

1150-59 Butterfly valve with ADA pneumatic actuator

MAIN CHARACTERISTICS

The 1150 to 1158+ADA range are butterfly valves dedicated to the automatic shut off of various fluids. Several versions are available depending upon the materials of the liner and the disc. This valve has long neck pattern for insulation purpose up to size 200 and 4 centring lugs. The valve has also a one piece sharp with anti-ejection device. As standard finish, the body has a high resistant rilsan coating.

The ADA actuator can be directly mounted thanks to the ISO 5211 pad of the valve, making a compact assembly. The ADA actuator is available in double acting and spring return versions with numerous options.



AVAILABLE MODELS AND LIMITS OF USE

Sizes 32-40 to 1000

Wafer type for PN10/16 ANSI 150 flanges

Type	Body material	Disc material		Shaft material	Liner material	TS	
		DN 32 to DN100	DN125 and above			min.	max.
1141	SG iron EN-GJS 500-7	SS 1.4408	EN-JGS-500-7 chromed	AISI 304	NBR	- 10° C	+ 60 °C
1149			SS 1.4408	AISI 304	NBR carboxyl	- 10 °C	+ 80 °C
1150			EN-JGS-500-7 chromed	AISI 420	EPDM	- 5 °C	+90 °C
1151			SS 1.4408	AISI 304	NBR	- 10° C	+ 60 °C
1152			EN-JGS-500-7 chromed	AISI 420	NBR	- 10° C	+ 60 °C
1153			SS 1.4408	AISI 304	EPDM	- 5 °C	+ 90 °C
1154			SS 1.4408	AISI 304	FKM	- 5 °C	+150 °C
1156			SS 1.4408	AISI 304	NBR white	- 10° C	+ 60 °C
1157			SS 1.4408	AISI 304	Silicone	- 15 °C	+140 °C
1158			Aluminium bronze C415		AISI 304	NBR	- 10° C

Size	DN 32 to DN 200	DN 250 to DN 400
PS	16 bar	10 bar

MOTORIZATION WITH ADA ACTUATOR

The actuators are sized for following operating conditions : - compressed air supply : 6 bar,
 - max. pressure differential up/downstream : 10 bar

Size	Double acting	Spring return
40	ADA 20	ASR 40
50	ADA 20	ASR 40
65	ADA 40	ASR 80
80	ADA 40	ASR 80
100	ADA 80	ASR 130
125	ADA 80	ASR 200

Size	Double acting	Spring return
150	ADA 130	ASR 300
200	ADA 200	ASR 500
250	ADA 300	ASR 500
300	ADA 500	ASR 850
350	ADA 850	ASR 1200
400	ADA 1750	ASR 2500

Modifications reserved

1150-59 Butterfly valve with ADA pneumatic actuator

OVERALL DIMENSIONS

To know the overall dimensions of the assembly 1150+ADA, consult the drawing n°796, on page 4 of that document.

ADA ACTUATOR

See our technical data sheet FT1610 on page 5.

OPTIONS

Others seats materials : EPDM HT, silicone food,..
Special painting for the body of the valve
Mirror polishing of the disc
Special coating for actuator
Oversized actuator
Stainless steel actuator
Manual gear box
Limits switches : all types
Position detector : all types
NAMUR solenoid pilot valves : all types

STANDARDIZATION

Design according to EN 593,
Body materials according to EN 1503-1 and 1503-3
Face to face dimension according to EN 558-1 table 20,
Flanges according to EN 1092-1 and 2 and ANSI B16.5,
Top flange for motorization according to ISO 5211,
Final testing according to EN 12266-1

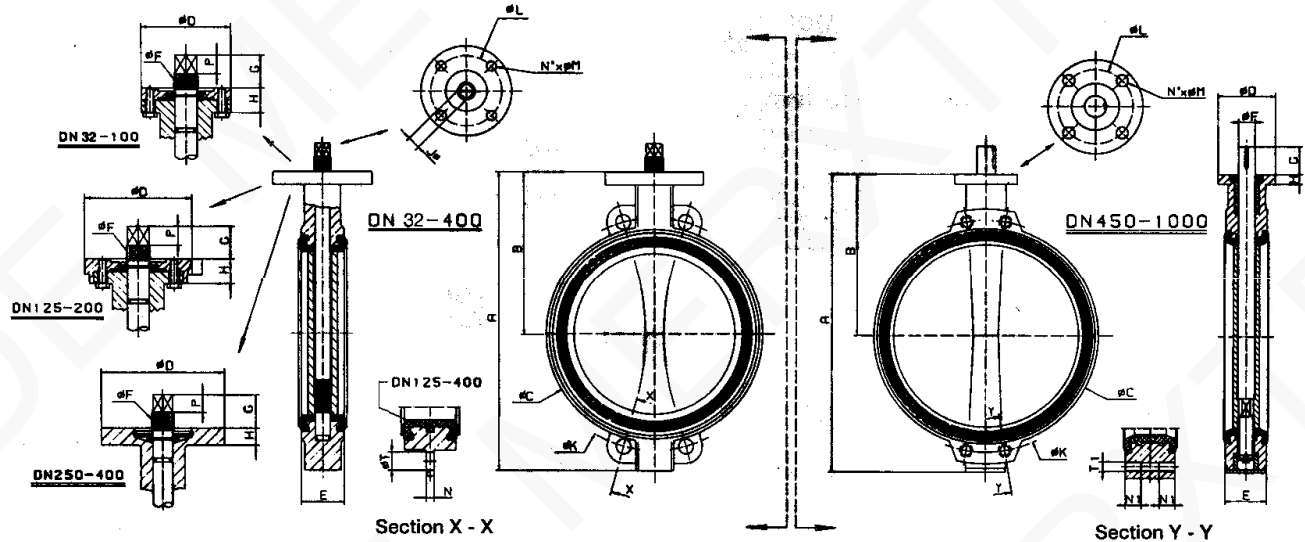
HOMOLOGATIONS

PED 97/23/CE : Category III : homologation CE 0409
ATEX 94/9/CE : Groupe II, category 2, for areas 1,2,21 and 22
ACS, use for potable water, n° 07 ACC LY 504 (1150 and 1153)

