

# PNEUMATIC ACTUATOR



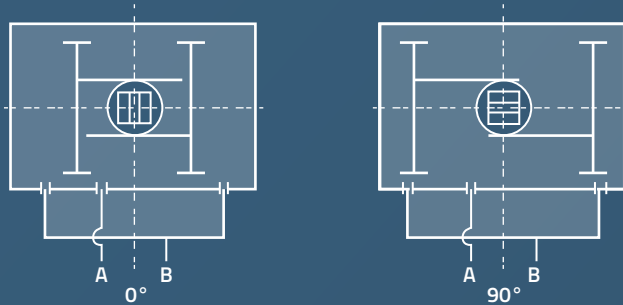
Wireless Technologies USA  
Witech USA Corp



## OPERATING PRINCIPLE OF AIR TO AIR ACTUATOR

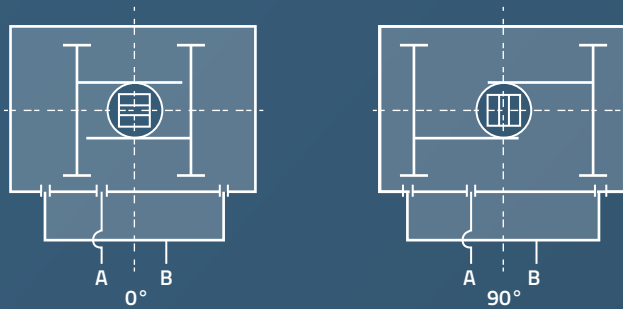
## PNEUMATIC ACTUATOR

### 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.

## Output torque of air to air actuators

UNITS: Lb\*in

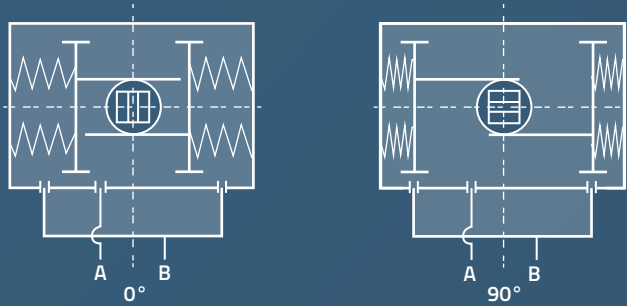
Model	Air supply pressure (Unit: PSI)								
	36	43.5	58	65.2	72.5	79.7	87	101.5	116
WA-07A	88	106	142	159	177	195	212	248	283
WA-18A	159	195	257	292	327	354	389	451	513
WA-20A	221	265	354	398	442	487	531	619	708
WA-38A	345	416	558	628	690	761	832	973	1106
WA-47A	496	602	796	903	1000	1097	1195	1398	1593
WA-650A	735	876	1168	1319	1460	1611	1752	2035	2345
WA-670A	1106	1327	1779	2000	2221	2434	2664	3097	3549
WA-695A	1894	2274	3027	3407	3788	4159	4540	5301	6053
WA-615A	2947	3540	4708	5301	5885	6478	7062	8230	9416
WA-645A	4708	5646	7531	8478	9416	10354	11301	13186	15062
WA-765A	5855	7062	9416	10593	11770	12947	14124	16478	18832
WA-795A	8513	10212	13619	15319	17027	18726	20434	23832	27239
WA-725A	12938	15531	20699	23292	25876	28469	31053	36230	41407
WA-855A	16885	20257	27009	30389	33761	37142	40513	47265	54018
WA-805A	25274	30327	40442	45496	50549	55602	60655	70770	80876
WA-955A	36018	43221	57628	38283	72035	79239	86442	100850	115257



## OPERATING PRINCIPLE OF AIR TO SPRING ACTUATOR

## PNEUMATIC ACTUATOR

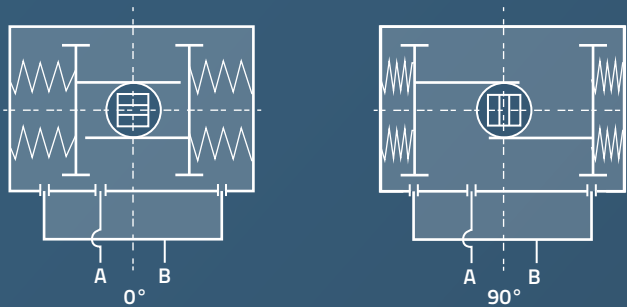
CCW



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.

