

1118 BUTTERFLY VALVE + AP RE PNEUMATIC ACTUATOR

FEATURES

The 1118 triple-offset butterfly valve is a high-performance valve. It is designed for the automatic shut-off of high-pressure and/or high-temperature fluid pipes such as steam, bitumen, heating oils, etc. The valve has a direction of mounting, but the seat leakage is, however, bi-directional. The single-block stem of the butterfly is mounted on bearings and has an antistatic device. Due to its fire safe construction, the valve can be used for hydrocarbons. The ISO 5211 mounting pad enables standardised actuators to be mounted.

AVAILABLE MODELS

DN 100 to DN 300, FAF according to EN 558-1 :
"LUG" wafer mounting PN40.
Double and spring-return actuator.

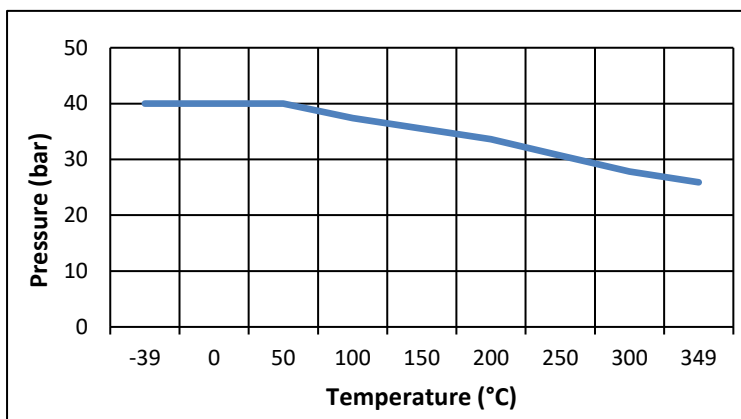


On request



LIMITS OF USE

Fluid pressure: PS	40 bar Maxi
Fluid temperature: WT	<u>Steel</u> : -39°C / +349°C
Ambient temperature	-20°C / +70°C
Motor compressed air	mini 6 bar / maxi 10 bar



DIRECTIVES AND MANUFACTURING STANDARDS

OBJET	Standard	OBJET	Standard
Pressure Equipment Directive 2014/68/EC	Cat.III Module H - CE 0035	Line leak-tightness	ANSI/FCI 70-2
		Final test	ISO 5208 and MSS SP-25
ATEX Directive 2014/34	II 2G/D zones 1,2,21,22	Flange dimension	EN 1092-1
Construction	API 609	Face-to-face dimension	ISO 558 série 109
Body materials	EN 1503-2	Actuator pilot connection	NAMUR
Material certificate	EN 10204	Switch box connection	VDI/VDE 3845
Fire safe	API 607/5 - ISO 10497-5 - BS6755-2	Connection Motorization	ISO 5211
		SIL 3 level (actuator alone)	EN 61508

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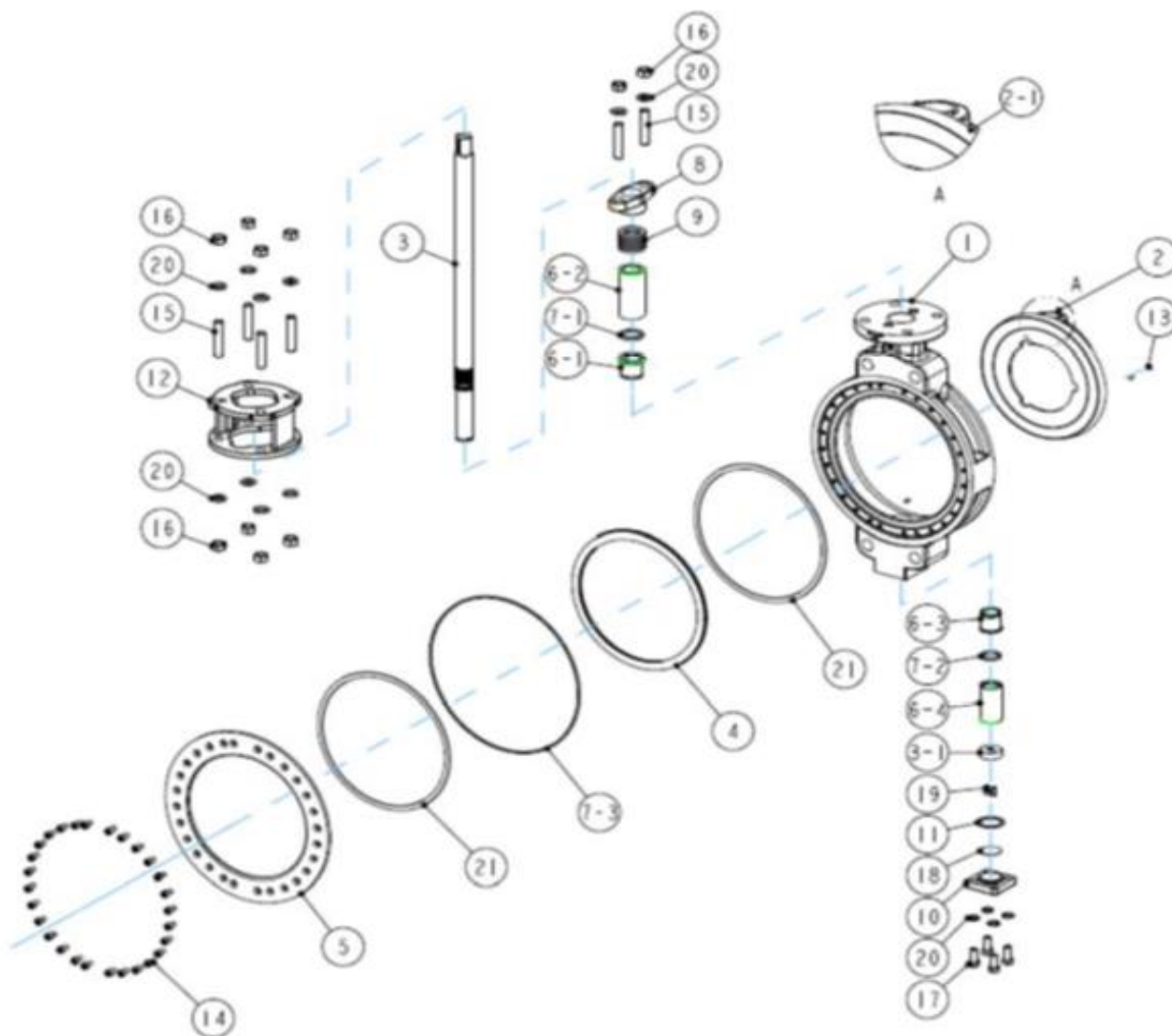


