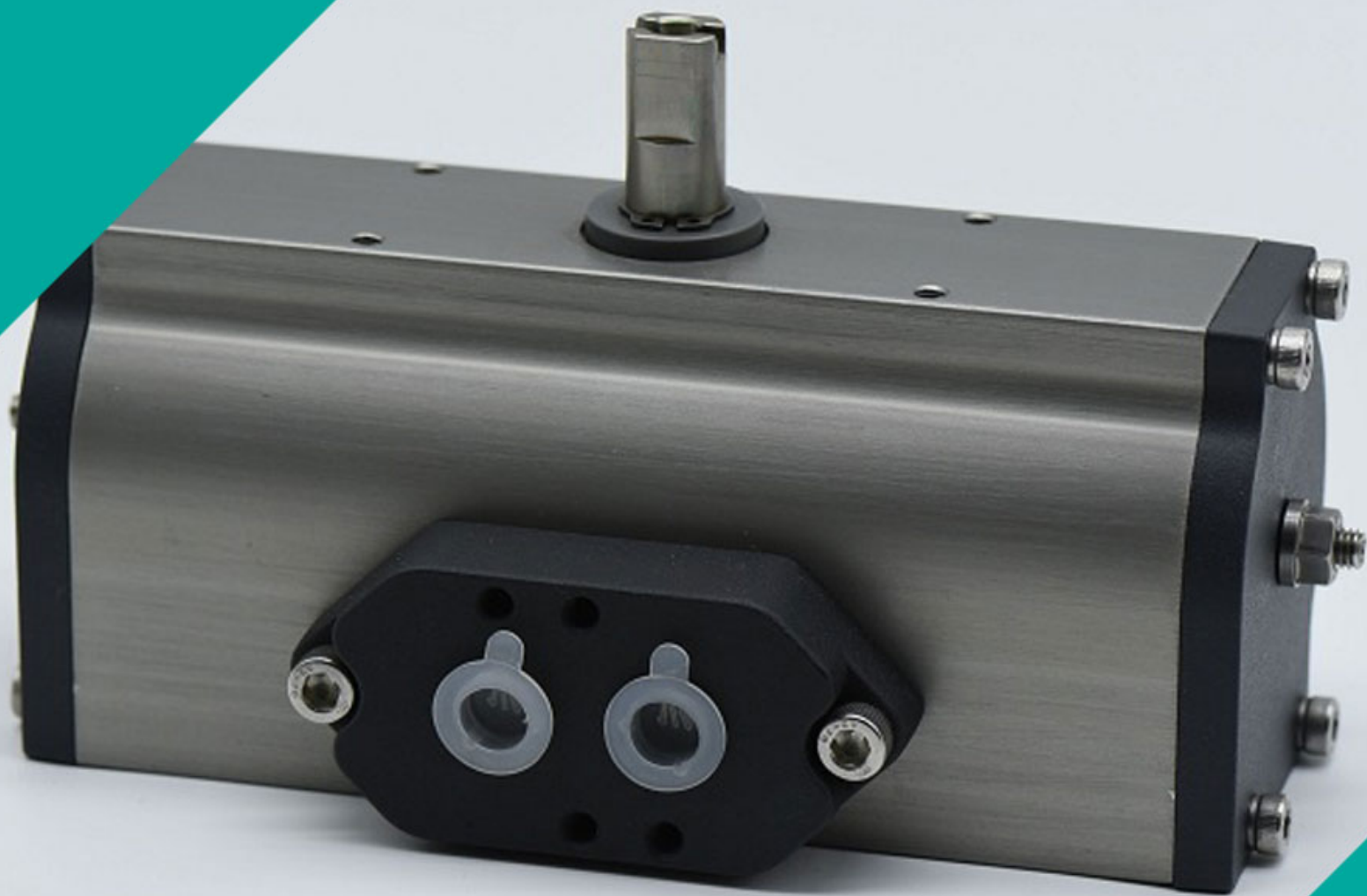


SCOTCH YOKE ACTUATOR



CREATIVE • INNOVATION • PROCESS



SKU:1587



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SCOTCH YOKE ACTUATOR

Description

PAC-S Series Pneumatic Actuator is designed suitable for general purpose of valves and damper automation and offer a wide range of torques enable to operate ball, butterfly, plug valves, dampers or any device that requires a quarter turn operation for on-off or modulating service. Scotch Yoke actuators are available with symmetric yokes. Asymmetric yoke provide more constant torque throughout - at both the break points and end positions.

Technical Data

Connection flange	UNI EN ISO 5211 F03-F04-F05-F07-F10-F12-F14-F16-F25
Standard	UNI EN 15714-3:2009 standard
Accessories Connection	Namur
Rotation Angle	90° (- 80° / +30°)
Torque	In Proportion To The Air Supply(see Table)

Working Conditions

Working temperature	Working temperature: 0°C - 80°C , -20°C -80°C (Filtered compressed air dry) (Special version: high temperature: -20°C - 150°C; low temperature: -50°C - 60°C)
Supply pressure	min. 2,5 bar, max. 8 bar
Working medium	Filtered compressed air
Lubricating medium	In the case of air lubrication , do not use detergent oil or lubricating oil compatible with NBR