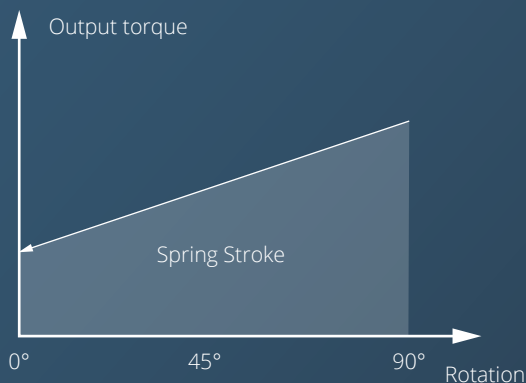
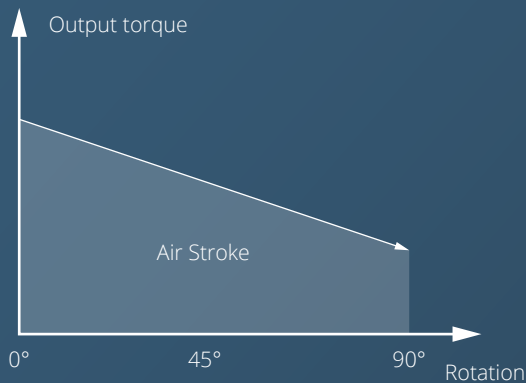
CW



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.

## OUTPUT TORQUE OF AIR TO SPRING ACTUATOR



Make sure that the torque necessary to operate the valve is compatible with the actuator torque (it depends on both actuator type and air supply). Please note that the requested torque depends not only on the valve, but on the working conditions and the safety margins of the plant in question too.

# PNEUMATIC ACTUATOR

## Output torque of air to spring actuators

UNITS: Lb\*in

Air pressure		36 PSI		43.5 PSI		58 PSI		72.5 PSI		87 PSI		101.5 PSI		116 PSI		Springs' output	
Model	Spring Qty	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° Start	90° End
WA-07SR-	5	50	34	67	50											55	38
	6	43	22	61	40	96	75									65	44
	7	35	12	53	29	87	65	124	92							76	52
	8			46	18	81	53	117	81	152	125					88	59
	9			38	7	73	42	109	70	144	113	180	149			98	67
	10					65	32	102	59	137	103	173	138			110	75
	11					58	20	94	48	129	92	165	127	200	162	120	82
	12							86	37	122	81	158	108	193	151	131	90
WA-18SR-	5	101	68	133	101	197	132									92	60
	6	89	50	120	82	185	147	250	212							111	73
	7	76	32	111	64	173	128	237	194							129	85
	8			96	45	161	110	226	175	290	239	355	304			148	96
	9					149	92	213	157	278	220	342	285			166	109
	10					12	73	202	138	265	202	330	266	396	331	185	121
	11							190	119	254	183	319	248	383	312	203	133
	12							177	101	242	165	306	229	371	295	221	145
WA-20SR-	5	128	94	172	137	261	227									128	93
	6	110	67	153	112	242	201	332	290							154	112
	7	92	42	135	86	224	176	313	265							180	131
	8			116	60	204	150	295	239	382	327	472	416			205	150
	9					186	125	303	213	364	302	453	391			231	168
	10					168	98	255	188	345	276	435	365	523	453	257	187
	11							239	162	327	250	416	340	504	428	282	205
	12							220	136	309	225	397	313	486	402	307	224
WA-38SR-	5	206	142	275	212	414	351									204	140
	6	178	102	248	171	387	311	526	449							244	168
	7	150	61	219	131	358	270	497	409							285	196
	8			192	89	331	228	470	367	609	506	748	645			326	224
	9					303	188	442	327	581	465	719	604			366	252
	10					274	147	413	286	552	425	691	564	830	702	407	280
	11							386	245	525	384	664	523	802	662	448	308
	12							358	205	496	344	635	482	773	621	488	336
WA-47SR-	5	293	195	391	294	591	495									304	206
	6	251	135	350	234	550	434	750	634							365	248
	7	211	73	309	172	509	373	710	573							426	289
	8			277	112	468	312	668	512	868	712	1068	912			487	330
	9					427	251	627	451	827	651	1027	850			548	372
	10					386	190	586	390	786	590	985	789	1186	989	608	413
	11							544	329	744	530	943	729	1143	929	669	455
	12							503	269	703	469	902	668	1102	868	730	496

