VALVE 736-746 XS WITH PNEUMATIC ACTUATOR AP-RE

FEATURES

The 736XS (steel) and 746XS (stainless steel) + AP-RE 2-way ball valves are designed for automatic shut-off of industrial fluid networks. With a 3-piece construction with external tie rods, they are easy to dismantle for maintenance. The valve has full bore, an antistatic device and double sealing at the gland. It is CE, ATEX and TA-LUFT approved. The ISO 5211 plate allows direct mounting of the actuator. Pneumatic motorisation is available in double effect and spring return versions with numerous options.

AVAILABLE MODELS

Diameters 1/4" to 4".

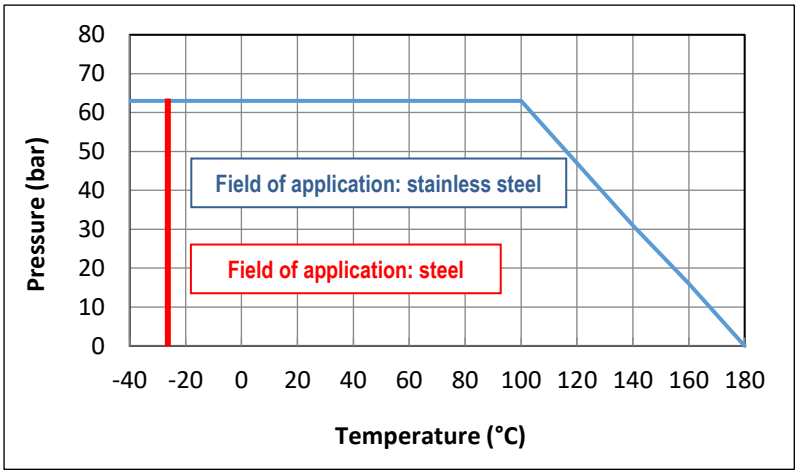
Double-effect and spring return actuators

Racc.	G	SW	BW
Steel	736 XS	735 XS	734 XS
Stainless steel	746 XS	743 XS	745 XS

optional

LIMITS OF USE

Material	steel	Stainless steel
Fluid pressure: WP	63 bar (20°C)	
Fluid temperature: WT°	-25°C / +180°C	- 40°C / +180°C
Ambient temperature	- 20°C / + 80°C	
Compressed air engine	mini 6 bar / maxi 10 bar	



DIRECTIVES AND MANUFACTURING STANDARDS

OBJET	Standard	ON	OBJET	Standard
EC Pressure Equipment Directive 2014/68	**1/4" to 1"** : not submitted		Final test	EN 12266
	1"1/4 to 4" : category III	TÜV 0035	Certificate of material	EN 10204
Dimensionnement	EN 12516-1		Motorisation connection	ISO 5211
Nuances des aciers	EN 1503-1		Actuator pilot connection	NAMUR
Directive ATEX	II 2G/D Tx areas 1,2,21 and 22	SIRA 0518	Limit switch housing connection	VDI/VDE 3845
	EN 13463-1 et 5		SIL 3 level (actuator only)	EN 61508

Information given as an indication only, and subject to possible modifications

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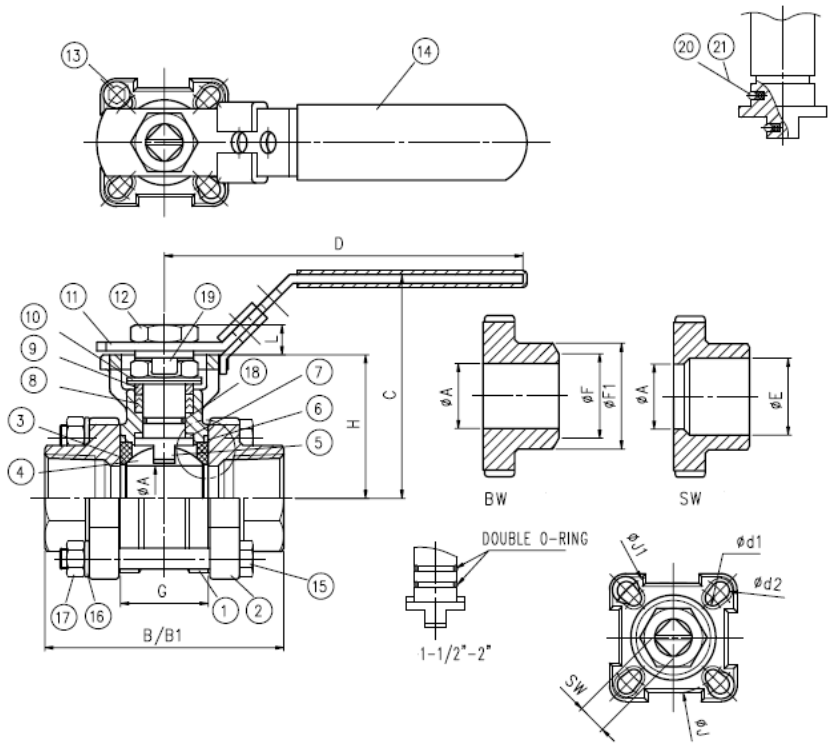
VALVE 736-746 XS WITH PNEUMATIC ACTUATOR AP-RE

