

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.

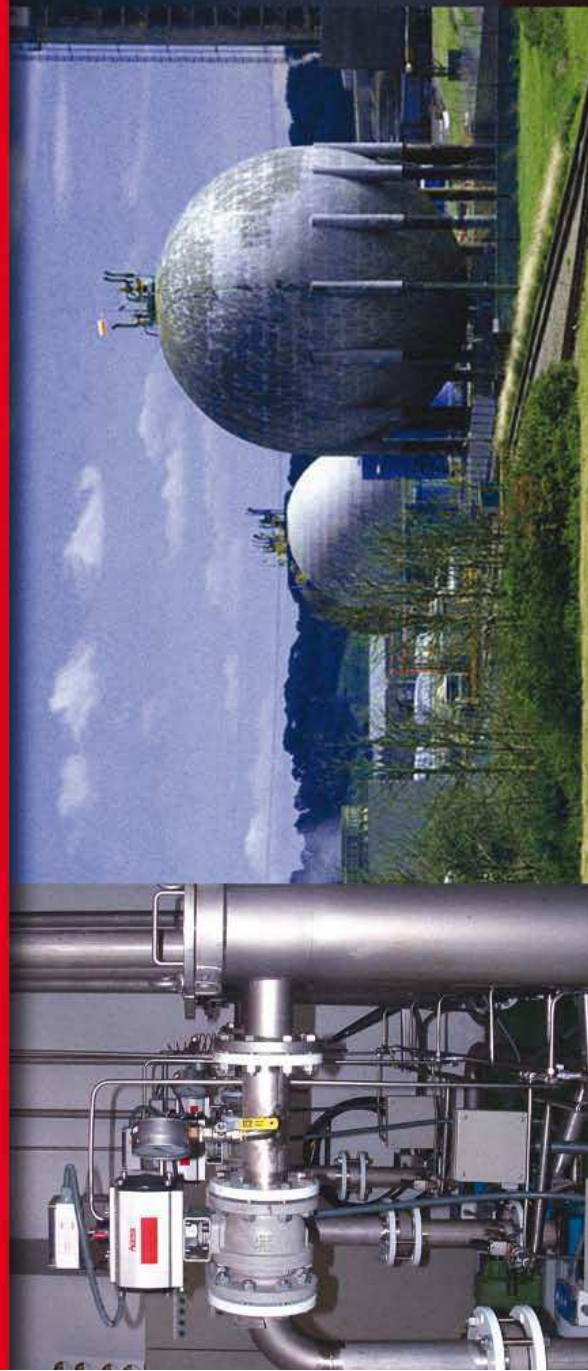
The product, double acting and spring return rack and pinion actuators with torque figures up to 6421 Nm is a superior combination of features for reliable and dependable service for 1/4 turn valves.

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.





ADA 10



SIZES:
20 TO 2100



SIZE: 2500



SIZE: 4000



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 VDI/VDE 3845 Std.
- Coupling according to ISO 5211 and DIN 3337 (Octogonal drive)
- Position indicator can be used also to operate mechanical limit switches.

OPTIONS ON REQUEST

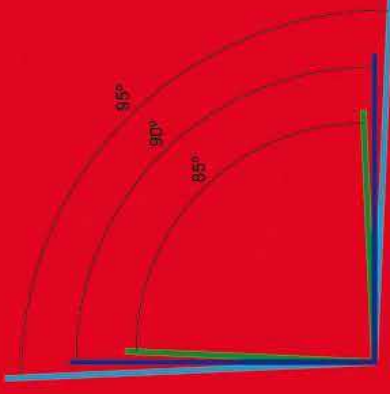
- Epoxy coated body.
- Electroless Nickel Plated body and end caps.
- High temperature construction.
- Low temperature construction.
- Stainless steel pinion
- Fast acting actuators
- Actuators with 100% travel adjustment stroke.

BI-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.

