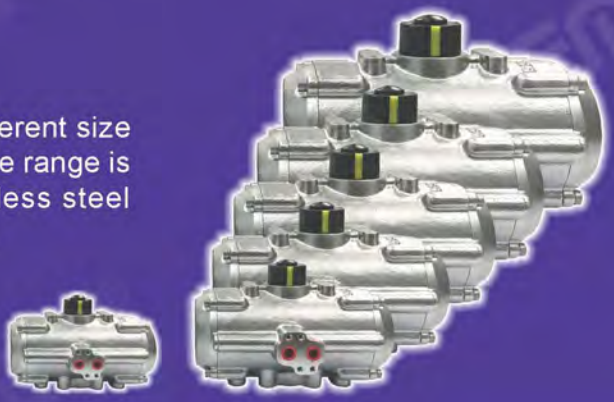
Stainless Steel Pneumatic Actuators

IP67

Design and Feature

ALPHA-ACHEM AA Series pneumatic actuators are 100% stainless steel actuators with the strong point of the fourth generation rack & pinion pneumatic actuators. Based on latest CNC machining centers & mechanical manufacturing technology, and nearly 20 years know-how of the rack & pinion technology, this actuators we manufactured is a high grade product with the characteristics of reliability, high performance, long cycle life and already proved to be used in most corrosive chemicals as well as very harsh industrial atmospheres.

- Wide scope of output torque. Totally, we have 10 different size (specifications) actuators for choice. The output torque range is from 15Nm to 3815Nm at 5 Bar. The AA-300 stainless steel actuator with 3815Nm is biggest one in the World now.



- Excellent corrosion resistance. All main parts of AA series actuator and it's accessories are made from stainless steel. The body and end-caps is made by investment casting stainless steel. The CF8 (304) and CF8M (316) are available for choice. The pinion and fastening are made by 304 or 316 on requiring. Nearly 20 years experience of application proved that this kind of stainless steel pneumatic is able to offer excellent resistance to most corrosive chemicals (such as acid, alkali) as well as corrosive industry atmospheres, such as offshore, oil and gas platform, pharmaceutical and food industry.

- Smooth operation and long life operation. High level manufacturing technology for the rack & pinion in our workshop allows this actuator not only to cycle more than 1 million times free from failure but alos to offer exceptionally smooth actuation due to the low friction generated during rotral operations.

- Flexible adjustment in travel ends. The two independent external travel stop bolts allow ±5°adjustment at 0°and 90° of the quarter travel.

Design and Feature

- Namur and ISO5211 Mount. AA series Stainless Steel Pneumatic Actuators are designed to incorporate Namur mounting for solenoids, limit switches and positioners and offer a ISO5211 combination mounting pads that allow you to mount directly to quarter turn valves.

- Single acting with high performance springs. Preloaded coating springs are made from the high quality material for resistant to corrosion and longer cycle life, which can be demounted safely and conveniently to satisfy different requirements of torque by changing quantity of springs.

5 Springs

6 Springs

7 Springs

8 Springs

9 Springs

10 Springs

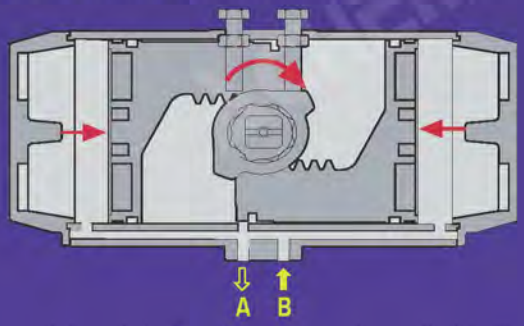
11 Springs

12 Springs

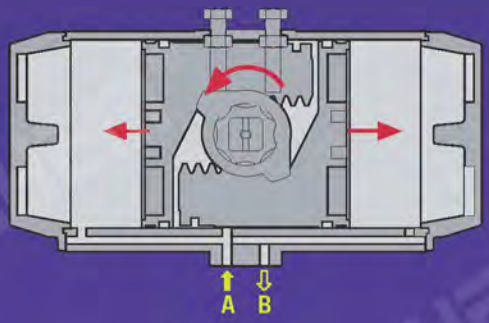
Even spring set is recommended for high cycle application.

Operating Principle

Double Acting (R-closed)

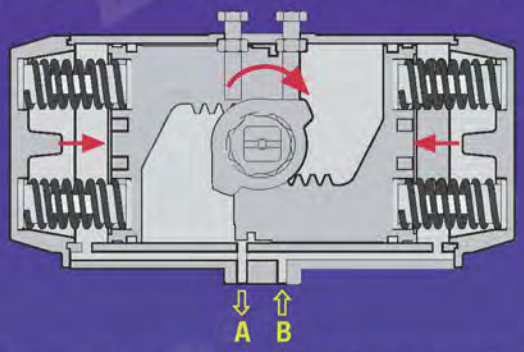


By supplying air to Port B, pressure is applied to the outside chamber and drives the dual pistons inward.
The action causes the pinion to turn clockwise while the air is being exhausted from Port A.

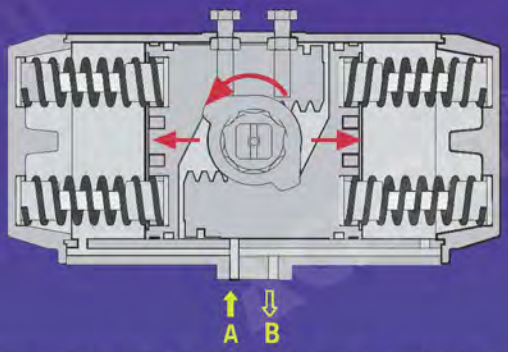


By supplying air to Port A, pressure is applied to the center chamber and forces the dual pistons outward.
Linear piston force is transferred via gear racks to the pinion gear, causing the pinion to turn counterclockwise while the air is being exhausted from Port B.