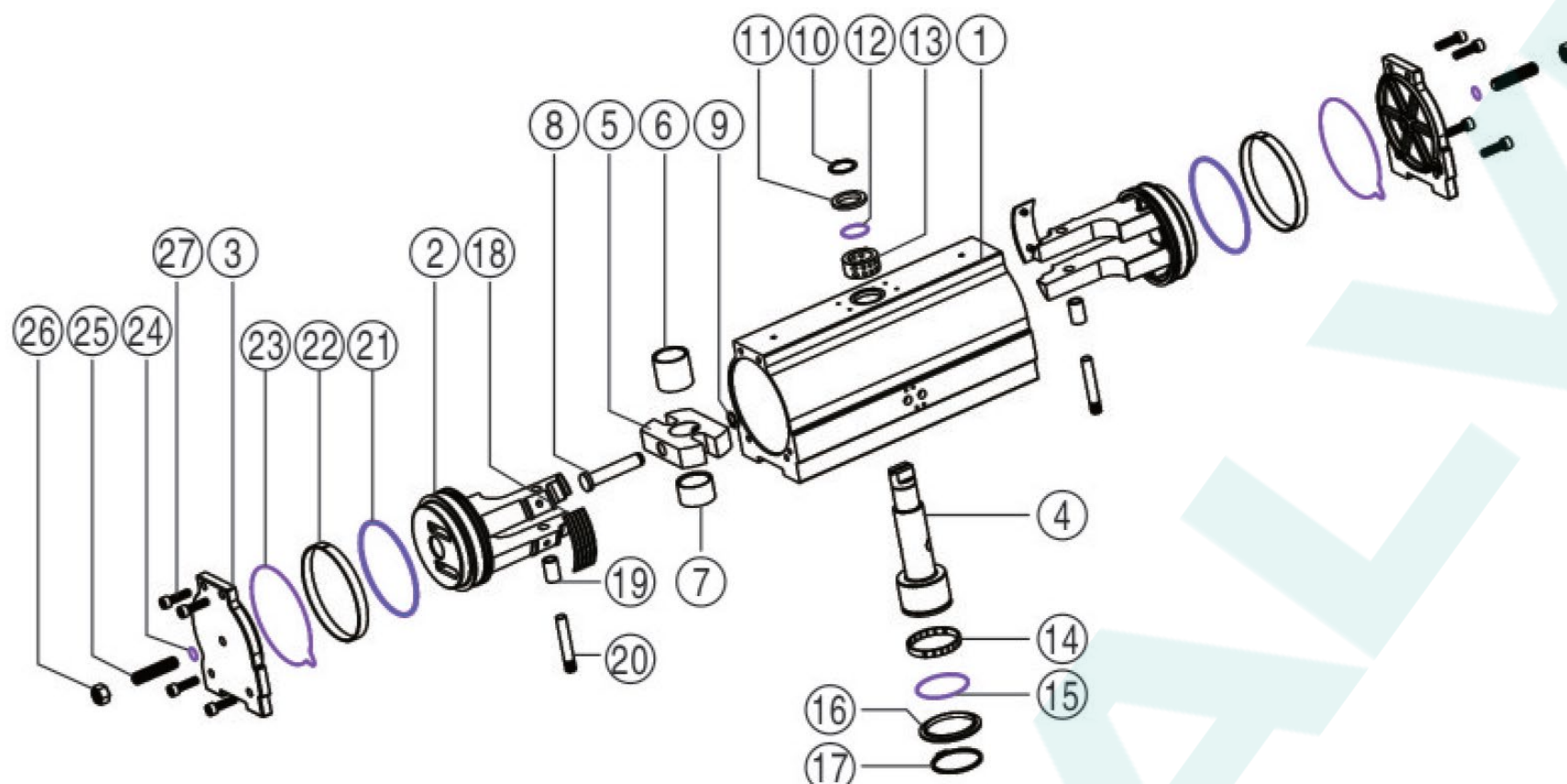
Features and Benefits

1. Provide with the self-lubricated bearing and guide ring between the sliding parts.
- Less friction between piston and cylinder
2. Both pin, yoke and bearings are made of Alloy Steel , the hardness is higher than 50HRC .
- Effective resistance to the actuator internal dynamic wear;
3. Rolling friction between yoke and bearing
- Reduced the friction between the piston and shaft;
4. Scotch yoke with rolling friction (transforming rotary motion into linear motion using piston and shaft without teeth/gears)
- Reduced friction between piston and shaft with consequently less wear on the relevant parts
 - High opening and closing torques provided by scotch-yoke concept;
 - Compared with rack and pinion actuator, reduced actuator volume (30%) and installation space;
 - Compared with rack and pinion actuator, reduced actuator weight (30%) and construction of equipment's.
 - Compared with rack and pinion actuator, reduced the air consumption (40%)
 - Faster switching speed than rack and pinion actuator(40% for double acting,20% for single acting)
5. Cylindrical cylinder
- Reduced wear of the sliding piston parts with low roughness of the surface.
6. SIL3
- Meet the requirements of SIL and guarantee the highly reliable and safe operation
7. ATEX Certificate
- Allow products to be installed in the potential explosive environments.

Options

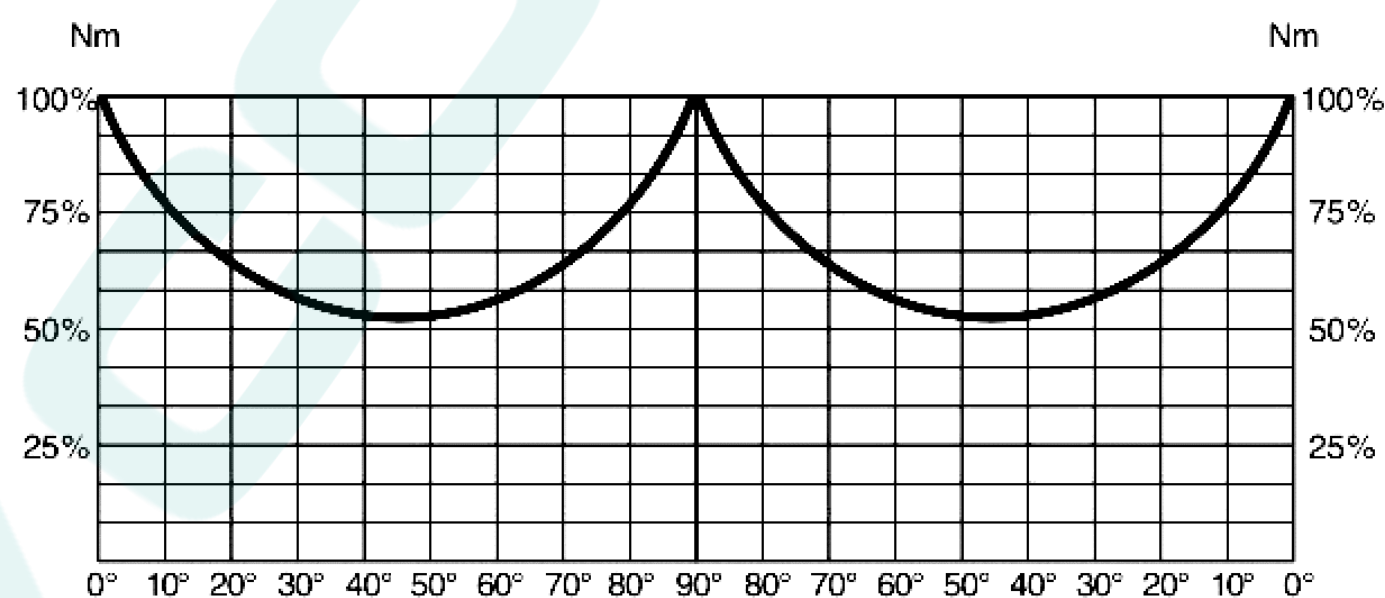
- Direct mount solenoid valves
- Monitor/Position confirmation limit switches
- Electro-Pneumatic positioner 4-20m input
- Pneumatic positioners 3-15 PSI input

