

Pneumatic actuators



Optimum performance

We realise that the performance of our pneumatic actuators is vitally important to your production process. An actuator that does not function well often has serious consequences for the outcome of the process. That is why quality has been our primary concept in actuator development. El-O-Matic pneumatic actuators are reliable, quality products, continuously providing optimum performance under all circumstances.

Standard Specification

- Pressure 0.2 to 8 bar
- Temperature -20°C to +80°C
- Materials Housing: Aluminium alloy
Shaft: Hard anodised aluminium alloy
- Finish Polyester non-TGIC based powder coating
- Lifespan Minimum of 500,000 cycles

Features

- For application to ball, plug and butterfly valves.
- Can be used in other quarter-turn applications, such as dampers and pressure regulators.
- Actuators are made of high duty aluminium alloys, providing optimum strength and corrosion resistance.
- Compact rack & pinion design.
- Can be supplied in single (spring return) or double acting versions.
- Choice of twelve sizes, with a torque range from 12 to 4000 Nm.
- Mounting for solenoid valves and position signalers to the NAMUR standard (VDI/VDE 3845).
- Valve mounting and drive dimensions to the ISO 5211 or DIN 3337
- Drive shaft provided with insert, for low cost, versatile direct valve mountings.
- Anti-blow-out shaft.

Operating principle

Pneumatic actuators come in two versions: double acting and single acting (spring return). Both versions are designed in such a way that (with the exception of the position indicator) there are no moving parts on the outside. This makes them safe, easy to install and virtually maintenance free.



Furthermore, the compact rack and pinion construction means that actuators are lightweight and occupy a minimum of space.

Ample choice of spring packages

Spring return, single acting actuators are used in most safety systems. Their ability to automatically return the valve to its fail-safe position on air failure provides the vital link for ultimate system shut down. El-O-Matic spring return actuators have modular spring packages, which enable them to be easily applied to a wide variety of supply pressures and operating conditions.



Limit stops

Limit stops are necessary where the precise adjustment of the valve's open position is required. These are standard on all actuators up to 1600 Nm. and optional on the two larger sizes. Actuators with double stroke adjustment are also available for those applications on high performance butterfly valves (closed position).

Standardisation

El-O-Matic actuators comply fully with all the relevant industry standards. Control interfaces for solenoid valves, switch boxes and positioners satisfy the NAMUR standard (VDI/VDE 3845). Valve mounting and drive dimensions are to ISO 5211 standard (option DIN 3337).

Inserts

Actuator sizes up to 1600 Nm. are fitted with drive inserts. This enables actuators to be directly mounted onto suitable valves and eliminates the need for a bracket and coupling type mounting kit. The increasing use of direct mounts significantly cuts the cost of the valve/actuator assembly. Standard actuators are fitted with square drive inserts in accordance with ISO 5211 (or DIN 3337), but a wide variety of other inserts are also available. Special inserts may have oversize or undersize squares, or with double-D or shaft key way forms. These can be supplied on factory built actuators or as loose items, drive inserts are easily replaceable at distributor or end user level.



inserts

Where direct mounts are not possible, for instance on valves with exposed gland packing, the use of inserts often simplifies the design of the mounting kit.