Spring Return (R-closed, fail closed)



Upon loss of air pressure, the stored energy in the compressed springs forces the pistons inwards producing rotary motion with exhaust air exiting at Port A. This "fail safe" position is held by spring force until air pressure reapplied to Port A.



By supplying air to Port A, pressure is applied to the center chamber, forcing the dual pistons outward, compressing the springs in the outside chambers to produce a counterclockwise rotation. Exhaust air exits at Port B.

Ordering Guide

AA — Code of ACHEM stainless steel pneumatic actuator

45 — Size of the Actuator

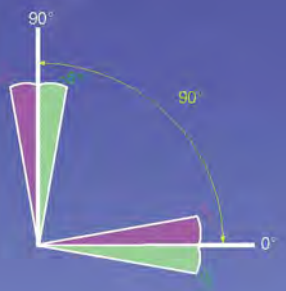
45
52
63
83
105
125
140
160
210
300

DA — Acting Type

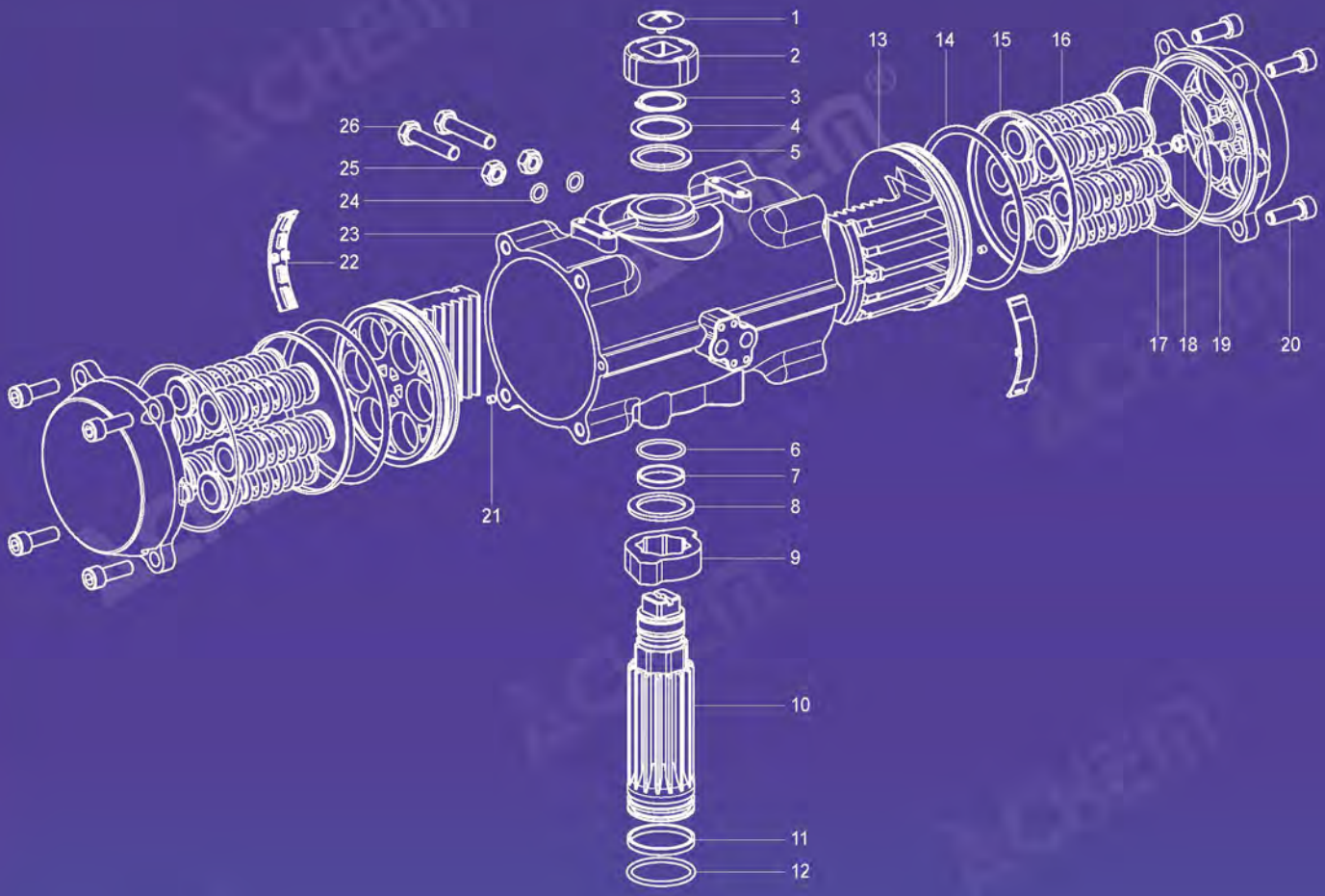
DA - Double Acting
SR - Spring Return

Stroke Adjustment:

Stroke Adjustment: Pinion stops allow ±5° adjustment at 0° and 90°.