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CONSTRUCTION



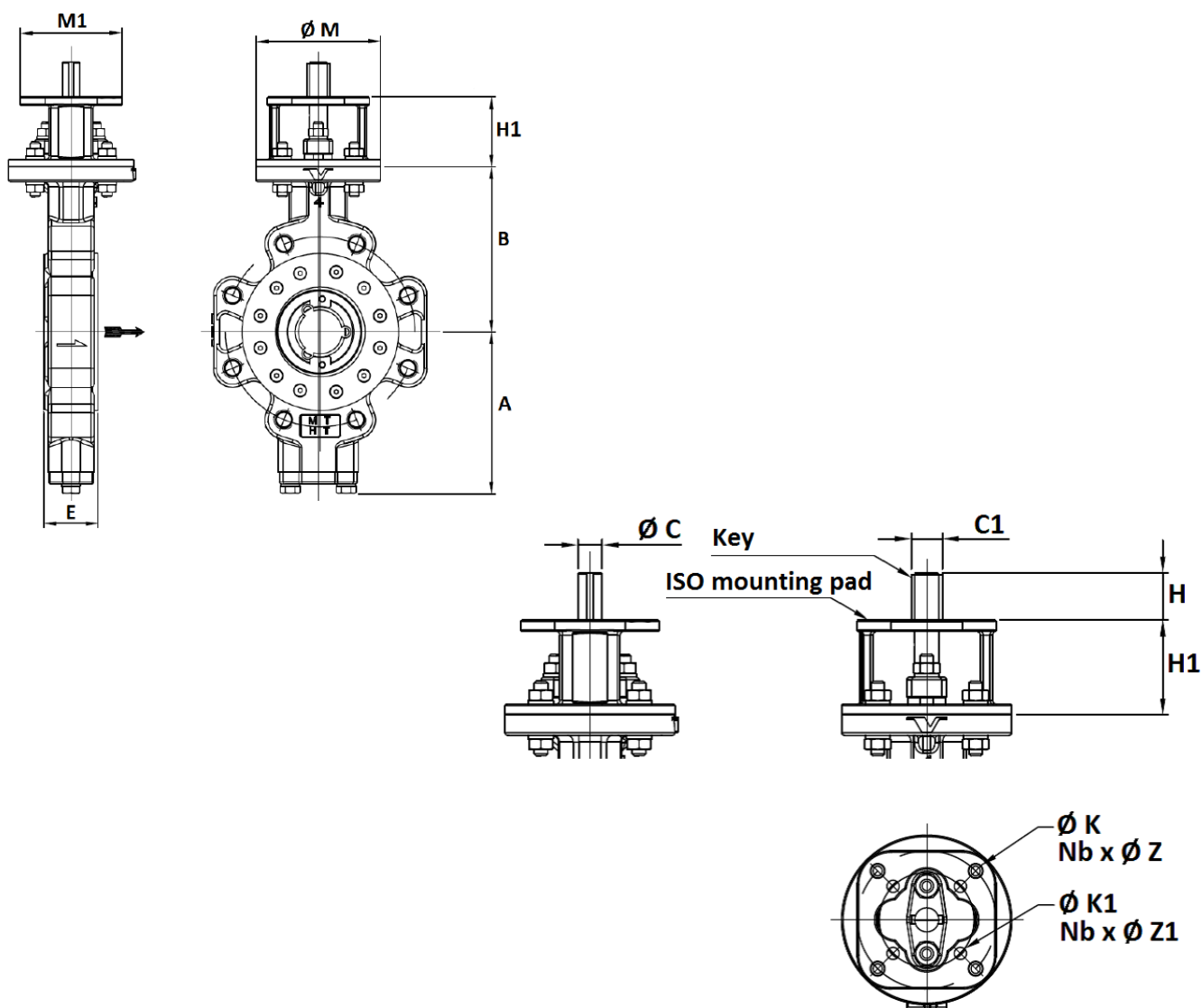
No.	Name	Material	No.	Name	Material
1	Body	ASTM A216 WCB steel	11	Plug gasket	Graphite
2	Butterfly	ASTM A351 CF8M stainless steel	12	Yoke	ASTM A216 WCB steel
2-1	Disc seat	Stellite Grade 6	13	Stud	A193 B8M
3	Stem	UNS S32205	14	Holding flange screw	A193 B8
3-1	Ring	UNS S32205	15	Stud	A193 B8
4	Laminated body seat	A479 XM-19 + Graphite	16	Nut	A194/8
5	Holding flange	ASTM A351 CF8 stainless steel	17	Screw	A193 B8
6-1 to 6-4	Ring	AISI 316 SS + RTFE	18	Washer	AISI 316 SS + RTFE
7-1 to 7-3	Gasket	Graphite	19	Screw	A193 B8
8	Gland follower	ASTM A351 CF8 stainless steel	20	Elastic washer	A240 304 SS
9	Packing gland	Graphite	21	Gasket	Graphite
10	Plug	ASTM A216 WCB steel			

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DIMENSIONS (mm)



DN	E	A	B	H	H1	$\varnothing M$	M1	$\varnothing K$	$\varnothing K1$	$\varnothing C$	C1	Weight (in Kg)
100	54	162	165	35	70	125	102	102	70	17.9	22.9	15
150	61	197	215	45	70	125	102	102	70	21.85	27.85	22
200	75	227	260	45	80	150	125	125	102	29.85	35.85	50
250	85	271	310	65	100	175	160	140	125	37.7	43.7	91
300	94	314	335	65	120	210	195	165	140	44.7	50.7	131

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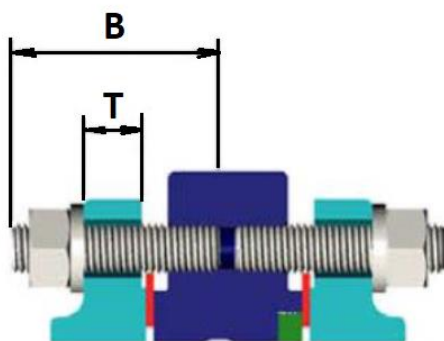
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FLOW-RATE COEFFICIENT Kv (m³/h)

DN	Percent of rated travel									
	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
100	20,7	31,0	45,7	76,7	127,6	143,1	178,4	217,2	268,1	255,2
150	61,2	92,2	138,8	231,0	385,3	431,0	538,8	654,3	808,6	769,8
200	105,2	157,8	237,1	394,8	657,8	736,2	920,7	1117,2	1380,2	1314,7
250	165,5	248,3	372,4	620,7	1035,3	1159,5	1449,1	1759,5	2173,3	2069,8
300	252,6	378,4	567,2	945,7	1576,7	1765,5	2207,8	2680,2	3311,2	3153,4

BOLTING SIZE (in mm, not provided)

DN	100	150	200	250	300
Threading	M20 x 2,5	M24 x 3	M27 x 3	M30 x 3,5	M30 x 3,5
Length B	80	95	110	120	120
T	24	28	34	38	42



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AP RE PNEUMATIC MOTORIZATION

The AP RE motorization proposed as standard comprises:

- rack and pinion actuator of anodised aluminium.
- a safety coefficient of 1.3 minimum compared to the nominal torque of the valve.
- air non-lubricated dry motor, minimum 6 bar pressure.
- an upstream / downstream pressure difference $\Delta P=25$ bar max.

The actuator mount is a yoke + stainless steel driver according to the EN 15081 standard.

For any other operating conditions, please contact us.

* indicative time for actuator running empty

DN	Double-effect	V (liters)	Time (s)*	Spring-return	V (liters)	Time (s)*
100	RE 116	2.8	2	RES 161/6	8	3
150	RE 146	4.9	3	RES 201/6	4.90	6
200	RE 161	8	3	RES 241/6	19.2	6
250	RE 181	11.1	5	RES 271/6	32.2	7
300	RE 241	19.2	6	RES 271/6	32.2	7

MOTORISATION OPTIONS

There are many options, so please contact our sales service for more information on these:

1	actuators dimensioned for a compressed air pressure of 3, 4 or 5 bar
2	actuator dimensioned for an upstream / downstream pressure difference ΔP greater than 10 bar
3	actuator with special coatings, stainless steel actuator
4	Actuator for very low (-60°C) or very high ($+150^{\circ}\text{C}$) ambient temperatures.
5	manual override with declutchable gear box
6	compressed air filter regulator
7	All types of piloting solenoid valves
8	all types of switch boxes
9	all types of positioner
10	rapid exhaust, flow-rate limiters - exhaust brakes
OPTIONS ON THE VALVE	
1	Drilling of the centring lugs for PN16 flanges according to EN 1092-1 and ANSI 150 according to ANSI B16.5
2	Threaded lugs connections



INSTALLATION IN AN ATEX ZONE

For 1118+APS RE automatic valves to be installed in ATEX 1 or 2 zones, this has to be specified when ordering.

Our services will check of the assembly, the installation of an earthing braid, and will issue an assembly certificate.

Our authorised technicians carry out these operations in the workshop. Please contact us.

The special assembly and maintenance instructions for motorised valves in the ATEX zones must be followed.

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STORAGE INSTRUCTIONS

Follow our “IMESTOCK” instructions for storage

ASSEMBLY INSTRUCTIONS

1 - Checks

- Check that the material of the valve body is chemically compatible with the fluid.
- Check that the pressure and service conditions are compatible with the (P, T) diagram of the valve. See § “Service limits”.
- Check that the fluid is clean and free of particles. The latter could scratch the butterfly and damage the seats, hence causing the valve to leak. If need be, install an upstream filter.
- Check that the valve is not used for flow or pressure control since it is not intended for this use and there is a risk of premature wear of the seat, in particular in the event of high pressure and/or temperature. For this special application, please contact us.
- Check that the valve is not used on a gas which might condense at certain times during the process. In such a case, the pressure could become negative, which could lead to a significant deformation of the seat. Please contact us.
- Static electricity: the valve will be supplied with a ball-stem-body internal electrical continuity tester. If the service conditions require the electrical continuity of the installation, check its earthing.
- Check the perfect alignment of the upstream and downstream pipe installation. Wafer-type valves such as 1118 are sensitive to this parameter. An alignment fault would lead to a butterfly blockage.
- Also check the pipe installation support. In the event of a fault in the latter, the valve would undergo too high mechanical stress which could damage it.
- You must follow the additional “IMEVMATEX” instructions if the valve is installed in an explosive zone.