Double Acting Actuators



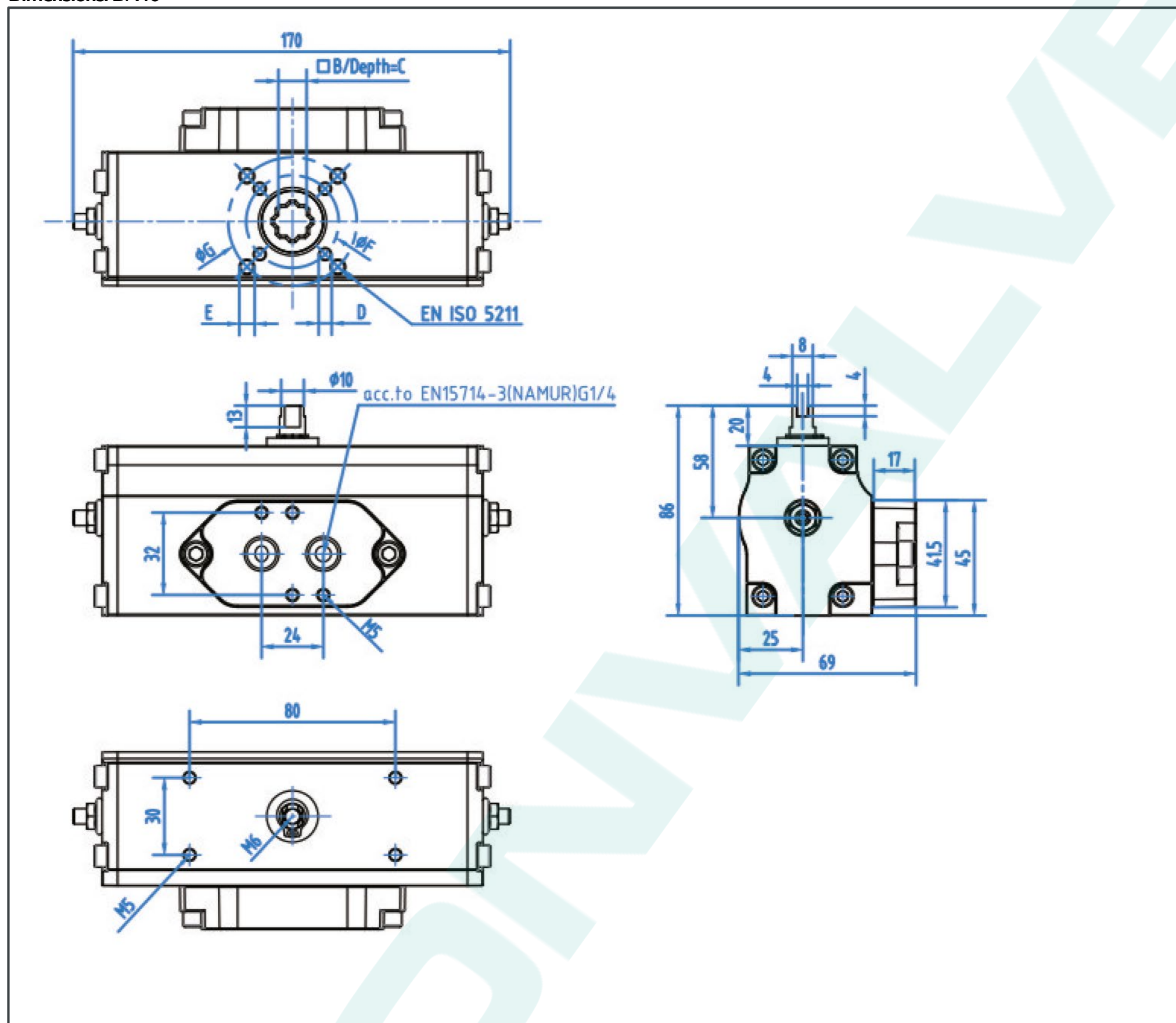
Materials specification

No	Part name	O.TA' O.ty	Materials	No	Part name	O.TA' O.ty	Materials
1	Actuator Cylinder	1	Aluminum	15	Lower Shaft O-ring	1	NBR
2	Piston	2	Aluminum	16	Lower Washer	1	POM
3	End Cover	2	Aluminum	17	Lower Snap-Ring	1	Stainless Steel
4	Drive Shaft	1	Alloy Steel	18	Piston Guide-Ring	2	POM
5	Yoke	1	Alloy Steel	19	Roller	2	Alloy Steel
6	Upper Piston Bearing	1	POM	20	Piston Pin	2	Alloy Steel
7	Lower Piston Bearing	1	POM	21	Piston O-ring	2	NBR
8	Yoke Pin	1	Alloy Steel	22	Piston Guide Ring	2	POM
9	Yoke Pin Snap-Ring	1	Stainless Steel	23	End Cover Seal Ring	2	NBR
10	Upper Snap-Ring	1	Stainless Steel	24	Nut O-ring	2	NBR
11	Upper Washer	1	POM	25	Stroke Adjusting Screw	2	Stainless Steel
12	Upper Shaft O-ring	1	NBR	26	Seal Nut	2	Stainless Steel
13	Upper Bushing	1	POM/Graphite Copper Sleeve	27	Hex. Socket Screw	8	Stainless Steel
14	Lower Bushing	1	POM/Graphite Copper Sleeve				

OUTPUT TORQUE TABLE(Nm) α° = Rotation Angle

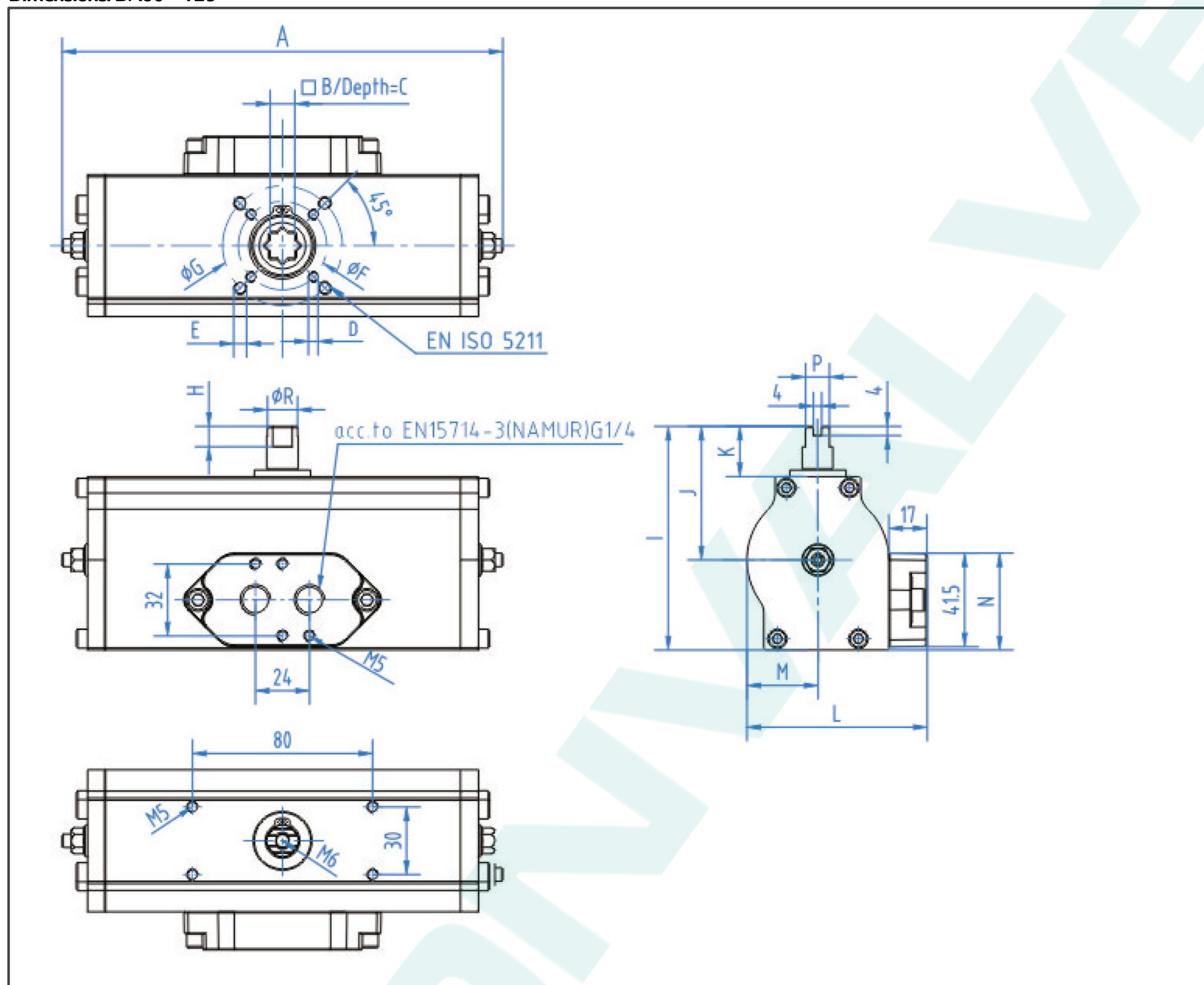
Air Pressure	3 Bar			4 Bar			5 Bar			6 Bar		
Type	0°	45°	90°	0°	45°	90°	0°	45°	90°	0°	45°	90°
DA40	13.5	7.4	13.5	18.0	9.9	18.0	22.5	12.4	22.5	27.0	14.6	27.0
DA60	38.1	20.9	38.1	50.7	27.9	50.7	63.3	34.8	63.3	76.2	41.0	76.2
DA80	125.0	68.8	125.0	166.7	91.7	166.7	208.3	114.6	208.3	250.1	135.3	250.1
DA100	265.0	145.8	265.0	353.3	196.3	353.3	441.7	242.9	441.7	530.0	286.2	530.0
DA125	456.9	251.4	456.9	610.4	335.5	610.4	762.0	419.1	762.0	935.3	504.9	935.3
DA140	668.0	347.4	668.0	891.0	463.0	891.0	1114.0	579.3	1114.0	1337.2	695.2	1337.2
DA180	1317.3	684.8	1317.3	1756.0	913.1	1756.0	2195.8	1141.4	2195.8	2633.9	1369.7	2633.9
DA220	2550.0	1402.5	2550.0	3401.2	1870.5	3401.2	4251.3	2337.5	4251.3	5100.4	2805.0	5100.4