Structure and Materials

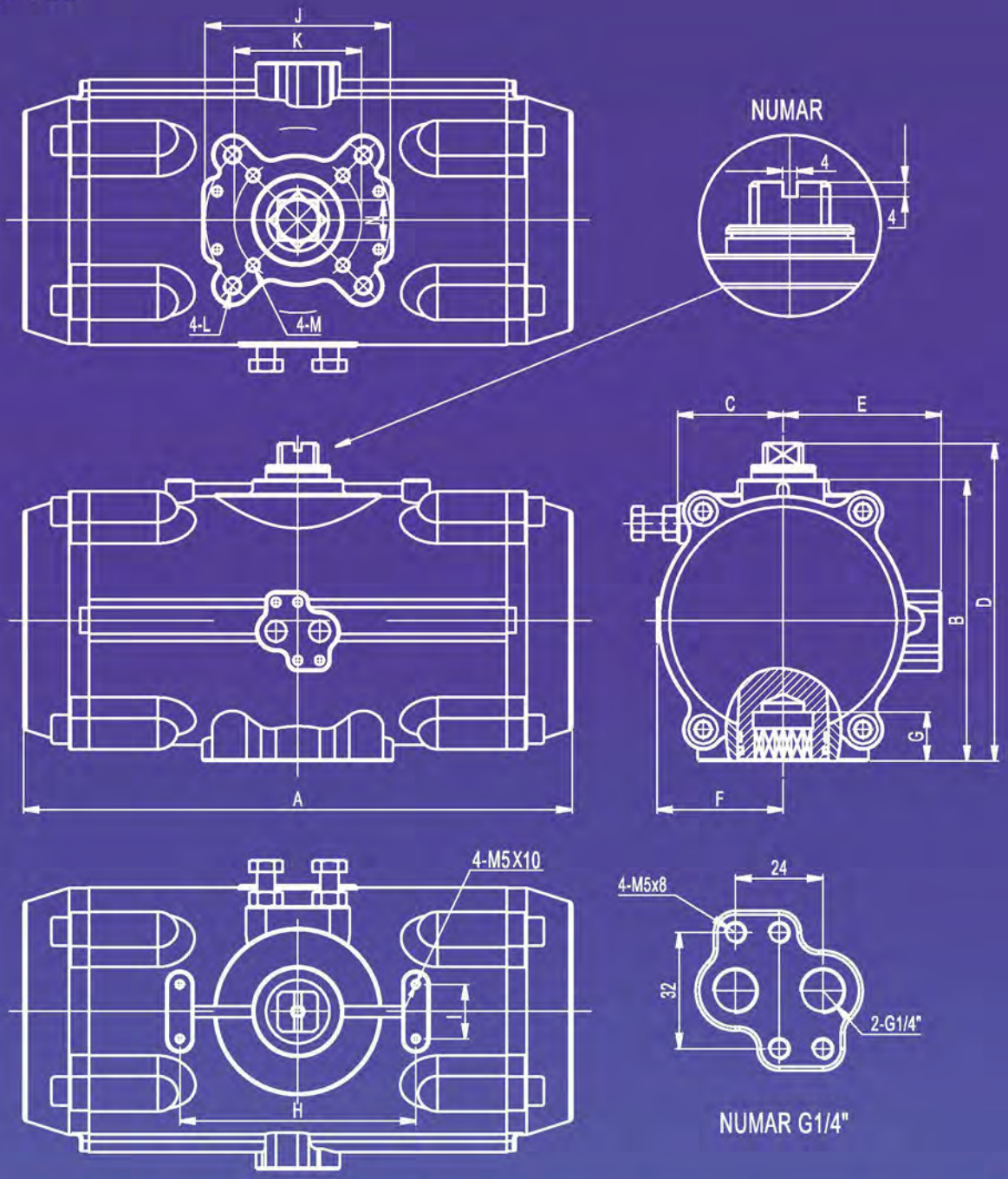


No.	Part Description	Qty.	Material
1	Indicator Screw	1	Plastic
2	Indicator	1	Plastic
3	Snap Ring	1	Stainless Steel
4	Washer	1	Stainless Steel
5	Outside Washer	1	POM
6	O-ring (Pinion Top)	1	NBR / L NBR / Viton
7	Bearing (Pinion Top)	1	POM
8	Inside Washer	1	POM
9	Cam	1	Stainless Steel (316 / 304 on requiring)
10	Pinion	1	Stainless Steel (316 / 304 on requiring)
11	Bearing (Pinion Bottom)	1	POM
12	O-ring (Pinion Bottom)	1	NBR / L NBR / Viton
13	Pistion	2	Stainless Steel (316 / 304 / Alu. on requiring)
14	O-ring (Piston)	2	NBR / L NBR / Viton

No.	Description	Qty.	Material
15	Bearing (Piston)	2	POM
16	Cartridge Spring	0-12	Spring Steel
	Spring Retainer (L & R)		Nylon 66
	Retainer Connector		Stainless Steel/ Brass
17	O-ring (End Cap)	2	NBR / L NBR / Viton
18	Stop Screw	2	Stainless Steel
19	End Cap	2	Stainless Steel (316 / 304 on requiring)
20	Screw (End Cap)	8	Stainless Steel
21	Plug	2	NBR / L NBR / Viton
22	Guide Piston	2	Nylon 66
23	Body	1	Stainless Steel (316 / 304 on requiring)
24	O-ring (Adjust Screw)	2	NBR / L NBR / Viton
25	Nut (Adjust Screw)	2	Stainless Steel
26	Adjust Screw	2	Stainless Steel