2 - Place of installation

The **1118 +RE** automatic valves can be installed both indoors and outdoors, while complying with the temperature limits given.

If the valve is equipped with accessories (switch box, pilot solenoid valve), check their service temperatures and their IP code depending upon the place of installation.

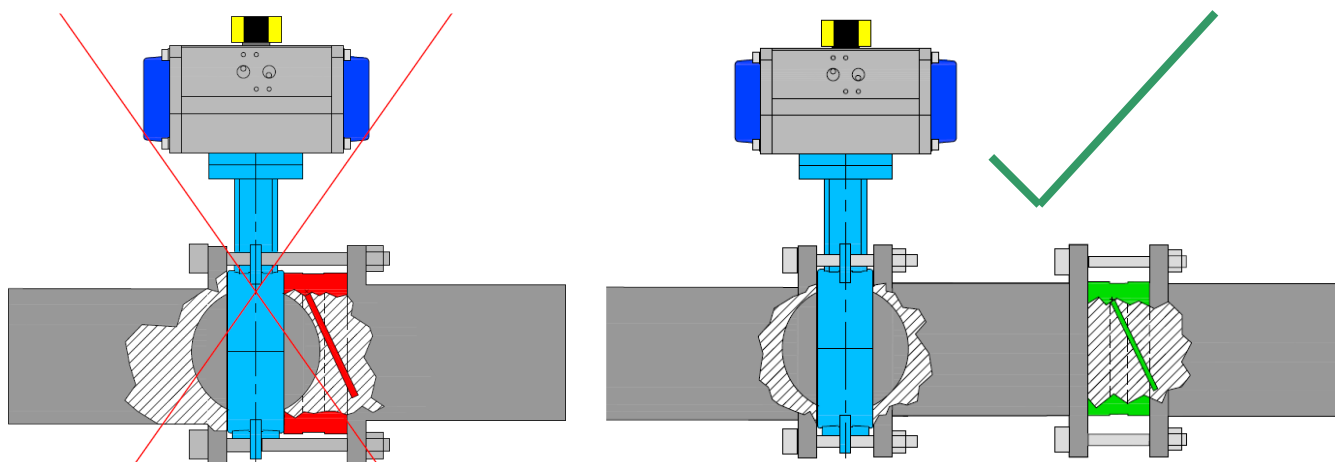
3 – Butterfly blockage

The valve must be installed on a pipe installation section which allows the butterfly to move freely.

At opening, the butterfly protrudes from the body according to the lengths shown in the table below.

DN	100	150	200	250	300	350	400
Protrusion (mm)	22	45	65	85	104	121	141

You must take this into account when mounting and not about another valve element immediately upstream and downstream which could block the movement of the butterfly (e. g. a swing valve).



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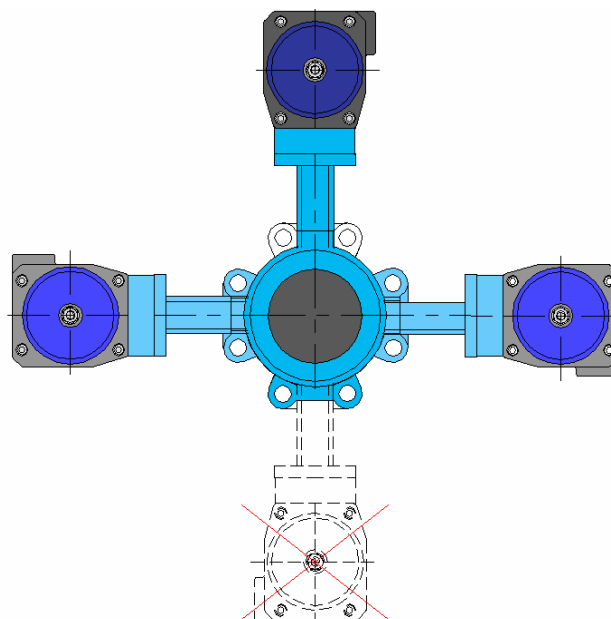
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4 - Valve positions on the pipe installation

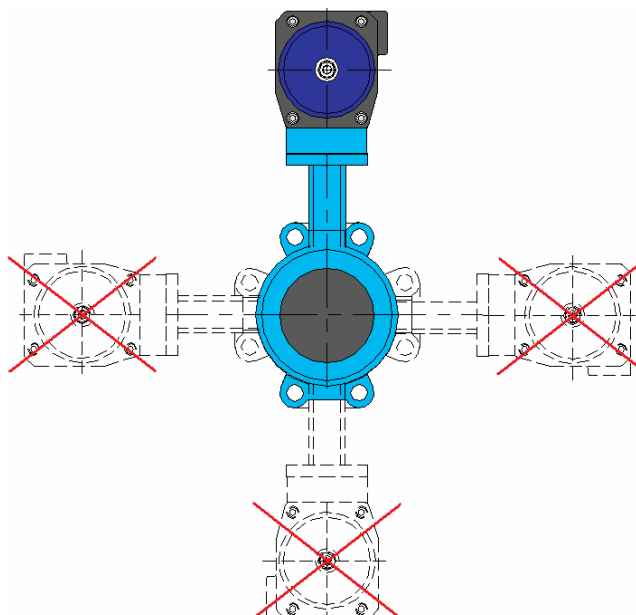
The automatic valve has to be mounted either vertically or horizontally with an actuator, as shown in the diagram below:

DN100 - DN150



DN200 - DN400

Authorised with
suitable support



Authorised with
suitable support

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5 - Mounting at the end of a line

1118 butterfly valves can be installed at the end of a line.

6 - Pipe installation cleaning

The sealing system of the 1118 valve can be easily damaged by the impurities in the flow. Check that the fluid flowing through the valve is clean. Check the strict cleanliness of the upstream and downstream pipe installation. Clean the piping (brazing residues, metal swarf, sealing material, etc.) before installing the valve.

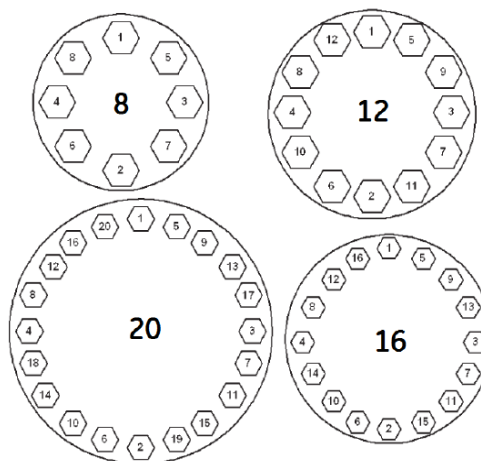
7 - Installation

- Before any installation, cut-off the piping upstream and downstream, depressurize the ductwork installation, and bring the installation to ambient temperature. Carefully clean the pipe installation of any particles (foreign body, dusts, rust, etc.) or shavings by rinsing with water or by blowing air through it.
- Make provision for the use of a hoist.
- Remove the protective covers from the valve flanges.
- Check the cleanliness of the internal surfaces of the valve and clean them if need be.
- Direction of installation: follow the preferred direction of installation.
- Check that the standards for the valve flanges (PN40 as per EN 1092-1) and the pipe installation, are the same.
- Select flange gaskets suitable for the fluid and the flange standard for the valve (PN40).
- Stock up on hex-head nuts and bolts as shown in the table below:

DN	Bolt*	Number	Tightening torque (Nm)
100	M20x80	8	270
150	M24x90	8	450
200	M27x100	12	700
250	M30x110	12	950
300	M30x140	16	950
350	M33x140	16	1300
400	M36x140	16	1700

*Theoretical length for 2 mm thick flange seals.

- Screw-in the screws through the flanges as shown in the diagram below and apply the torques shown in the table below. Follow a symmetrical tightening cross pattern in order to apply a uniform tightening torque on the gasket seats.



- Check the sealing of the connection using a suitable test (hydrostatic test or leak detection spray).
- Hydraulic test of the installation
 - Valves were tested at the factory at 1.5 x WP.
 - If a hydrostatic test is carried out on the installation, do not exceed the authorised pressure.

