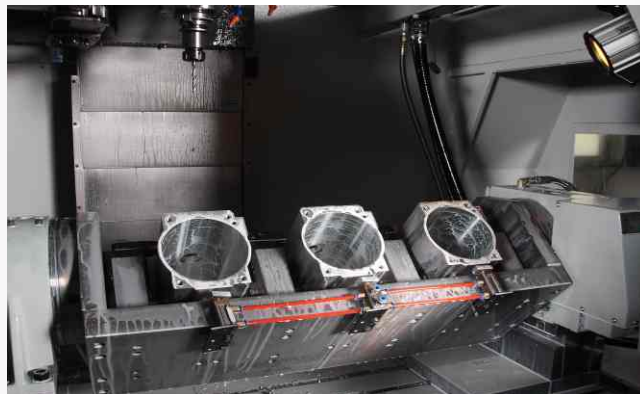
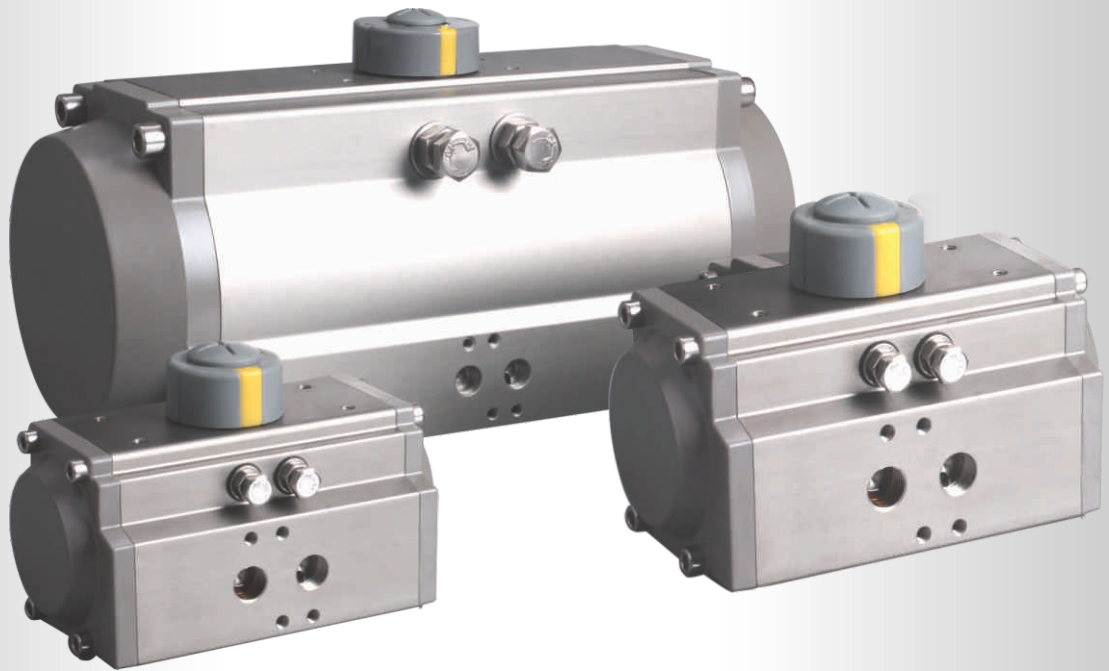


**ELGER**<sup>TM</sup>



**EP SERIES PNEUMATIC ACTUATOR**

## ELGER CONTROLS

We, at ELGER CONTROLS offer products & solutions to effectively meet the challenges of modern process control, for automation of Final Controls Elements like Valves & Dampers. We are committed to providing robust and reliable ACTUATORS for every type of industry and every type of application.

## EP SERIES - PNEUMATIC SEMI-ROTARY ACTUATORS

Pneumatic actuators being the most preferred type of all actuators are simple in construction, easier to operate, maintain and troubleshoot, used extensively in Process Industries for automation of Valves & Dampers. EP series offers pneumatic semi-rotary actuators that are rugged, INDUSTRIAL GRADE products.