Dimensions: DA40

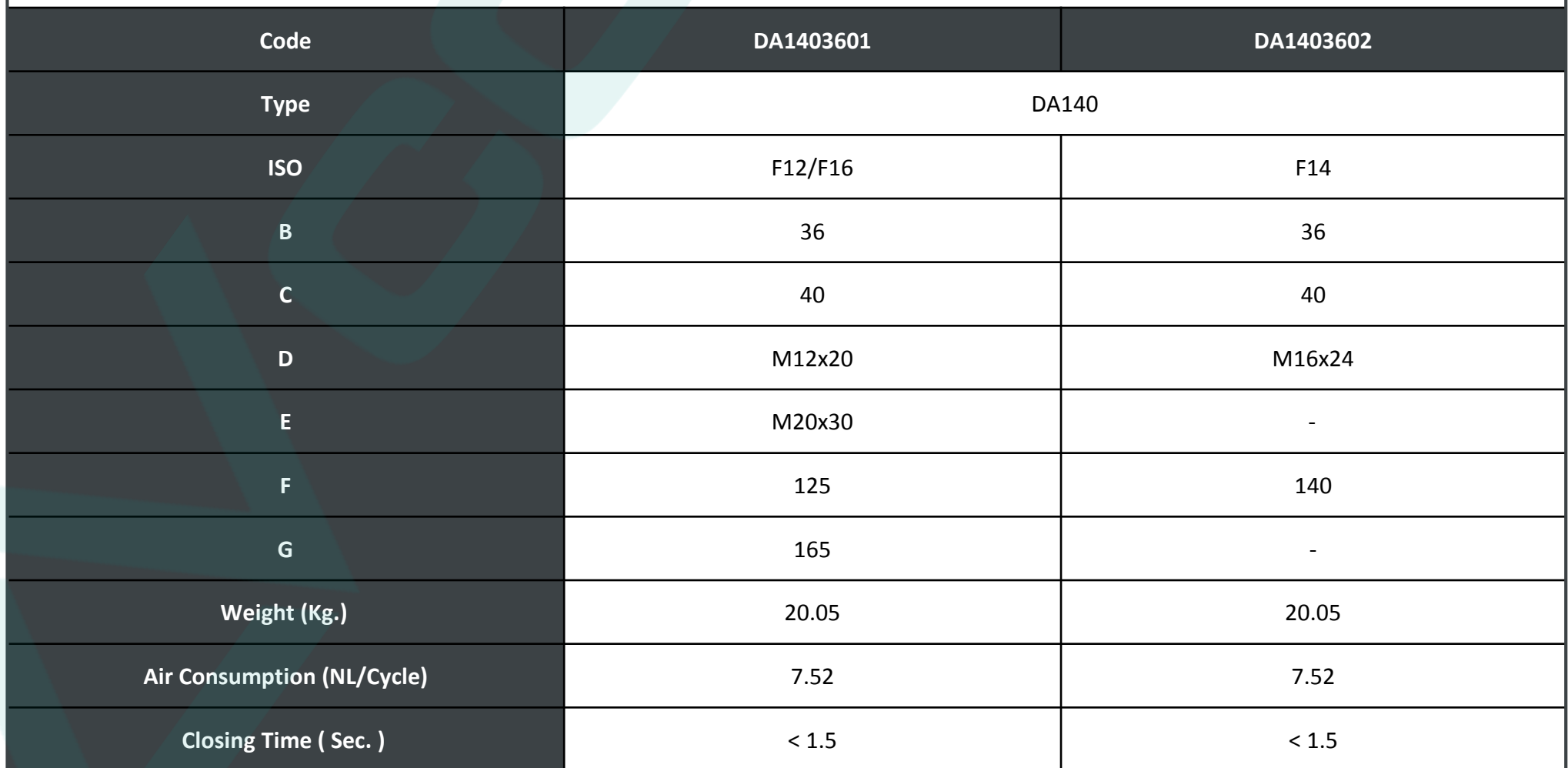


Code	DA0401101	DA0401102
Type	DA40	
ISO	F03/F05	F04
B	11	11
C	16	16
D x depth	M5x8	M5x7.5
E x depth	M6x9	-
F	36	42
G	50	-
Weight (Kg.)	1.0	1.0
Air Consumption (NL/Cycle)	0.18	0.18
Closing Time (Sec.)	0.25	0.25

