

SINGLE ACTING PNEUMATIC SWING ACTUATORS



The single-acting swing actuators of the ATM series are mainly intended for controlling armatures and valves, where it is necessary to ensure a return to the initial state when the supply of compressed air is interrupted. The swing movement is ensured by a pair of toothed racks with pistons. The torque is not constant throughout the range of swinging motion. Supplying compressed air rotates the output shaft of the drive, venting the springs returns the shaft to its initial state.

Working pressure	0,6 MPa
Min. pressure	0,2 MPa
Max. pressure	0,8 MPa
Temp. range	-20°C to +80°C *
End position regulation	±4°
Working medium	modified compressed air

*) values for temp. range B

Průměr pístu [mm]	52	63	75	83	92	105	125	140	160	190	210	240	270	300	350	400
Connection	G1/4"	G1/4"	G1/4"	G1/4"	G1/4"	G1/4"	G1/4"	G1/4"	G1/4"	G1/4"	G1/4"	G1/4"	G1/2"	G1/2"	G1/2"	G1/2"
Air source interface	NAMUR VDI/VDE 3845															
Flange connection pattern 1	F03	F05	F05	F05	F05	F07	F07	F10	F10	-	-	-	-	-	F16	F16
Flange connection pattern 2	F05	F07	F07	F07	F07	F10	F10	F12	F12	F14	F14	F16	F16	F16	F25	F25
Armature connection	ISO 5211															
Position sensing	optical with the option of connecting a sensor, positioner or sensor box															
Connection of position sys.	NAMUR VDI/VDE 3845															
Opening time [s] at 0,8 MPa	0,4	0,5	0,5	0,6	0,7	0,9	1,3	1,6	2	3	4	4,5	5			
Closing time [s] at 0,8 MPa	0,4	0,5	0,6	0,6	0,8	0,9	1,4	1,8	2,3	3,3	4,4	4,9	5,7			
Weight [kg]	1,48	2,23	3,15	3,63	5,2	7,8	11,6	15,6	24,1	36	55	80,9	117			
One spring weight [kg]	0,01	0,02	0,03	0,05	0,06	0,10	0,16	0,23	0,39	0,45	0,80	1,33	2,00			

Order codes

ZG-ATM 125 X 90 B AM D8

Piston diameter		Piston diameter		Swing angle		Temperature range		Number of springs	
052	52 mm	160	160 mm	90	angle 90°	B	-20°C to +80°C	5*	2+3 springs
063	63 mm	190	190 mm	120	angle 120°	D	-40°C to +80°C	6*	3+3 springs
075	75 mm	210	210 mm	135	angle 135°	G	-15°C to +150°C	7	3+4 springs
083	83 mm	240	240 mm	180	angle 180°			8	4+4 springs
092	92 mm	270	270 mm					9	4+5 springs
105	105 mm	300	300 mm					10	5+5 springs
125	125 mm	350	350 mm					11	5+6 springs
140	140 mm	400	400 mm					12	6+6 springs
								13*	6+7 springs
								14*	7+7 springs
								15*	7+8 springs
								16*	8+8 springs



The swing direction is standard to the right (clockwise). If you require the opposite swing direction, please contact our technical department.



Notice

The torque caused by the drive must not be greater than the maximum permissible torque specified in ISO 5211 for the specific size of the mounting flange.

*) Note for the number of springs 5 and 6 does not apply to piston Ø 400 mm
13 to 16 only apply to piston Ø 400 mm

Construction / materials

- body: hard anodized extruded aluminum alloy, honed bore
- pistons: Aluminum casting or steel casting
- pinion and cam: steel
- caps: Aluminium casting
- seal: NBR, or FPM or silicone
- fasteners: stainless steel
- position indicator: plastic
- springs: spring steel

Actuator sizing

The recommended safety factor for single-acting swing actuator is 30 to 50% under normal conditions. Example of determining the size of actuator: The required torque of the fitting is 80 Nm, the torque increased by the safety factor is 80 + 30% of 80 = 104 Nm. At an inlet pressure of 0.5 MPa, it is therefore advisable to choose the ZG-ATM140 D7 actuator with 7 springs. During air movement, actuator has a torque of 308 Nm in the 0° position, and 247 Nm in the 90° position. When returned by springs, actuator has a torque of 181 Nm in the 90° position and 120 Nm in the 0° position.