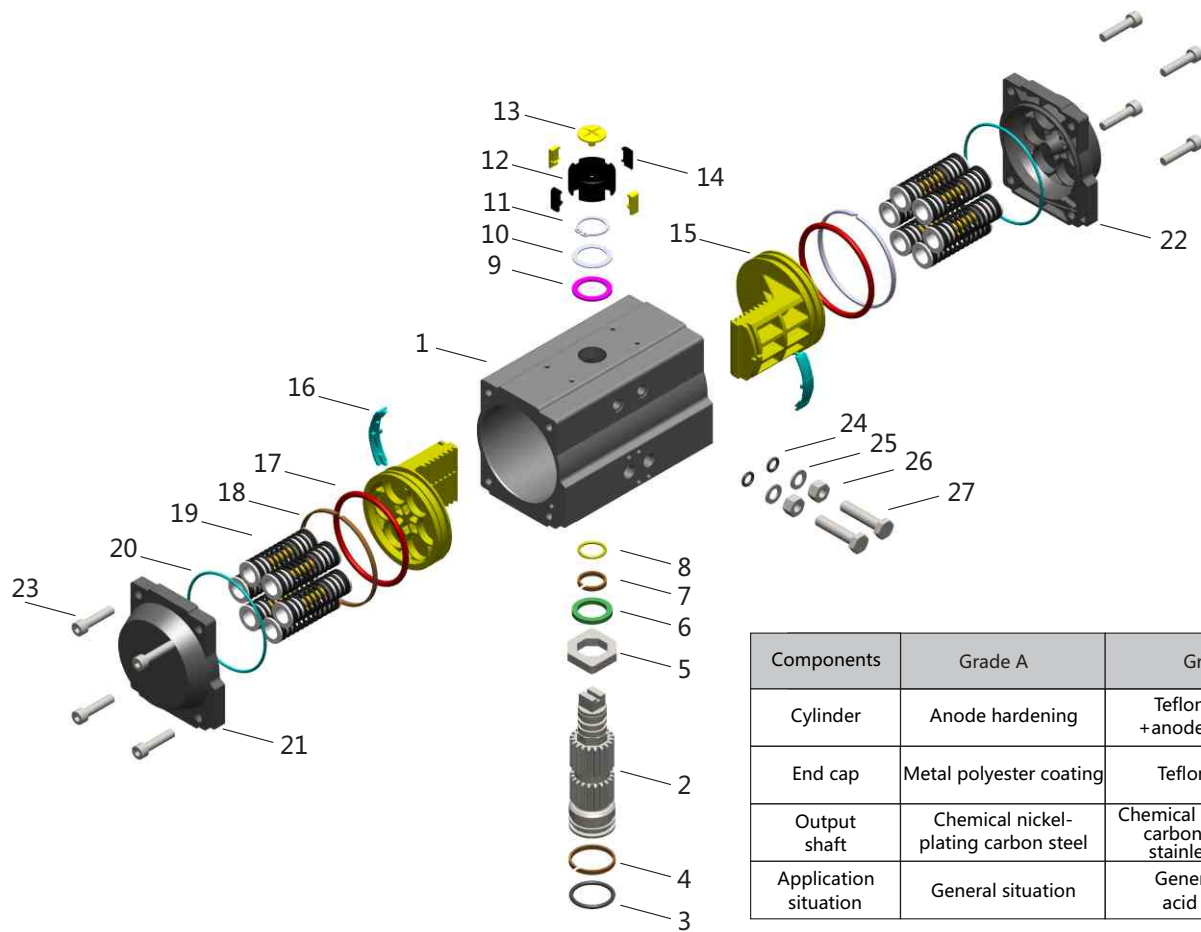
Many Process Industry applications are critical which could affect Plant performance are safety related which demands high level of reliability, repeatability and precise control of final elements like valves & dampers. EP series actuators are designed, manufactured and tested to meet International standards.