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8 - Connection to the compressed air supply network

The compressed air connection is made through ports 1 and 2 of the actuator:

DN	Double-acting	Connection	Single-acting	Connection
100	RE 116	G1/4"	RES 161/6	G1/4"
150	RE 146	G1/4"	RES 201/6	G1/4"
200	RE 161	G1/4"	RES 241/6	G 1/2"
250	RE 181	G1/4"	RES 271/6	G 1/2"
300	RE 241	G 1/2"	RES 271/6	G 1/2"

9 - Operating test

After having made the pneumatic connections, perform an operating test as follows:

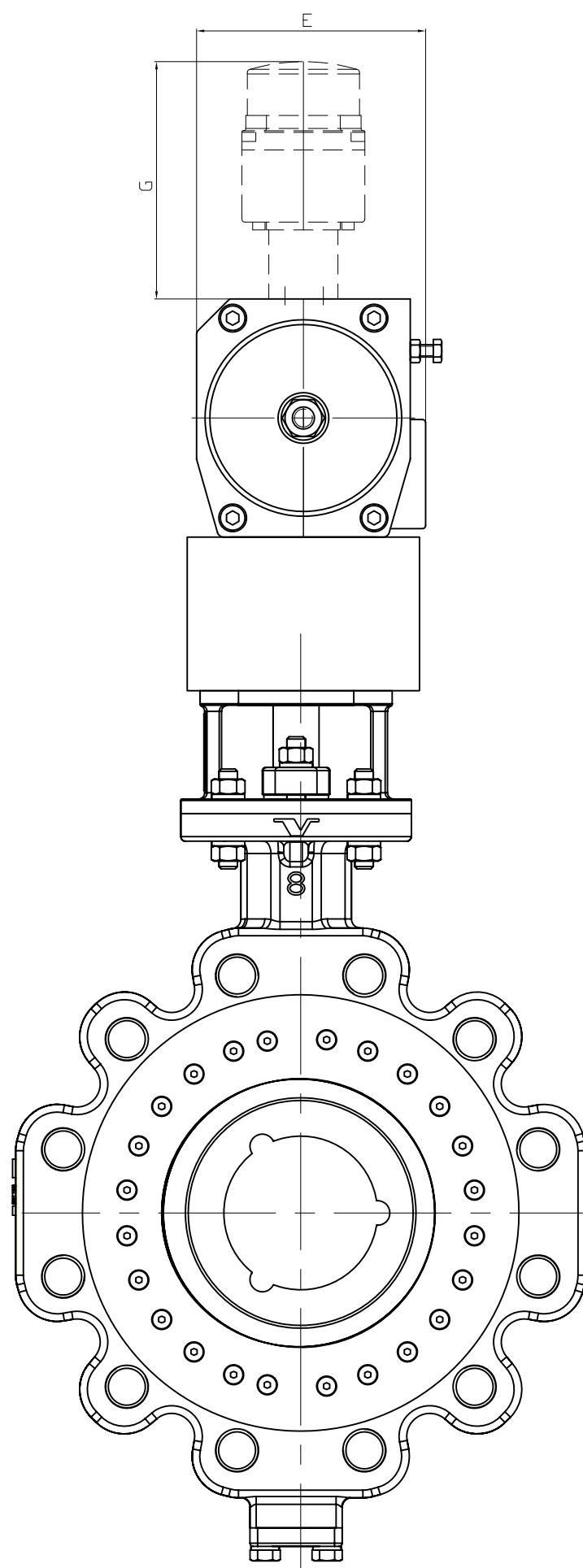
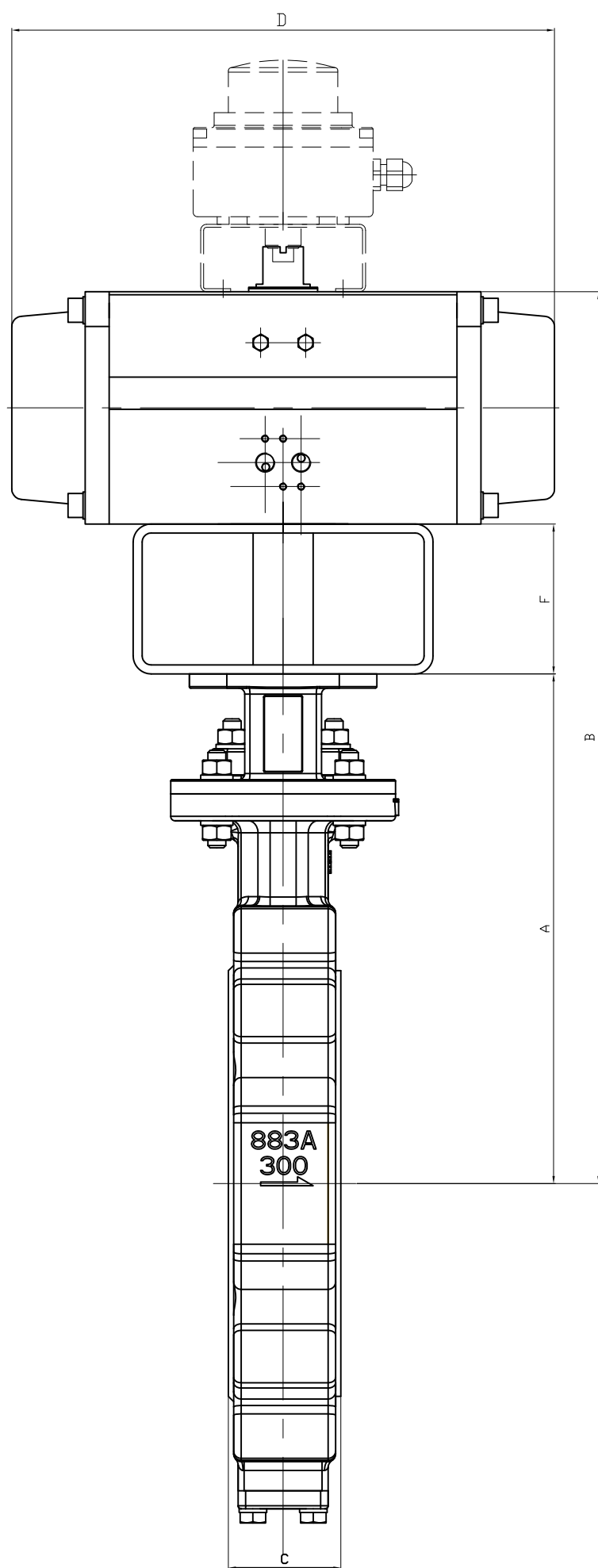
Type	Double-acting version	NC single-acting version	NO single-acting version
To open	feed port 1	feed port 1	feed port 1
To close	feed port 2	purge port 1	purge port 1

10 - Setting the opening and closing speeds

Unless there is a mandatory functional necessity, make sure that the opening and closing manoeuvres are made slowly in order to prevent water hammers. If need be, install flow restrictors on the compressed air supplies to the cylinder.

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DN	100		150		200		250		300	
ALPHAIR	116RE	161RES	146RE	201RES	161RE	241RES	181RE	271RES	241RE	271RES
A	235		285		340		410		455	
B	461	511	542	611	616	758	730	842	853	887
C	54		61		75		83		92	
D	304	424	398	528	424	604	482	684	604	684
E	133.5	182	164.5	222	182	300	203.5	352	300	352
F	80		80		80		100		100	
G	164.5	184.5	164.5	184.5	184.5	184.5	184.5	184.5	184.5	184.5
Poids Kg	26.7	41.9	41.7	70.8	72.8	128.1	130.7	208.7	195.7	248.7

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ROBINET A PAPILLON A TRIPLE EXCENTRATION 1118/TRIPLE ECCENTRIC BUTTERFLY VALVE 1118 + ACTIONNEUR PNEUMATIQUE ALPHAIR RE/PNEUMATIC ACTUATOR ALPHAIR RE				Matière :		
				Poids (Kg) :		
				Traitement : SANS		
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RE SERIES

