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A C T U A T O R S F O R E V E R Y E N V I R O N M E N T

ACTREG, S.A. manufactures a wide range of pneumatic actuators offering reliable performance across all major valve applications.

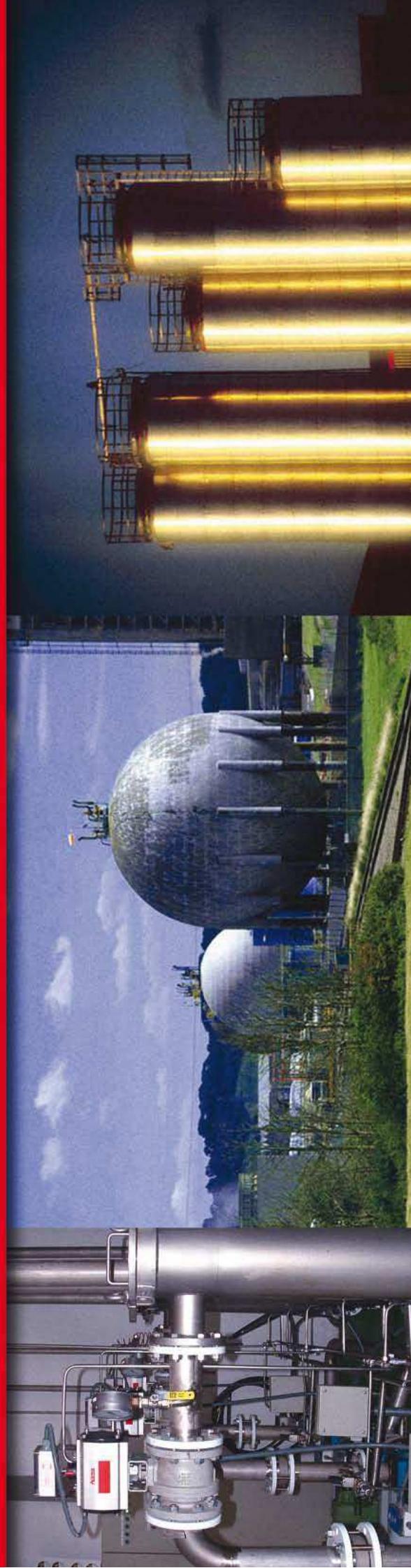
The international distribution secures quick availability and more importantly, personalised service for valve manufacturers, valve stockists and contractors.

The product, double acting and spring return rack and pinion actuators with torque figures up to 6421 Nm is a superior combination of features for reliable and dependable service for 1/4 turn valves.

ACTREG pneumatic actuators are manufactured in 14 different sizes, in both double acting (ADA) and spring return (ASR) types. Engineered to meet all applications and environmental conditions, the precision in design and quality provide long and safe operational performance in valve control.

ACTREG has invested in quality assurance and state-of-the-art machining and testing facilities in order to assist customers in safely controlling their processes.

ACTREG engineers are happy to help you with your automation demands.



The aluminium body is inside and outside coated with hard anodizing, with extremely abrasion resistance, low surface roughness and optimal resistance.

Carbon steel shaft electroless with nickel plated against external and internal corrosion. Anti-blowout design.

External stroke adjustment for 5 degrees regulation, designed in opposite side of Namur connection for better manipulation when solenoid valve is assembled.

Pistons are coated with special treatment for corrosion resistance. Backslash free transmission due to special tooth machining. They have 3 way guiding for low friction between body and pistons. Pistons provided with internal guide machined between pistons and pinion.

Every single actuator is tested and provided with a unique serial number for traceability. This heat number is stamped in the body.

The assembly of switch boxes, proximity switches or positioners, takes place by means of the Namur connection VD1/VDE 3845, carried out like standard in all our models. The height of the axis to fulfil this Norm is of 30mm, for all our products, with which it entails that with a single model of Box or positioner; we can cover all our manufacturing range.

Pre-stressed springs offers more torque and different options for their positioning. This system allows us to easily fit the necessary torque to close or open the valve, offering a total safety replacement and manipulation.

Different end caps for double or single acting for fast and safety identification without the need to read the label, in addition less air consumption in double acting actuators. Epoxy coated as standard protected against environment corrosion.

TYPES OF ACTUATORS

DOUBLE ACTING & SPRING RETURN

GENERAL CHARACTERISTICS

- ADA type: Double acting.
- ASR type: Spring return.
- Rack and pinion design.
- Linear torque.
- Rotation angle $90^\circ \pm 5^\circ$
- Antifriction sliding bearings.
- Long life without maintenance.