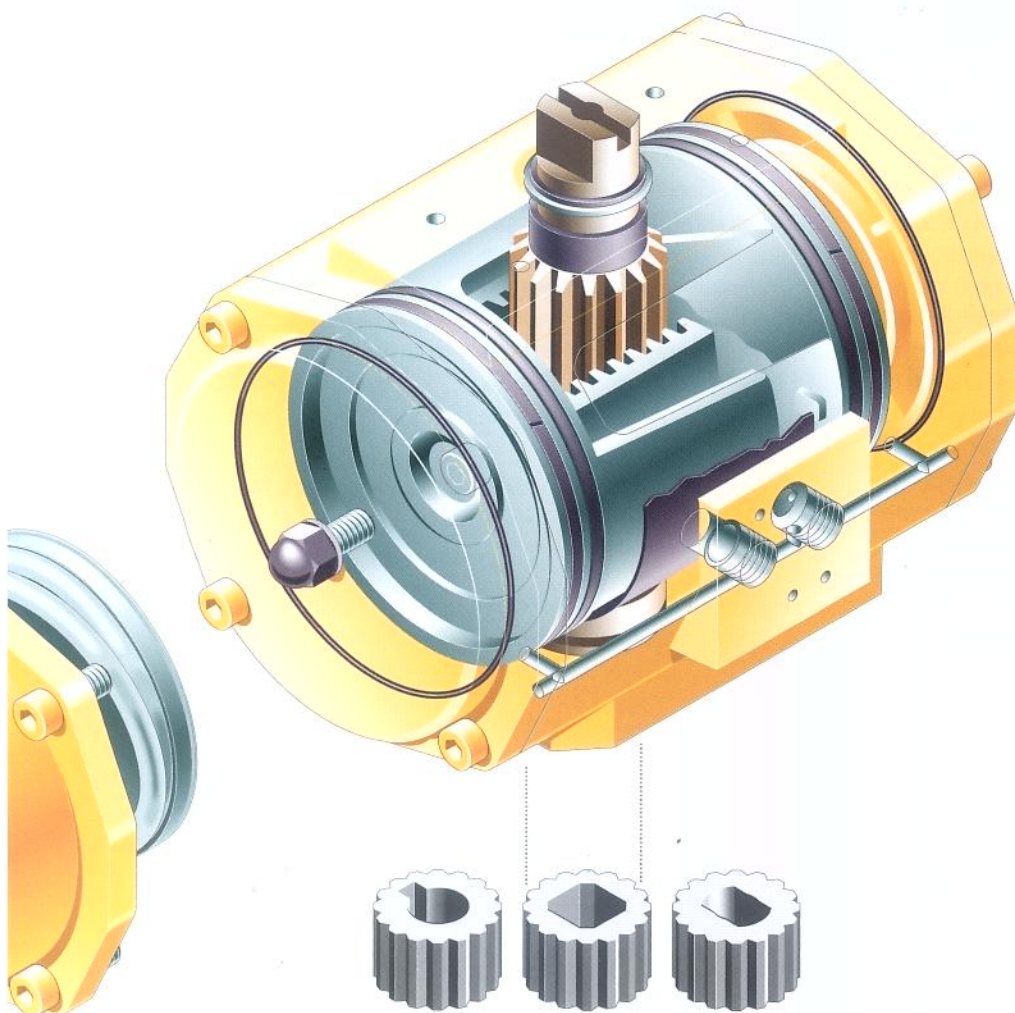
Long life span

El-O-Matic actuators have a patented 3-point guiding system, full synthetic bearings and a rack & pinion gearing. High precision gear cutting methods provide close tolerances and ensure minimum gear backlash, all of which guarantees virtually the longest working life of any actuator in the industry.

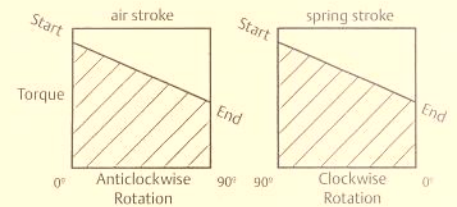
Application

The choice of actuator depends primarily on the valves' torque requirement, and with El-O-Matic you have the widest range possible, 12 basic model sizes covering a torque range from 12 to 4000 Nm.

But for optimum actuator sizing many factors may need consideration. El-O-Matic has all available relevant technical data on practically all the quarter-turn valve manufacturers in the world. This electronic database enables us to select just the right actuator for you, whatever the valve type: ball, butterfly or plug valve.