Modifications reserved

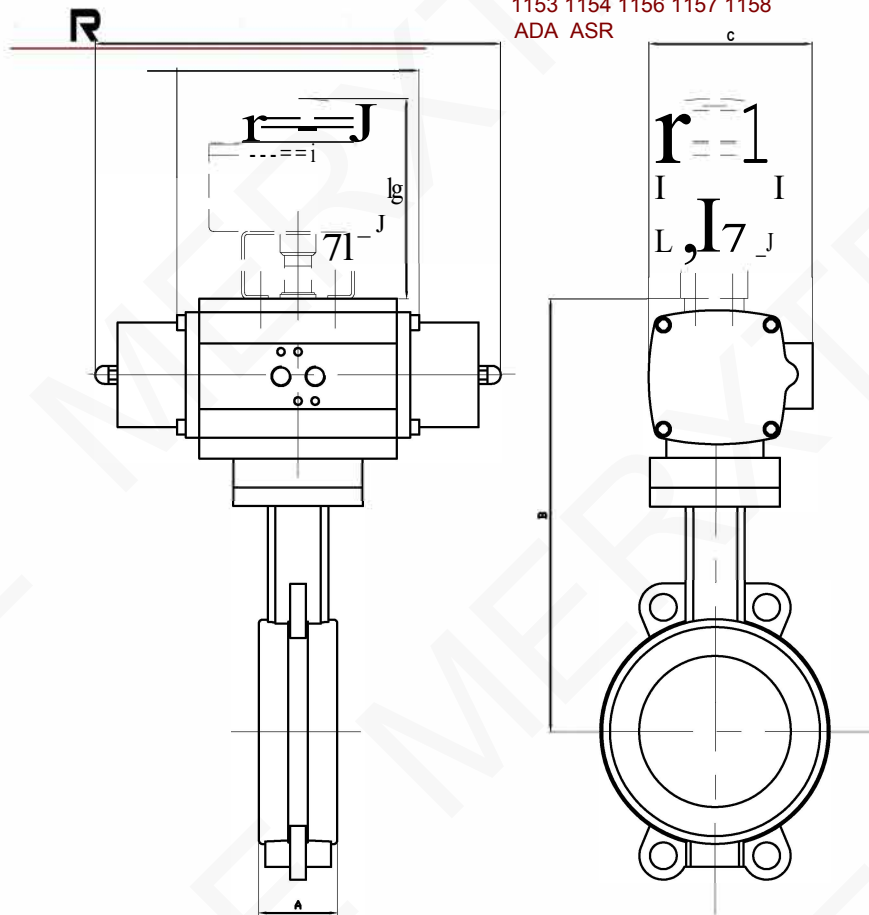
1150-59 Butterfly valve with ADA pneumatic actuator

DIMENSIONS (mm)



DN		A	B	C	D	E	F	G	H	J	K	L	N° x M	N	P	Trous lissés			Trous taraudés			kg
mm	Ø															T ₁	N°	N ₁	T ₁	N°		
32	1" 1/4	206	140	82	88	33	10,5	30	24	8	100	70	4 x 9	12	17	18	4	-	-	-	2	
40	1" 1/2	206	140	82	88	33	10,5	30	24	8	110	70	4 x 9	12	17	18	4	-	-	-	2	
50	2"	228	156	102	88	43	10,5	30	24	8	125	70	4 x 9	12	17	18	4	-	-	-	3,5	
65	2" 1/2	243	162	119	88	46	14,5	30	24	9	145	70	4 x 9	12	17	18	4	-	-	-	4,5	
80	3"	266	170	135	88	46	16,5	30	24	11	160	70	4 x 9	12	17	18	4	-	-	-	5	
100	4"	294	185	155	88	52	16,5	30	24	11	180	70	4 x 9	12	17	18	4	-	-	-	6,5	
125	5"	324	207	185	105	56	18,5	30	24	14	210	70	4 x 9	12	17	18	4	-	-	-	8	
150	6"	349	216	208	105	56	18,5	30	24	14	240	70	4 x 9	12	17	23	4	-	-	-	9	
200	8"	438	256	270	105	60	22,5	30	24	17	295	70	4 x 9	14	17	23	4	-	-	-	15	
250	10"	461	248	328	150	68	25,5	40	20	19	350	102	4 x 11	16	20	23	4	-	-	-	21,5	
300	12"	523	280	381	150	78	30,5	40	20	22	400	102	4 x 11	16	20	23	4	-	-	-	30	
350	14"	582	300	437	170	78	30,5	40	20	22	460	140	4 x 18	16	20	23	4	-	-	-	39	
400	16"	645	340	486	170	102	35,5	40	20	27	515	140	4 x 18	20	20	27	4	-	-	-	52	
450	18"	738	394	538	175	114	50	80	22	-	565	140	4 x 18	-	-	-	-	35	M24	4	87	
500	20"	822	440	595	175	127	50	80	25	-	620	140	4 x 18	-	-	-	-	35	M24	4	117	
600	24"	965	507	695	250	154	60	90	30	-	725	165	4 x 22	-	-	-	-	35	M27	4	177	
700	28"	1100	575	804	300	165	60	90	30	-	840	254	8 x 18	-	-	-	-	35	M27	4	258	
750	30"	1150	600	860	300	190	65	90	30	-	900	254	8 x 18	-	-	-	-	40	M30	4	296	
800	32"	1248	655	911	300	190	65	110	30	-	950	254	8 x 18	-	-	-	-	40	M30	4	330	
900	36"	1325	685	1010	300	203	80	110	30	-	1050	254	8 x 18	-	-	-	-	40	M30	4	505	
1000	40"	1457	754	1124	300	216	80	110	30	-	1160	254	8 x 18	-	-	-	-	40	M33	4	661	