Technical data

Torque [Nm] depending on working pressure

Piston Ø [mm]	Number of springs	Inlet pressure [MPa] and position														Return by springs	
		0,25		0,3		0,4		0,5		0,6		0,7		0,8			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
52	5	5,7	3,6	7,6	5,7										6,2	4,3	
	6	4,8	2,5	6,9	4,5	10,9	8,5								7,4	5,0	
	7	3,9	1,3	6,1	3,3	9,8	7,3	14,0	10,4						8,6	5,9	
	8			5,2	2,0	9,2	6,0	13,2	9,1	17,2	14,1				9,9	6,7	
	9			4,3	0,8	8,3	4,8	12,3	7,9	16,3	12,8	20,3	16,8		11,1	7,6	
	10					7,4	3,6	11,5	6,7	15,5	11,6	19,5	15,6		12,4	8,5	
	11					6,6	2,3	10,6	5,4	14,6	10,4	18,6	14,3	22,6	18,3	13,6	9,3
	12							9,7	4,2	13,8	9,1	17,8	12,2	21,8	17,1	14,8	10,2
63	5	11,4	7,7	15,0	11,4	22,3	14,9								10,4	6,8	
	6	10,1	5,7	13,6	9,3	20,9	16,6	28,3	23,9						12,5	8,2	
	7	8,6	3,6	12,5	7,2	19,3	14,5	26,8	21,9						14,6	9,6	
	8			10,9	5,1	18,2	12,4	25,5	19,8	32,8	27,0	40,1	34,3		16,7	10,9	
	9					16,8	10,4	24,1	17,7	31,4	24,9	38,7	32,2		18,8	12,3	
	10					14,0	8,2	22,8	15,6	30,0	22,8	37,3	30,1	44,7	37,4	20,9	13,7
	11							21,5	13,5	28,7	30,7	36,0	28,0	44,3	35,3	22,9	15,0
	12							20,0	11,4	27,3	18,6	34,6	25,9	41,9	33,3	25,0	16,4
75	5	14,5	10,6	19,4	15,5	29,5	25,7								14,5	10,5	
	6	12,4	7,6	17,3	12,6	27,4	22,7	37,5	32,8						17,4	12,7	
	7	10,4	4,8	15,2	9,7	25,3	20,0	35,4	30,0						20,3	14,8	
	8			13,1	6,8	23,1	17,0	33,3	27,0	43,2	37,0	53,3	47,0		23,2	16,9	
	9					21,0	14,1	31,2	24,1	41,1	34,1	51,2	44,2		26,0	19,0	
	10					19,0	11,1	28,9	21,2	39,0	31,2	49,0	41,2	59,0	51,0	29,0	21,0
	11							27,0	18,3	37,0	28,3	47,0	38,4	57,0	48,5	32,0	23,2
	12							25,0	15,4	34,9	25,4	45,0	35,4	55,0	45,4	34,8	25,3
83	5	23,3	16,0	31,0	24,0	46,8	39,7								23,0	15,8	
	6	20,0	11,5	28,0	19,3	43,7	35,0	59,5	51,0						27,6	19,0	
	7	17,0	7,0	25,0	15,0	40,5	30,5	56,2	46,2						32,2	22,0	
	8			22,0	10,0	37,5	25,8	53,0	41,5	69,0	57,2	84,5	73,0		36,8	25,3	
	9					34,2	2,3	50,0	37,0	66,0	52,6	81,2	68,3		41,4	28,5	
	10					31,0	16,6	46,7	32,3	62,5	48,0	78,0	63,7	93,8	79,3	46,0	31,6
	11							43,6	27,7	59,3	43,4	75,0	59,0	91,0	74,8	50,6	34,8
	12							40,5	23,2	56,0	39,0	72,0	54,5	87,4	70,2	55,2	38,0
92	5	33,0	22,0	44,2	33,2	66,8	55,9								34,4	23,3	
	6	28,4	15,2	39,6	26,4	62,2	49,0	84,8	71,6						41,2	28,0	
	7	23,8	8,2	34,9	19,4	57,5	42,1	80,2	64,7						48,0	32,7	
	8			31,3	12,6	52,9	35,2	75,5	57,9	98,0	80,5	120,7	103,0		55,0	37,3	
	9					48,2	28,4	71,0	51,0	93,5	73,6	116,0	96,0		61,9	42,0	
	10					43,6	21,5	66,2	44,0	89,0	66,7	111,3	89,2	134,0	112,0	68,7	46,7
	11							61,5	37,2	84,0	60,0	106,6	82,4	129,2	105,0	75,6	51,4
	12							56,8	30,4	79,5	53,0	101,9	75,5	124,5	98,0	82,5	56,0

SINGLE ACTING PNEUMATIC SWING ACTUATORS

Torque [Nm] depending on working pressure (continued)