Pneumatic actuators



Torque diagram with single acting actuators

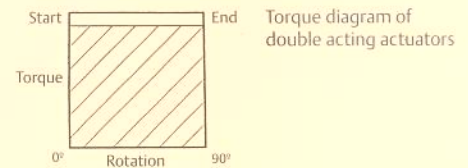
Torques in Nm

Single Acting

Spring set no. Actuator Type	3		3.5		4		4.5		5		5.5		6		7		Spring stroke (Nm)	
	start	end	start	end	start	end	start	end	start	end	start	end	start	end	start	end	start	end
ES12	2	-	3.7	1.0	5.0	2.3	6.4	3.6	7.7	4.9	9.0	6.2	10.3	7.5	12.9	10.1	7.2	4.6
ES25	3	7	9	5	11	7	14	9	16	12	19	14	21	17	26	21	11	7
	4	-	-	-	9	3	11	5	14	8	16	10	19	13	23	17	14	9
	5	-	-	-	-	-	-	-	11	4	14	6	16	8	21	13	18	11
	6	-	-	-	-	-	-	-	-	-	11	2	14	4	18	9	21	13
ES40	3	12	17	8	21	13	26	17	31	22	35	27	40	31	49	40	20	12
	4	-	-	-	17	5	21	10	26	14	30	19	35	23	44	32	26	17
	5	-	-	-	-	-	-	-	21	7	26	11	30	16	39	25	33	21
	6	-	-	-	-	-	-	-	-	-	21	4	25	8	34	17	40	25
ES65	3	18	25	11	32	18	39	25	46	32	52	39	59	46	73	60	32	20
	4	-	-	-	24	6	31	13	38	20	45	27	52	34	66	48	42	26
	5	-	-	-	-	-	-	-	30	8	37	15	44	22	58	36	53	33
	6	-	-	-	-	-	-	-	-	-	30	3	37	10	50	23	63	40
ES100	3	29	39	20	49	30	59	41	70	51	80	61	90	71	110	91	44	27
	4	-	-	-	39	14	49	24	59	34	69	44	80	54	100	75	58	37
	5	-	-	-	-	-	-	-	49	17	59	27	69	38	89	58	73	46
	6	-	-	-	-	-	-	-	-	-	48	11	59	21	79	41	88	55
ES200	3	61	84	42	106	64	129	86	151	109	173	131	196	153	240	198	98	61
	4	-	-	-	83	26	105	49	127	71	150	93	172	116	217	160	131	82
	5	-	-	-	-	-	-	-	104	33	126	56	149	78	193	123	164	102
	6	-	-	-	-	-	-	-	-	-	103	18	125	41	170	85	196	123
ES350	3	101	140	68	179	107	217	146	256	185	295	224	334	263	412	340	174	112
	4	-	-	-	136	41	175	80	214	118	252	157	291	196	369	274	232	149
	5	-	-	-	-	-	-	-	171	52	210	91	249	130	326	207	289	186
	6	-	-	-	-	-	-	-	-	-	-	-	206	63	283	141	347	223
ES600	3	179	245	120	311	186	377	252	443	318	509	384	575	450	707	582	292	183
	4	-	-	-	240	74	306	140	372	206	438	272	504	338	636	470	389	245
	5	-	-	-	-	-	-	-	302	94	368	160	434	226	566	358	487	306
	6	-	-	-	-	-	-	-	-	-	298	48	364	114	496	246	584	367
ES950	3	272	371	181	469	279	568	378	666	476	765	575	863	673	1060	870	434	269
	4	-	268	14	366	113	465	211	563	310	662	408	760	507	957	704	579	359
	5	-	-	-	-	-	-	-	460	143	559	242	657	340	854	537	724	448
	6	-	-	-	-	-	-	-	-	-	456	75	554	174	751	371	869	538
ES1600	3	445	608	307	771	470	934	633	1097	796	1260	959	1423	1121	1748	1447	711	449
	4	-	-	-	599	198	762	361	925	523	1088	686	1251	849	1577	1175	947	598
	5	-	-	-	-	-	-	-	753	251	916	414	1079	577	1405	903	1184	748
	6	-	-	-	-	-	-	-	-	-	744	142	907	305	1233	630	1421	897
PS2500	8	712	958	566	1203	811	1449	1057	1694	1302	1940	1548	2186	1794	2677	2285	1057	663
	10	-	774	284	1019	529	1265	775	1510	1020	1756	1266	2001	1511	2492	2002	1321	829
	12	-	-	-	835	247	1080	492	1326	738	1572	984	1817	1229	2308	1720	1585	995
	14	-	-	-	-	-	896	210	1142	456	1387	701	1633	947	2124	1438	1849	1160
PS4000	8	1213	1629	968	2045	1384	2462	1800	2878	2216	3294	2633	3710	3049	4543	3882	1783	1119
	10	-	1318	491	1734	908	2151	1324	2567	1740	2983	2157	3400	2573	4232	3405	2229	1399
	12	-	-	-	1423	431	1840	848	2256	1264	2672	1680	3089	2097	3921	2929	2674	1679
	14	-	-	-	-	-	1529	372	1945	788	2362	1204	2778	1620	3610	2453	3120	1958

Double Acting

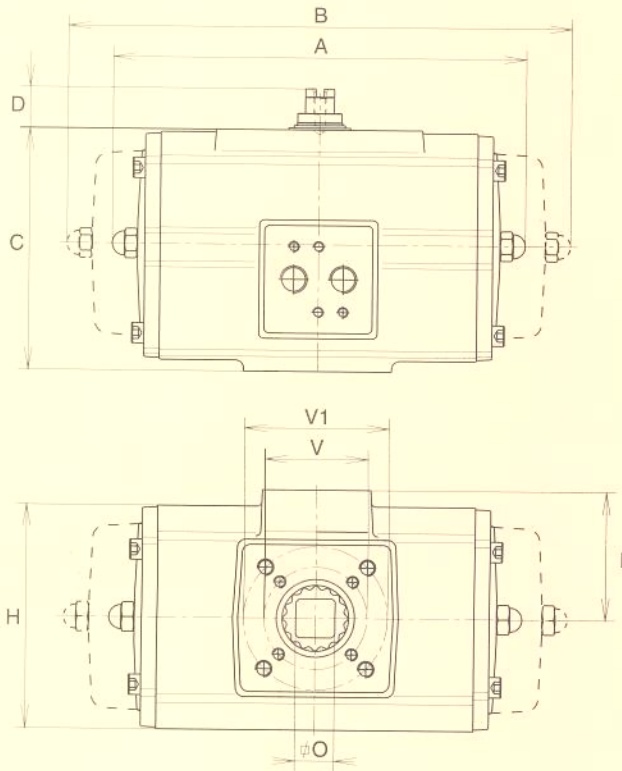
Actuator	Pressure (bar)										
	2	3	3.5	4	4.5	5	5.5	6	6.5	7	8
ED12	4.8	7.3	8.5	9.7	10.9	12.2	13.4	14.6	15.9	17.1	19.6
ED25	9	13	16	18	20	23	25	27	29	32	36
ED40	17	25	29	34	38	42	47	51	55	59	68
ED65	25	38	45	51	58	64	71	78	84	91	104
ED100	37	57	66	76	86	95	105	114	124	134	153
ED200	82	124	146	167	188	209	230	251	272	293	335
ED350	143	216	253	290	326	363	400	436	473	510	583
ED600	243	368	430	492	554	617	679	741	804	866	991
ED950	363	549	642	735	828	921	1014	1107	1200	1293	1479
ED1600	600	907	1061	1214	1368	1522	1676	1829	1983	2137	2444
PD2500	958	1449	1694	1940	2186	2431	2677	2922	3168	3413	3904
PD4000	1624	2456	2872	3289	3705	4121	4538	4954	5370	5786	6619