**PNEUMATIC ACTUATORS
WITH EXTERNAL ADJUSTMENT**

ROTATION 90°



English edition



Alphaair



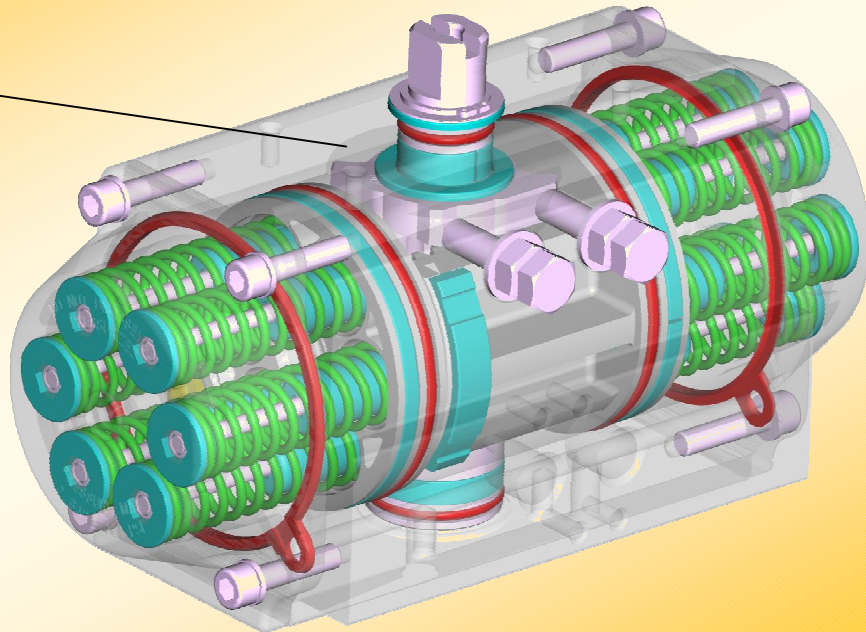
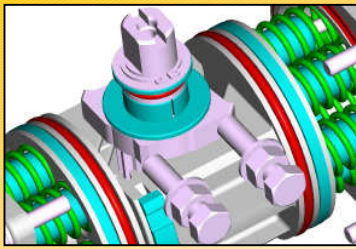
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2017

ALPHAIR PNEUMATIC ACTUATORS

EXTERNAL ADJUSTMENT

New "RE" SERIES



The new series of ALPHAIR Pneumatic Actuators with special "External Adjustment" system meets every quality and precision requirement.

The new "External Adjustment" system guarantees maximum precision on rotation adjusting, for normal and heavy conditions, in any application field.

Suitable for every requirement, ALPHAIR Pneumatic Actuators with special "External Adjustment" system are carefully designed for maximum torque rating and maximum lifetime.

More compact, heavy and reliable, ALPHAIR Pneumatic Actuators with special "External Adjustment" system can be easily assembled on every kind of valve.

STANDARD VERSION FEATURES

- **EN AW 6063 extruded aluminium Body**, inside surface finishing Ra= 0,4-0,6. 25 µ Hard Anodizing.
- **EN AB 46100 die-cast aluminium alloy Pistons**, 15 micron Anodizing.
- **EN AB 46100 die-cast aluminium alloy Covers**, painted with 60-80 µ polyester powder.
- **Carbon steel Shaft**, 20 µ nickel-plated. Stainless Steel AISI 304 (A2) or AISI 316 (A4) as Optional.
- **External adjusting gear, made of Stainless Steel AISI 316 (A4).**
- **AISI 316 (A4) Stainless Steel Screws.**
- **NBR nitrile rubber seals.** FPM/FKM or SILICONE on request.
- Acetalic resin + 20% PTFE bearings, for low friction, easily replaceable for maintenance. PA66 or LEXAN on request.
- Pre-compressed Spring Cartridges, easily replaceable for maintenance, 60-80 micron polyester painted.
- High performances Syntetic Grease as standard grease. Special grease supplied for HIGH/LOW/VERY LOW temperatures.
- Several special protections available for chemical, pharmaceutical, food and industrial environments.
- Rotation adjustment $\pm 5^\circ$ in both opening and closing position. Assembly precision $\pm 1^\circ$, made by electronic devices.
- Double lower drilling for valve fastening and centering, according to ISO 5211-DIN 3337 Standards.
- Double square lower female shaft key (starlike), according to ISO 5211-DIN 3337 Standards for assembly on valves with square key on line (0°) and diagonal key (45°).
- Solenoid connections according to NAMUR VDI/VDE-3845 Standards.
- Top drilling for accessories fastening, and upper shaft end according to NAMUR VDI/VDE-3845 Standards.
- Position indicator on request, enabling switch-box assembly on top.
- Aluminium adhesive nameplates, with progressive serial number punched.
- Lubrication carried out by the manufacturer, guaranteed for min. 1.000.000 operations.
- Running test and 100% seal test carried out with electronic equipment and certification of every individual product.
- Standard execution for temperatures from -20°C to $+80^\circ\text{C}$ (optional, special execution for extreme temperatures).
- Conformity for use in explosive environment; Ex II 2 GD "c" protection type.
- According to EN 15714-3 design and manufacture standard requirements.

FEEDING	TEMPERATURE RANGE	SUPPLY PRESSURE	ROT. ADJUSTMENT
Dry or lubricated 50 um filtered compressed air	Standard $-20^\circ +80^\circ\text{C}$ ($-4 +175^\circ\text{F}$) HIGH Temperature $-20^\circ +150^\circ\text{C}$ ($-4 +300^\circ\text{F}$) LOW Temperature $-40^\circ +80^\circ\text{C}$ ($-40 +175^\circ\text{F}$) VERY LOW Temperature $-60^\circ +80^\circ\text{C}$ ($-76 +175^\circ\text{F}$)	8 bar/120 psi Continuous working - 10 bar/142 psi MAXIMUM	$\pm 5^\circ$ in both OPENING and CLOSING position

DOUBLE ACTING TORQUES IN Nm

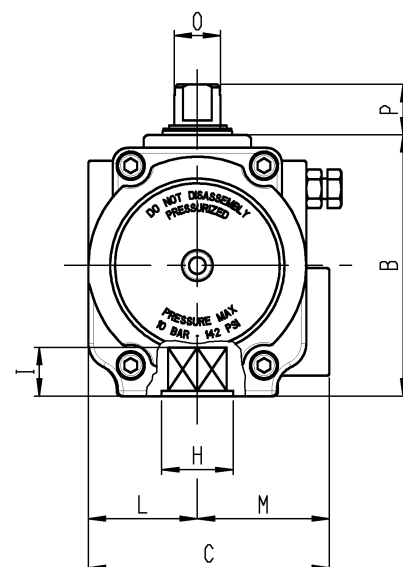
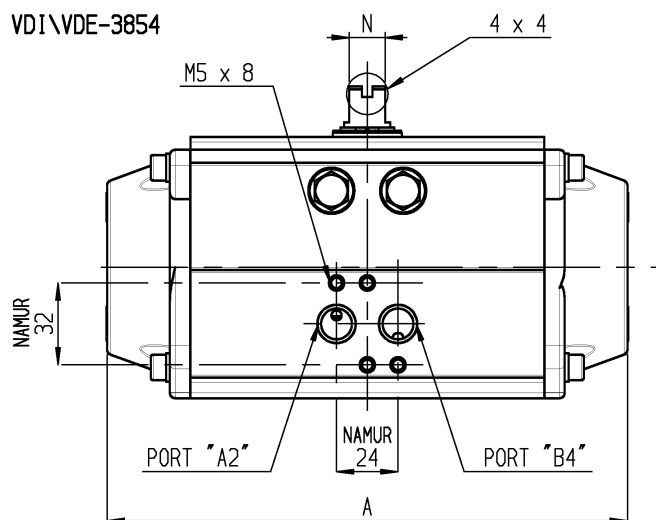
TYPE	AIR SUPPLY PRESSURE (bar)									
	1	2	3	4	5	6	7	8	9	10
RE 043	-	-	6,5	8,7	10,9	13,0	15,2	17,3	19,5	21,7
RE 051	3,3	6,7	10,0	13,4	16,7	20,1	23,4	26,8	30,1	33,5
RE 064	5,9	11,8	17,8	23,7	29,6	35,5	41,4	47,4	53,3	59,2
RE 076	11,8	23,5	35,3	47,1	58,9	70,6	82,4	94,2	105,9	117,7
RE 086	17,2	34,5	51,7	68,9	86,1	103,4	120,6	137,8	155,0	172,3
RE 101	27,5	54,9	82,4	109,8	137,3	164,8	192,2	219,7	247,1	274,6
RE 116	43,7	87,4	131,1	174,9	218,6	262,3	306,0	349,7	393,4	437,1
RE 126	56,6	113,3	169,9	226,5	283,2	339,8	396,4	453,0	509,7	566,3
RE 146	88,4	176,7	265,1	353,4	441,8	530,1	618,5	706,9	795,2	883,6
RE 161	114,9	229,7	344,6	459,5	574,3	689,2	804,1	918,9	1034	1149
RE 181	156,6	313,1	469,7	626,3	782,9	939,4	1096	1253	1409	1565
RE 201	215,3	430,6	646,0	861,3	1077	1292	1507	1723	1938	2153
RE 241	372,5	745,0	1118	1490	1863	2235	2608	2980	3353	3725
RE 271	539,2	1078	1617	2157	2696	3235	3774	4314	4853	5392
RE 331	911,5	1823	2734	3646	4558	5469	6385	7292	8204	9115
RE 421	1671	3342	5013	6684	8354	10025	11696	13367	-	-