## DESIGN FEATURES

- RACK & PINION, double piston, symmetrical design generates fast and steady motion with high power output
- Extruded Aluminium body and Die Cast end caps of modular design enables conversion of Double acting to Single acting or vice versa by changing end caps and or spring set assembly reversal of rotation by interchanging piston positions
- Allowable ambient temperature of -20 °C to +80 °C standard version and -15 °C to +150°C for high temperature versions
- Combined pre-stressed spring set assembly provides complete safety during disassembly/assembly and also during normal operation
- Two independent end stop screws to adjust Open & Close end positions
- Multi-functional position indicator for onsite visual indication of actuator position, with mounting slot according to VDI/VDE3845 and NAMUR for installing limit switch box, positioner and position sensors
- Solenoid valve mounting provision conforming to NAMUR standard
- Mounting base conforming to ISO5211 and DIN3337
- Composite material rack bushing and piston guide rings for prevention of metal-metal friction and increased lubrication to ensure smooth and long service life
- SS fasteners and NBR O-Rings



CONSTRUCTION



Components	Grade A	Grade B
Cylinder	Anode hardening	Teflon coating + anode hardening
End cap	Metal polyester coating	Teflon coating
Output shaft	Chemical nickel-plating carbon steel	Chemical nickel-plating carbon steel or stainless steel
Application situation	General situation	General or low acid situation

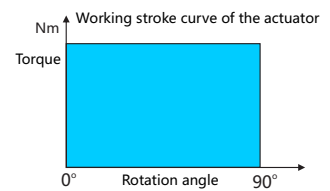
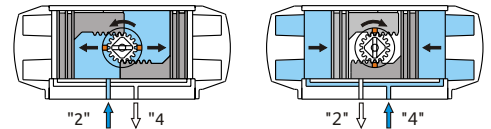
Part No	Quantity	Part name	Standard material	Optional material
01	1	Cylinder	Extruded aluminum alloy	Stainless steel
02	1	Output shaft	Carbon steel	Stainless steel
03	1	O-ring	NBR	Fluorine/silicon rubber
04	1	Bearing	Nylon46	-
05	1	Adjusting cam	Stainless steel	-
06	1	Thrust bearing	Nylon46	-
07	1	Bearing	Nylon46	-
08	1	O-ring	NBR	Fluorine/silicon rubber
09	1	Bearing	Nylon46	-
10	1	Gasket	Stainless steel	-
11	1	Elastic damping ring	Stainless steel	-
12	1	Position indicator	PPPP+30%GF	-
13	1	Screw	PPPP+30%GF	-
14	4	Position indicating piece	PPPP+30%GF	-
15	2	Piston	Casting aluminum alloy	-
16	2	Guide bearing	Nylon46	-
17	2	O-ring (piston)	NBR	Fluorine/silicon rubber
18	2	Guide ring (piston)	Fluorine-carbon composite material	-
19	5-12	Spring assembly	Alloy spring steel	-
20	2	O-ring (end cap)	NBR	Fluorine/silicon rubber
21	1(1)	Left end cap	Casting aluminum alloy	Stainless steel
22	1(1)	Right end cap	Casting aluminum alloy	Stainless steel
23	8	End cap bolt	Stainless steel	-
24	2	O-ring (adjusting bolt)	NBR	Fluorine/silicon rubber
25	2	Gasket	Stainless steel	-
26	2	Nut	Stainless steel	-
27	2	Adjusting bolt	Stainless steel	-

## Operating principle of Double Acting Actuator

When air is supplied through PORT 2, it enters the center chamber between two pistons driving them apart. The two piston racks rotate the output shaft counterclockwise. Air from both end chambers will be exhausted through PORT 4. When air is supplied through PORT 4, it enters the end chambers from both ends forcing both pistons move towards center. The two piston racks rotate the output shaft clockwise. Air from center chamber will be exhausted through PORT 2.