Protected against environmental corrosion:

Hard anodized Aluminium body.

Electroless Nickel Plated pinion.

Epoxy coated end caps,

Stainless steel bolts, studs and nuts.

Working temperature: -30 °C to 100 °C in Standard Construction

-15 °C to 150 °C with FKM O-rings

-40 °C to 80 °C with Silicone O-rings

Maximum working pressure: 8 bar (116 psig). (Except ADA10 at 10 bar)

Total safety for springs replacement.

Mounting of solenoid valves acc. NAMUR Std.

Mounting of devices acc. NAMUR VD/VDE 384/45 Std.

Coupling according to ISO 5211 and DIN 3337 (Octagonal drive)

- Position indicator can be used also to operate mechanical limit switches.
- Actuators with 100% travel adjustment stroke.

OPTIONS ON REQUEST

Epoxy coated body.

Electroless Nickel Plated body and end caps.

High temperature construction.

Low temperature construction.

Stainless steel pinion

Fast acting actuators

Position indicator

Actuators with 100% travel adjustment stroke.

B1 - DIRECTIONAL TRAVEL STOPS

ACTREG pneumatic actuators are provided with bi-directional pinion travel stops.

Side located stops allow a full $\pm 5^\circ$ travel adjustment between 85° and 95° . These travel stops are designed to absorb the maximum rated torque of the actuator and the maximum impact loads associated with recommended travel speed.

SIZE: 2500



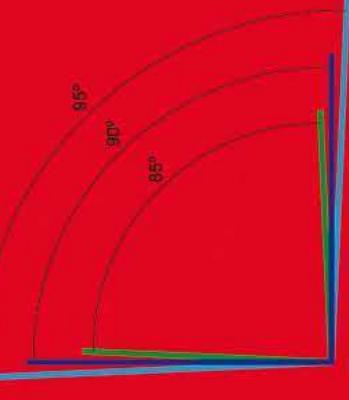
ADA 10

SIZES:

20 TO 2100



SIZE: 2500



Adjustment of the counterclockwise and clockwise rotation limits is accomplished by unscrewing the locking nuts, turning the respective left and right stop studs to reduce or increase the travel angle and screwing the locking nuts.

ASSEMBLY VARIATIONS

AIR OPEN

SPRING COMBINATIONS & CORRECT POSITION OF SPRINGS

ACTUATOR SIZE ASR-20

The image shows three different views of a cylindrical device, likely a medical probe or sensor. Each view features a central cylindrical body with a black band near the top. Inside the cylinder, three red, semi-circular or lens-shaped components are visible, arranged in a triangular pattern. The top view shows the side of the cylinder, the middle view shows the top, and the bottom view shows the bottom edge.

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A close-up photograph of a circular LED light fixture. The fixture has a silver metal housing and a central circular lens containing six red LED lights arranged in a hexagonal pattern. The background is dark blue.

S 17

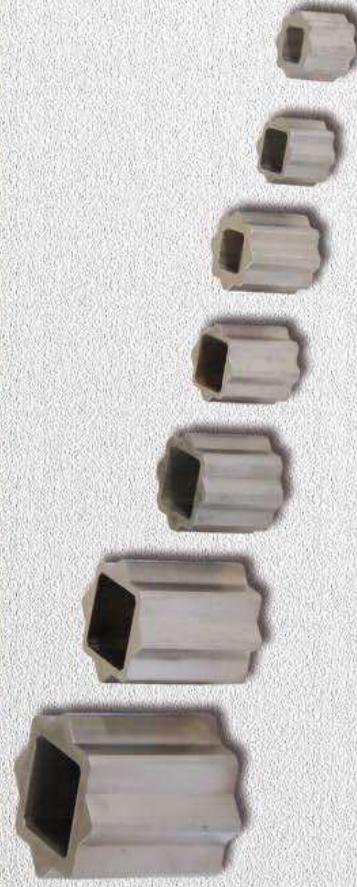
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Depending on air supply pressure, spring function and torque figures of the valve.