Modifications reserved



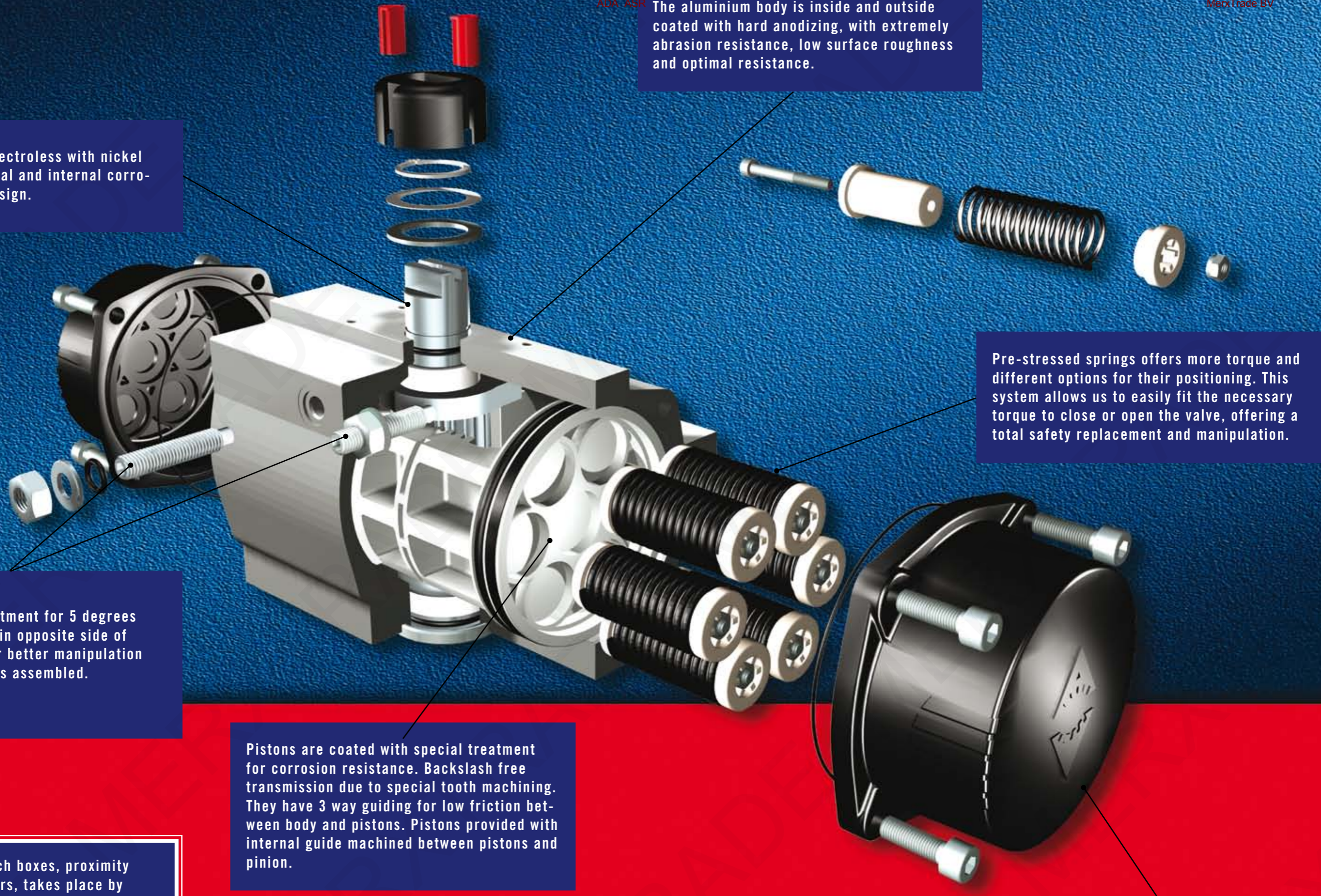
DN	1'1/2		2'		2'1/2		3'		4'		5'	
ACTREG	20 DE	40 SE	20 DE	40 SE	40 DE	80 SE	40 DE	80 SE	80 DE	130 SE	80 DE	200 SE
A	33		43		46		46		52		56	
B	236	255	252	271	277	299	287	309	322	331	344	372
C	76	90	76	90	90	111	90	111	111	121	111	135
D / D'	128	230	128	230	143	260	143	260	162	270	162	335

DN	6'		8'		10'		12'		14'		16'	
ACTREG	130 DE	300 SE	200 DE	500 SE	300 DE	850 SE	500 DE	1200 SE	850 DE	1750 SE	1200 DE	
A	56		60		68		78		78		102	
B	362	428*	421	485*	480**	515**	529**	579**	567**	630**	649**	
C	121	151	135	172	151	192	172	212	192	242	212	
D / D'	184	380	202	420	236	470	270	540	320	580	373	

- :Monto.ge o.vec o.rco.de de 60
- :Monto.ge o.vec o.rco.de de 80

InforMo.tions donnees à titre Indico.tif et sous reserve de Modific.ions eventuelles

Ech•	Date •12/05/2004	Dessine par , FG	Tolerances generales , +/- 02	Modific.ions	Date	REV.
Actionneur ACTREG + BFC Vonne popillon 1120-1150				Matlere :		
				Polols <Kg) ,		
 45, Rue du Rousseau 38297 SAINT QUENTIN FALLAVIER www.merxtrade.com				Tro.tteMent , SANS		
				Plo.n n° Ens 796 4/10		



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

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

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.

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. Backlash 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.

The assembly of switch boxes, proximity switches or positioners, takes place by means of the Namur connection VDI/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.

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

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.



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 (Octagonal drive)
- Position indicator can be used also to operate mechanical limit switches.