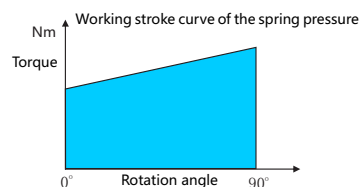
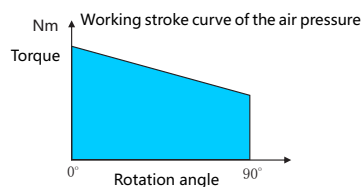
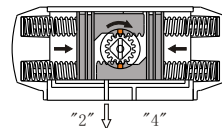
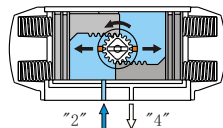
## Output torque - Double acting (Nm)

Model	Supply Air Pressure							
	2 bar	3 bar	4 bar	5 bar	5.5 bar	6 bar	7 bar	8 bar
EPD 040	4	6	8	10	11	12	14	16
EPD 052	9	13	17	21	23	26	30	34
EPD 063	15	23	30	38	41	45	52	60
EPD 075	25	37	50	62	68	74	87	99
EPD 083	33	49	65	81	89	97	114	130
EPD 092	47	70	93	116	128	140	163	186
EPD 105	70	104	139	173	191	208	243	277
EPD 125	123	184	246	307	338	368	430	491
EPD 140	185	277	370	462	508	554	647	739
EPD 160	282	422	563	704	774	844	985	1126
EPD 190	453	680	907	1134	1248	1361	1587	1814
EPD 210	623	935	1246	1558	1714	1870	2182	2493
EPD 240	977	1465	1954	2443	2687	2931	3420	3908
EPD 270	1374	2061	2748	3435	3779	4122	4809	5496
EPD 300	1696	2544	3392	4241	4665	5089	5937	6785
EPD 350	2539	3809	5079	6349	6985	7619	8889	10159
EPD 400	3619	5428	7238	9047	9953	10857	12666	14476



## Operating principle of Spring Return Actuator

When air is supplied through PORT 2, it enters the center chamber between two pistons driving them apart and the springs get compressed. The two piston racks rotate the output shaft counterclockwise. Air from both end chambers will be exhausted through PORT 4. Actuator remains in this position as long as air supply pressure to PORT 2 is maintained, when PORT 2 is exhausted, the springs retract, forcing both pistons move towards center. The two piston racks rotate the output shaft clockwise. Air from center chamber will be exhausted through PORT 2.



Spring components			
Spring Quantity	Spring installation mode	Spring Quantity	Spring installation mode
5		9	
6		10	
7		11	
8		12	