Dimensions

AA-45~160



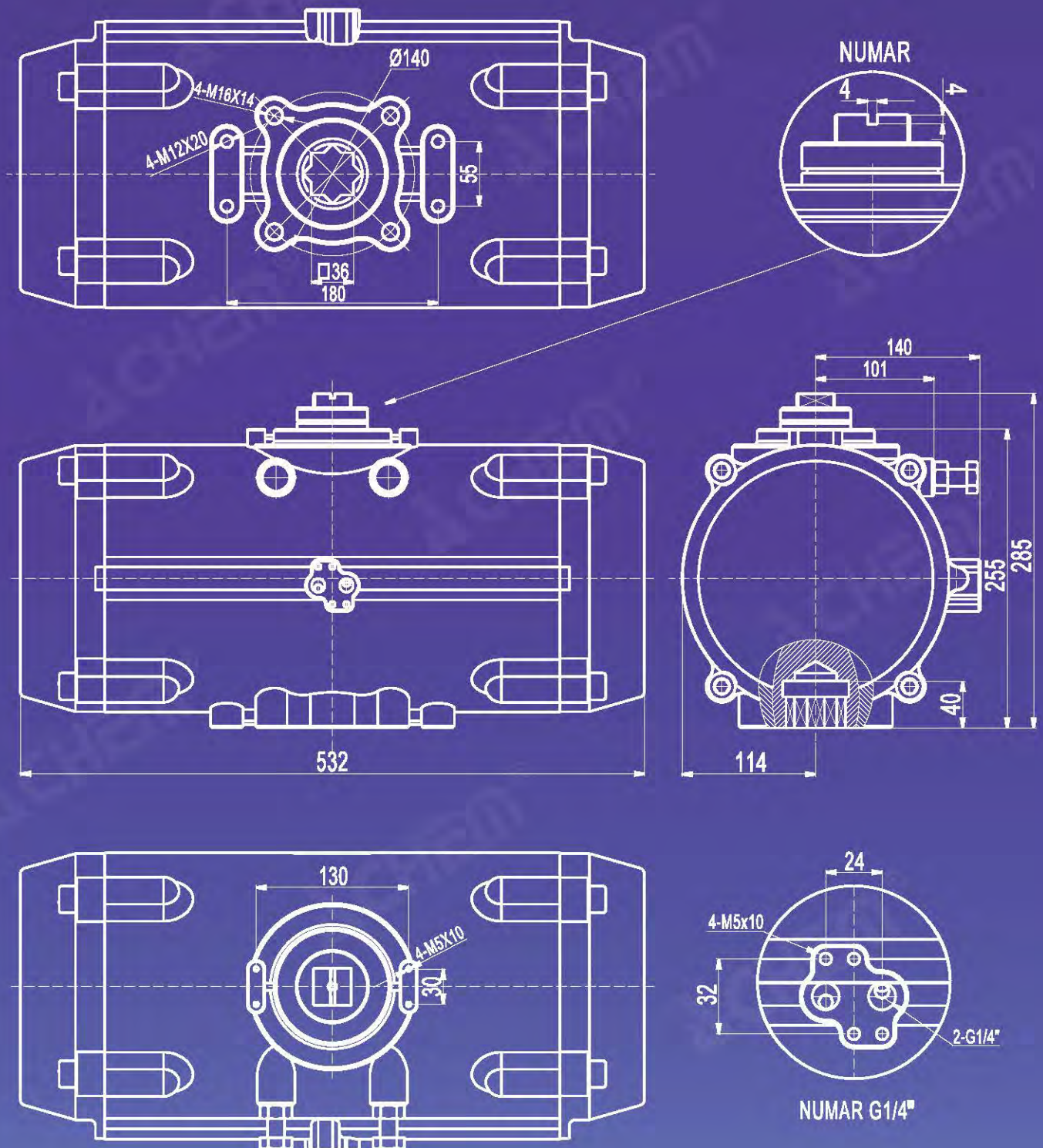
NUMAR G1/4"

Unit: mm

Model	A	B	C	D	E	F	G	H	I	N	J	K	L	M	Air Connection
AA-45	133	64	28	84	46	25	14	80	30	11	Ø50	Ø36	M6×10(1/4"-20UNC)	M5×7.5(#10-24UNF)	G1/4"
AA-52	146	72	30	92	47	32	14	80	30	11	Ø50	Ø36	M6×10(1/4"-20UNC)	M5×7.5(#10-24UNF)	G1/4"
AA-63	173	88	36	108	54	38	18	80	30	14	Ø70	Ø50	M8×13(5/16"-18UNC)	M6×10(1/4"-20UNC)	G1/4"
AA-83	204	108	48	128	65.5	48	21	80	30	17	Ø70	Ø50	M8×13(5/16"-18UNC)	M6×10(1/4"-20UNC)	G1/4"
AA-105	270	133	50	153	77	60	26	80	30	22	Ø102	Ø70	M10×16(3/8"-16UNC)	M8×13(5/16"-18UNC)	G1/4"
AA-125	302	155	58	175	87	69.5	27.5	80	30	22	Ø102	Ø70	M10×16(3/8"-16UNC)	M8×13(5/16"-18UNC)	G1/4"
AA-140	394	172	69	192	95.5	77	32	80	30	27	Ø125	Ø102	M12×20(1/2"-12UNC)	M10×16(3/8"-16UNC)	G1/4"
AA-160	456	198	75	218	106	87	34	80	30	27	Ø125	Ø102	M12×20(1/2"-12UNC)	M10×16(3/8"-16UNC)	G1/4"