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



SPRING COMBINATIONS & CORRECT POSITION OF SPRINGS

———— ACTUATOR SIZE ASR-20 ————



———— ACTUATOR SIZE ASR-40 TO 4000 ————



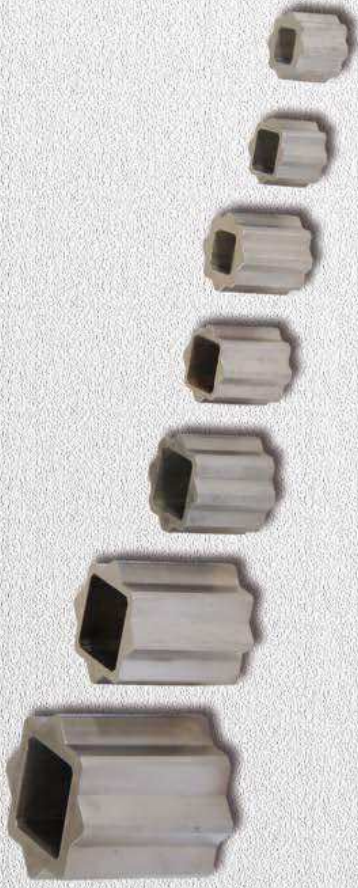
(Only for ASR-40 & 80)

Depending on air supply pressure, springs function and torque figures of the valve, the required springs force varies. Actreg spring return actuators offer 6 different options, from 2 to 7 springs in each end cap.
The correct position of the springs, in order to optimize its function, is given above.

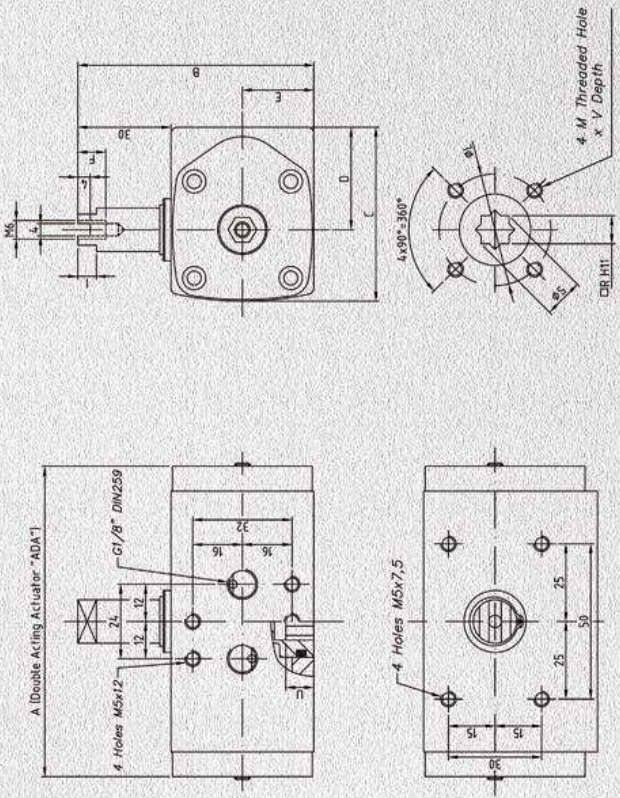
NOTE: Our Standard construction is with the maximum spring combination (S14) except size ASR-20 which is assembled with spring combination (S06).

ADAPTORS

“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.”