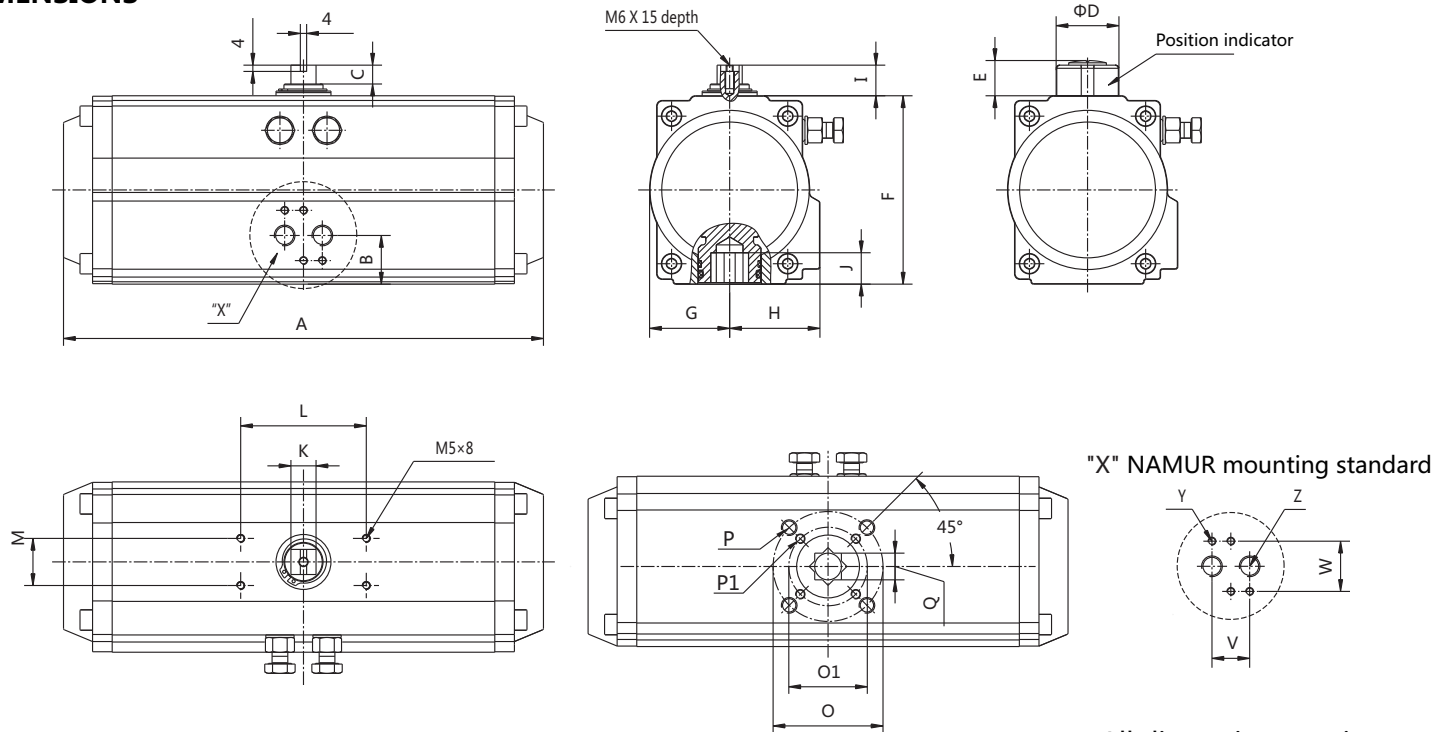
**Output torque - Single acting (Nm)**

Model	Spring Sets	Spring Torque		Supply Air Pressure											
				3 bar		4 bar		5 bar		6 bar		7 bar		8 bar	
		90°	0°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
EPS 52	5	5	4	9	7	13	12								
	6	7	5	8	6	12	11	17	15						
	7	8	6	7	5	12	9	16	14	20	18				
	8	9	6	6	4	11	8	15	13	19	17	24	21		
	9	10	7			10	7	14	12	18	16	23	20	27	24
	10	11	8			9	6	13	10	18	15	22	19	26	23
	11	12	9					13	9	17	14	21	18	25	22
EPS 63	5	10	7	16	13	23	20								
	6	12	8	14	11	22	18	30	26						
	7	14	10	13	9	20	16	28	24	35	31				
	8	16	11	12	7	19	14	27	22	24	29	42	37		
	9	18	12			18	12	25	20	33	27	40	35	48	42
	10	20	14			16	10	24	18	31	25	39	33	46	40
	11	22	15					23	16	30	23	38	31	45	38
EPS 75	5	16	10	27	22	39	34								
	6	17	12	25	19	37	31	50	43						
	7	22	14	23	16	35	28	48	40	60	53				
	8	25	16	21	12	33	25	47	37	58	45	70	62		
	9	28	18			31	22	44	34	56	46	68	59	81	71
	10	31	20			29	19	42	31	54	43	66	56	79	68
	11	34	22					40	28	52	40	64	53	77	65
EPS 83	5	22	15	34	27	50	43								
	6	26	18	31	23	47	39	63	55						
	7	30	21	28	19	44	35	60	51	77	67				
	8	34	24	25	14	41	31	57	46	74	63	90	79		
	9	39	27			38	26	54	42	71	59	87	75	103	91
	10	43	30			35	22	52	38	68	54	84	71	100	87
	11	47	33					49	34	65	50	81	66	97	83