SINGLE ACTING TORQUES IN Nm

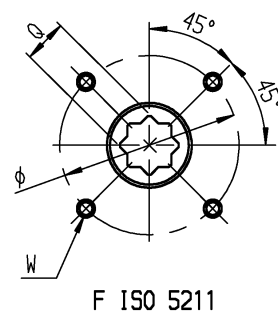
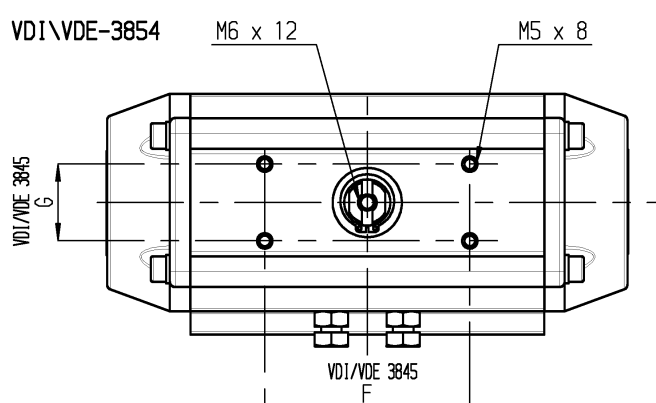
TYPE	SPRING SET	AIR SUPPLY PRESSURE (bar)												SPRING TORQUE	
		3		4		5		6		7		8			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
RE 043	SR 3/3	-	-	-	-	7,1	4,1	9,3	6,3	11,5	8,5	13,7	10,7	6,8	3,8
	SR 4/4	-	-	-	-	7,1	4,1	8,1	4,1	10,2	6,2	12,4	8,4	9,0	5,0
RE 051	SR 3/3	5,8	4,3	9,1	7,6	12,5	10,9	15,8	14,3	19,2	17,6	22,5	21,0	5,8	4,3
	SR 4/4	4,4	2,3	7,8	5,7	11,1	9,0	14,4	12,3	17,8	15,7	21,1	19,0	7,8	5,7
	SR 5/5			6,3	3,7	9,7	7,1	13,0	10,4	16,4	13,8	19,7	17,1	9,7	7,1
	SR 6/6					8,2	5,1	11,6	8,5	14,9	11,8	18,3	15,2	11,6	8,5
RE 064	SR 3/3	10,7	7,1	16,6	13,0	22,5	18,9	28,5	24,8	34,4	30,8	40,3	36,7	10,7	7,1
	SR 4/4	8,4	3,5	14,3	9,4	20,2	15,4	26,1	21,3	32,0	27,2	38,0	33,1	14,3	9,4
	SR 5/5			11,9	5,9	17,8	11,8	23,8	17,7	29,7	23,6	35,6	29,6	17,8	11,8
	SR 6/6					15,5	8,2	21,4	14,1	27,3	20,1	33,2	26,0	21,4	14,1
RE 076	SR 3/3	21,1	14,3	32,8	26,0	44,6	37,8	56,4	49,6	68,1	61,3	79,9	73,1	21,1	14,3
	SR 4/4	16,3	7,2	28,1	19,0	39,8	30,8	51,6	42,5	63,4	54,3	75,2	66,1	28,1	19,0
	SR 5/5			23,3	12,0	35,1	23,8	46,9	35,5	58,6	47,3	70,4	59,1	35,1	23,8
	SR 6/6					30,3	16,7	42,1	28,5	53,9	40,3	65,6	52,0	42,1	28,5
RE 086	SR 3/3	33,8	17,8	51,1	35,1	68,3	52,3	85,5	69,5	102,7	86,7	120,0	104,0	33,8	17,8
	SR 4/4	27,9	6,6	45,1	23,8	62,3	41,0	79,6	58,2	96,8	75,5	114,0	92,7	45,1	23,8
	SR 5/5			39,2	12,5	56,4	29,7	73,6	47,0	90,8	64,2	108,1	81,4	56,4	29,7
	SR 6/6					50,4	18,5	67,7	35,7	84,9	52,9	102,1	70,1	67,7	35,7
RE 101	SR 3/3	50,1	32,3	77,5	59,7	105,0	87,2	132,5	114,7	159,9	142,1	187,4	169,6	50,1	32,3
	SR 4/4	39,3	15,6	66,8	43,0	94,2	70,5	121,7	98,0	149,2	125,4	176,6	152,9	66,8	43,1
	SR 5/5			56,0	26,4	83,5	53,8	110,9	81,3	138,4	108,7	165,9	136,2	83,5	53,8
	SR 6/6					72,7	37,1	100,2	64,6	127,6	92,0	155,1	119,5	100,2	64,6
RE 116	SR 3/3	80,7	50,5	124,4	94,2	168,1	137,9	211,8	181,6	255,5	225,3	299,3	269,0	80,7	50,5
	SR 4/4	63,9	23,5	107,6	67,3	151,3	111,0	195,0	154,7	238,7	198,4	282,4	242,1	107,6	67,3
	SR 5/5			90,8	40,4	134,5	84,1	178,2	127,8	221,9	171,5	265,6	215,2	134,5	84,1
	SR 6/6					117,7	57,2	161,4	100,9	205,1	144,6	248,8	188,3	161,4	100,9
RE 126	SR 3/3	105,0	64,9	161,6	121,5	218,2	178,2	274,9	234,8	331,6	291,4	388,1	348,0	105,0	64,9
	SR 4/4	83,3	29,9	140,0	86,5	196,6	143,2	253,2	199,8	309,9	256,4	366,5	313,0	140,0	86,6
	SR 5/5			118,3	51,5	175,0	108,2	231,6	164,8	288,2	221,4	344,8	278,1	175,0	108,2
	SR 6/6					153,3	73,2	210,0	129,8	266,6	186,4	323,2	243,1	210,0	129,8
RE 146	SR 3/3	162,5	102,6	250,8	190,9	339,2	279,3	427,5	367,7	515,9	456,0	604,3	544,4	162,5	102,6
	SR 4/4	128,3	48,4	216,6	136,8	305,0	225,1	393,3	313,5	481,7	401,9	570,1	490,2	216,6	136,8
	SR 5/5			182,4	82,6	270,8	171,0	359,1	259,3	447,5	347,7	535,9	436,0	270,8	171,0
	SR 6/6					236,6	116,8	324,9	205,2	413,3	293,5	501,7	381,9	325,0	205,2
RE 161	SR 3/3	202,7	141,9	317,5	256,8	432,4	371,6	547,3	486,5	662,1	601,4	777,0	716,2	202,7	141,9
	SR 4/4	155,3	74,3	270,2	189,2	385,1	304,1	499,9	418,9	614,8	533,8	729,7	648,7	270,2	189,2
	SR 5/5			222,9	121,6	337,8	236,5	452,6	351,4	567,5	466,2	682,4	581,1	337,8	236,5
	SR 6/6					290,4	168,9	405,3	283,8	520,2	398,6	635,0	513,5	405,3	283,8
RE 181	SR 3/3	281,6	188,2	438,1	344,7	594,7	501,3	751,3	657,9	907,8	814,5	1064	971,0	281,6	188,2
	SR 4/4	218,8	94,3	375,4	250,9	532,0	407,5	688,5	564,0	845,1	720,6	1002	877,2	375,4	250,9
	SR 5/5			312,7	157,0	469,3	313,6	625,8	470,2	782,4	626,8	939,0	783,3	469,3	313,6
	SR 6/6					406,5	219,8	563,1	376,3	719,7	532,9	876,2	689,5	563,1	376,3
RE 201	SR 3/3	386,2	259,8	601,5	475,13	816,8	690,5	1032	905,8	1247	1121	1436	1336	386,2	259,8
	SR 4/4	299,6	131,1	514,9	46,4	730,2	561,8	945,5	777,1	1160	992,4	1376	1208	514,9	346,4
	SR 5/5			428,3	217,7	643,6	433,0	858,9	648,4	1074	863,7	1290	1079	643,6	433,0
	SR 6/6					557,0	304,3	772,3	519,6	987,6	735,0	1203	950,3	772,3	519,6
RE 241	SR 3/3	664,0	453,6	1037	826,2	1409	1199	1782	1571	2154	1944	2527	2316	664,0	453,6
	SR 4/4	521,8	232,3	885,4	604,8	1258	977,4	1630	1350	2003	1722	2376	2095	885,4	604,8
	SR 5/5			734,2	383,5	1107	756,0	1479	1129	1852	1501	2224	1874	1107	756,0
	SR 6/6					955,5	534,7	1328	907,2	1701	1280	2073	1653	1328	907,2
RE 271	SR 3/3	912,5	705,1	1452	1244	1991	1783	2530	2323	3069	2862	3608	3401	912,5	705,1
	SR 4/4	677,5	400,8	1217	940,2	1756	1479	2295	2019	2834	2558	3373	3097	1217	940,1
	SR 5/5			981,7	635,8	1521	1175	2060	1714	2599	2144	3138	2793	1521	1175
	SR 6/6					1286	871,0	1825	1410	2364	1954	2903	2489	1825	1410
RE 331	SR 3/3	1626	1108	2538	2020	3450	2931	4361	3843	5273	4755	6184	5666	1626	1108
	SR 4/4	1257	565,8	2168	1477	3080	2389	3992	3301	4903	4212	5815	5123	2168	1477
	SR 5/5			1799	935,2	2711	1847	3622	2759	4534	3670	5445	4582	2711	1847
	SR 6/6					2341	1305	3253	2216	4165	3128	5076	4040	3253	2216
RE 421	SR 3/3	2999	2014	4670	3685	6340	5356	8011	7026	9682	8697	11353	10368	2999	2014
	SR 4/4	2327	1014	3998	2685	5669	4356	7340	6027	9011	7698	9369	8369	3998	2685
	SR 5/5			3327	1685	4998	3356	6669	5027	8340	6698	8369	8369	4998	3356
	SR 6/6					4327	2357	5997	4028	7668	5698	7369	7369	5997	4028
Torque by air														Torque by springs	