OPTIONS ON REQUEST

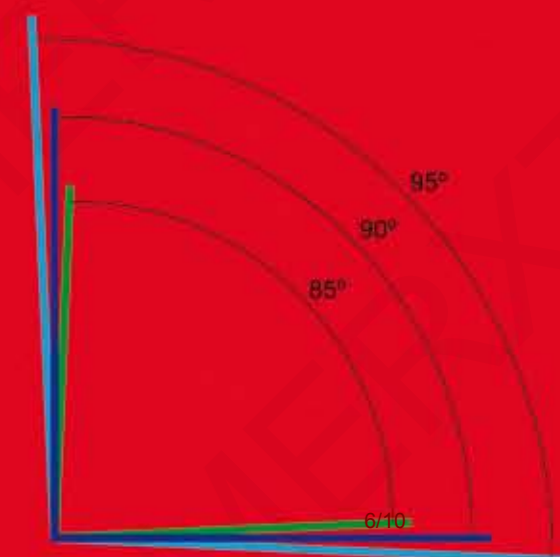
- Epoxy coated body.
- Electroless Nickel Plated body and end caps.
- High temperature construction.
- Low temperature construction.
- Stainless steel pinion
- Fast acting actuators
- Actuators with 100% travel adjustment stroke.

BI-DIRECTIONAL TRAVEL STOPS

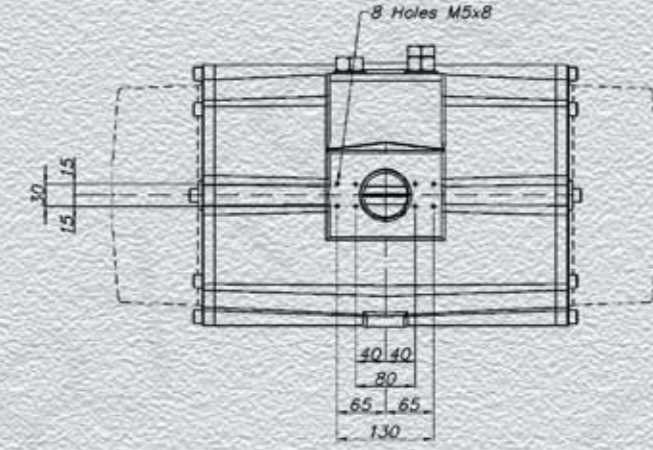
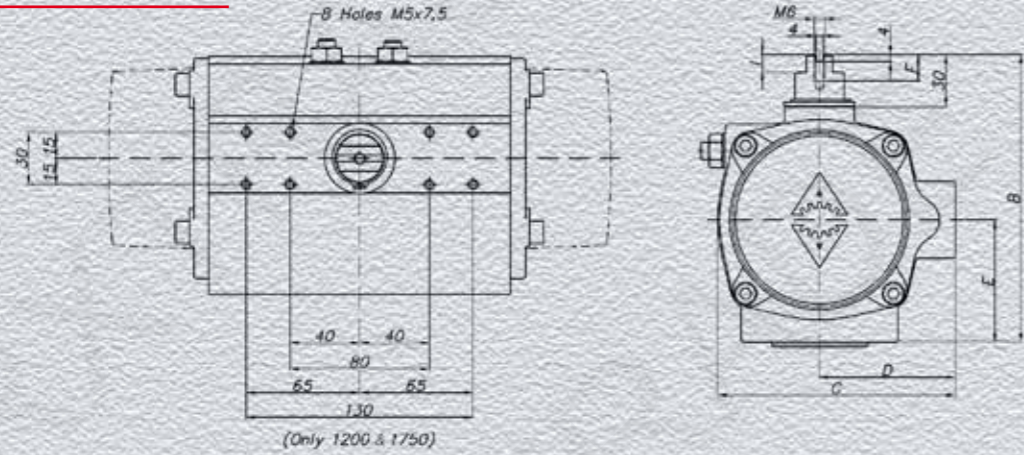
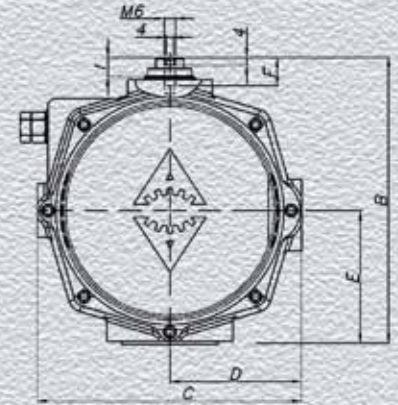
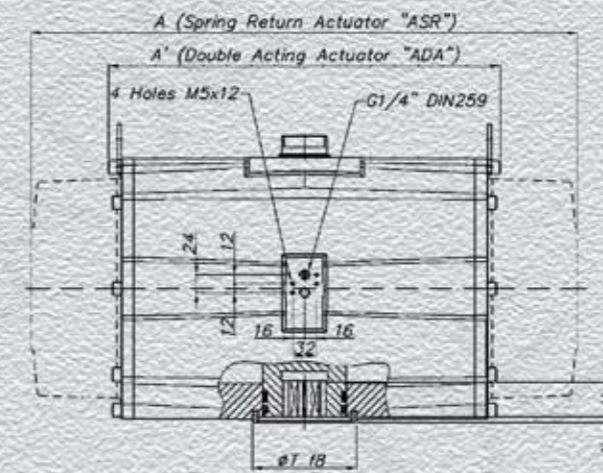
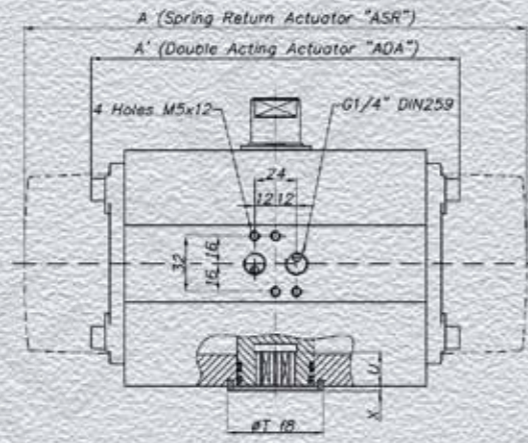
ACTREG pneumatic actuators are provided with bi-directional pinion travel stops.