EPS 92	5	30	22	48	40	71	63								
	6	36	26	44	34	67	57	90	80						
	7	42	31	39	27	63	51	86	74	109	97				
	8	48	35	35	21	59	45	82	68	105	91	128	114		
	9	55	39			54	39	77	69	100	85	124	108	147	132
	10	61	44			50	33	173	57	960	79	120	102	143	126
	11	67	48					68	50	92	73	115	96	138	120
EPS 105	5	46	39	65	58	99	92								
	6	55	47	57	49	91	83	126	118						
	7	65	55	49	39	84	74	118	109	153	143				
	8	74	63	41	30	76	65	110	99	145	134	180	169		
	9	83	71			68	55	102	90	137	125	172	159	206	194
	10	92	79			60	46	95	81	129	116	164	150	199	185
	11	102	87					87	71	121	106	157	141	191	176
EPS 125	5	80	53	131	104	192	166								
	6	96	64	120	88	182	150	243	211						
	7	112	74	110	72	171	134	232	195	294	257				
	8	128	85	99	56	161	118	222	179	283	241	345	302		
	9	144	96			150	102	211	163	273	225	334	286	395	374
	10	160	106			139	86	201	174	262	209	323	270	385	331
	11	175	117					190	131	251	193	313	254	374	315
EPS 140	5	133	89	188	144	280	236								
	6	160	107	170	117	263	209	355	302						
	7	187	125	152	90	245	183	337	275	430	368				
	8	213	142	135	64	227	156	319	249	412	341	504	433		
	9	240	160			209	129	302	222	394	314	486	407	579	499
	10	267	178			191	103	284	195	376	288	469	380	561	472
	11	293	196					266	169	358	261	451	353	543	446
	12	320	214				248	142	341	234	433	327	525	419	