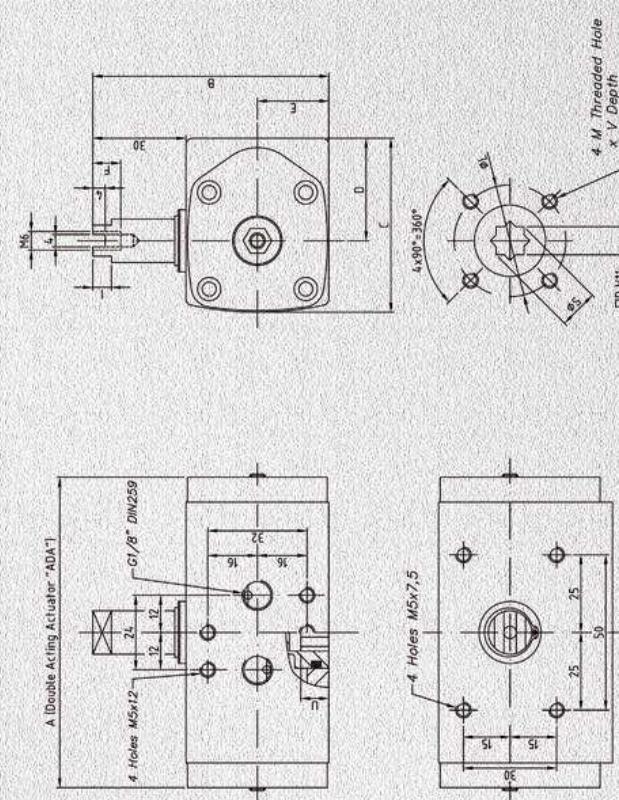
The correct position of the springs, in order to optimize its function, is given above.