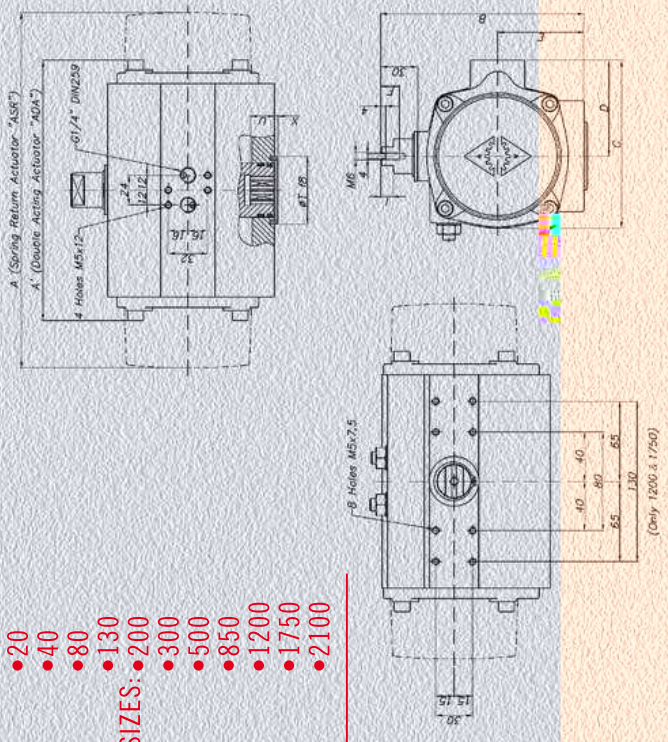
NEW SIZE ADA 10



DOUBLE ACTING & SPRING RETURN ACTUATORS GENERAL DIMENSIONS IN mm													
SIZE	A	B	C	D	E	F	I	R	ρS	ISO 5211	ρL	MAX	U
10	100	76	56	33	23	9	6	9	12.5	FC3	36	M5x8	10

- 20
- 40
- 80
- 130
- 200
- 300
- 500
- 850
- 1200
- 1750
- 2100

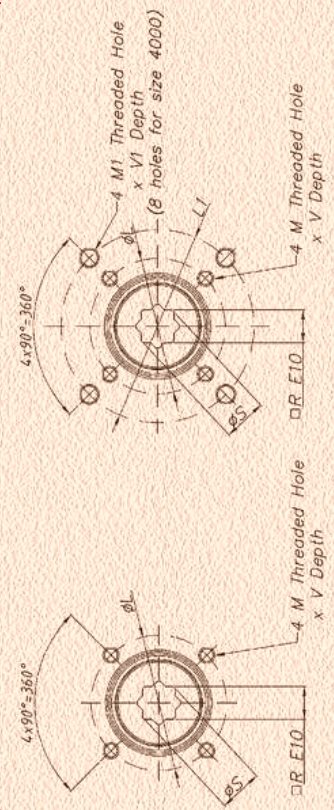
SIZES: •200



ISO 5211 DETAIL

- SIZES: •20•40•130
- 200•300•850•1200•4000

SIZES: •20•40•500•1750•2100•2500



DOUBLE ACTING & SPRING RETURN ACTUATORS GENERAL DIMENSIONS IN mm

SIZE	A	B	C	D	E	F	I	R	øS	ISO 5211	øL1	M1xV1	øT	X	U
20	163	145	96	76	48	34	9	6	9	12.5	F03	36	M5x8	25	10
20	163	145	96	76	48	34	9	6	14	18.1	F05	50	M6x10	35	12
20	163	145	96	76	48	34	9	6	14	18.1	F04	42	M5x10	35	12
40	195	188	115	91	56	45	9	6	14	18.1	F04	42	M5x10	35	12
40	195	188	115	91	56	45	9	6	14	18.1	F05	50	M6x10	35	12
80	217	177	137	111	66	55	12	8	17	22.5	F05	50	M6x10	35	12
130	258	196	147	122	71	60	15	8	17	22.5	F05	50	M6x10	35	12
200	299	225	165	135.5	78	70	15	10	17	22.5	F07	70	M8x16	55	3
300	348.5	273	182	152.5	86	80	16	12	22	28.5	F07	70	M8x16	55	3
500	397	304	199	173	96	85	17	15	22	28.5	F10	102	M10x16	70	3
850	473	372	221	191.5	106	98	15	15	27	36.5	F10	102	M10x17	85	3
1200	560	439	249	212.5	116	114	16	15	36	48.5	F10	102	M10x17	100	4
1750	601	461	280	242.5	131	130	16	15	36	48.5	F14	140	M16x25	100	4
2100	702	510	313	276.5	148	147	16	15	46	65.1	F16	165	M20x30	130	4

NOTE: See page 8 for the ISO Detail.