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.



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

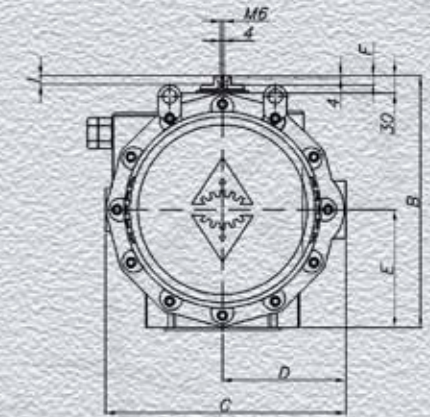
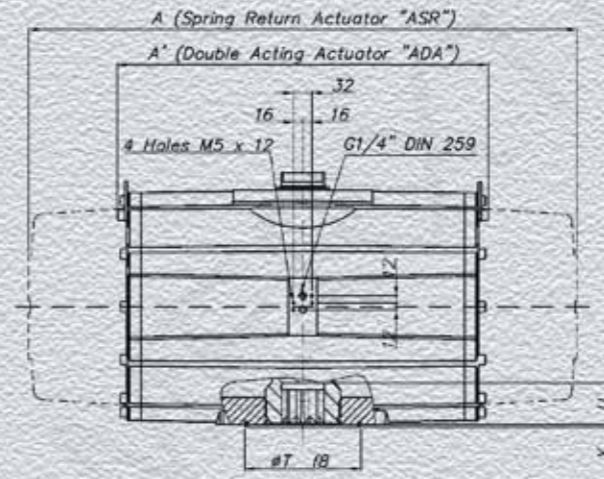
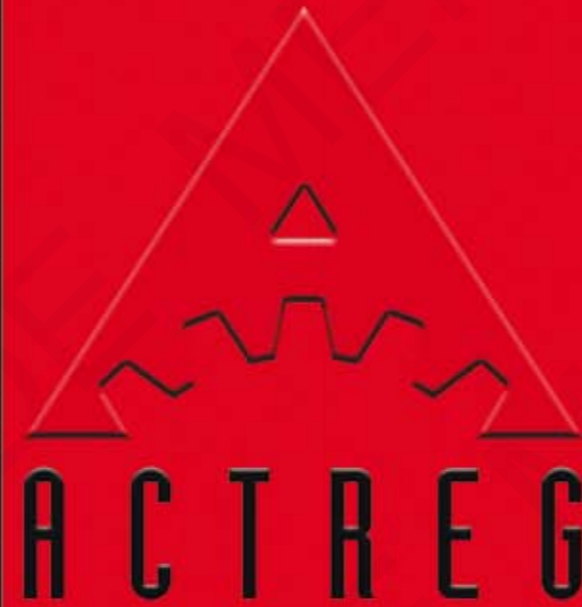
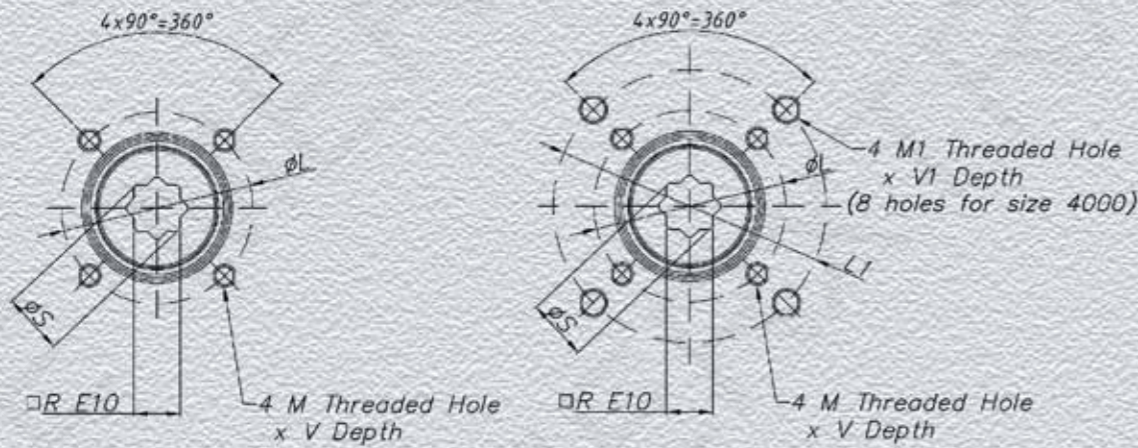