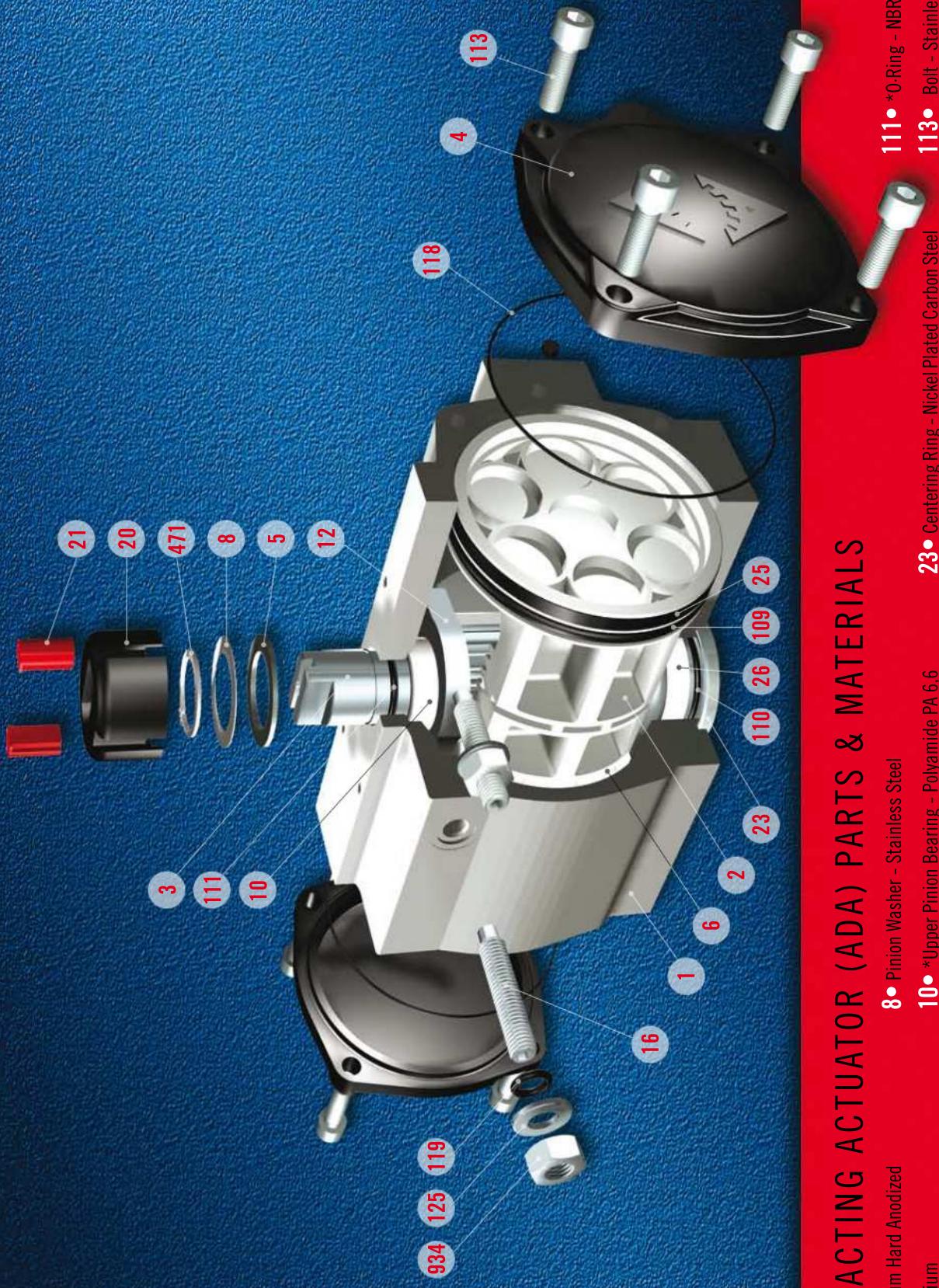
ADAPTERS

"Together with the actuator up to size 200 included, we supply a stem adaptor which allows the mounting of the actuator on different ISO 5211 shaft dimensions. Other adaptors with different dimensions are available under request."