Model	Spring Sets	Spring Torque		Supply Air Pressure											
				3 bar		4 bar		5 bar		6 bar		7 bar		8 bar	
		90°	0°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
EPS 160	5	201	136	286	222	427	362								
	6	241	163	259	182	100	322	541	463						
	7	281	190	232	141	373	282	513	423	654	564				
	8	321	218	205	101	345	242	486	383	627	524	768	664		
	9	361	245			318	202	459	222	600	483	741	624	881	765
	10	401	272			291	162	432	343	573	443	713	584	854	725
	11	441	299					405	303	545	403	686	544	827	685
	12	481	326					377	263	518	363	659	504	800	645
EPS 190	5	349	232	448	332	675	559								
	6	418	278	402	262	629	489	856	716						
	7	488	325	356	192	582	419	809	646	1036	873				
	8	558	371	309	123	536	350	763	576	990	803	1217	1030		
	9	627	418			490	280	717	507	943	733	1170	960	1397	1187
	10	697	464			443	210	670	437	897	664	1124	891	1351	1117
	11	767	510					624	367	951	594	1077	821	1304	1048
	12	837	557					577	297	804	524	1031	751	1258	978
EPS 210	5	467	297	638	468	950	780								
	6	560	356	579	375	890	687	1202	998						
	7	654	416	519	282	831	593	1143	905	1455	1217				
	8	747	475	460	188	772	500	1083	812	1395	1123	1070	1435		
	9	840	535			712	407	1024	718	1336	1030	1647	1342	1959	1653
	10	934	494			653	313	965	625	1276	937	1588	1248	1900	1560
	11	1027	653					905	531	1217	843	1529	1155	1840	1467
	12	1121	713					846	438	1158	750	1463	1062	1781	1373
EPS 240	5	799	447	963	666	1452	1155								
	6	959	537	862	506	1351	995	1840	1484						
	7	1119	627	762	346	1250	835	1739	1324	2228	1812				
	8	1279	716	661	187	1150	675	1639	1164	2027	1652	2616	2141		
	9	1439	806			1049	515	1538	1004	2027	1492	2515	1981	3004	2470
	10	1599	895			949	355	1437	844	1926	1333	2415	1821	2903	2370
	11	1759	985					1337	684	1825	1173	2314	1661	2803	2150
	12	1919	1075					1236	524	1725	1013	2213	1501	2702	1990
EPS 270	5	1033	539	1431	1028	2118	1715								
	6	1240	647	1305	821	1992	1508	2679	2194						
	7	1446	755	1179	615	1866	1302	2553	1989	3240	2676				
	8	1653	863	1053	108	1740	1095	2427	1782	3114	2469	3801	3156		
	9	1860	971			1614	889	2301	1576	2988	2263	3675	2950	4363	3637
	10	2066	1079			1488	682	2175	1369	2862	2056	3549	2743	4253	3430
	11	2273	1187					2049	1162	2736	1846	3423	2536	4111	3223
	12	2480	1295					1923	956	2610	1643	3297	2330	3985	3017
EPS 300	5	1272	848	1697	1272	2545	2121								
	6	1527	1018	1527	1018	2375	1866	3223	2714						
	7	1781	1187	1357	763	2206	1612	3054	2460	3902	3308				
	8	2036	1357	1186	509	2036	1357	2884	2205	3732	3054	4581	3902		
	9	2290	1527			1866	1103	2715	1951	3563	2799	4411	3647	5259	4496
	10	2545	1696			1697	848	2545	1697	3393	2545	4241	3393	5090	4241
	11	2799	1866					2375	1442	3224	2290	4072	3139	4920	3987
	12	3054	2035					2206	1188	3054	2036	9302	2884	4750	3732
EPS 350	5	1905	1138	2672	1905	3942	3175								
	6	2286	1365	2445	1524	3715	2794	4985	4064						
	7	2667	1593	2217	1143	3487	2413	4757	3684	6027	4653				
	8	3048	1821	1989	762	3259	2032	4529	3302	5799	4572	7069	5842		
	9	3429	2048			3032	1651	4302	2921	5572	4191	6842	5461	8112	6731
	10	3810	2276			2804	1270	4074	2540	5344	3810	6614	5080	7884	6350
	11	4190	2503					3847	2159	5117	3429	6387	4699	7657	5969
	12	4571	2731					3619	1779	4889	3049	6159	4318	7429	5588
EPS 400	5	2714	1809	3619	2715	5429	4524								
	6	3257	2171	3257	2172	5067	3981	6877	5791						
	7	3800	2533	2896	1629	4705	3439	6515	5248	8324	7058				
	8	4342	2895	2534	1086	4343	2896	6153	4705	7962	6515	9772	8324		
	9	4885	3257			3981	2353	5791	4163	7600	5972	9410	7782	11220	9591
	10	5428	3619			3620	1810	5429	3620	7239	5429	9048	7239	10858	9048
	11	5971	3981					4067	3077	6877	4886	8686	6696	10496	8506
	12	6514	4342					4705	2534	6515	4344	8324	6153	10134	7963