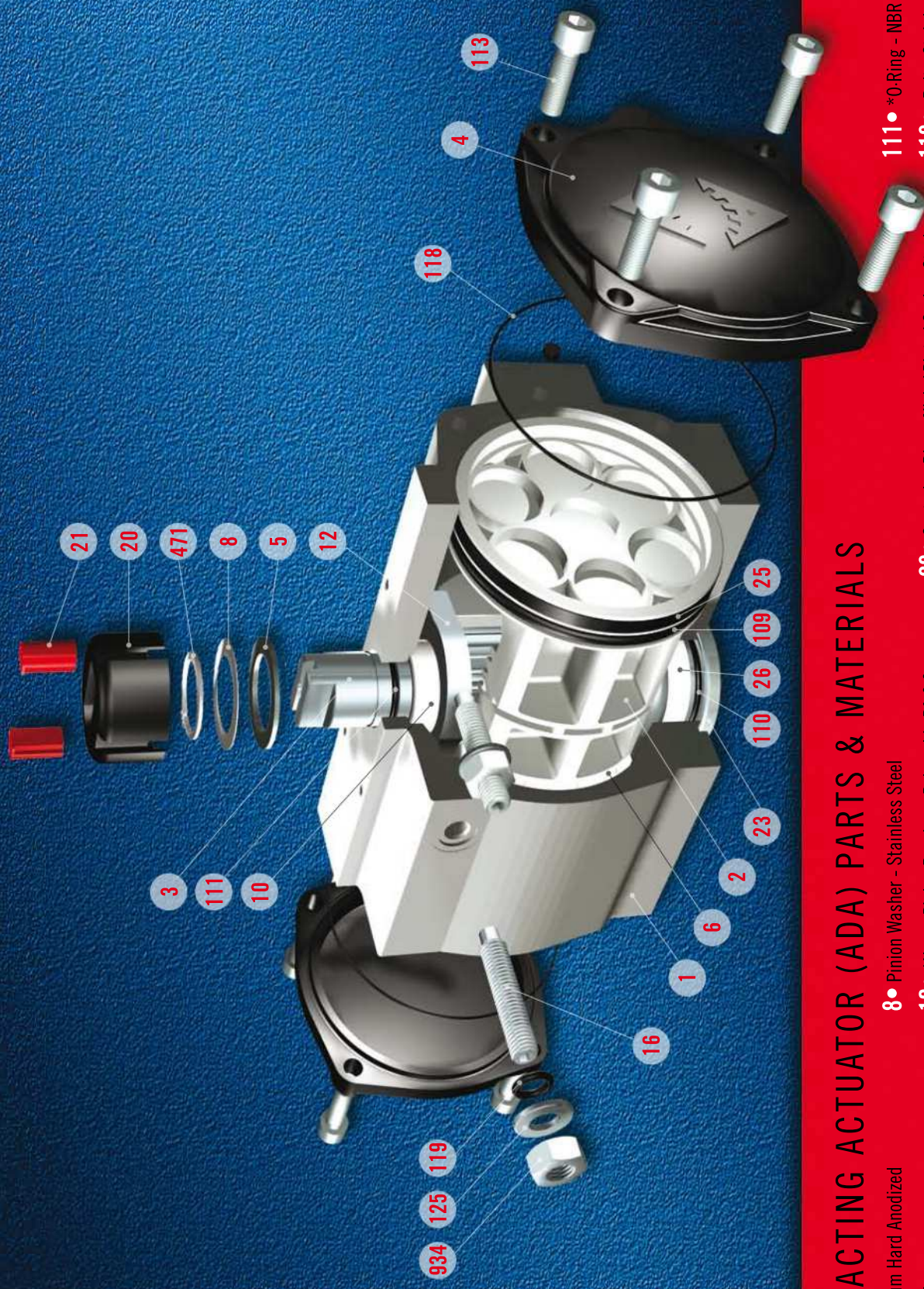
DOUBLE ACTING & SPRING RETURN ACTUATORS GENERAL DIMENSIONS IN mm