NEW SIZE ADA 10

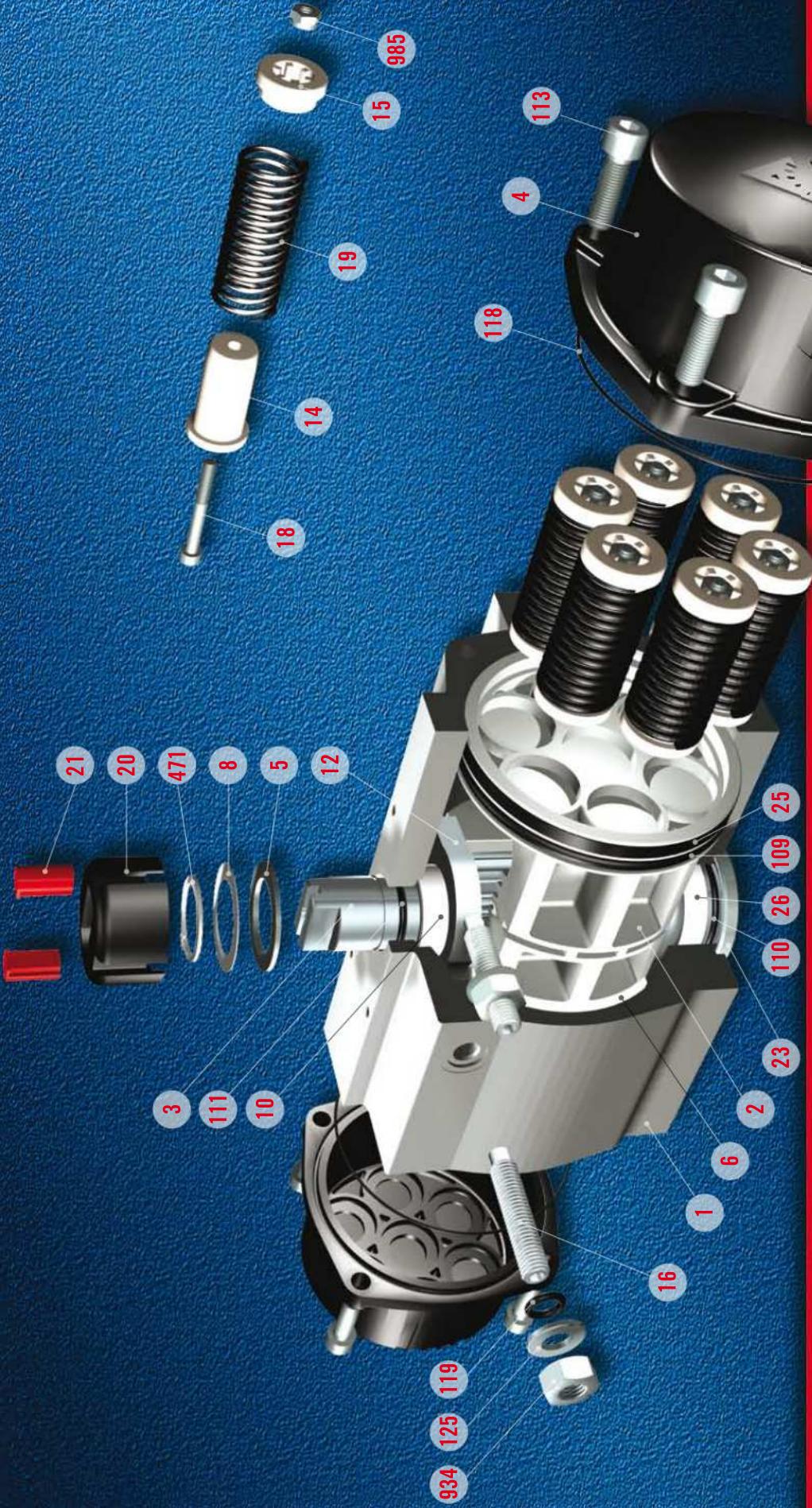




DOUBLE ACTING ACTUATOR (ADA) PARTS & MATERIALS

- 1● Body - Aluminium Hard Anodized
- 2● Piston - Aluminium
- 3● Pinion - Nickel Plated Carbon Steel
- 4● End Caps - Aluminium Epoxy Coated
- 5● *Soft Washer Pinion - Polyamide PA 6,6 + 30% G.F.
- 6● *Slide Piston - Polyamide PA 6,6 + 30% G.F.
- 7● **Lug - Nickel Plated Carbon Steel
- 8● Pinion Washer - Stainless Steel
- 10● *Upper Pinion Bearing - Polyamide PA 6,6 Size 500 & greater in Reinforced Br.
- 12● Stop - ASTM A-105
- 16● Adjustment Stroke Screw - Stainless Steel
- 20● Position Indicator - Polyamide
- 21● Cam - Polyamide
- 23● Centering Ring - Nickel Plated Carbon Steel
- 25● *Slide Guide - Polyamide PA 6,6 + 30% G.F.
- 26● *Lower Pinion Bearing - Polyamide PA 6,6
- 41● **Stop Washer Pinion - Stainless Steel
- 109● *O-Ring - NBR
- 110● *O-Ring - NBR
- 111● *O-Ring - NBR
- 113● Bolt - Stainless Steel
- 118● *O-Ring - NBR
- 119● *O-Ring - NBR
- 125● Washer - Stainless Steel
- 471● *Slip Washer - Stainless Steel
- 934● Nut - Stainless Steel

*Recommended spare parts
**Only for sizes 2500 & 4000



SPRING RETURN ACTUATOR (ASR) PARTS & MATERIALS

- 1• Body - Aluminium Hard Anodized
- 2• Piston - Aluminium
- 3• Pinion - Nickel Plated Carbon Steel
- 4• End Caps - Aluminium Epoxy Coated
- 5• *Soft Washer Pinion - Polyamide PA 6.6
- 6• *Slide Piston - Polyamide PA 6.6 + 30% G.F.
- 7• **Lug - Nickel Plated Carbon Steel
- 8• Pinion Washer - Stainless Steel
- 9• Nut - Stainless Steel
- 10• Spring - DIN 2076 - D-5.6
- 11• Stop - ASTM A-105
- 12• Spring's Long Support - Polyamide PA 6.6
- 13• Spring's Short Support - Polyamide PA 6.6
- 14• Spring's Guide - Polyamide PA 6.6 + 30% G.F.
- 15• Centering Ring - Nickel Plated Carbon Steel
- 16• Adjustment Stroke Screw - Stainless Steel
- 17• Bolt - Stainless Steel
- 18• Bolt - Stainless Steel
- 19• Position Indicator - Polyamide PA 6.6 Size 500 & greater in Reinforced Br.
- 20• Cam - Polyamide
- 21• Washer - Stainless Steel
- 22• *O-Ring - NBR
- 23• Stop Washer Pinion - Stainless Steel
- 24• *O-Ring - NBR
- 25• *O-Ring - NBR
- 26• Lower Pinion Bearing - Polyamide PA 6.6
- 27• Pinion Washer - Stainless Steel
- 28• Nut - Stainless Steel
- 29• Pinion Washer - Stainless Steel
- 30• *O-Ring - NBR
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- 112• *O-Ring - NBR
- 113• Bolt - Stainless Steel
- 114• *O-Ring - NBR
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- 125• Washer - Stainless Steel
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- 199• *O-Ring - NBR
- 200• *O-Ring - NBR