SIZES: •2500

ISO 5211 DETAIL

SIZES: •20•40•500•1750•2100•2500

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



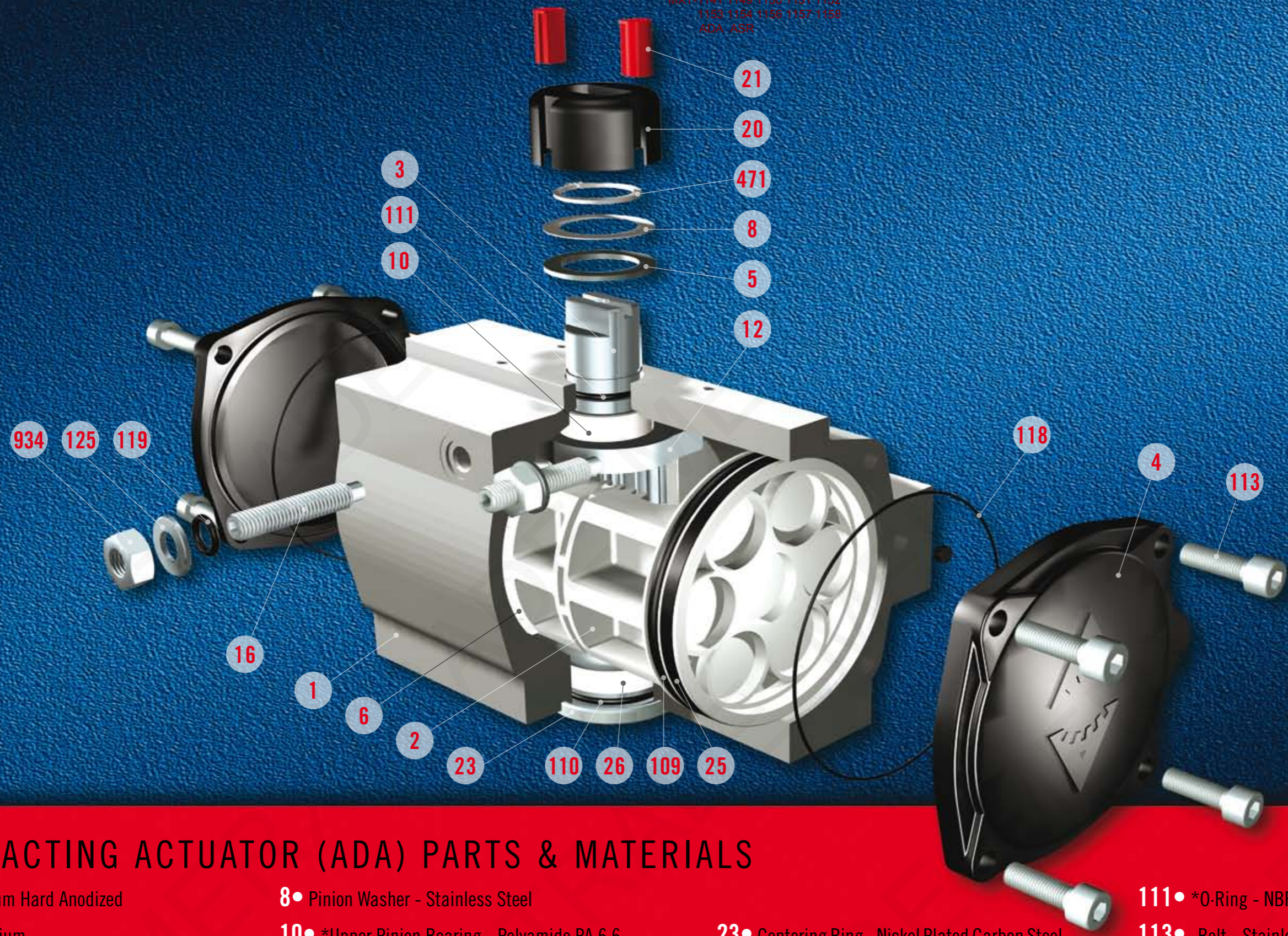
SIZES: •4000

DOUBLE ACTING & SPRING RETURN ACTUATORS GENERAL DIMENSIONS IN mm

SIZE	A	A'	B	C	D	E	F	I	R	ρS	ISO 5211	ρL	MxV	ISO 5211	ρL1	M1xV1	ρT	X	U
20	163	145	96	76	48	34	9	6	9	12,5	F03	36	M5x8				25	2	10
20	163	145	96	76	48	34	9	6	14	18,1	F05	50	M6x10				35	3	12
20	163	145	96	76	48	34	9	6	14	18,1	F04	42	M5x10				35	3	12
40	195	158	115	91	56	45	9	6	14	18,1	F04	42	M5x10				35	3	12
40	195	158	115	91	56	45	9	6	14	18,1	F05	50	M6x10				35	3	12
80	217	177	137	111	66	55	12	8	17	22,5	F05	50	M6x10	F07	70	M8x16	55	3	19
130	258	196	147	122	71	60	15	8	17	22,5	F05	50	M6x10	F07	70	M8x16	55	3	22
200	299	225	165	135,5	78	70	15	10	17	22,5	F07	70	M8x16	F10	102	M10x16	55	3	23
300	348,5	273	182	152,5	86	80	16	12	22	28,5	F07	70	M8x16	F10	102	M10x16	70	3	24
500	397	304	199	173	96	85	17	15	22	28,5	F10	102	M10x16				70	3	32
850	473	372	221	191,5	106	98	15	15	27	36,5	F10	102	M10x17	F12	125	M12x20	85	3	39
1200	560	439	249	212,5	116	114	16	15	36	48,5	F10	102	M10x17	F14	140	M16x26	100	4	48
1750	601	461	280	242,5	131	130	16	15	36	48,5	F14	140	M16x26				100	4	50
2100	702	510	313	276,5	148	147	16	15	46	65,1	F16	165	M20x29				130	4	50