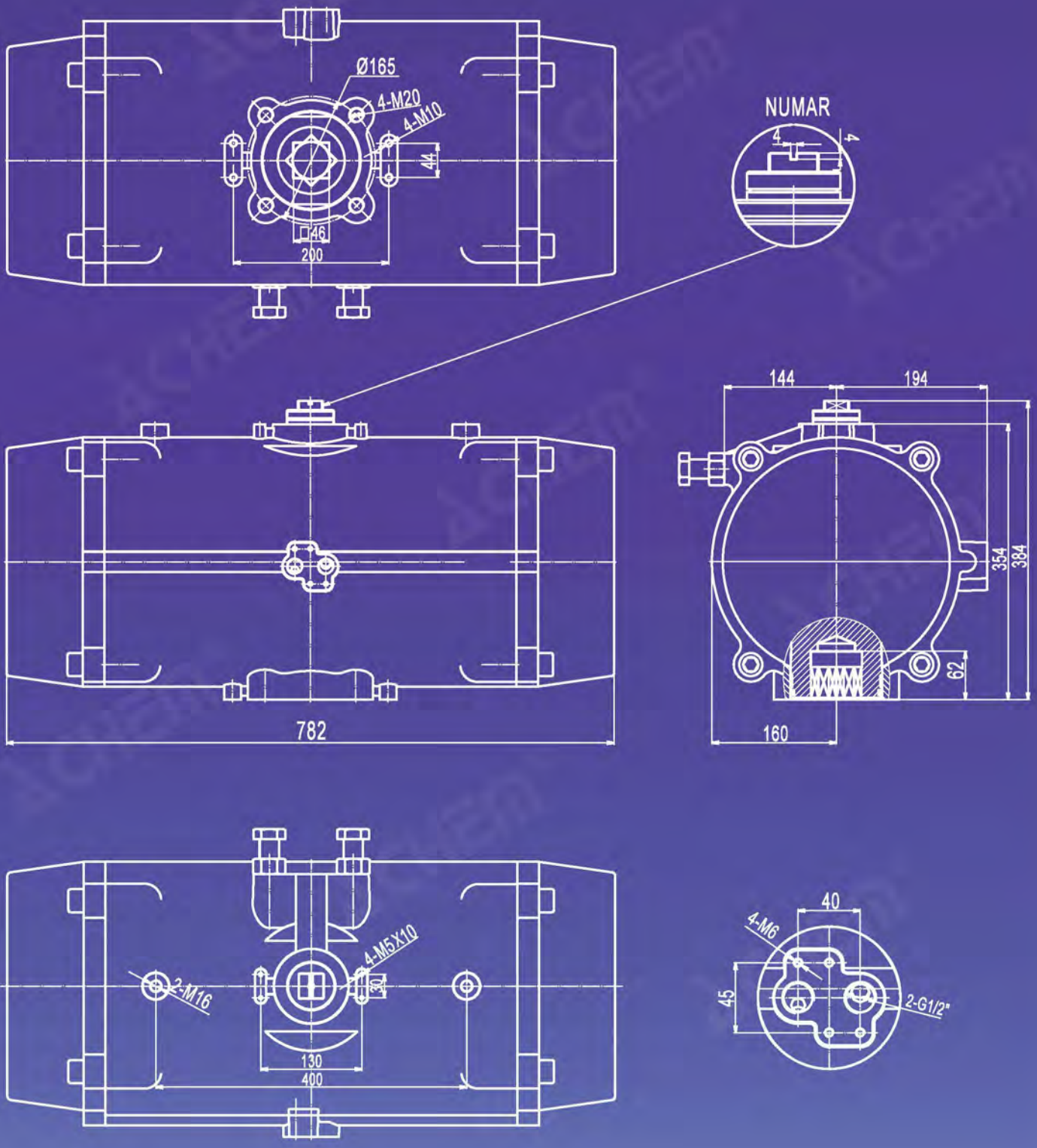
Dimensions

AA-210



Dimensions

AA-300



unit: mm

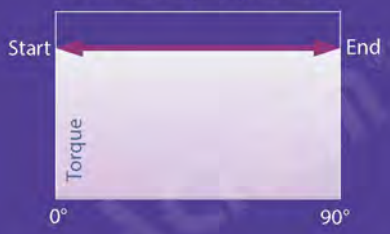
Model	AA-45	AA-52	AA-63	AA-83	AA-105	AA-125	AA-140	AA-160	AA-210	AA-300
Nameplates Dimensions	58×18	65×28	65×26	65×26	65×26	65×26	65×26	65×26	65×26	120×40

Output Torque (Nm)

Double Acting Actuators Output Torque (Nm)

MODEL	Air Pressure (Bar)						
	2.0	3.0	4.0	5.0	6.0	7.0	8.0
AA-45DA	6.0	9.1	12.1	15.1	18.1	21.1	24.1
AA-52DA	8.0	12.0	16.0	20.0	23.9	27.9	31.9
AA-63DA	14.6	21.9	29.2	36.5	43.8	51.1	58.4
AA-83DA	31.4	47.0	62.7	78.4	94.1	109.7	125.4
AA-105DA	66.1	99.2	132.2	165.3	198.4	231.4	264.5
AA-125DA	100.3	150.5	200.6	250.8	301.0	351.1	401.3
AA-140DA	171.0	256.5	342.0	427.5	513.0	598.5	684.0
AA-160DA	266.0	399.0	532.0	665.0	798.0	931.0	1064.0
AA-210DA	532.0	798.0	1064.0	1330.0	1596.0	1862.0	2128.0
AA-300DA	1526.0	2671.0	3052.0	3815.0	4578.0	5341.0	6104.0

Double Acting Torque Curve



Spring Return Actuators Output Torque (Nm)

Model	Spring No.	Output Air to Spring: Air Pressure (Bar) 2 — 0° Start	2 — 90° End	3 — 0° Start	3 — 90° End	4 — 0° Start	4 — 90° End	5 — 0° Start	5 — 90° End	6 — 0° Start	6 — 90° End	7 — 0° Start	7 — 90° End	8 — 0° Start	8 — 90° End	Spring Return Output — 0° End	Spring Return Output — 90° Start
AA-45SR*	2			4.2	1.3	7.2	4.3	10.2	7.3							4.6	7.4
	3					6.0	2.4	9.0	5.4	12.0	8.4	15.0	11.4	18.1	14.5	5.8	9.2
	4							7.8	3.5	10.8	6.5	13.8	9.5	16.9	12.6	7.0	11.1
AA-52SR	4	4.6	3.0	8.6	7.0											3.4	5.0
	5			7.6	5.7											4.3	6.2
	6			6.9	4.5	10.9	8.5									5.0	7.4
	7			6.0	3.3	9.8	7.3	14.0	10.4							5.9	8.6
	8			5.2	2.0	9.2	6.0	13.2	9.1	17.2	14.1					6.7	9.9
	9			4.3	0.8	8.3	4.8	12.3	7.9	16.3	12.8	20.3	16.8			7.6	11.1
	10					7.4	3.6	11.5	6.7	15.5	11.6	19.5	15.6			8.5	12.4
	11					6.6	2.3	10.6	5.4	14.6	10.4	18.6	14.3	22.6	18.3	9.3	13.6
	12							9.7	4.2	13.8	9.1	17.8	12.2	21.8	17.1	10.2	14.8
AA-63SR	4	9.2	6.3	16.5	13.6	23.8	20.9									5.4	8.3
	5			15.0	11.4	22.3	14.9									6.8	10.4
	6			13.6	9.3	20.9	16.6	28.3	23.9							8.2	12.5
	7			12.5	7.2	19.5	14.5	26.8	21.9							9.6	14.6
	8			10.9	6.1	18.2	12.4	25.5	19.8	32.8	27.0	40.1	34.3			10.9	16.7
	9					16.8	10.4	24.1	17.7	31.4	24.9	38.7	32.2			12.3	18.8
	10					15.5	8.2	22.8	15.6	30.0	22.8	37.3	30.1	44.7	37.4	13.7	20.9
	11							21.5	13.5	28.7	20.7	36.0	28.0	43.3	35.3	15.0	22.9
	12							20.0	11.4	27.3	18.6	34.6	25.9	41.9	33.3	16.4	25.0
AA-83SR	4	18.7	13.0	34.3	28.6	50.0	44.3									12.7	18.4
	5			31.1	24.0	46.8	37.9									15.8	23.0
	6			28.0	19.3	43.7	35.1	59.4	50.7							19.0	27.6
	7			24.8	14.8	40.5	30.5	56.2	46.2							22.1	32.2
	8			21.7	10.1	37.4	25.8	53.1	41.5	68.8	57.2	84.5	72.9			25.3	36.8
	9					34.2	21.3	49.9	37.0	65.6	52.6	81.2	68.3			28.5	41.4
	10					31.0	16.6	46.7	32.3	62.4	48.0	78.1	63.7	93.8	79.3	31.6	46.0
	11							43.6	27.7	59.3	43.4	75.0	59.1	90.6	74.8	34.8	50.6
	12							40.4	23.2	56.1	38.9	71.7	54.5	87.4	70.2	38.0	55.2