DIMENSIONS – European Sizes in millimetres

VDI/VDE-3854



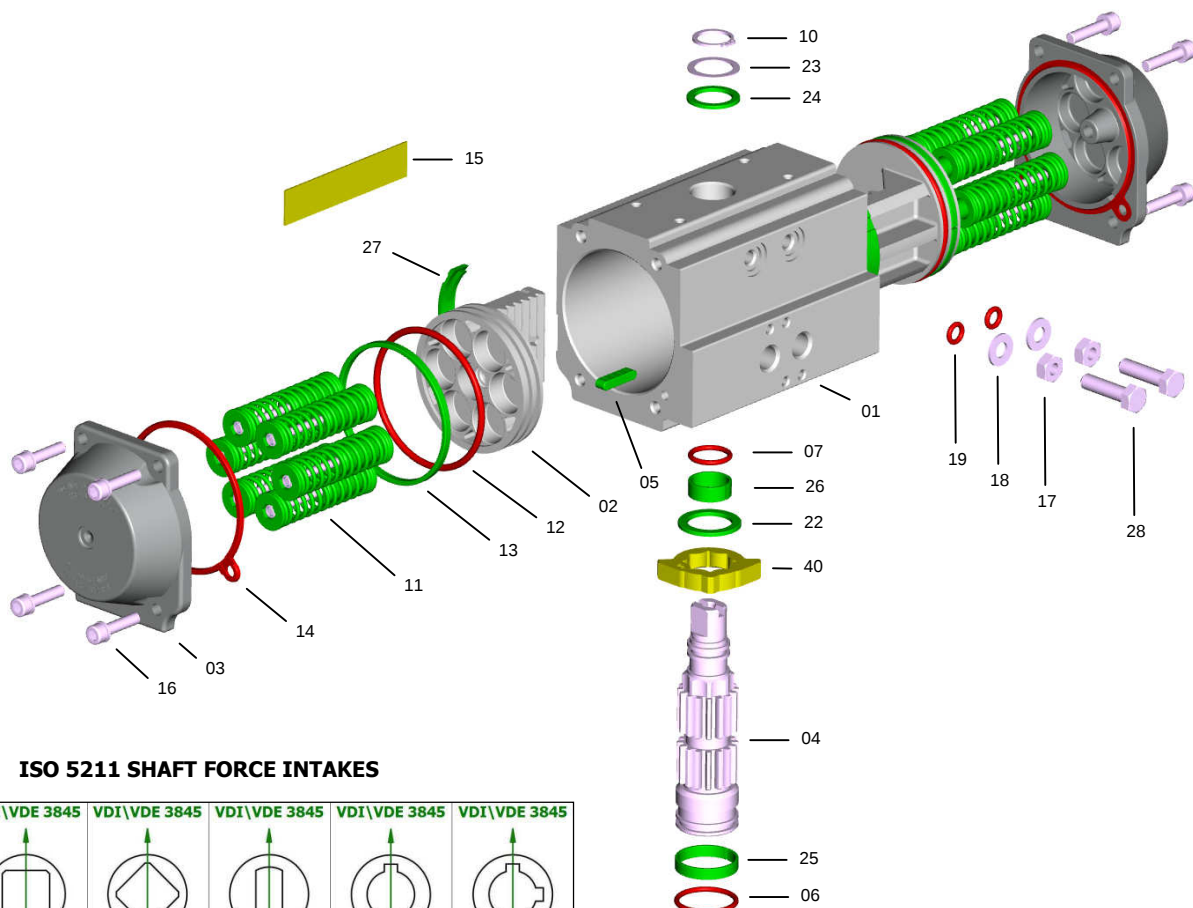
VDI/VDE-3854



POSITION	TYPE															
	RE 043	RE 051	RE 064	RE 076	RE 086	RE 101	RE 116	RE 126	RE 146	RE 161	RE 181	RE 201	RE 241	RE 271	RE 331	RE 421
A	141	138	155	203	239	261	304	333	398	424	482	528	604	684	850	940
B	62	69	86	102	112	127	145,5	157,5	177	196	220	246	298	332	414	542
C	63,5	75	86	94	104	120	133,5	144,5	164,5	182	203,5	222	300	352	400	528
VDI/VDE 3845 F x G	80 x 30 50 x 25	80 x 30					80 x 30 130 x 30		130 x 30							200 x 50
L	27	33,5	38	42,5	49	55	63,5	69,5	80,5	89	99,5	110	150	176	190	234
M	36,5	41,5	48	51,5	55	65	70	75	84	93	104	112	150	176	210	294
Port A Port B DIN 259	1/8" GAS-NPT		1/4" GAS-NPT										1/2" GAS-NPT			
N x O	8 x 12			14 x 18			27 x 36				32 x 42		42 x 60	55 x 80		
P	20						30			50						80
Q x I	9 x 10 11 x 13	9 x 10 11 x 13	9 x 10 11 x 13 14 x 16	11 x 13 14 x 16 17 x 20	14 x 16 17 x 20	14 x 16 17 x 20 22 x 25	17 x 20 22 x 25	17 x 20 22 x 25 27 x 29	22 x 25 27 x 29	22 x 25 27 x 29	27 x 29 36 x 39	27 x 29 36 x 39	36 x 39 46 x 50	36 x 39 46 x 50	*46 x 50 55 x 60	*55 x 60 75 x 80
F ISO 5211	F04	F04	F05/07	F05/07	F05/07	F07/10	F07/10	F07/10	F10/12	F10/12	F10/12	F14	F14	F16	F16/25	F25/30
Optional	F03/05	F03/05	F3/5/7			F5/7/10		F7/10/12			F14	F10/12	F(12)/16	F(12)/16		F(16)
Volume DE	0,180 lt	0,300 lt	0,500 lt	0,700 lt	1,000 lt	1,800 l	2,900 lt	3,700 lt	6,100 lt	7,900 lt	11,2 lt	14,4 lt	19,2 lt	32,2 lt	62,8 lt	131 lt
Volume SE	0,072 lt	0,120 lt	0,200 lt	0,280 lt	0,400 lt	0,720 l	1,160 lt	1,480 lt	2,440 lt	3,160 lt	4,480 lt	5,760 lt	7,680 lt	12,9 lt	25,1 lt	52,4 lt