*Recommended spare parts

**Only for sizes 2500 & 4000

Double Acting Actuator Torque Output in Nm

Double Acting Actuator Torque Output in ft lb

Output Torque For Double Acting in Nm												Output Torque For Double Acting in ft lb													
Original Torque For Double Acting in Nm												Original Torque For Double Acting in ft lb													
Size	Type	Pressure	3 bar	3.5 bar	4 bar	4.5 bar	5 bar	5.5 bar	6 bar	6.5 bar	7 bar	7.5 bar	8 bar	8.5 bar	9 bar	9.5 bar	10 bar	10.5 bar	Weight (kg)	Weight (lb)					
10	D	6	8	9	10	11	11.5	12	12	12	13	13.5	14	14	15	15	15.5	16.5	17.5	18.5	19.5	20.5	21.5		
10	D	9.7	11.4	13	14.6	16.2	17.8	19.5	21.1	23	26	-	-	1.4	2.1	3	3.8	4.4	5.9	6.6	7.4	8.1	8.8		
10	D	20.3	23.7	27.1	30.5	33.9	37.3	41	44	47	54	50	54	58.2	62.5	67.2	72.5	77.5	82.5	87.5	92.5	97.5	102.5		
10	D	38.5	44.9	51.3	57.7	64.1	70.5	77	83	90	103	-	-	3	3	130	D	43.6	50.8	58.0	65.3	72.5	79.8	87	
130	D	68.9	88.1	102	117	131	146	161	175	190	205	234	-	-	5.6	5.6	130	D	64.9	75.2	86.2	96.5	108	119	129
200	D	88	145	170	194	218	242	267	291	315	339	388	-	-	8.5	11.2	16	143	161	178	197	214	223	250	
300	D	217	253	289	325	361	397	433	469	505	537	577	-	-	11.2	14.2	16	12	16	15	17	19	20.5	24.7	
500	D	359	419	479	538	598	658	718	778	837	957	-	-	16.9	20.5	24.2	27.7	30	37	44.1	485	529	573	617	
850	D	606	719	824	942	1060	1178	1343	1531	1649	1884	-	-	32.5	40.8	44.7	48.5	52.1	56.7	60.7	64.8	68.8	72.5	76.5	
1200	D	707	824	948	1069	1181	1301	1448	1629	1810	2172	2353	-	-	40.8	48.0	52.1	56.7	60.7	64.8	68.8	72.5	76.5	80.8	
1750	D	1086	1267	1448	1629	1810	1981	2172	2353	2534	2896	-	-	48.0	56.0	60.7	64.8	68.8	72.5	76.5	80.8	84.7	88.9		
2300	D	1730	2019	2307	2696	2894	3172	3461	3749	4038	4614	-	-	68.9	86.6	104.1	121.6	139.3	157.8	176.3	194.8	213.3	231.8	250.4	
4000	D	2408	2809	320	3612	4013	4414	4816	5217	5618	6241	-	-	120.4	140.4	160.4	180.4	200.4	220.4	240.4	260.4	280.4	300.4	320.4	
4000	D	2408	2809	320	3612	4013	4414	4816	5217	5618	6241	-	-	120.4	140.4	160.4	180.4	200.4	220.4	240.4	260.4	280.4	300.4	320.4	