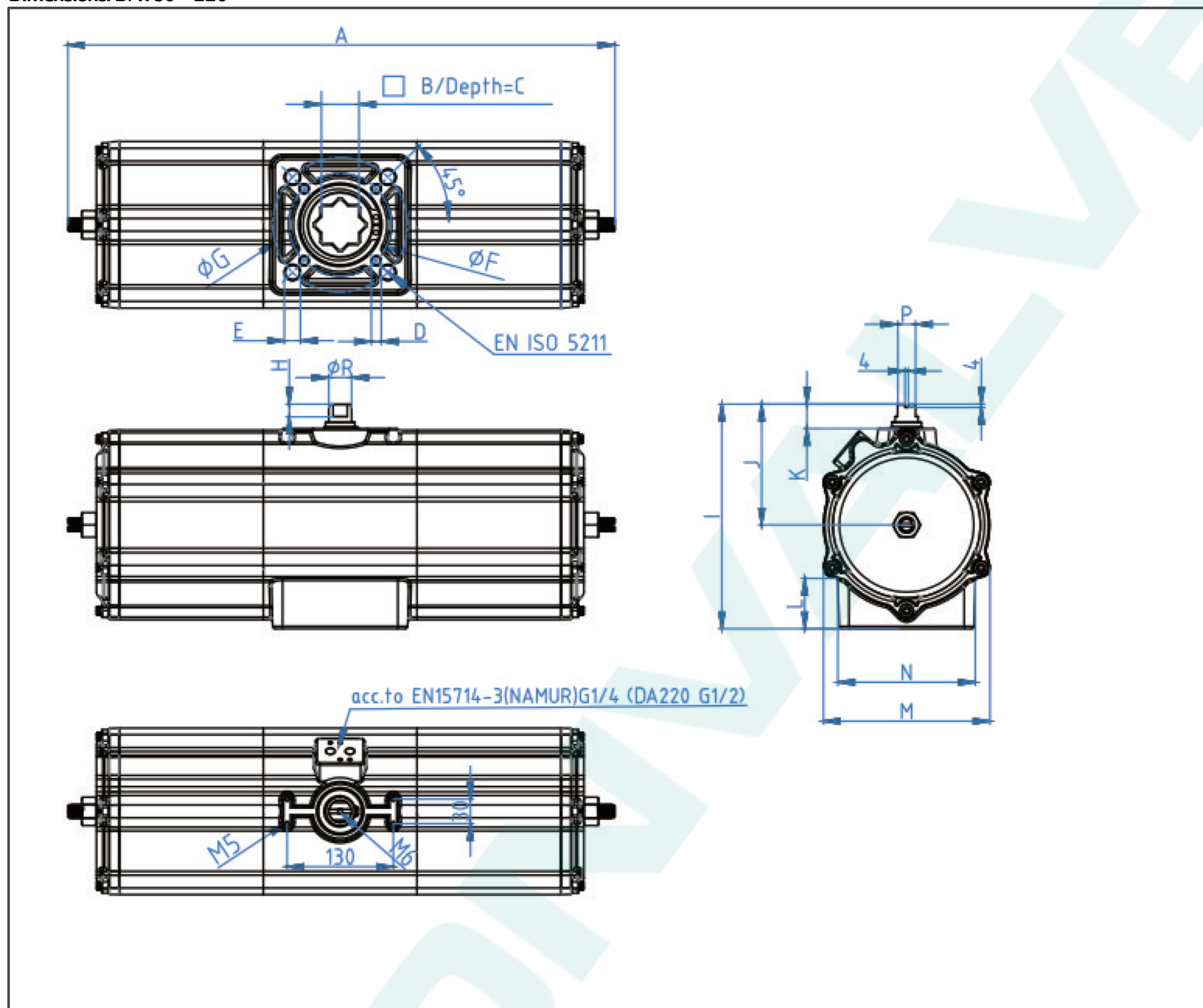
Dimensions: DA60 – 125



Code	DA0601401	DA0601402	DA0651401	DA0801701	DA1002201	DA1252701
Type	DA60		DA65	DA80	DA100	DA125
ISO	F05	F04	F05/F07	F05/F07	F07/F10	F10/F12
A	195	195	195	295	385	445
B	14	14	14	17	22	27
C	16	16	16	22	26	30
D x depth	M6x9	M5x7.5	M6x8.5	M6x9	M8x12	M10x15
E x depth	-	-	M8x12	M8x12	M10x15	M12x18
F	50	42	50	50	70	102
G	-	-	70	70	102	125
H	13	13	13	13	13	15
I	97	97	97	128	149	186
J	57	57	57	72	83	106
K	20	20	20	20	20	30
L	80	80	80	108	131	156
M	31.5	31.5	31.5	45.5	57	70
N	43	43	43	53	59	60
P	11	11	11	14	19	22
R	14	14	14	20	26	30
Weight (Kg.)	1.5	1.5	1.7	3.8	6.95	12.05
Air Consumption (NL/Cycle)	0.46	0.46	0.46	1.49	3.26	5.63
Closing Time (Sec.)	0.25	0.25	0.25	0.45	0.70	1.00