# PNEUMATIC ACTUATOR

## Output torque of air to spring actuators

UNITS: Lb\*in

Air pressure		36 PSI		43.5 PSI		58 PSI		72.5 PSI		87 PSI		101.5 PSI		116 PSI		Springs' output	
Model	Spring Qty	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° Start	90° End
WA-650SR-	5	451	296	597	442	890	735									435	280
	6	396	208	541	354	834	648	1127	940							523	336
	7	340	121	486	268	778	561	1071	853							610	392
	8			429	181	722	473	1015	765	1307	1058	1600	1351			696	448
	9					666	387	959	680	1252	972	1544	1265			784	504
	10					610	296	903	588	1196	881	1488	1173	1781	1466	871	560
	11							847	504	1139	797	1432	1089	1724	1382	958	616
	12							791	420	1084	713	1376	1005	1669	1298	1045	672
WA-670SR-	5	646	416	867	637	1310	1080									699	460
	6	558	274	779	496	1221	947	1664	1389							832	558
	7	460	133	681	354	1124	796	1575	1248							973	646
	8			593	221	1035	664	1478	1106	1920	1558	2372	2000			1106	743
	9					947	522	1389	965	1832	1407	2274	1858			1248	832
	10					850	389	1292	832	1735	1274	2186	1717	2628	2168	1389	929
	11							1204	690	1646	1133	2088	1575	2531	2018	1531	1018
	12							1106	558	1558	1000	2000	1442	2442	1885	1664	1106
WA-695SR-	5	1133	752	1513	1124	2265	1885									1142	761
	6	982	522	1363	903	2115	1655	2876	2416							1372	912
	7	832	292	1212	673	1965	1434	2726	2186							1602	1062
	8			1062	442	1814	1204	2575	1956	3327	2717	4088	3469			1823	1212
	9					1655	973	2416	1735	3168	2487	3929	3248			2053	1372
	10					1504	743	2265	1496	3018	2257	3779	3009	4531	3770	2283	1522
	11							2106	1265	2867	2027	3619	2779	4381	3540	2513	1673
	12							1956	1044	2717	1796	3469	2558	4230	3310	2743	1823
WA-615SR-	5	1708	1097	2292	1690	3469	2867									1841	1239
	6	1460	735	2053	1319	3230	2496	4407	3673							2212	1487
	7	1212	363	1796	947	2973	2124	4150	3301							2584	1735
	8			1558	584	2735	1761	3912	2097	5088	4115	6265	5292			2947	1973
	9					2478	1389	3655	2566	4832	3743	6009	4920			3319	2221
	10					2239	1018	3416	2195	4593	3372	5770	4549	6947	5726	3690	2469
	11							3168	1832	4345	3009	5522	4186	6699	5363	4053	2717
	12							2920	1460	4097	2637	5274	3814	6451	4991	4425	2965
WA-645SR-	5	2938	1965	3876	2912	5761	4796									2735	1770
	6	2584	1425	3522	2363	5407	4248	7292	6133							3283	2124
	7	2230	876	3168	1814	5053	3699	6938	5584							3832	2478
	8			2814	1265	4699	3150	6584	5035	8469	6920	10345	8805			4381	2832
	9					4345	2611	6230	4487	8115	6372	10000	8257			4929	3186
	10					3991	2062	5876	3947	7761	5823	9646	7708	11522	9593	5469	3540
	11							5522	3398	7407	5283	9292	7159	11177	9044	6018	3894
	12							5168	2850	7053	4735	8938	6619	10823	8496	6566	4248