*AA-45SR springs are ordinary not pre-loaded cartridge structure.
SR2 = two big springs; SR3 = two big springs + one small spring; SR4 = two big springs + two small springs.

Spring Return Actuators Output Torque (Nm)

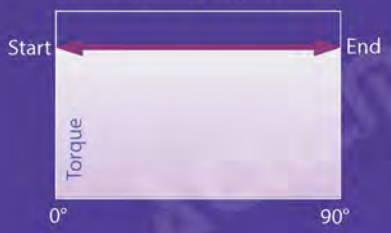
Model	Spring No.	Output Air to Spring														Spring Return Output	
Air Pressure (Bar)		2		3		4		5		6		7		8			
		0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° End	90° Start
AA-105SR	4	40.8	26.7	73.3	59.8	106.9	92.8									25.3	39.4
	5			67.5	49.9	100.6	83.0									31.6	49.2
	6			61.1	40.0	94.2	73.2	127.3	106.2							38.0	59.1
	7			54.9	30.3	87.9	63.4	121.0	96.4							44.3	68.9
	8			48.5	20.4	81.6	53.5	114.7	86.5	147.7	119.6	180.8	152.7			50.6	78.7
	9					75.3	43.7	108.4	76.8	141.5	109.8	174.5	142.9			56.9	88.6
	10					68.9	33.4	102.0	66.5	135.1	99.6	168.2	132.6	201.2	165.7	63.3	98.4
	11							95.7	57.0	128.7	90.1	161.8	123.1	194.8	156.2	69.6	108.3
	12							89.4	47.5	122.5	80.6	155.5	113.6	188.6	146.7	75.9	118.1
AA-125SR	4	59	37	109	87	159	137									42	63
	5			98	72	148	122									52	79
	6			88	56	138	107	188	157							63	94
	7			77	40	127	90	178	141							73	110
	8			67	25	117	75	167	125	217	176	268	226			84	125
	9					107	59	157	109	207	159	257	210			94	141
	10					96	44	146	94	196	144	247	194	297	245	105	157
	11							136	78	186	128	236	178	286	228	115	173
	12							125	63	176	113	226	163	276	213	125	188
AA-140SR	4	102	68	188	153	273	239									69	103
	5			171	127	256	213									86	129
	6			154	102	239	187	325	273							103	155
	7			137	76	222	162	308	247							120	181
	8			120	50	205	136	291	221	376	307	462	392			137	206
	9					187	110	273	196	358	281	444	367			155	232
	10					170	84	256	169	341	255	427	340	512	426	172	258
	11							238	143	324	229	409	314	495	400	189	284
	12							221	118	307	203	392	289	478	374	206	310
AA-160SR	4	154	100	278	233	420	366									112	166
	5			259	191	392	324									140	208
	6			232	149	365	282	498	415							168	250
	7			203	07	336	240	469	373							196	292
	8			176	66	309	199	442	332	575	465	708	598			223	333
	9					280	157	413	290	546	423	679	556			251	375
	10					253	115	386	248	519	381	652	514	785	647	279	417
	11							358	207	491	340	624	473	757	606	307	458
	12							330	165	463	298	596	431	729	564	335	500
AA-210SR	4	312	228	578	494	844	760									220	304
	5			523	418	789	684									275	380
	6			468	342	734	608	1000	874							330	456
	7			413	266	679	532	945	798							385	532
	8			358	190	624	456	890	722	1156	988	1422	1254			440	608
	9					569	380	835	646	1101	912	1367	1178			495	684
	10					514	304	780	570	1046	836	1312	1102	1578	1368	550	760
	11							725	494	991	760	1257	1026	1523	1292	605	836
	12							670	418	936	684	1202	950	1468	1216	660	912
AA-300SR	4	942	611													584	849
	5															730	1061
	6			1316	875											876	1273
	7			1153	639	1916	1402									1022	1485
	8			991	403	1754	1166	2517	1929							1168	1697
	9					1592	930	2355	1693	3118	2456					1314	1909
	10					1430	695	2193	1458	2956	2221	3719	2984	4482	3747	1460	2122
	11							2030	1222	2793	1985	3556	2748	4319	3511	1606	2334
	12							1868	986	2631	1749	3394	2512	4157	3275	1752	2546

Output Torque (in.lbs)

Double Acting Actuators Output Torque (in.lbs)