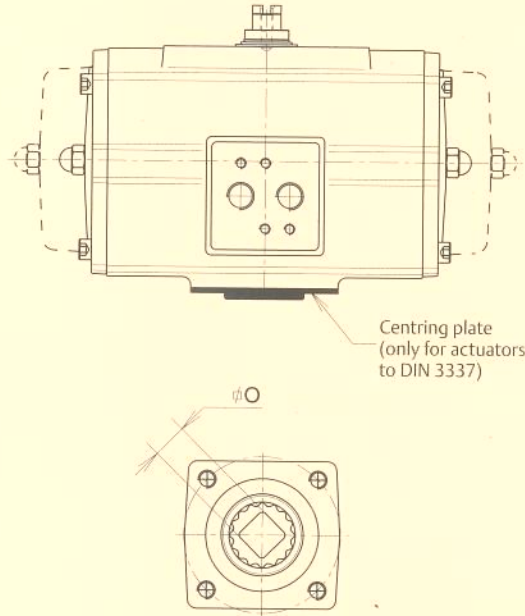
Dimensions and technical data

Air connections and topwork
Acc. VDI/VDE 3845 (NAMUR)

Air connections and topwork
Acc. VDI/VDE 3845 (NAMUR)



ISO 5211



Centring plate
(only for actuators
to DIN 3337)

DIN 3337

Technical data

Actuator type		E12	E25	E40	E65	E100	E200	E350	E600	E950	E1600	P2500	P4000	
Bore	mm.	46	56	70	80	91	110	145	175	200	230	300	325	
Stroke	mm.	12.6	15.7	18.8	22	25.1	37.7	37.7	44	50.3	62.8	56.5	81.7	
Weight:	DA	kg.	0.61	1.3	1.8	2.4	3.1	5.8	10.4	19.4	26.4	42.7	56.8	86.6
	SR	kg.	0.67	1.7	2.4	3.6	4.6	9.1	16.9	27.6	38.6	65.8	88.2	131.8
Operating time	sec.	0.4	0.5	0.7	1.1	1.2	2.3	3.6	4.5	5.4	6.9	7	12	
Air consumption at 1 atm (litres)	port A	stroke	0.05	0.1	0.16	0.33	0.35	0.8	1.8	2.9	4.7	7.3	8	13.5
	port B	stroke	0.06	0.11	0.22	0.36	0.49	1	1.9	3.1	4.9	8.0	9.3	17.5

Dimensions (mm.)

	A DA	103	159	180	199	221	283	305	387	424	516	378	502
	B SR	118	172	204	249	267	360	387	477	517	637	570	834
	C	60	80	93	105	118	143	181	220	259	297	356	380
	D	20	20	20	20	20	20	20	30	30	30	30	30
	H	60	74	86	98	108	128	173	207	231	265	350	380
	I	33	46	53	58	63	73	95	113	126	142	183	200
ISO 5211	O	9	11	14	14	19	22	27	27	36	46	46	55
	V/V1	42	36/50	50/70	50/70	50/70	70/102	70/102	102/125	102/140	165/254	165/254	165/254
	W/	M6	M5/	M6/	M6/	M6/	M8/	M8/	M10/	M10/	M20/	M20/	M20/
	W1		M6	M8	M8	M8	M10	M10	M12	M16	4xM16	4xM16	8xM16
DIN 3337	O	9	11	14	14	17	22	22	27	36	46	46	55
	V	42	50	50	50	70	102	102	125	140	165	165	254
	W	M6	M6	M6	M6	M8	M10	M10	M12	M16	M20	M20	M16