# PNEUMATIC ACTUATOR

## Output torque of air to spring actuators

UNITS: Lb\*in

Air pressure		36 PSI		43.5 PSI		58 PSI		72.5 PSI		87 PSI		101.5 PSI		116 PSI		Springs' output	
Model	Spring Qty	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° Start	90° End
WA-765SR-	5	3451	2522	4628	3699	6982	6053									3363	2434
	6	2965	1850	4142	3027	6496	5381	8850	7735							4035	2920
	7	2478	1177	3655	2354	6009	4708	8363	7062							4708	3407
	8			3168	1681	5522	4035	7876	6389	10230	8743	12584	11097			5381	3894
	9					5035	3363	7389	5717	9743	8071	12097	10425			6053	4381
	10					4549	2690	6903	5044	9257	7398	11611	9752	13965	12106	6726	4867
	11							6416	4372	8770	6726	11124	9071	13478	11434	7398	5354
	12							5929	3699	8283	6053	10637	8407	12991	10761	8071	5841
WA-795SR-	5	4885	3619	6584	5310	9991	8717									4903	3628
	6	4159	2628	5858	4327	9265	7735	12673	11142							5885	4354
	7	3434	1655	5133	3354	8531	6761	11938	10168							6858	5088
	8			4407	2372	7814	5779	11212	9177	14619	12584	18027	15991			7841	5805
	9					7080	4796	10487	8195	13885	11602	17292	15009			8832	6540
	10					6354	3814	9761	7221	13168	10628	16566	14035	19973	17434	9805	7265
	11							9035	6239	12442	9646	15850	13044	19257	16451	10788	7991
	12							8310	5257	11708	8664	15115	12062	18522	15469	11770	8717
WA-725SR-	5	7991	5973	10575	8566	15743	13735									6965	4956
	6	6991	4593	9584	7177	14752	12354	19929	17531							8345	5947
	7	6009	3195	8602	5788	13770	10956	18947	16133							9743	6929
	8			7611	4398	12779	9566	17956	14743	23133	19929	28310	25097			11133	7920
	9					11788	8168	16965	13354	22142	18531	27319	23699			12531	8912
	10					10796	6788	15973	11965	21150	17142	26319	22310	31504	27496	13912	9903
	11							14982	10566	20159	15743	25327	20920	30513	26097	15310	10894
	12							14000	9177	19177	14363	24345	19531	29522	24708	16699	11876
WA-855SR-	5	9708	6451													9389	6460
	6	8274	4372	11646	7743											11265	7752
	7	6858	2283	10204	5655	16956	12407									13142	9044
	8			8770	3566	15522	10319	22274	17071							15018	10336
	9					14088	8230	20841	14982	27593	21735					16894	11628
	10					12655	6150	19407	12903	26159	19655	32912	26407	39664	33159	18779	12920
	11							17965	10814	24717	17566	31469	24319	38221	31071	20655	14212
	12							16531	8726	23283	15478	30035	22230	36788	28982	22531	15504
WA-805SR-	5	13743	8531													15062	10381
	6	11434	5186	16487	10239											18080	12460
	7	9124	1841	14177	6894	24292	17009									21088	14531
	8			11867	3549	21982	13664	32088	23770							24106	16611
	9					19681	10310	29522	20416	39894	30522					27115	18690
	10					17372	6965	27478	17071	37584	27177	47699	37292	57805	47398	30133	20761
	11							25168	13726	35274	23832	45389	33947	55496	44053	33142	22841
	12							22867	10372	32973	20478	43088	30593	53195	40699	36159	24920

## Output torque of air to spring actuators

UNITS: Lb\*in

Air pressure		36 PSI		43.5 PSI		58 PSI		72.5 PSI		87 PSI		101.5 PSI		116 PSI		Springs' output	
Model	Spring Qty	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° Start	90° End
WA-955SR-	7	17947	7690													25487	16257
	8	15363	3637	22566	10841											29133	18584
	9			19991	6796	34398	21204									32770	20903
	10			17407	2752	31814	17159	46221	31566							36416	23221
	11					29230	13115	43637	27522	58044	41929					40053	25549
	12					26655	9071	41062	23478	55469	37885	69867	52283	84274	66690	43699	27867
	13							38478	19425	52885	33832	67283	48230	81690	62637	47336	30195
	14							35903	15381	50310	29788	64708	44186	79115	58593	50982	32513
	15							33319	11336	47726	25743	62124	40142	76531	54522	54619	34841
	16									45142	21699	59540	36097	73947	50504	58265	37159

## Operating Conditions

Operating medium:

Dry or lubricated air, or the non-corrosive gases.  
The maximum particle diameter must less that 30 μm

Air supply pressure:

The minimum supply pressure is 36.2 PSI  
The maximum supply pressure is 116 PSI

Operating temperature:

Standard: -4°F~+176°F (-20°C~+80°C)  
Low temperature: -31°F~+176°F (-35°C~+80°C)  
High temperature: +5°F~+302°F (-15°C~+150°C)

Travel adjustment:

Have adjustment range of ±5° for the rotation  
at 0° and 90°

Application:

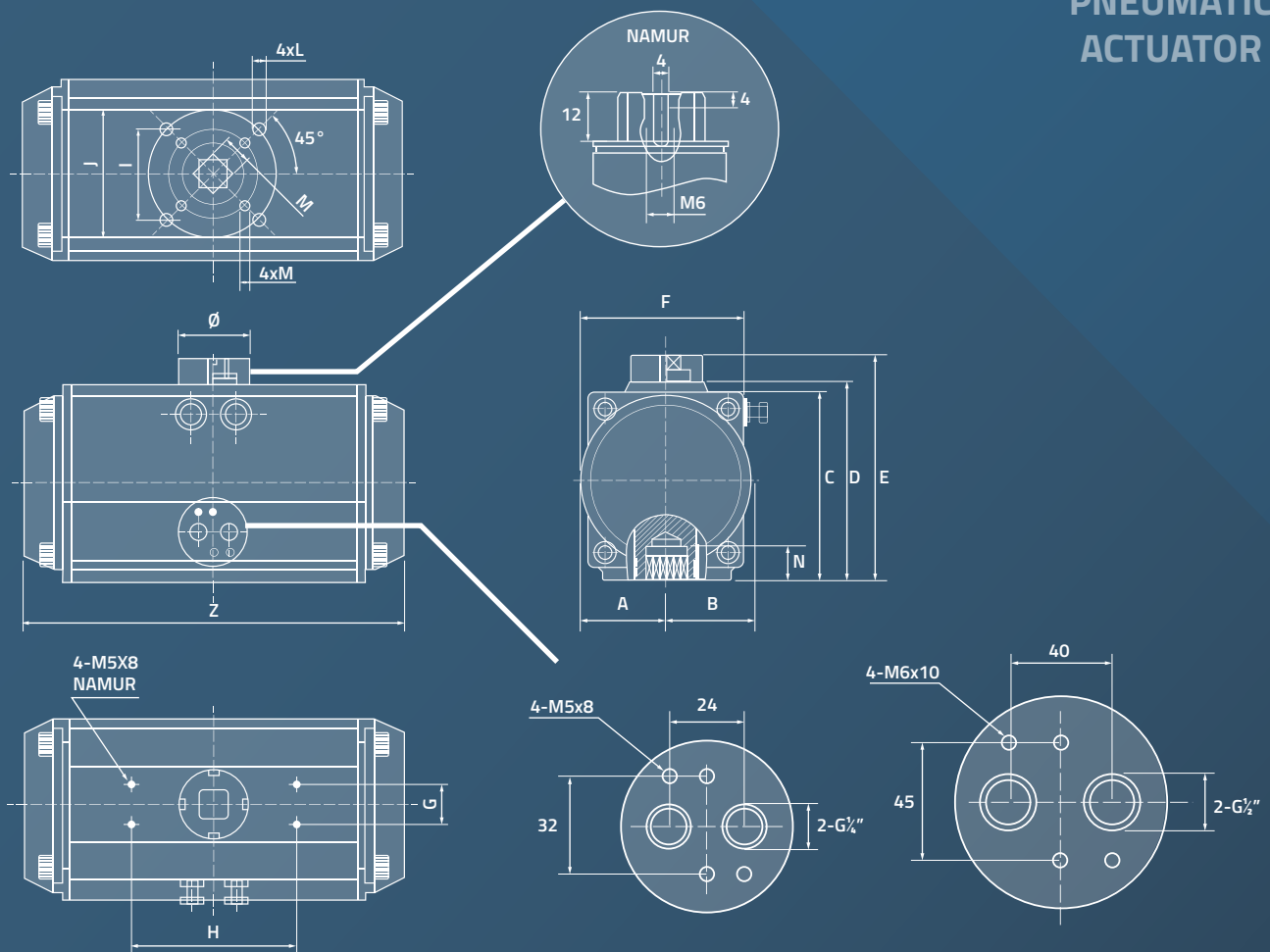
Either indoor or outdoor

## Operating Type

Air to Air

Air to Spring

# PNEUMATIC ACTUATOR



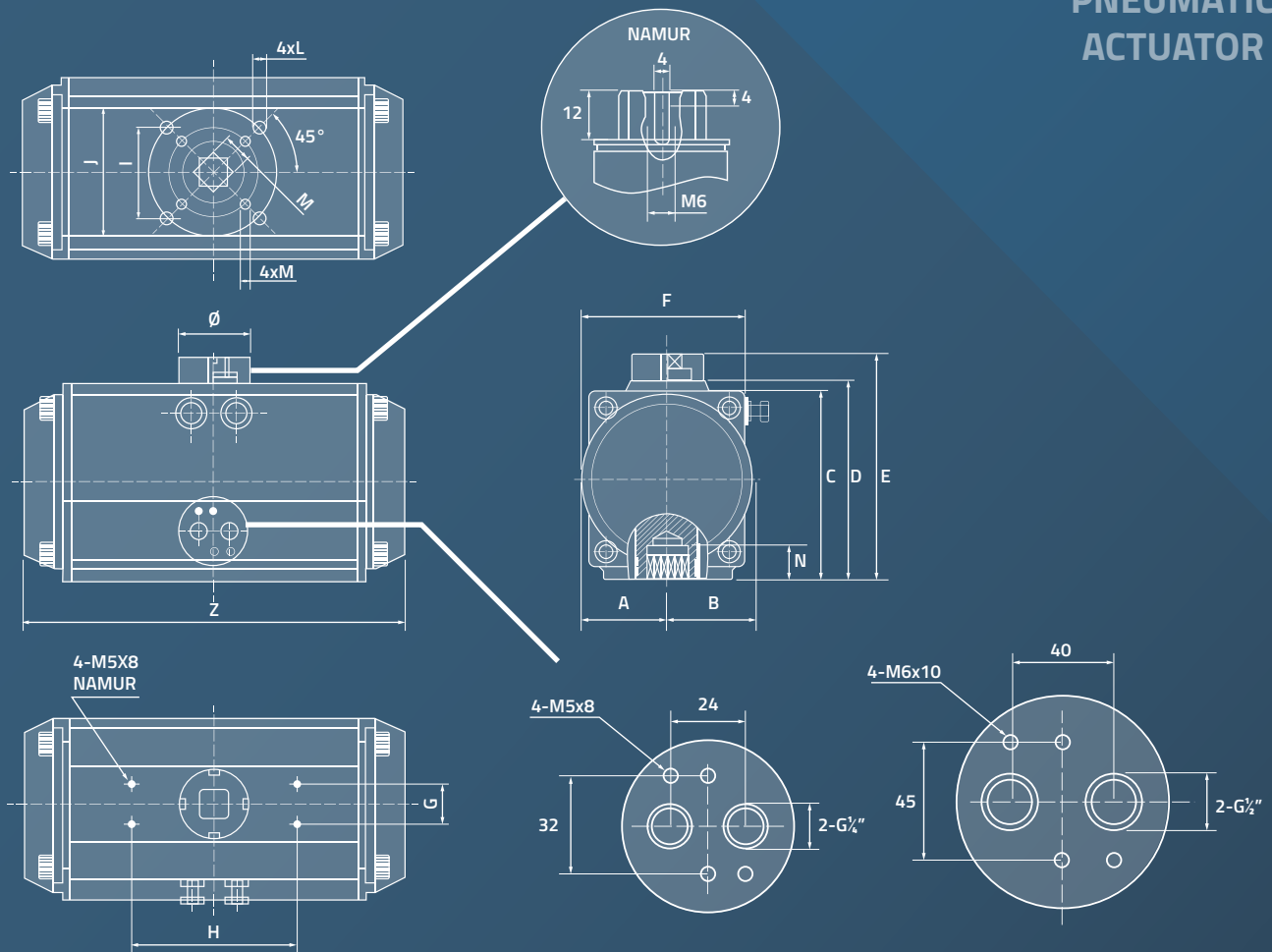
## Dimensions

UNITS: mm

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Z	Ø	Air connection
WA-07	30	41.5	65.5	72	92	65	30	80	F03	F05	M5x8	M6x10	11	14	147	Ø40	NAMUR G1/4"
WA-18	36	47	81	87.5	107.5	72	30	80	F05	F07	M6x10	M8x13	14	18	168	Ø40	NAMUR G1/4"
WA-20	42	53	94	99.5	119.5	81	30	80	F05	F07	M6x10	M8x13	14	18	184	Ø40	NAMUR G1/4"
WA-38	46	57	98.5	108.7	128.7	92	30	80	F05	F07	M6x10	M8x13	17	21	204	Ø40	NAMUR G1/4"
WA-47	50	58.5	111	116.8	136.8	98	30	80	F05	F07	M6x10	M8x13	17	21	262	Ø40	NAMUR G1/4"
WA-650	57.5	64	122.5	133	153	109.5	30	80	F07	F10	M8x13	M10x16	22	26	268	Ø40	NAMUR G1/4"
WA-670	67.5	74.5	145.5	155	175	127.5	30	80	F07	F10	M8x13	M10x16	22	26	296	Ø55	NAMUR G1/4"
WA-695	75	77	160.75	171.5	191.5	137.5	30	80	F10	F12	M10x16	M12x20	27	31	390	Ø55	NAMUR G1/4"
WA-615	87	87	184	197	217	158	30	80	F10	F12	M10x16	M12x20	27	31	454	Ø55	NAMUR G1/4"