SIZE	A	B	C	D	E	F	I	R	øS	ISO 5211	øL1	M1xV1	øT	X	U		
2500	738	518	383	356	177.5	176.5	16	15	46	60.2	F16	165	M20x29	130	4		
4000	940	630	434	413	213	201	16	15	55	72.5	F16	165	M20x30	254	M16x30	200	4

SIZES: •2500

SIZES: •4000

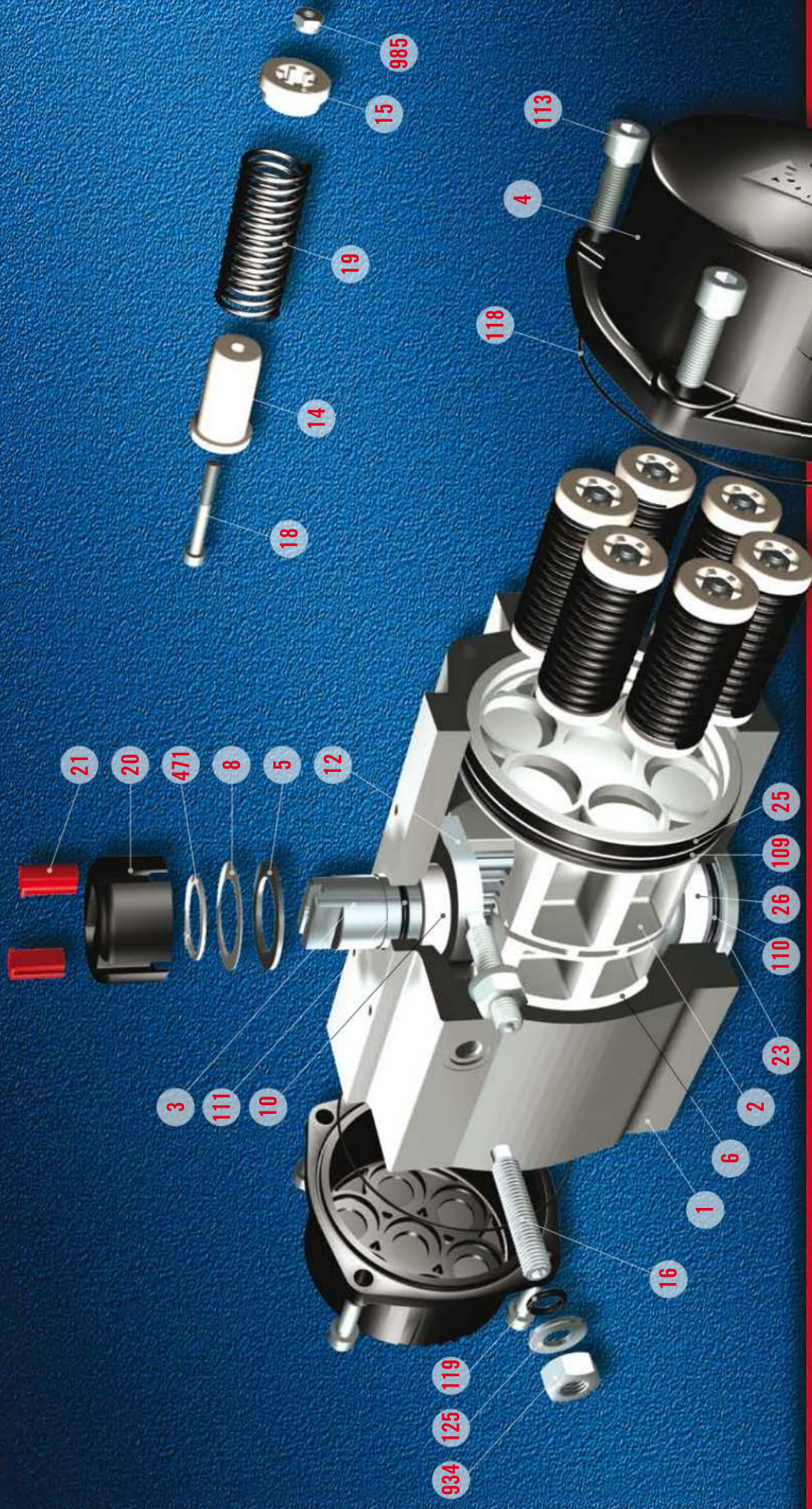
ACTREG



DOUBLE ACTING ACTUATOR (ADA) PARTS & MATERIALS

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

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



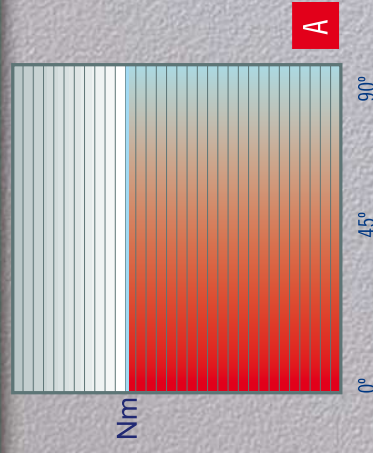
SPRING RETURN ACTUATOR (ASR) PARTS & MATERIALS

- | | | | |
|--|--|---|---|
| 1 • Body - Aluminium Hard Anodized | 10 • *Upper Pinion Bearing - Polyamide PA 6,6
Size 500 & greater in Reinforced Br. | 20 • Position Indicator - Polyamide | 111 • *O-Ring - NBR |
| 2 • Piston - Aluminium | 11 • Stop - ASTM A-105 | 21 • Cam - Polyamide | 113 • Bolt - Stainless Steel |
| 3 • Pinion - Nickel Plated Carbon Steel | 14 • Spring's Long Support - Polyamide PA 6.6 | 23 • Centering Ring - Nickel Plated Carbon Steel | 118 • *O-Ring - NBR |
| 4 • End Caps - Aluminium Epoxy Coated | 15 • Spring's Short Support - Polyamide PA 6.6 | 25 • *Slide Guide - Polyamide PA 6,6 + 30% G.F. | 119 • *O-Ring - NBR |
| 5 • *Soft Washer Pinion - Polyamide PA 6.6 | 16 • Adjustment Stroke Screw - Stainless Steel | 26 • *Lower Pinion Bearing - Polyamide PA 6,6 | 125 • Washer - Stainless Steel |
| 6 • *Slide Piston - Polyamide PA 6,6 + 30% G.F. | 18 • Bolt - Stainless Steel | 41 • **Stop Washer Pinion - Stainless Steel | 471 • *Slip Washer - Stainless Steel |
| 7 • **Lug - Nickel Plated Carbon Steel | 19 • Spring - DIN 2076 · D-5.6 | 109 • *O-Ring - NBR | 934 • Nut - Stainless Steel |
| 8 • Pinion Washer - Stainless Steel | | 110 • *O-Ring - NBR | 985 • Nut - Stainless Steel |

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

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%.



• Torque

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.