DOUBLE ACTING & SPRING RETURN ACTUATORS GENERAL DIMENSIONS IN mm

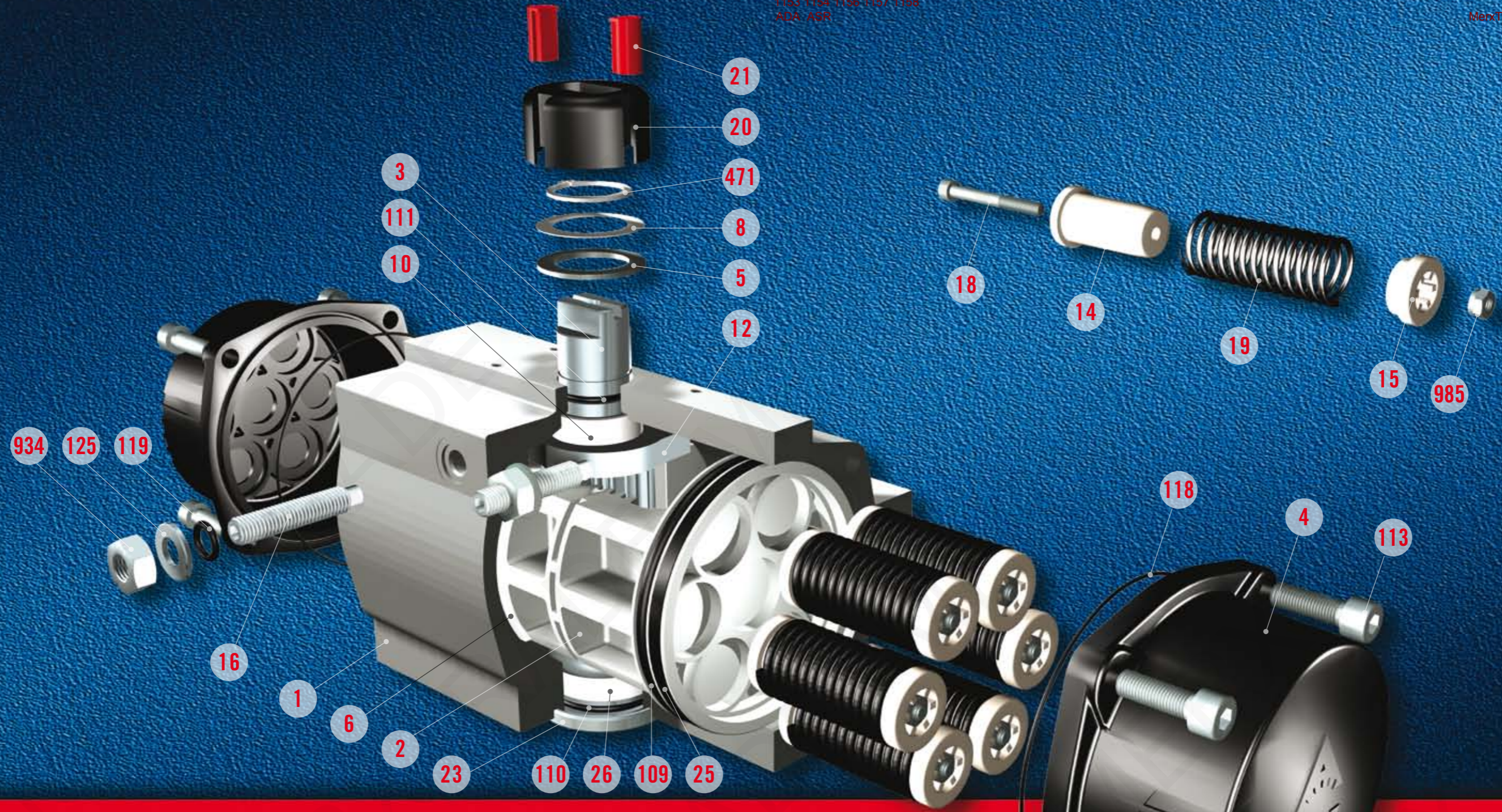
SIZE	A	A'	B	C	D	E	F	I	R	ρS	ISO 5211	ρL	MxV	ISO 5211	ρL1	M1xV1	ρT	X	U
2500	738	518	383	356	177,5	176,5	16	15	46	60,2	F16	165	M20x29				130	4	58
4000	940	630	434	415	213	201	16	15	55	72,5	F16	165	M20x30	F25	254	M16x30	100	4	60



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
- 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 | 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 | 12 • 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 Torque Output in Nm																								
Size	TYPE	Output Torque For Double Acting in Nm												Weight (Kg)										
		3 bar		3,5 bar		4 bar		4,5 bar		5 bar		5,5 bar			6 bar		6,5 bar		7 bar		8 bar		10 bar	
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
10	D	6	8	9	10	11	11,5	12	12	13	14	15	0,64											
20	D	9,7	11,4	13	14,6	16,2	17,8	19,5	21,1	23	26	-	1,4											
40	D	20,3	23,7	27,1	30,5	33,9	37,3	41	44	47	54	-	2,1											
80	D	38,5	44,9	51,3	57,7	64,1	70,5	77	83	90	103	-	3											
130	D	59,1	68,9	78,7	88,6	98,4	108,3	118	128	138	157	-	3,8											
200	D	88	102	117	131	146	161	175	190	205	234	-	5,6											
300	D	145	170	194	218	242	267	291	315	339	388	-	8,5											
500	D	217	253	289	325	361	397	433	469	505	577	-	11,2											
850	D	359	419	479	538	598	658	718	778	837	957	-	16,9											
1200	D	519	606	692	779	865	952	1038	1125	1211	1384	-	25,8											
1750	D	707	824	942	1060	1178	1295	1413	1531	1649	1884	-	32,5											
2100	D	1086	1267	1448	1629	1810	1991	2172	2353	2534	2896	-	40,8											
2500	D	1730	2019	2307	2596	2884	3172	3461	3749	4038	4614	-	69,6											
4000	D	2408	2809	3210	3612	4013	4414	4816	5217	5618	6421	-	129,4											