# PNEUMATIC ACTUATOR



## Dimensions

UNITS: mm

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Z	Ø	Air connection
WA-645	103	103	216	230	260	189.5	30	130		F14		M16x25	36	40	525	Ø80	NAMUR G1/4"
WA-765	113	113	235.5	255	285	210	30	130		F14		M16x25	36	40	532	Ø80	NAMUR G1/4"
WA-795	130	130	264	288	318	245	30	130		F16		M20x25	46	50	610	Ø80	NAMUR G1/4"
WA-725	147	147	299	326	356	273	30	130		F16		M20x25	46	50	722	Ø80	NAMUR G1/2"
WA-855	162	162	348	348	378	324	30	130	F16	F20	M20x25	M20x25	46	60	742	Ø80	NAMUR G1/4"
WA-805	190	190	402	402	432	380	30	130	F16	F20	M20x25	M20x25	46	60	860	Ø80	NAMUR G1/2"
WA-955	258	258	464	464	494	498	30	130	F16	F25	M20x25	8-M16x25	55	60	924	Ø80	NAMUR G1/4"

# PNEUMATIC ACTUATOR

## Weight

Model	(DA)	(SR)	Model	(DA)	(SR)
WA-07 (Ø52)	1.4 Kg	1.5 Kg	WA-615 (Ø160)	20.1 Kg	24 Kg
WA-18 (Ø63)	2.0 Kg	2.1 Kg	WA-645 (Ø190)	31.3 Kg	35.3 Kg
WA-20 (Ø75)	2.7 Kg	2.9 Kg	WA-765 (Ø210)	46.8 Kg	54.8 Kg
WA-38 (Ø83)	3.1 Kg	3.6 Kg	WA-795 (Ø240)	67.3 Kg	80.2 Kg
WA-47 (Ø92)	4.6 Kg	5.2 Kg	WA-725 (Ø270)	96.9 Kg	118 Kg
WA-650 (Ø105)	6.8 Kg	6.9 Kg	WA-855 (Ø300)	110 Kg	130 Kg
WA-670 (Ø125)	9.0 Kg	10.1 Kg	WA-805 (Ø350)	186 Kg	234 Kg
WA-695 (Ø140)	13.2 Kg	15.6 Kg	WA-955 (Ø400)	289 Kg	360 Kg