Piston Ø [mm]	Number of springs	Inlet pressure [MPa] and position														Return by springs	
		0,25		0,3		0,4		0,5		0,6		0,7		0,8			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
105	5	51,0	33,4	67,5	50,0	100,6	83,0									49,2	31,6
	6	45,0	23,5	61,0	40,0	94,2	73,2	127,3	106,2							59,0	38,0
	7	38,4	13,7	55,0	30,0	88,0	63,4	121,0	96,4							69,0	44,3
	8			48,5	20,5	81,6	53,5	115,0	86,5	147,7	119,6	180,8	152,7			78,7	50,6
	9					75,3	43,7	109,0	76,8	141,5	110,0	174,5	142,9			88,6	56,9
	10					69,0	33,4	102,0	66,5	135,0	100,0	168,2	132,6	201,0	165,7	98,4	63,3
	11							96,0	57,0	128,7	90,0	161,8	123,0	195,0	156,0	108,3	69,3
	12							89,5	47,5	122,5	90,6	155,5	113,6	189,0	146,7	118,0	76,0
125	5	73,0	47,0	98,0	72,0	148,0	122,0									79,0	52,0
	6	63,0	31,0	88,0	56,0	138,0	107,0	188,0	157,0							94,0	63,0
	7	52,0	15,0	77,0	40,0	127,0	90,0	178,0	141,0							110,0	73,0
	8			67,0	25,0	117,0	75,0	167,0	125,0	217,0	176,0	268,0	226,0			125,0	84,0
	9					107,0	59,0	157,0	109,0	207,0	159,0	257,0	210,0			141,0	94,0
	10					96,0	44,0	146,0	94,0	196,0	144,0	247,0	194,0	297,0	245,0	157,0	105,0
	11							136,0	78,0	186,0	128,0	236,0	178,0	286,0	228,0	173,0	115,0
	12							125,0	63,0	176,0	113,0	226,0	163,0	276,0	213,0	188,0	125,0
140	5	128,0	85,0	171,0	127,0	256,0	213,0									129,0	86,0
	6	111,0	59,0	154,0	102,0	239,0	187,0	325,0	273,0							155,0	103,0
	7	94,0	33,0	137,0	76,0	222,0	162,0	308,0	247,0							181,0	120,0
	8			120,0	50,0	205,0	136,0	291,0	221,0	376,0	307,0	462,0	392,0			206,0	137,0
	9					187,0	110,0	273,0	196,0	358,0	281,0	444,0	367,0			232,0	155,0
	10					170,0	84,0	256,0	169,0	341,0	255,0	427,0	340,0	512,0	426,0	258,0	172,0
	11							238,0	143,0	324,0	229,0	409,0	314,0	495,0	400,0	284,0	189,0
	12							221,0	118,0	307,0	203,0	392,0	289,0	478,0	374,0	310,0	206,0
160	5	193,0	124,0	259,0	191,0	392,0	324,0									208,0	140,0
	6	165,0	83,0	232,0	149,0	365,0	282,0	498,0	415,0							250,0	168,0
	7	137,0	41,0	203,0	107,0	336,0	240,0	469,0	373,0							292,0	196,0
	8			176,0	66,0	309,0	199,0	442,0	337,0	575,0	465,0	708,0	598,0			333,0	223,0
	9					280,0	157,0	413,0	290,0	546,0	423,0	679,0	556,0			375,0	251,0
	10					253,0	115,0	386,0	248,0	519,0	381,0	652,0	514,0	785,0	647,0	417,0	279,0
	11							358,0	207,0	491,0	340,0	624,0	473,0	757,0	606,0	458,0	307,0
	12							330,0	165,0	463,0	298,0	596,0	431,0	729,0	564,0	500,0	335,0
190	5	332	222	438	329	651	542									309	200
	6	292	161	398	267	611	480	824	693							371	240
	7	252	99	358	205	571	418	784	631							433	280
	8			318	143	531	356	744	569	957	782	1169	995			495	320
	9					491	295	704	507	917	720	1130	933			557	360
	10					451	233	664	446	877	658	1090	871	1302	1084	618	400
	11							624	384	837	597	1050	809	1263	1022	680	440
	12							584	322	797	535	1010	748	1223	960	742	480

Torque [Nm] depending on working pressure (continued)