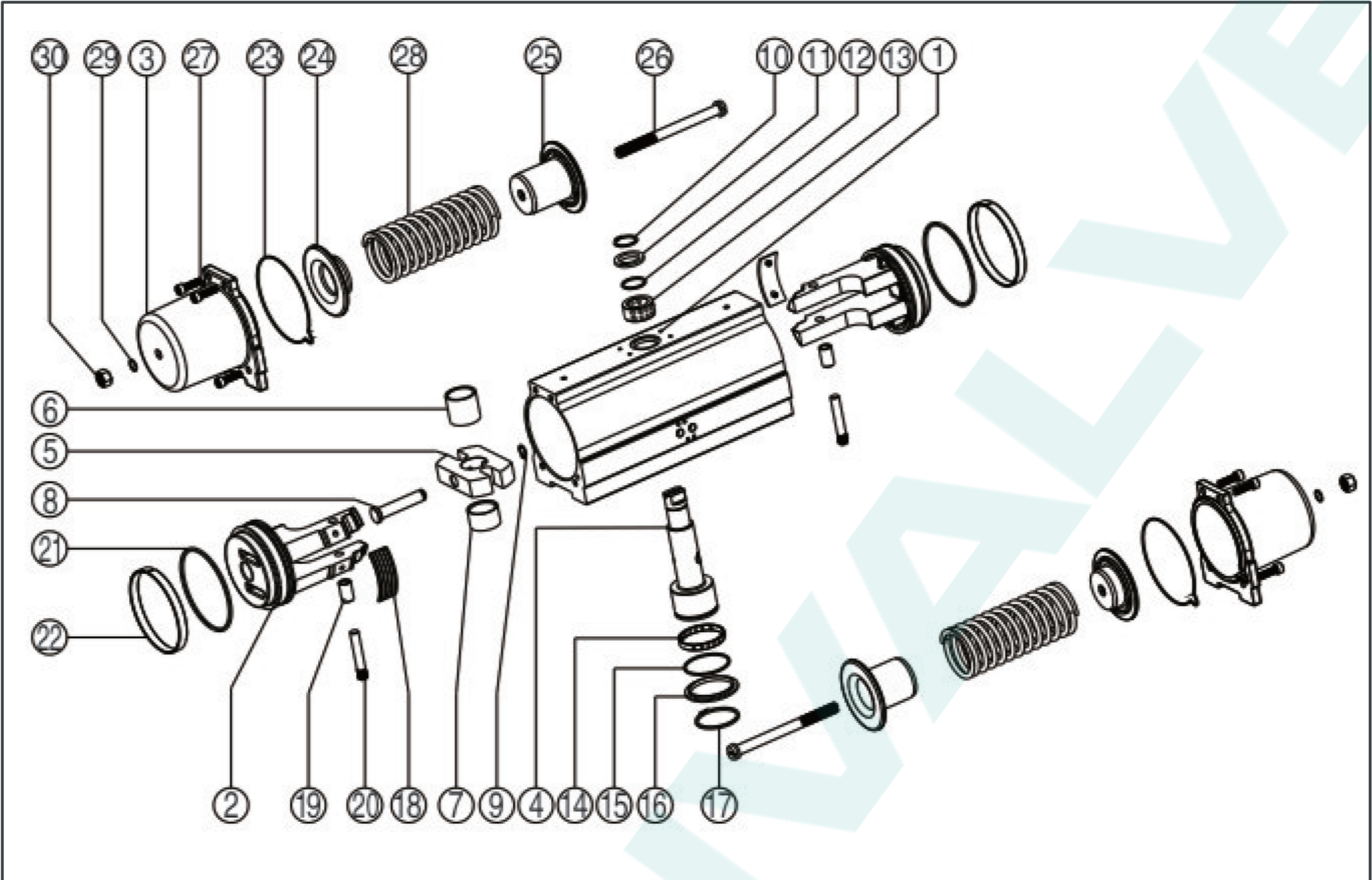


Dimensions: DA180 – 220



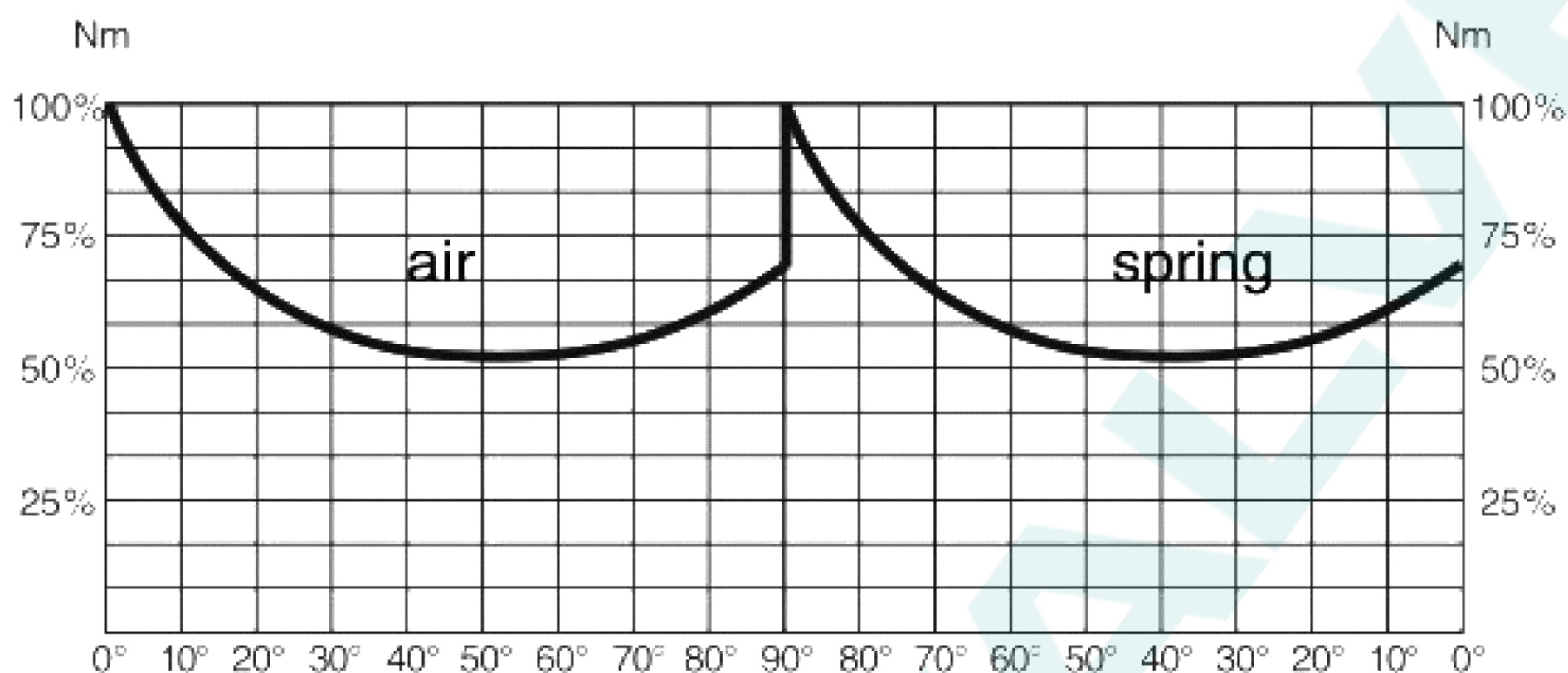
Code	DA1804601	DA1804602	DA2205501
Type	DA180		DA220
ISO	F12/F16	F14	F16
A	669	669	794
B	46	46	55
C	50	50	57
D	M12x18	M16x24	M20x36
E	M20x36	-	-
F	125	140	165
G	165	-	-
H	15	15	15
I	275	275	314
J	148	148	171
K	30	30	30
L	62	62	71
M	206	206	271
N	168	168	206
p	22	22	22
R	28	28	36
Weight (Kg.)	34.98	34.98	64.27
Air Consumption (NL/Cycle)	16.49	16.49	29.7
Closing Time (Sec.)	<2.0	<2.0	<4.0

Single Acting Actuators



Materials specification							
No	Part name	O.TA' O.ty	Materials	No	Part name	O.TA' O.ty	Materials
1	Actuator Cylnder	1	Aluminum	16	Lower Washer	1	POM
2	Piston	2	Aluminum	17	Lower Snap O-ring	1	Stainless Steel
3	End Cover	2	Aluminum	18	Piston Guide O-ring	2	POM
4	Drive Shaft	1	Alloy Steel	19	Roller	2	Alloy Steel
5	Yoke	1	Alloy Steel	20	Piston Pin	2	Alloy Steel
6	Upper Piston Bearing	1	Alloy Steel	21	Piston O-ring	2	NBR
7	Lower Piston Bearing	1	POM	22	Piston Guide Ring	2	POM
8	Yoke Pin	1	POM	23	End Cover Seal Ring	2	NBR
9	Yoke Pin Snap-Ring	1	Alloy Steel	24	Upper Spring Washer	2	Aluminum
10	Upper Snap-Ring	1	Stainless Steel	25	Lower Spring Washer	2	Aluminum
11	Upper Washer	1	Stainless Steel	26	Spring Shaft	2	Stainless Steel
12	Upper Shaft O-ring	1	POM	27	Hex. Socket Screw	8	Stainless Steel
13	Upper Bushing	1	NBR	28	Spring	2	Spring Steel
14	Lower Bushing	1	POM/Graphite Copper Sleeve	29	Nut O-ring	2	NBR
15	Lower Shaft O-ring	1	POM/Graphite Copper Sleeve	30	Seal Nut	2	Stainless Steel