Model	Air Pressure (Psi)						
	30	45	60	75	90	105	120
AA-45DA	54.9	83.3	110.8	138.2	165.7	193.2	220.6
AA-52DA	73.2	109.9	146.5	183.1	218.8	255.4	292.1
AA-63DA	133.7	200.5	267.3	334.2	401.0	467.8	534.7
AA-83DA	287.5	430.3	574.0	717.8	861.5	1004.3	1148.1
AA-105DA	605.2	908.2	1210.3	1513.4	1816.4	2118.5	2421.5
AA-125DA	918.3	1377.9	1836.5	2296.1	2755.7	3214.4	3674.0
AA-140DA	1565.5	2348.3	3131.1	3913.8	4696.6	5479.4	6262.1
AA-160DA	2435.3	3652.9	4870.6	6088.2	7305.8	8523.5	9741.1
AA-210DA	4870.6	7305.8	9741.1	12176.4	14611.7	17046.9	19482.2
AA-300DA	13970.8	24453.5	27941.6	34927.0	41912.4	48897.8	55883.2

Double Acting Torque Curve



Spring Return Actuators Output Torque (in.lbs)

Air Pressure (Psi)	Spring No.	Output Air to Spring 30 0° Start	30 90° End	45 0° Start	45 90° End	60 0° Start	60 90° End	75 0° Start	75 90° End	90 0° Start	90 90° End	105 0° Start	105 90° End	120 0° Start	120 90° End	Spring Return Output 0° End	Spring Return Output 90° Start
AA-45SR*	2			39	12	66	39	93	67							41	65
	3					55	22	82	49	110	77	137	104	166	133	51	87
	4							71	32	99	60	126	87	155	115	62	98
AA-52SR	4	42	27	79	64											30	44
	5			70	52											38	55
	6			63	41	100	78									44	65
	7			55	30	90	67	128	95							52	76
	8			48	18	84	55	121	83	157	129					59	88
	9			39	7	76	44	113	72	149	117	186	154			67	98
	10					68	33	105	61	142	106	179	143			75	110
	11					60	21	97	49	134	95	170	131	207	168	82	120
	12							89	38	126	83	163	112	200	157	90	131
AA-63SR	4	84	58	151	125	218	191									48	73
	5			137	104	204	136									60	92
	6			125	85	191	152									73	111
	7			114	66	179	133									85	129
	8			100	56	167	114	233	181							96	148
	9					154	95	221	162	287	228					109	166
	10					142	75	209	143	275	209	341	276	409	342	121	185
	11							197	124	263	190	330	256	396	323	133	203
	12							183	104	250	170	317	237	384	305	145	221
AA-83SR	4	171	119	314	262	458	406									112	163
	5			285	220	428	347									140	204
	6			256	177	400	321									168	244
	7			227	135	371	279									196	285
	8			199	92	342	236	486	380							224	326
	9					313	195	457	339	601	482					252	366
	10					284	152	428	296	571	439	715	583	859	726	280	407
	11							399	254	543	397	687	541	829	685	308	448
	12							370	212	514	356	656	499	800	643	336	489

*AA-45SR springs are ordinary not pre-loaded cartridge structure.
SR2 = two big springs; SR3 = two big springs + one small spring; SR4 = two big springs + two small springs.

ACHEN®

Spring Return Actuators Output Torque (in.lbs)

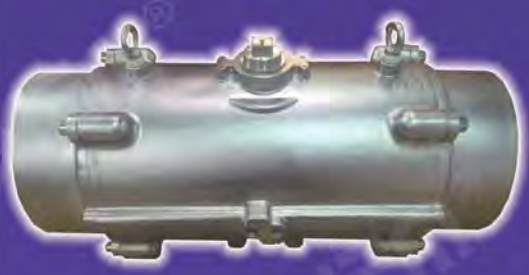
Model	Spring No.	Output Air to Spring														Spring Return Output	
Air Pressure (Psi)		30		45		60		75		90		105		120			
		0° Start	90° Start	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° End	90° Start
AA-105SR	4	374	244	671	547	979	850									224	349
	5			618	457	921	760									280	435
	6			559	366	862	670	1165	972							336	523
	7			503	277	805	580	1108	883							392	610
	8			444	187	747	490	1050	792	1352	1095	1655	1398			448	696
	9					689	400	992	703	1295	1005	1598	1308			504	784
	10					631	306	934	609	1237	912	1540	1214	1842	1517	560	871
	11							876	522	1178	825	1481	1127	1783	1430	616	958
	12							818	435	1122	738	1424	1040	1727	1343	672	1045
AA-125SR	4	540	339	998	797	1456	1254									372	558
	5			897	659	1355	1117									460	699
	6			806	513	1263	980	1721	1437							558	832
	7			705	366	1163	824	1630	1291							646	974
	8			613	229	1071	687	1529	1144	1987	1611	2454	2069			743	1106
	9					980	540	1437	998	1895	1456	2353	1923			832	1248
	10					879	403	1337	861	1794	1318	2261	1776	2719	2243	929	1389
	11							1245	714	1703	1172	2161	1630	2618	2087	1018	1531
	12							1144	577	1611	1035	2069	1492	2527	1950	1106	1664
AA-140SR	4	934	623	1721	1401	2499	2188									611	912
	5			1566	1163	2344	1950									761	1142
	6			1410	934	2188	1712	2975	2499							912	1372
	7			1254	696	2032	1483	2820	2261							1062	1602
	8			1099	458	1877	1245	2664	2023	3442	2811	4230	3589			1212	1823
	9					1712	1007	2499	1794	3278	2573	4065	3360			1372	2053
	10					1556	769	2344	1547	3122	2335	3909	3113	4687	3900	1522	2283
	11							2179	1309	2966	2097	3744	2875	4532	3662	1673	2513
	12							2023	1080	2811	1859	3589	2646	4376	3424	1823	2744
AA-160SR	4	1410	916	2545	2133	3845	3351									991	1469
	5			2371	1749	3589	2966									1239	1841
	6			2124	1364	3342	2582	4559	3799							1487	2213
	7			1859	64	3076	2197	4294	3415							1735	2584
	8			1611	604	2829	1822	4047	3040	5264	4257	6482	5475			1974	2947
	9					2563	1437	3781	2655	4999	3873	6216	5090			2221	3319
	10					2316	1053	3534	2270	4752	3488	5969	4706	7187	5923	2469	3690
	11							3278	1895	4495	3113	5713	4330	6930	5548	2717	4053
	12							3021	1511	4239	2728	5456	3946	6674	5164	2965	4425
AA-210SR	4	2856	2087	5292	4523	7727	6958									1947	2690
	5			4788	3827	7223	6262									2434	3363
	6			4285	3131	6720	5566	9155	8002							2921	4036
	7			3781	2435	6216	4871	8652	7306							3407	4708
	8			3278	1739	5713	4175	8148	6610	10583	9045	13019	11481			3894	5381
	9					5209	3479	7645	5914	10080	8350	12515	10785			4381	6053
	10					4706	2783	7141	5218	9576	7654	12012	10089	14447	12524	4868	6726
	11							6638	4523	9073	6958	11508	9393	13943	11828	5354	7399
	12							6134	3827	8569	6262	11005	8697	13440	11133	5841	8071
AA-300SR	4	8624	5594													5168	7514
	5															6461	9390
	6			12048	8011											7753	11266
	7			10556	5850	17541	12836									9045	13142
	8			9073	3690	16058	10675	23044	17660							10337	15018
	9					14575	8514	21560	15500	28546	22485					11629	16895
	10					13092	6363	20077	13348	27063	20334	34048	27319	41033	34304	12921	18780
	11							18585	11188	25570	18173	32556	25158	39541	32144	14213	20656
	12							17102	9027	24087	16012	31073	22998	38058	29983	15505	22532