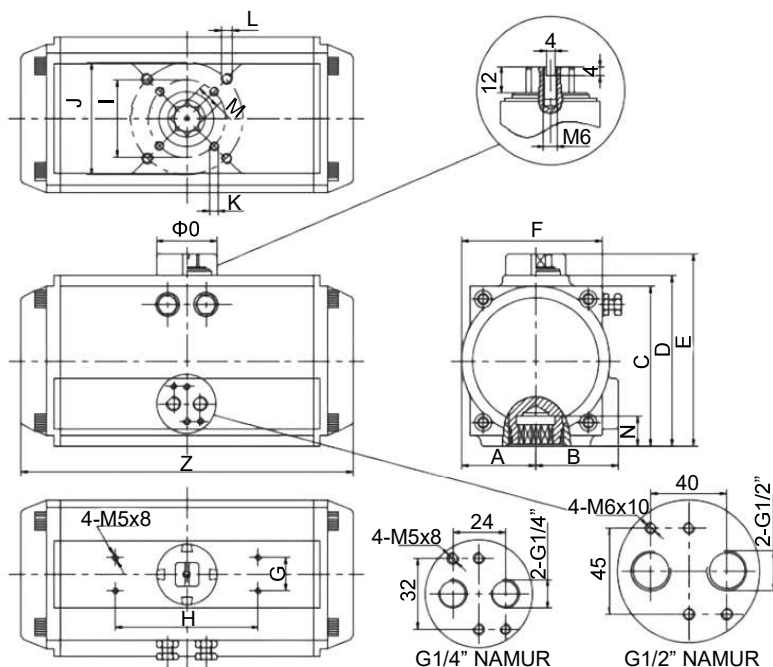
Piston Ø [mm]	Number of springs	Inlet pressure [MPa] and position														Return by springs	
		0,25		0,3		0,4		0,5		0,6		0,7		0,8			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
210	5	390	285	523	418	789	684									380	275
	6	335	209	468	342	734	608	1000	874							456	330
	7	280	133	413	266	679	532	945	798							532	385
	8			358	190	624	456	890	722	1156	988	1422	1254			608	440
	9					569	380	835	646	1101	912	1367	1178			684	495
	10					514	304	780	570	1046	836	1312	1102	1578	1368	760	550
	11							725	494	991	760	1257	1026	1523	1292	836	605
	12							670	418	936	684	1202	950	1468	1216	912	660
240	5	552	409	744	600	1129	985									554	410
	6	470	297	662	489	1047	874	1432	1259							665	492
	7	388	187	580	379	964	764	1349	1149							775	575
	8			498	268	883	653	1267	1037	1652	1422	2037	1807			886	656
	9					800	542	1185	926	1569	1311	1954	1696			998	739
	10					718	431	1103	816	1488	1201	1872	1586	2257	1970	1108	821
	11							1021	705	1406	1090	1791	1474	2176	1859	1219	903
	12							939	594	1323	979	1708	1363	2093	1748	1330	985
270	5	890	675	1195	968	1779	1552									787	560
	6	790	519	1083	811	1667	1396	2252	1981							943	672
	7	679	361	972	654	1556	1238	2141	1823							1101	783
	8			860	497	1444	1081	2029	1666	2614	2252	3199	2836			1258	895
	9					1332	923	1917	1509	2502	2094	3087	2678			1416	1007
	10					1220	767	1805	1352	2390	1937	2974	2521	3560	3107	1572	1119
	11							1693	1194	2278	1779	2862	2364	3448	2949	1730	1231
	12							1582	1037	2167	1623	2751	2207	3336	2792	1887	1342
300	5	1097	729													1061	730
	6	935	494	1316	875											1273	876
	7	772	258	1153	639	1916	1402									1485	1022
	8			991	403	1754	1166	2517	1929							1697	1168
	9					1592	930	2355	1693	3119	2456					1909	1314
	10					1430	695	2193	1458	2956	2221	3719	2984	4482	3747	2122	1460
	11							2030	1222	2793	1985	3556	2748	4319	3511	2334	1606
	12							1868	986	2631	1749	3394	2512	4157	3275	2546	1752
350	5	1533	964													1702	1173
	6	1292	586	1863	1157											2043	1408
	7	1031	208	1602	779	2745	1922									2383	1642
	8			1341	401	2484	1544	3626	2686							2724	1877
	9					2224	1165	3336	2307	4508	3449					3064	2112
	10					1963	787	3105	1929	4247	3071	5390	4214	6532	5356	3405	2346
	11							2844	1551	3986	2693	5129	3836	6271	4978	3745	2581
	12							2584	1172	3726	2314	4869	3457	6011	4599	4086	2816

SINGLE ACTING PNEUMATIC SWING ACTUATORS

Torque [Nm] depending on working pressure (continued)