▲ DOUBLE ACTING ACTUATOR TORQUE OUTPUT in Nm
▼ SPRING RETURN ACTUATOR TORQUE OUTPUT in Nm

Spring Return Actuator Torque Output in Nm																								
Size	TYPE	Output Torque For Double Acting in Nm												Spring stroke		Weight (Kg)								
		3 bar		3,5 bar		4 bar		4,5 bar		5 bar		5,5 bar		6 bar			6,5 bar		7 bar		8 bar		0°	90°
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°		0°	90°	0°	90°	0°	90°	0°	90°
20	S04			8	5	9	7	11	8	13	10	14	12	16	13	17	15	19	17	22	20	4	7	1,51
	S06 A									11	7	12	9	14	10	15	12	17	13	20	17	7	11	1,54
	S08									10	5	12	7	14	9	15	10	18	14	9	15	9	15	1,56
40	S04	16	14	20	17	23	20	26	24	30	27	33	30	37	34	40	37	43	41	50	47	5	8	2,17
	S06	14	10	18	14	21	17	24	20	28	24	31	27	34	30	38	34	41	37	48	44	7	12	2,20
	S08			15	10	19	14	22	17	26	20	29	24	32	27	36	30	39	34	46	41	10	16	2,23
	S10									20	14	24	17	27	20	30	24	34	27	37	30	44	37	2,26
	S12									21	13	25	17	28	20	32	24	35	27	42	34	15	24	2,29
	S14 A									23	13	26	17	30	20	33	24	40	30	47	30	17	28	2,32
80	S04	31	27	38	34	44	40	50	46	57	53	63	59	70	66	76	72	82	78	95	91	9	13	3,28
	S06	27	21	34	28	40	34	47	41	53	47	59	53	66	60	72	66	79	73	92	86	13	20	3,36
	S08					37	29	43	35	49	41	56	48	62	54	69	61	75	67	88	80	17	27	3,43
	S10							39	29	46	36	52	42	59	49	65	55	71	61	84	74	22	33	3,51
	S12							42	30	48	36	55	43	61	49	68	56	81	69	96	84	26	40	3,58
	S14 A							45	31	51	37	58	44	64	50	77	63	90	77	107	93	30	47	3,65
130	S06	43	36	52	46	62	56	72	65	82	75	92	85	102	95	111	105	121	115	141	134	19	27	4,40
	S08			47	38	57	48	67	58	76	68	86	77	96	87	106	97	116	107	135	127	26	36	4,50
	S10					51	40	61	50	71	60	81	70	91	80	100	89	110	99	130	119	32	45	4,60
	S12							56	42	65	52	75	62	85	72	95	82	105	92	124	111	39	54	4,70
	S14 A							70	54	80	64	89	74	99	84	119	103	145	128	171	154	45	64	4,80
200	S06	61	49	76	63	90	78	105	92	119	107	134	122	149	136	163	151	178	166	207	195	31	46	6,50
	S08			67	50	81	65	96	79	111	94	125	109	140	123	154	138	169	152	198	182	42	61	6,70
	S10					72	52	87	66	102	81	116	96	131	110	146	125	160	139	189	169	52	77	6,90
	S12							78	53	93	68	107	83	122	97	137	112	151	126	180	156	63	92	7,00
	S14 A							99	70	113	84	128	99	142	113	172	143	203	173	237	207	73	107	7,30
300	S06	102	75	126	99	151	123	175	148	199	172	223	196	247	220	272	245	296	269	344	317	51	83	9,65
	S08			112	76	136	100	160	124	185	148	209	173	233	197	257	221	281	245	330	294	68	111	9,92
	S10					122	76	146	101	170	125	194	149	219	173	243	198	267	222	315	270	85	138	10,20
	S12							131	77	156	101	180	126	204	150	228	174	253	198	301	247	102	166	10,50
	S14 A							165	102	190	126	214	151	238	175	287	223	319	253	354	287	119	193	10,80
500	S06	152	119	188	155	224	191	260	227	296	263	333	299	369	335	405	371	441	407	513	480	76	115	13,33
	S08	131	86	167	122	203	158	239	194	275	231	311	267	347	303	383	339	419	375	492	447	101	153	13,84
	S10					181	126	217	162	254	198	290	234	326	270	362	306	398	342	470	414	126	192	14,35
	S12							196	129	232	165	268	201	304	238	340	274	376	310	449	382	152	230	14,85
	S14 A							247	169	283	205	319	241	355	277	427	349	477	398	542	451	177	268	15,36
850	S06	260	209	320	269	380	328	440	388	500	448	559	508	619	568	679	627	739	687	858	807	116	177	19,7
	S08	227	159	287	218	347	278	407	338	467	398	526	458	586	518	646	577	706	637	826	757	155	236	20,3
	S10			254	168	314	228	374	288	434	348	494	408	553	467	613	527	673	587	793	707	193	295	20,9
	S12							341	238	401	298	461	358	521	417	580	477	640	537	760	657	232	353	21,6
	S14 A							428	307	488	367	547	427	607	487	727	607	817	697	1017	897	271	412	22,2
1200	S06	373	289	460	376	546	462	633	549	720	635	806	722	893	808	979	895	1066	981	1239	1154	171	271	30,1
	S08	325	213	411	299	498	386	584	472	671	559	758	645	844	732	931	818	1017	905	1190	1078	229	361	31,1
	S10	276	136	363	222	449	309	536	395	622	482	709	569	795	655	882	742	969	828	1142	1001	286	451	32,2
	S12					401	232	487	319	574	405	660	492	747	578	833	665	920	751	1093	924	343	541	33,2
	S14 A							525	329	612	415	698	502	785	588	871	675	1044	848	1240	1040	401	631	34,3
1750	S06	477	349	595	466	712	584	830	702	948	820	1066	937	1183	1055	1301	1173	1419	1291	1654	1526	270	421	39,3
	S08	400	229	518	347	636	465	754	582	871	700	989	818	1107	936	1225	1053	1342	1171	1578	1407	360	562	41,0
	S10			441	228	559	345	677	463	795	581	912	699	1030	816	1148	934	1266	1052	1501	1287	451	702	42,7
	S12							600	344	718	461	836	579	954	697	1071	815	1189	933	1425	1168	541	843	44,4
	S14 A							642	342	759	460	877	578	995	695	1113	813	1348	1049	1631	1383	631	983	46,0
2100	S06	702	509	883	690	1064	871	1245	1052	1426	1233	1607	1414	1788	1595	1969	1776	2150	1957	2512	2319	384	577	44,6
	S08	574	316	755	497	936	678	1117	859	1298	1040	1479	1221	1660	1402	1841	1583	2022	1764	2384	2126	512	770	46,6
	S10			627	305	808	486	989	667	1170	848	1351	1029	1532	1210	1713	1391	1894	1572	2256	1934	640	962	48,6
	S12							861	474	1042	655	1223	836	1404										