Technical Data

Weight

Unit: kg

Model	45	52	63	83	105	125	140	160	210	300
DA	1.8	2.5	3.79	6.5	10	13.5	15.5	28	71.5	170.5
SR	2.1	2.63	3.96	6.8	10.8	13.95	18.65	31.7	80.0	198.1



Air Consumption

Unit: L

ModelAction	45	52	63	83	105	125	140	160	210	300
OPEN	0.08	0.12	0.21	0.43	0.95	1.60	2.50	3.70	7.50	23.8
CLOSED	0.11	0.16	0.23	0.47	0.88	1.40	2.20	3.20	7.50	29.7

Air consumption depends on Air Supply, Air volume and Action cycle times, the calculating as follows:

$$\text{L/Min=Air volume (Air volume Opening+Air volume closing)} \times \left[\frac{\text{Air Supply (Kpa)}+101.3}{101.3}\right] \times \text{Action cycle times (/min)}$$

Operating Time

Air Pressure: 5 Bar Unit: s

Double Acting			Spring Return													
				Spring Qty												
Size	0°-90°	90°-0°	Size	3+3		3+4		4+4		4+5		5+5		5+6		6+6	
				0°-90°	90°-0°	0°-90°	90°-0°	0°-90°	90°-0°	0°-90°	90°-0°	0°-90°	90°-0°	0°-90°	90°-0°	0°-90°	90°-0°
45DA	0.55	0.47	45SR	2.35	0.37	2.37	0.36	2.39	0.35	2.41	0.33	2.43	0.31	2.45	0.29	2.47	0.27
52DA	0.6	0.53	52SR	2.46	0.48	2.48	0.46	2.5	0.44	2.52	0.42	2.54	0.4	2.56	0.38	2.58	0.36
63DA	0.66	0.58	63SR	2.54	0.56	2.56	0.54	2.58	0.52	2.6	0.5	2.62	0.48	2.64	0.46	2.66	0.44
83DA	0.83	0.73	83SR	2.71	0.73	2.73	0.71	2.75	0.69	2.77	0.67	2.79	0.65	2.81	0.63	2.83	0.61
105DA	1.35	1.3	105SR	3.14	0.91	3.16	0.89	3.18	0.87	3.2	0.85	3.22	0.83	3.24	0.81	3.26	0.79
125DA	2.4	1.79	125SR	4.24	1.2	4.26	1.18	4.28	1.16	4.3	1.14	4.32	1.12	4.34	1.1	4.36	1.08
140DA	2.5	2.1	140SR	4.4	1.35	4.4	1.33	4.62	1.31	4.64	1.29	4.66	1.27	4.68	1.25	4.68	1.22
160DA	3.93	2.6	160SR	4.74	1.77	4.76	1.75	4.78	1.73	4.8	1.71	4.82	1.69	4.82	1.67	4.84	1.65
210DA	5.5	4.35	210SR	8.25	4.8	8.4	4.6	8.42	4.58	8.44	4.56	8.46	4.54	8.48	4.52	8.5	4.5
300DA	15	14.9	300SR	24	13.2	24.5	13	24.4	12.8	24.3	12.6	24.5	12.58	24.7	12.56	24.9	12.54

Operating Conditions

1. Operating Media:
Dry and lubricated air, or non-corrosive gas. The maximun particle diameter must be less than 40μm.

2. Air Supply Pressure:
The minimum supply pressure is 2 Bar (30 psi). The maximum supply pressure is 8 Bar (120 psi).

3. Operating Temperature:
Standard (NBR O-ring): -20°C ~ 80°C (-4°F ~ 175°F);
Low Temperature (L NBR O-ring): -35°C ~ 80°C (-30°F ~ 175 °F);
High Temperature (Viton O-ring): -15°C ~ 150°C (5°F ~ 300°F).

4. Travel adjustment:
Have adjustment range of ± 5° for the rotation at 0° and 90°

5. Lubrication:
Under normal operating condition, need not accrete lubricant.

6. Application:
Either indoor or outdoor.

7. Highest pressure:
The maximum input pressure is 10 Bar (145 Psi).