Double Acting Actuator Torque Output in Nm												Double Acting Actuator Torque Output in ft lb												
Spring Return Actuator Torque Output in Nm												Spring Return Actuator Torque Output in ft lb												
Size	Type	Pressure	3 bar	3.5 bar	4 bar	4.5 bar	5 bar	5.5 bar	6 bar	6.5 bar	7 bar	7.5 bar	8 bar	8.5 bar	9 bar	9.5 bar	10 bar	10.5 bar	Weight (kg)	Weight (lb)				
20	S04	8	5	9	7	11	8	13	10	14	12	16	13	17	20	22	26	4	7	15.1	17.7	20.4	23.1	
20	S06	A	14	20	27.1	30.5	33.9	37.3	41	44	47	54	50	54	58.2	62.5	67.2	72.5	77.8	82.5	87.5	92.5	97.5	
40	S04	16	24	30	37	43	49	55	61	67	73	79	85	91	97	103	109	115	121.4	128.1	134.8	141.5	148.2	
40	S06	A	18	24	30	37	43	49	55	61	67	73	79	85	91	97	103	109	115	121.4	128.1	134.8	141.5	148.2
80	S04	31	37	44	50	56	62	68	74	80	86	92	98	104	110	116	122	128	134.8	141.5	148.2	154.9	161.6	
80	S06	A	34	40	46	52	58	64	70	76	82	88	94	100	106	112	118	124	131.2	137.9	144.6	151.3	158.0	
130	S04	43	52	62	72	82	92	102	112	122	132	142	152	162	172	182	192	202	218.6	225.3	232.0	238.7	245.4	
130	S06	A	46	55	64	73	82	91	101	110	120	130	140	150	160	170	180	190	208.6	215.3	222.0	228.7	235.4	
200	S04	61	76	93	108	124	140	156	172	188	204	220	236	252	268	284	300	316	334.8	351.5	368.2	384.9	401.6	
200	S06	A	67	80	97	114	131	148	165	182	199	216	233	250	267	284	301	318	335.8	352.5	369.2	385.9	402.6	
300	S04	112	128	144	160	176	192	208	224	240	256	272	288	304	320	336	352	368	385.2	402.9	420.6	438.3	456.0	
300	S06	A	127	143	159	175	191	207	223	239	255	271	287	303	319	335	351	367	384.2	401.9	418.6	436.3	454.0	
500	S04	192	212	232	252	272	292	312	332	352	372	392	412	432	452	472	492	512	531.2	551.9	571.6	591.3	611.0	
500	S06	A	207	227	247	267	287	307	327	347	367	387	407	427	447	467	487	507	527.2	547.9	567.6	587.3	607.0	
850	S04	311	366	421	476	531	586	641	696	751	806	861	916	971	1026	1081	1136	1191	1246.4	1302.1	1357.8	1413.5	1469.2	
850	S06	A	316	371	426	481	536	591	646	691	746	791	836	881	926	971	1016	1061	1116.2	1171.9	1227.6	1283.3	1339.0	
1200	S04	400	460	520	580	640	690	740	790	840	890	940	990	1040	1090	1140	1190	1240	1295.8	1351.5	1407.2	1462.9	1518.6	
1200	S06	A	411	471	531	591	651	711	771	831	891	951	1011	1071	1131	1191	1251	1311	1371.8	1431.5	1491.2	1550.9	1610.6	
1750	S04	500	560	620	680	740	800	860	920	980	1040	1100	1160	1220	1280	1340	1400	1460	1520.4	1580.1	1640.8	1700.5	1760.2	
1750	S06	A	516	576	636	696	756	816	876	936	996	1056	1116	1176	1236	1296	1356	1416	1476	1536.1	1595.8	1655.5	1715.2	1775.9
2500	S04	702	759	803	849	895	941	987	1033	1080	1126	1172	1218	1264	1310	1356	1402	1448	1504.4	1561.1	1617.8	1674.5	1731.2	
2500	S06	A	716	773	829	885	941	997	1053	1109	1165	1221	1277	1333	1389	1445	1491	1547	1603.1	1660.8	1718.5	1776.2	1833.9	
2100	S04	816	871	926	981	1036	1091	1146	1196	1251	1307	1362	1417	1472	1527	1582	1637	1692	1747.4	1803.1	1858.8	1914.5	1970.2	
2100	S06	A	831	887	943	999	1055	1110	1165	1221	1277	1333	1389	1445	1491	1547	1593	1649	1703.1	1760.8	1818.5	1876.2	1933.9	
3000	S04	900	967	1033	1100	1167	1233	1300	1367	1433	1500	1567	1634	1701	1768	1835	1902	1969	2026.4	2083.1	2140.8	2197.5	2255.2	
3000	S06	A	914	974	1041	1108	1175	1242	1309	1376	1443	1510	1577	1644	1711	1778	1845	1912	1979.1	2035.8	2093.5	2151.2	2208.9	
4000	S04	1000	1067	1133	1200	1267	1333	1400	1467	1534	1601	1668	1735	1802	1869	1936	2003	2070	2127.4	2185.1	2242.8	2300.5	2358.2	
4000	S06	A	1015	1081	1147	1213	1280	1347	1414	1481	1548	1615	1682	1749	1816	1883	1950	2017	2074.1	2131.8	2189.5	2247.2	2305.9	

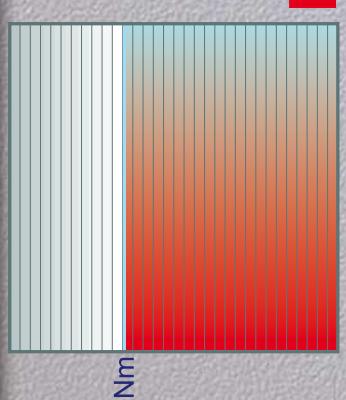
Double Acting Actuator Torque Output in Nm												Double Acting Actuator Torque Output in ft lb											
Spring Return Actuator Torque Output in Nm												Spring Return Actuator Torque Output in ft lb											
Size	Type	Pressure	3																				

DOUBLE ACTING ACTUATOR (ADA)

In double acting actuators, the pinion rotation and its reversal are obtained by reversing the supply to the two input ports. The output torques obtainable mainly depend on the cylinder diameter and the supply pressure: by increasing one or both factors, the available torque also increases. The friction should usually be negligible. As shown in diagram (A), the torque of ADA actuator is constant throughout the entire rotation and relevant reversal. The advised safety factor, in addition to the operation torque is approx. 20%.

SPRING RETURN ACTUATOR (ASR)

In Spring return actuators, springs are used to reverse the rotation of the pinion. The output torque depends not only on the cylinder diameter and the supply pressure but also on the presence of the springs, which should be compressed to guarantee the return. As shown in diagram (C), the available torque at 0° progressively reduces during the rotation due to the springs compression. On the contrary, as shown in diagram (D), the return force at 90° progressively decreases up to 0° for the same reason. Owing to the higher friction present, the safety coefficient advised in this case is approx. 30%.