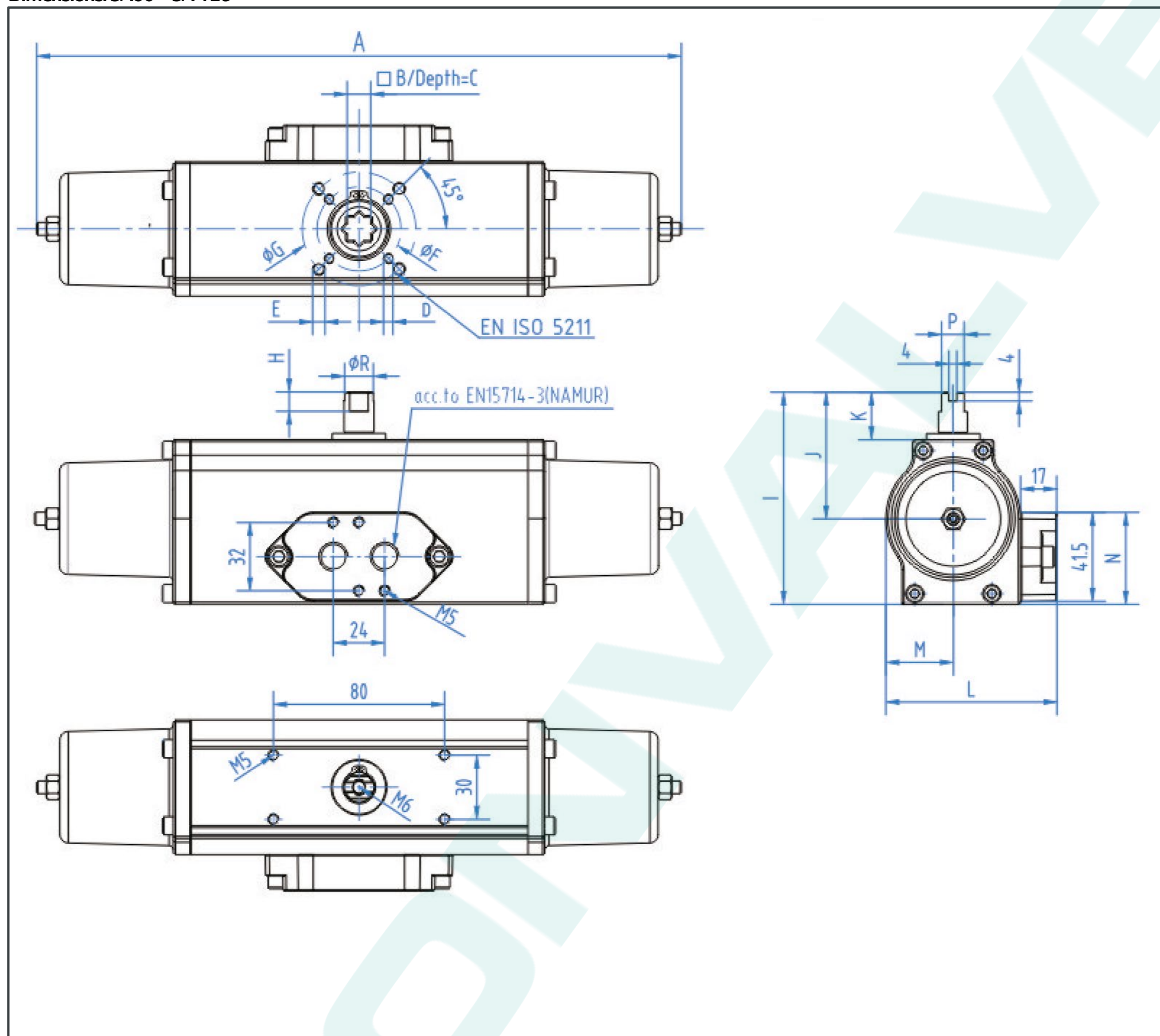
Single Acting Actuators

OUTPUT TORQUE TABLE(Nm) α° = Rotation Angle

Type	α°	2.5bar		3bar		4bar		5bar		5.5bar		6bar	
		Spring	Air	Spring	Air	Spring	Air	Spring	Air	Spring	Air	Spring	Air
SA60	0°	14.8	23.1	19.5	26.0	24.1	36.5	26.8	48.9	31.5	51.8	38.9	52.0
	45°	8.5	7.9	11.1	8.6	13.8	12.5	15.4	17.5	18.0	18.1	22.2	17.1
	90°	18.4	10.3	24.1	10.2	29.9	15.9	33.3	24.0	39.1	23.9	48.3	20.5
SABO	0°	45.8	72.2	61.5	80.1	77.1	111.7	84.4	151.6	100.0	159.6	122.9	160.3
	45°	25.7	25.4	34.0	27.3	42.4	39.3	46.9	55.3	55.2	57.2	68.1	54.5
	90°	55.0	34.2	72.4	34.6	89.8	52.9	99.9	78.5	117.3	79.0	144.8	69.3
SA100	0°	89.0	131.8	107.0	158.0	145.0	208.3	182.0	259.7	198.0	257.8	236.0	294.0
	45°	66.5	55.0	88.2	57.6	109.9	84.4	121.5	121.4	143.2	124.0	176.5	115.0
	90°	151.0	69.8	182.0	83.0	231.0	122.3	279.0	162.7	322.0	163.8	370.0	160.0
SA125	0°	155.0	226.0	185.0	272.0	241.0	369.0	296.0	466.0	333.0	506.0	389.0	526.0
	45°	114.1	95.5	150.2	101.2	186.2	149.3	207.2	211.9	243.3	218.2	300.4	202.9
	90°	224.0	138.5	309.0	148.0	392.0	218.0	475.0	287.2	546.0	293.0	630.1	285.0
SA140	0°	199.0	358.0	257.0	411.0	314.0	577.0	356.0	758.0	413.0	812.0	516.0	821.0
	45°	133.7	164.7	172.7	189.1	211.0	265.4	239.2	348.7	277.5	373.5	346.8	377.7
	90°	312.0	245.0	401.0	267.0	491.0	400.0	557.0	557.0	647.0	578.0	798.0	539.0
SA180	0°	371.0	727.0	476.0	841.0	581.0	1175.0	661.0	1534.0	766.0	1649.0	951.0	1683.0
	45°	274.5	341.7	352.2	395.3	429.9	552.3	489.1	721.0	566.8	775.0	703.7	791.0
	90°	623.0	475.0	803.0	514.0	979.0	777.0	1112.0	1083.0	1290.0	1125.0	1602.0	1032.0
SA220	0°	712.0	1413.0	950.0	1600.0	1188.0	2212.0	1306.0	2944.0	1544.0	3131.0	1900.0	3200.0
	45°	512.6	692.4	684.0	784.0	855.4	1083.9	940.3	1442.6	1111.7	1534.2	1368.0	1568.0
	90°	1106.0	1019.0	1477.0	1073.0	1849.0	1551.0	2030.0	2220.0	2402.0	2273.0	2955.0	2145.0

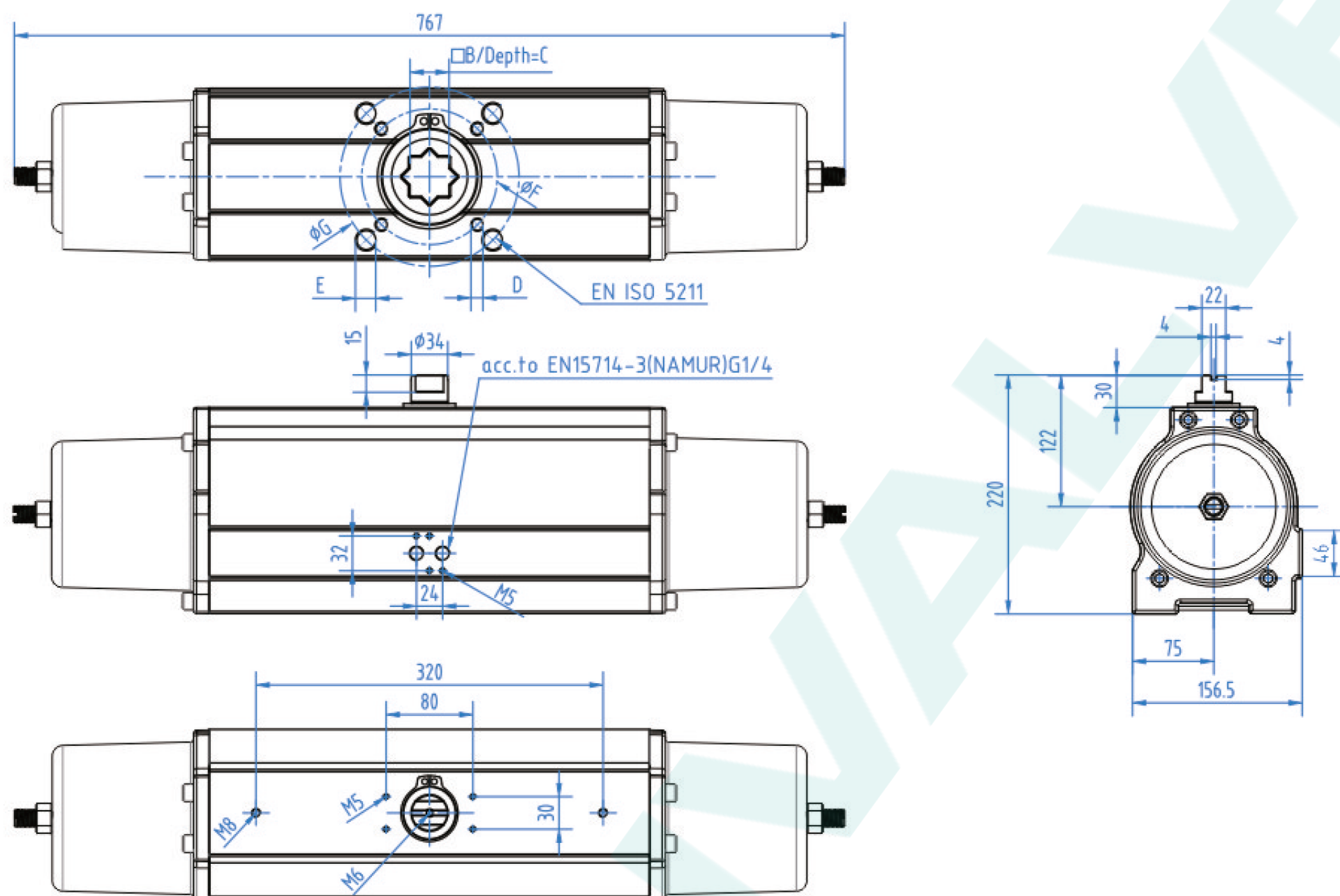
✓ The torque reset is only determined by the spring not the supply pressure. Six different springs are available on request, refer to the attached table; under the action of the spring, the actuator is automatically closed in a clockwise direction. The air source pressure shown in the table is the minimum operating pressure of the spring of this specification.