## How to Order

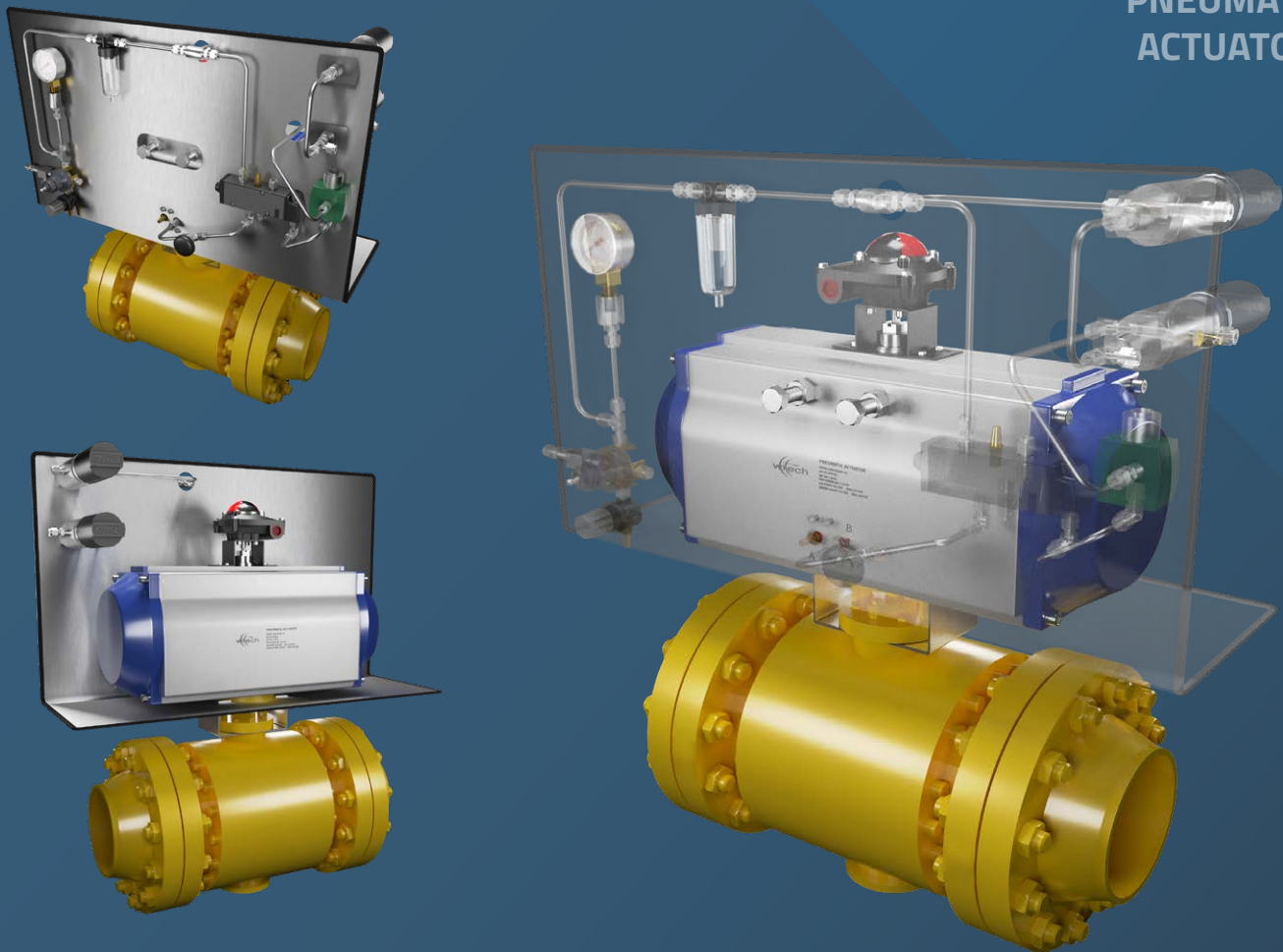
Model	Type	Spring Qty (Only for SR type)
WA-07 WA-18 WA-20	A Air to Air	-5
WA-38 WA-47 WA-650		-6
WA-670 WA-695 WA-615		-7
WA-670 WA-695 WA-615		-8
WA-645 WA-765 WA-795		-9
WA-645 WA-765 WA-795		-10
WA-725 WA-855 WA-800 WA-955		-11
WA-725 WA-855 WA-800 WA-955		-12
WA-725 WA-855 WA-800 WA-955		SR Air to Spring



Example: **WA-645SR-10** for a WA-645 body, air to spring actuator with 10 springs, start torque of 5469 Lb\*in and end torque of 3540 Lb\*in.

**WA-38A** for a WA-38 body, air to air actuator, output torque of 690 Lb\*in @72.5 PSI.

# PNEUMATIC ACTUATOR



## Accessories



**WLS-865 Series**  
Weather Proof Limit Switch

Enclosure: Weather proof IP67, O-ring sealed, CSA Approved, Type 4X  
 Outside coating: Epoxy-Polyester outside against corrosion  
 Ambient temperature: -20°C~+80°C  
 Cable entries: 2 - PT1/2", other standard threads  
 Terminal block: 8 nos of terminal strips (6 for switches, 2 for solenoid valve power)  
 Position indicator: Dome type 0°~90°  
 Mounting bracket: Stainless steel acc. to VDI/VDE3845 NAMUR, SS1, SS2 as standard  
 Switches(Sensors): 2-SPDT mechanical switch(Form C)



**WLS-800 FM Series**  
Explosion Proof Limit Switch

Enclosure: Explosion proof Ex d IIC T6, IP67, O-ring sealed  
 Outside coating: Epoxy-Polyester outside against corrosion  
 Ambient temperature: -20°C~+80°C  
 Cable entries: 2 - PF3/4", other standard threads  
 Terminal block: 8 nos of terminal strips (6 for switches, 2 for solenoid valve power)  
 Position indicator: Dome type 0°~90°  
 Mounting bracket: Stainless steel acc. to VDI/VDE3845 NAMUR, SS1, SS2 as standard  
 Switches(Sensors): 2-SPDT mechanical switch(Form C)



Wireless Technologies USA  
Witech USA Corp

20283 State road 7. suite 400  
Boca Raton, FL 33498  
United States of America  
Phone: (561) 883 8129  
[www.witechusa.com](http://www.witechusa.com)