Piston ∅ [mm]	Number of springs	Inlet pressure [MPa] and position														Return by springs	
		0,25		0,3		0,4		0,5		0,6		0,7		0,8			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
400	7	1028	869													2880	1837
	8	1736	411	2550	1225											3292	2100
	9			2259	768	3887	2396									3703	2362
	10			1967	311	3595	1939	5223	3567							4115	2624
	11					3303	1482	4931	3110	6559	4738					4526	2887
	12					3012	1025	4640	2653	6286	4281	7895	5908	9523	7536	4938	3149
	13							4348	2195	5976	3823	7603	5450	9231	7078	5349	3412
	14							4057	1738	5685	3366	7312	4993	8940	6621	5761	3674
	15							3765	1281	5393	2909	7020	4536	8648	6164	6172	3937
16									5101	2452	6728	4079	8356	5707	6584	4199	

Dimensions



∅	A	B	C	D	E	F	G	H	∅ I	∅ J	K	L	M	N	Z	O	Air source
52	30	41,5	65,5	72	92	65	30	80	36	50	M5x8	M6x10	11	14	147	40	NAMUR G1/4"
63	36	47	81	87,5	108	72	30	80	50	70	M6x10	M8x13	14	18	168	40	
75	42	53	94	99,5	120	81	30	80	50	70	M6x10	M8x13	14	18	184	40	
83	46	57	98,5	108,7	129	92	30	80	50	70	M6x10	M8x13	17	21	204	40	
92	50	58,5	111	116,5	137	98	30	80	50	70	M6x10	M8x13	17	21	262	40	
105	57,5	64	123	133	153	110	30	80	70	102	M8x13	M10x16	22	26	268	40	
125	67,5	74,5	146	155	185	128	30	130	70	102	M8x13	M10x16	22	26	301	55	
140	75	77	161	172	202	138	30	130	102	125	M10x16	M12x20	27	31	390	55	
160	87	87	184	197	227	158	30	130	102	125	M10x16	M12x20	27	31	458	55	
190	103	103	216	230	260	189	30	130	-	140	-	M16x25	36	50	525	80	
210	113	113	236	255	285	210	30	130	-	140	-	M16x25	36	50	532	80	
240	130	130	265	290	320	245	30	130	-	165	-	M20x25	46	60	602	80	
270	147	147	299	330	360	273	30	130	-	165	-	M20x25	46	60	722	80	
300	162	173	330	354	384	312	30	130	-	165	-	M20x25	46	60	820	80	
350	190	195	383	410	440	362	30	130	165	254	M20x25	8xM16x25	46	60	900	80	
400	260	260	441	466	496	450	30	130	165	254	M20x25	8xM16x25	46	60	940	80	



Position sensors of the ZLS series for actuators with swing movement of the ATM series have visible and clear optical position signaling. The sensor cam is easily and quickly adjusted without special tools. The terminal block has 8 contacts available for easy wiring. Thanks to the connection interface according to Namur VDI/VDE 3845, connecting the sensor is quick and easy.

Sensor type	mechanical	induction type
Switches	2x switch NC+NO (2xSPDT)	2x switch NC+NO (2xSPDT)
Switching capacity	250V AC, 16A; 125V AC, 16A 250V DC, 0,2A; 125V DC, 0,4A; 30V DC, 4A	12 to 24V DC
Protection class	IP65 / IP67	
Environmental conditions	altitude does not exceed 2000 m, ambient temperature -20 to -60 °C and + 60 °C according to temperature range	
Identificator	optical	
Limit switch connection	NAMUR VDI/VDE 3845, ISO 5211	
Electrical interface	G1/2"	

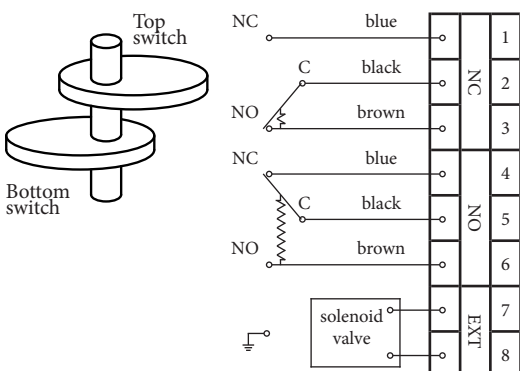
Order codes

ZG-ZLS 300 G A ST

Sensor type		Body material		Temperature range	
N	mechanical	A	Aluminium alloy	ST	-20°C to +60°C
G	induction type	S	stainless steel	OL	-40°C to +60°C
				LT	-60°C to +60°C

Wiring

Mechanical sensor



Induction sensor