Dimensions: SA60 - SA 125



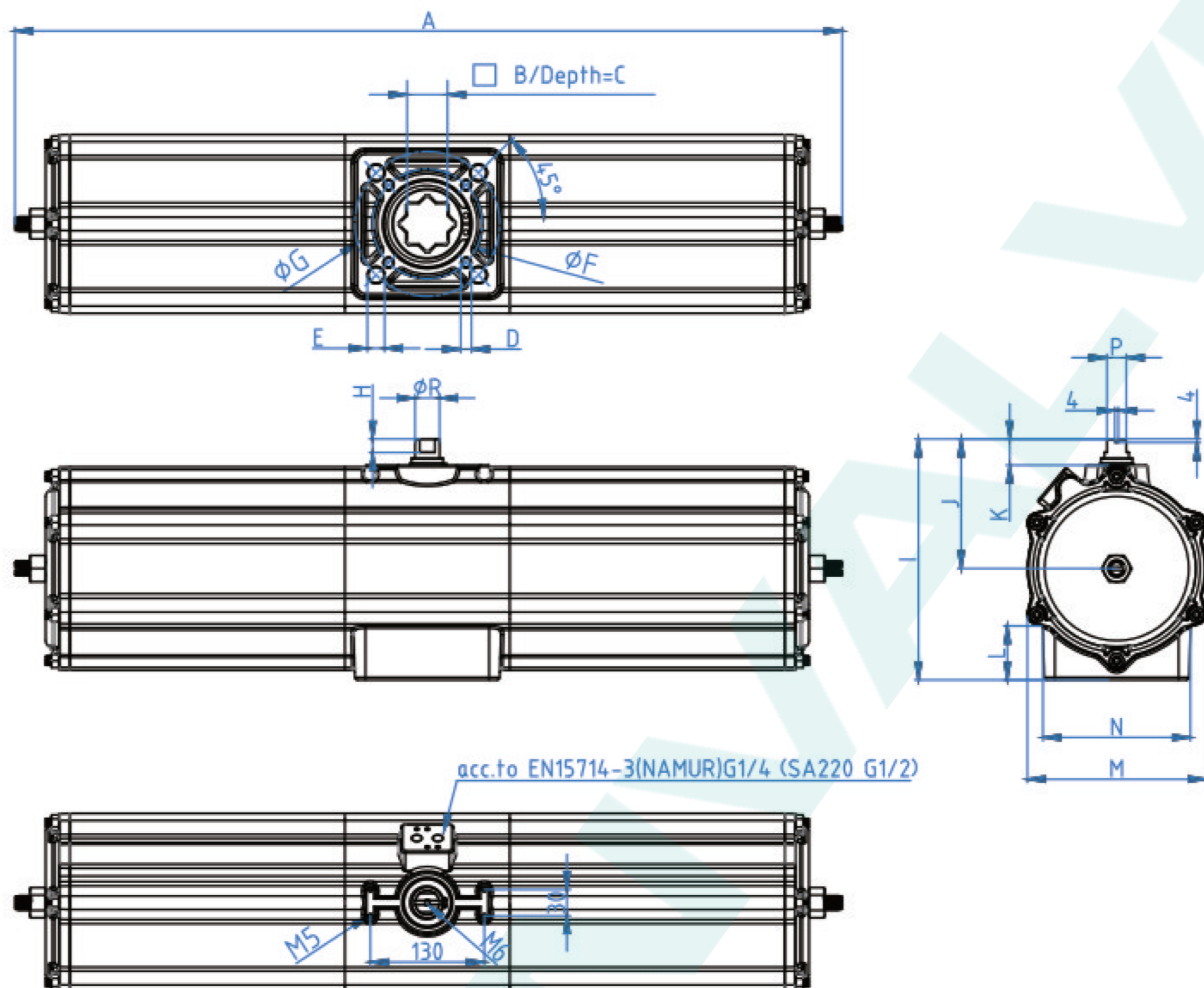
Code	SA0601401	SA0601402	SA0801701	SA1002201	SA1252701
Type	SA60		SA80	SA100	SA125
ISO	F05	F04	F05/F07	F07/F10	F10/F12
A	301	301	445	589	715
B	14	14	17	22	27
C	16	16	22	26	30
D x depth	M6x9	M5x7.5	M6x9	M8x12	M10x15
E x depth	-	-	M8x12	M10x15	M12x18
F	50	42	50	70	102
G	-	-	70	102	125
H	13	13	13	13	15
I	97	97	128	149	186
J	57	57	72	83	106
K	20	20	20	20	30
L	80	80	108	131	156
M	31.5	31.5	45.5	57	70
N	43	43	53	59	60
P	11	11	14	19	22
R	14	14	20	26	30
Weight (Kg.)	2.1	2.1	5.7	10.15	18.65
Air Consumption (NL/Cycle)	0.27	0.27	0.89	1.95	3.37
Closing Time (Sec.)	0.15	0.15	0.45	0.50	0.70

Dimensions: SA140



Code	SA1403601	SA1403602
Type	SA140	
ISO	F12/F16	F14
B	36	36
C	40	40
D	M12x20	M16x24
E	M20x30	-
F	125	140
G	165	-
Weight (Kg.)	30.05	30.05
Air Consumption (NL/Cycle)	4.52	4.52
Closing Time (Sec.)	< 1.5	< 1.5

Dimensions: SA60 - SA 125



Code	SA1804601	SA1804602	SA2205501
Type	SA180		SA220
ISO	F12/F16	F14	F15
A	943	943	1174
B	46	46	55
C	50	50	57
D	M12x18	M16x24	M20x36
E	M20x36	-	-
F	125	140	165
G	165	-	-
H	15	15	15
I	275	275	314
J	148	148	171
K	30	30	30
L	62	62	71
M	206	206	271
N	168	168	206
P	22	22	22
R	28	28	36
Weight (Kg.)	58.52	58.52	107.65
Air Consumption (NL/Cycle)	10.22	10.22	18.41
Closing Time (Sec.)	< 2.5	< 2.5	< 4