POSITION	F ISO 5211											
	F03	F04	F03/05	F05	F05/07	F5/7/10	F07/10	F10/12	F14	F16	F25	F30
Ø (W)	Ø 36 (M5x8)	Ø 42 (M5x8)	Ø 36 (M5x8) Ø 50 (M6x9)	Ø 50 (M6x9)	Ø 50 (M6x9) Ø 70 (M8x12)	Ø 50 (M6x9) Ø 70 (M8x12) Ø 102 (M10x15)	Ø 70 (M8x12) Ø 102 (M10x15)	Ø 102 (M10x15) Ø 125 (M12x18)	Ø 140 (M16x24)	Ø 165 (M20x30)	Ø 254 (M16x24) N°8 FORI	Ø 298 (M20x35) N°8 FORI
H	25	30	25	35	35 (RE 086=40)	40	55	85 (RE 161=75)	100	130	200	200

CONSTRUCTION PARTS – SPECIFICATIONS



ISO 5211 SHAFT FORCE INTAKES

VDI\UDE 3845	VDI\UDE 3845	VDI\UDE 3845	VDI\UDE 3845	VDI\UDE 3845	VDI\UDE 3845
STANDARD ALPHA S = L/D	L	D	H	V	W

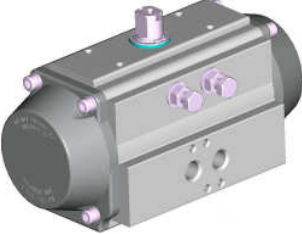
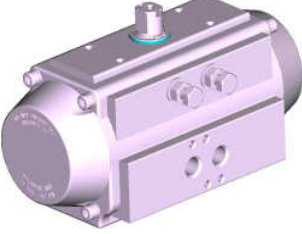
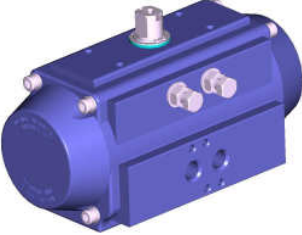
PART	QUANTITY	DESCRIPTION	MATERIAL	SPECIFICATION	PROTECTION
1	1	Body	Extruded aluminium alloy	EN AW 6063 T6	A - N - TF
2	2	Piston	Aluminium alloy	EN AB 46100 T6	A
3	2	Cover	Aluminium alloy	EN AB 46100 T6	N - V - TF
4	1	Shaft	Carbon steel Stainless Steel – optional	ASTM A-105 AISI 304 (A2) AISI 316 (A4)	N
5 *	2	Antiejection key	Acetalic resin – PA66 – PA66 – LEXAN		
6 *	1	Lower shaft O-Ring	NBR – FPM\FKM – Silicone – Silicone		
7 *	1	Upper shaft O-Ring	NBR – FPM\FKM – Silicone – Silicone		
10 *	1	Seeger ring	Carbon steel		N
11	0 ... 12	Spring cartridge	Carbon steel, PA 66, Stainless Steel	C-98	V
12 *	2	Piston O-Ring	NBR – FPM\FKM – Silicone – Silicone		
13 *	2	Piston head bearing	Acetalic resin – PA66 – PA66 – LEXAN		
14 *	2	Cover gasket	NBR – FPM\FKM – Silicone – Silicone		
15	1	Nameplate	Aluminium		
16	4 + 4	Cover fastening screw	Stainless Steel	AISI 304 (A2)	
17	2	Nut	Stainless Steel	AISI 304 (A2)	
18	2	Washer	Stainless Steel	AISI 304 (A2)	
19 *	2	O-Ring	NBR – FPM\FKM – Silicone – Silicone		
22 *	1	Gear antifriction washer	Acetalic resin – PA66 – PA66 – LEXAN		
23 *	1	Shaft thrust washer	Stainless Steel	AISI 304 (A2)	
24 *	1	Shaft antifriction washer	Acetalic resin – PA66 – PA66 – LEXAN		
25 *	1	Lower shaft pilot ring	Acetalic resin – PA66 – PA66 – LEXAN		
26 *	1	Upper shaft pilot ring	Acetalic resin – PA66 – PA66 – LEXAN		
27 *	2	Piston bearing	Acetalic resin – PA66 – PA66 – LEXAN		
28	2	Adjusting gear screw	Stainless Steel	AISI 304 (A2)	
40	1	Adjusting gear	Stainless Steel	AISI 316 (A4)	

* SPARE PARTS SET: Standard, Special HIGH Temperatures, Special LOW Temperatures, Special EXTRA LOW Temperatures

PROTECTIONS

A = Anodizing N = chemical Nickel-plating V = Painting TF = Anodizing+PTFE

COATINGS – MATERIAL TREATMENTS

		DESCRIPTION				APPLICATION FIELD
		Body	Covers	Pistons	Shaft	
	AV					
	standard	Anodizing	Polyester painting	Anodizing	High phosphorous nickel-plating (12%) opt. AISI 304 (A2) opt. AISI 316 (A4)	- Industry, general use.
	Colour	Gray	Gray	Brown	Polished steel	
	Thickness	25 µ	60/80 µ	15 µ	20 µ	
	NN	DESCRIPTION				APPLICATION FIELD
		Body	Covers	Pistons	Shaft	
		High phosphorous nickel-plating (12%)	High phosphorous nickel-plating (12%)	Anodizing	High phosphorous nickel-plating (12%) opt. AISI 304 (A2) opt. AISI 316 (A4)	
		Polished steel	Polished steel	Brown	Polished steel	
	Thickness	20 µ	20 µ	15 µ	20 µ	
	TF TF	DESCRIPTION				APPLICATION FIELD
		Body	Covers	Pistons	Shaft	
		Anodizing + PTFE coating	Anodizing + PTFE coating	Anodizing	High phosphorous nickel-plating (12%) opt. AISI 304 (A2) opt. AISI 316 (A4)	
		Blue	Blue	Brown	Polished steel	
	Thickness	Anodizing 25 µ PTFE 15 µ	Anodizing 15 µ PTFE 15 µ	15 µ	20 µ	

ANODIZING

Anodizing is an electrolytic process that produces anodic coating on aluminum, called alumine, with high thickness. Alumine is one of the most hard known materials, with resistance values up to 400-600 HV (45-65 HRC); properties and features of Anodizing (alumine thickness 25 micron) are well known and appreciated both for mechanical and chemical resistance.

- **Best friction and corrosion resistance, best surface hardness, good thermic and electrical insulation.**

ELECTROLESS NICKEL-PLATING

Chemical nickel-plating is an electroless coating process that gives nickel layers at extremely constant thickness also on sharp angles, blind-holes, threads and grooves recess. During the process, nickel is combined with phosphor at a percentage of 12% (high-phosphor). The obtained surface hardness is about 400-480 HV (45-55 HRC).

- **Best friction and corrosion resistance, best surface hardness, best external appearance similar to S.S., increased resistance to alkali and detergents in sanitary and food applications.**

POLYESTER PAINTING

Polyester painting is obtained through powder coatings on polarized parts, by means of light differences in electrical potentials. After applications, parts are baked in order to polymerize and let the painting be spread to avoid micro-porosity. The best elasticity can be obtained at 60/80 micron thickness; a satisfactory adhesion can be assured by sandblasting or brushing, and by special degreasing baths of the rough pieces to be treated.

- **Better corrosion resistance, protection against crashes, better external appearance and several available colours, resistance to chemicals.**

ANODIZING + PTFE COATING

As further improvement of the hard anodising treatment on aluminium alloys, protective coatings made of PTFE are used; this material is known for its particular chemical and physical features. On these double treated surfaces, oxide hardness and low roughness (internal slipping parts) is summed to the chemical resistance and the excellent qualities as a thermic barrier of PTFE (external surface, subject to corrosion).

- **Better corrosion resistance, protection against high temperatures and crashes, extreme resistance to chemicals and in marine environments.**

AISI 304 (A2) OR AISI 316 (A4) STAINLESS STEEL SHAFT - OPTIONAL

AISI 304 (A2) and AISI 316 (A4) Stainless Steel shafts, with their great corrosion resistance, are recommended for special applications such as: marine and chemical environments, food and pharmaceutical industry, high temperature applications.



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