**DIMENSIONS**



All dimensions are in mm

Model	EP 040	EP 052	EP 063	EP 075	EP 083	EP 092	EP 105	EP 125	EP 140	EP 160	EP 190	EP 210	EP 240	EP 270	EP 300	EP 350	EP 400	
	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	D/S	
ISO 5211	F04	F03/05	F05/07	F05/07	F05/07	F05/07	F07/10	F07/10	F10/12	F10/12	F14	F14	F16	F16	F16	F16/F25	F16/F25	
Weight (kg)	D	0.9	1.2	1.9	2.8	3.2	4.6	6.5	9.5	13.7	20.5	31.1	41.8	62.4	86.3	139	194	375
	S	/	1.3	2.1	3.1	3.7	5.2	7.1	10.9	15.7	23.6	35.3	46.6	72.4	98.3	176	238	448
Air consumption in (ℓ)	O	0.08	0.1	0.2	0.3	0.5	0.7	1.2	1.5	2.4	3.1	4.3	5.9	10.0	14.5	24.7	37.8	59.0
	C	0.09	0.2	0.3	0.5	0.8	1.1	1.8	2.3	3.8	4.9	6.9	9.5	15.2	21.4	38.6	50.6	78.0
A	116	145	169	201	209	242	275	332	385	450	507	562	646	722	825	866	1006	
B	18.5	24	25.5	27	30.5	31	32.5	33	39.5	43.5	58.5	64	72	74	85	95	233	
C	12	12	12	12	12	12	12	12	12	12	20	20	20	20	20	35	35	
D	40	40	40	40	40	40	40	40	55	55	55	80	80	80	80	95	95	
E	22	22	22	22	22	22	22	22	22	22	33	33	33	33	33	54	54	
F	60	72	88	100	108	120	133	155	171.5	197	230	255	290	320	354	410	467	
G	24	30	36	42	46	51	58	67.5	76	86.5	103	113	129	146	162	190	260	
H	36.5	41	46	52	55	57.5	64	70	77	87.5	103	113	129	146	173	195	260	
I	20	20	20	20	20	20	20	20	20	20	30	30	30	30	30	50	50	
Jmin	13	13	16	20	20	20	25	25	30	30	40	40	50	50	50	60	60	
K	9	12	12	12	16	16	16	22	22	22	32	32	32	32	32	45	45	
L	80	80	80	80	80	80	80	80	80	80	130	130	130	130	130	130	130	
M	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
O1	842	36	50	50	50	50	70	70	102	102	/	/	/	/	/	165	165	
O2	/	50	70	70	70	70	102	102	125	125	140	140	165	165	165	254	254	
P1	4 X M5	4 X M5	4 X M6	4 X M6	4 X M6	4 X M6	4 X M8	4 X M8	4 X M10	4 X M10	/	/	/	/	/	4 X M20	4 X M20	
P	/	4 X M6	4 X M8	4 X M8	4 X M8	4 X M8	4 X M10	4 X M10	4 X M12	4 X M12	4 X M16	4 X M16	4 X M20	4 X M20	4 X M20	8 X M16	8 X M16	
Q	9	11	14	17	17	17	22	22	27	27	36	36	46	46	46	55	55	
V	20	24	24	24	24	24	24	24	24	24	24	24	40	40	40	40	40	
W	29	32	32	32	32	32	32	32	32	32	32	32	45	45	45	45	45	
Y	M4X6	M5X8	M5X8	M5X8	M5X8	M5X8	M5X8	M5X8	M5X8	M5X8	M5X8	M5X8	M6X10	M6X10	M6X10	M6X10	M6X10	
Z	1/8"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	3/8"	3/8"	3/8"	3/8"	

## LIMIT SWITCH BOX



\* Optional - EEx dIIB T6

Enclosure	: Weather proof
Type	: IP 67
Ambient Temperature	: -20°C to +80°C
Cable Entry	: 2 X NPT (Other standards on request)
Terminal block	: 8 Nos of terminal strip
Limit switches	: 2 X SPDT, Proximity Switch and etc.
Switch rating	: 10A at 250VAC
Mounting bracket	: Stainless steel
Standard	: NAMUR

## SOLENOID VALVE



Enclosure	: Weather proof
Type	: IP 65
Ambient Temperature	: -20°C to +60°C
Coil Voltage	: 12VDC, 24VDC/110VAC, 230VAC(50/60Hz)
Valve body	: Aluminum
Response time	: 25ms ON and 50ms OFF
Pressure	: 1.5 to 9 Bar
Media	: Air
Standard	: NAMUR