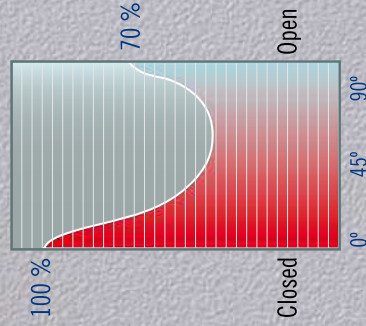
BUTTERFLY VALVE

The performance of the butterfly valve is based on the concept of a disc rotating on an axis inside a sealed duct. The open or closed of the valve position is obtained by the rotation of the disc through its shaft. The torque needed to drive a butterfly is generated by the friction between the disc and the seat, through the rod joint and also due to the differential pressure being exerted on the disc. From the diagram it can be observed that the maximum torque is attained in the closed position of the valve and that it is reduced after a small rotation.

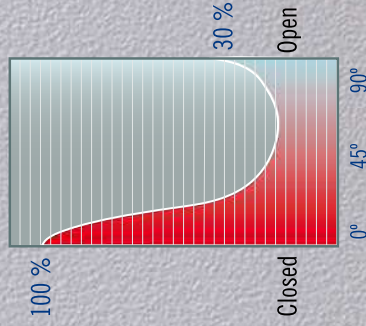
PLUG VALVE

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.

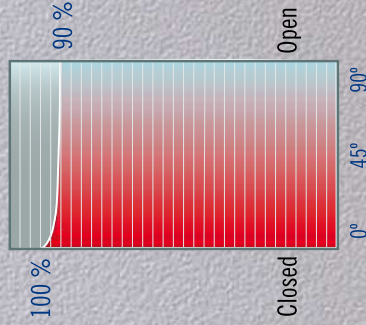
Operations Torque for Ball Valves



Operations Torque for butterfly Valves



Operations Torque for Plug Valves

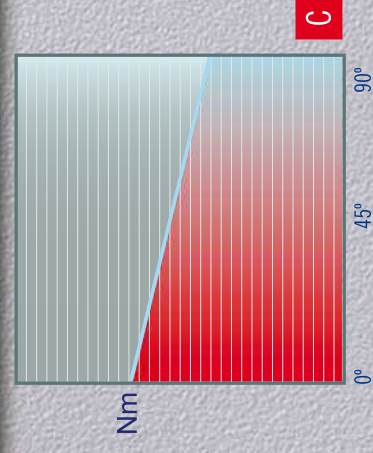


STROKE TIMES OBTAINED WITH NO RESISTANT TORQUE

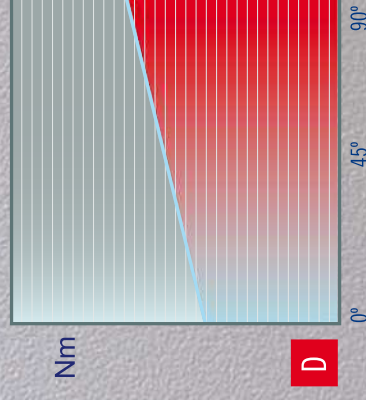
AIR PRESSURE: 6 bar-TIMES: s (seconds) - DOUBLE ACTING		20	40	80	130	200	300	500	850	1200	1750	2100	2500	4000	
Opening		0,04	0,08	0,11	0,15	0,15	0,22	0,40	0,50	0,80	1,20	1,80	2,3	2,80	3,00
Closing		0,09	0,08	0,10	0,15	0,22	0,40	0,50	0,80	1,50	2,00	2,6	3,10	3,50	3,50

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%.



• Torque with Air



• Torque with Spring

STROKE TIMES OBTAINED WITH NO RESISTANT TORQUE

AIR PRESSURE: 6 bar-TIMES: s (seconds) - SPRING RETURN		20	40	80	130	200	300	500	850	1200	1750	2100	2500	4000
Opening		0,12	0,20	0,27	0,32	0,50	0,70	0,90	2,20	2,30	2,80	3,3	3,80	4,30
Closing		0,18	0,29	0,40	0,50	0,80	0,85	1,10	2,60	2,80	3,20	3,7	4,20	5,00