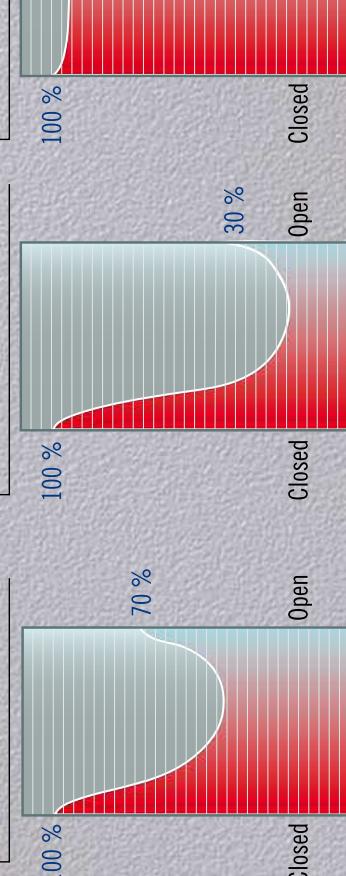


BALL VALVE

The performance of the ball valve is based on the concept of a drilled ball with two seats. Rotation of the ball permits or prevents the passage of fluid. The torque needed to open or close the valve is of course generated by the friction between ball and seats and stem and packing.

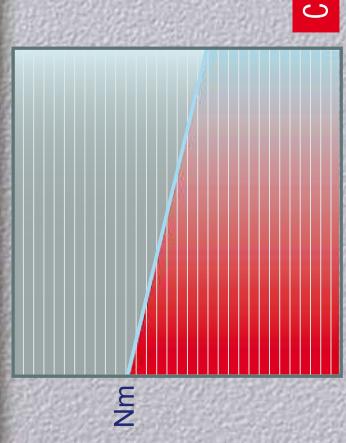
From the diagram it can be observed that the max. torque point is attained when, in presence of pressure, the closed valve starts to open.

Operations Torque for Ball Valves



STROKE TIMES OBTAINED WITH NO RESISTANT TORQUE
AIR PRESSURE: 6 bar-TIMES: s (seconds) - DOUBLE ACTING

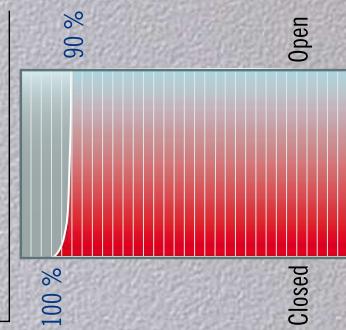
AIR PRESSURE: 6 bar-TIMES: s (seconds) - SPRING RETURN	
Opening	20 40 80 130 200 300 500 850 1200 1750 2100 2500 4000
Closing	0.04 0.08 0.11 0.15 0.15 0.22 0.40 0.50 0.50 0.60 0.60 0.85 1.10 2.20 2.60 3.20 3.7 3.80 4.20 5.00
Opening	0.12 0.20 0.27 0.32 0.50 0.70 0.70 0.85 1.10 1.20 1.30 1.50 2.00 2.30 2.60 3.20 3.7 3.80 4.20 5.00
Closing	0.18 0.29 0.40 0.50 0.50 0.60 0.60 0.85 1.10 1.20 1.30 1.50 2.00 2.30 2.60 3.20 3.7 3.80 4.20 5.00



PLUG VALVE

The performance of the plug valve is similar to that of the ball valve and is based on the concept of a drilled plug conical or cylindrical. The rotation of the pin in the seat allows the valve to open and close. The operation torque is not affected by the fluid pressure but is generated from the friction between the rotating parts. As shown in the diagram, the maximum torque point occurs when the valve is in closed position, but remains high anyway throughout the complete rotation.

Operations Torque for Plug Valves



STROKE TIMES OBTAINED WITH NO RESISTANT TORQUE
AIR PRESSURE: 6 bar-TIMES: s (seconds) - SPRING RETURN

AIR PRESSURE: 6 bar-TIMES: s (seconds) - DOUBLE ACTING	
Opening	20 40 80 130 200 300 500 850 1200 1750 2100 2500 4000
Closing	0.04 0.08 0.11 0.15 0.15 0.22 0.40 0.50 0.50 0.60 0.60 0.85 1.10 2.20 2.60 3.20 3.7 3.80 4.20 5.00