CONSTRUCTION

N°	Name	Steel	Stainless steel	N°	Name	Steel	Stainless steel
1	Body	1.0619	1.4408	**12**	Nut	SS 304	SS 304
2	End caps	1.0619	1.4408	**13**	Stop	SS 304	SS 304
3*	Seats	PTFE+15%GF	PTFE+15%GF	**14**	Sleeve	PVC	PVC
4	Sphere	CF8M / 316	CF8M / 316	**15**	Tie rods	SS 304	SS 304
5	Stem	SS 316	Inox 316	**16**	Washer	SS 304	SS 304
6*	Body seal	PTFE	PTFE	**17**	Nuts	SS 304	SS 304
7*	Washer	PTFE+15%GF	PTFE+15%GF	**18***	O-ring	FPM	FPM
8*	Packing	PTFE	PTFE	**19**	Nut brake	SS 304	SS 304
9	Spacer	SS 304	SS 304	**20**	Anti-static	SS 316	SS 316
10	Washer B.	SS 301	SS 301	**21**	Spring	SS 304	SS 304
11	Lever	SS 304	SS 304	* Parts included in the maintenance kit			



DIMENSIONS (mm)

DN	A	B (G)	B (SW)	B1 (BW)	C	D	E	F	F1	G	H	J1	SW
1/4"	10	65	65	70	46,5	110	14	13	17,0	26,0	41,0	42	9
3/8 ”	12,5	65	65	70	46,5	110	14	13	17,0	24,5	42,3	42	9
1/2"	16	75	75	75	70,9	110	21,9	17	22,4	25,2	42,3	42	9
3/4"	20	80	80	90	73,4	110	27,2	22	28,2	27,7	44,8	42	9
1”	24,5	90	90	100	84,1	135	34,0	28	33,7	33,0	54,0	50	11
1”1/4	32	110	110	110	89,3	135	42,7	37	44,0	41,2	59,2	50	11
1”1/2	38	120	120	125	109,5	165	48,8	43	50,8	49,3	73,5	70	14
2”	50	140	140	150	118,9	165	61,3	54	62,6	63,6	82,9	70	14
2”1/2	65	185	185	190	155,0	300	77,0	74	76,1	82,1	107,0	102	17
3”	80	205	205	220	165,0	335	90,0	83	88,9	95,8	117,3	102	17
4”	100	240	240	270	180,0	335	115,5	110	114,3	117,8	132,3	102	17

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VALVE 736-746 XS WITH PNEUMATIC ACTUATOR AP-RE

AP-RE PNEUMATIC MOTORIZATION

The ALPHAIR motorization offered as standard is suitable for:
- minimum safety factor of 1.3 in relation to the nominal torque of the valve,
- dry, non-lubricated motor air at 6 bar,
- upstream/downstream pressure difference ΔP=10 bar max.

The actuator is mounted directly.

DN	Double effect	V (litres)	Temps (s)*	Spring return	V (litres)	Temps (s)*
1/4"	RE 43	0,18	1	RES 43/6	0,18	1
3/8“	RE 43	0,18	1	RES 43/6	0,18	1
1/2"	RE 43	0,18	1	RES 43/6	0,18	1
3/4"	RE 43	0,18	1	RES 51/6	0,23	1
1“	RE 43	0,18	1	RES 64/6	0,45	1
1“1/4	RE 51	0,23	1	RES 76/6	0.61	1
1“1/2	RE 64	0,45	1	RES 86/6	0,98	1
2“	RE 76	0,61	1	RES 101/6	1,80	2
2“1/2	RE 76	0,61	1	RES 101/6	1,80	2
3“	RE 86	0,98	1	RES 116/6	2,8	2
4“	RE 101	1,80	2	RES 116/6	2,8	2

For any other service conditions, please consult us.
*indicative time for the actuator in vacuum

OPTIONS

There are a multitude of options available, so please consult our sales department for more information:

1	actuators designed for compressed air pressure of 3.4 or 5 bar
2	actuator designed for upstream/downstream pressure difference ΔP greater than 10 bar
3	actuator with special coating, stainless steel actuator
4	actuator for very low ambient temperatures (-60°C) or very high ambient temperatures (+150°C)
5	automatic safety tap with enhanced safety coefficient and closing time < 1 s,
6	heat dispersion arch for high-temperature fluids
7	100 mm high stainless steel riser for insulation passage
8	special version for ATEX areas
9	manual control via disengageable reduction gear
10	compressed air filter regulator
11	all types of pilot solenoid valves
12	limit switch enclosures of all types
13	All types of positioners
14	rapid exhaust
15	flow restrictors
16	air lock
17	sphere with decompression hole

INSTALLATION IN ATEX AREAS

If installing the 736-746XS+AP-RE automatic tap in ATEX areas 1, 2, 21 or 22, this must be specified when ordering. Our services will check the assembly, install a grounding braid and issue an assembly certificate. These operations are carried out in the workshop by our certified technicians. Please consult us.
It is also necessary to follow the special installation and maintenance instructions for motorized valves in ATEX areas.

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ASSEMBLY AND MAINTENANCE INSTRUCTIONS

1 - Installation

1.1 - Checks

- Check that the material of the tap body is chemically compatible with the fluid..
- Check that the pressure and operating conditions are compatible with the valve's (P,T) diagram. See § "Operating limits".
- Check that the fluid is clean and free of particles. These can scratch the ball and damage the seats, causing the valve to leak. Install an upstream filter if necessary.
- Check that the upstream and downstream pipes are correctly aligned and that the supports are suitable for the weight of the valve. Do not rely on the valve to compensate for pipe misalignment. For heat transfer fluids, provide for expansion compensation. All these piping defects may lead to leaks, blockages and even mechanical failure.
- Check that there is no risk of thermal expansion of the fluid that could damage the seats. In the open position, an orifice at the top of the sphere allows the pressure between the dead chamber and the fluid passage to be balanced. As an option, a decompression orifice on the upstream side of the valve to balance pressures is recommended for fluids such as ammonia, LPG, chlorine, etc.
- On a cold service, check that there is no risk of ice forming and blocking the tap spindle. If necessary, provide a spindle extension with suitable insulation or permanent spindle heating. Please consult us for a special model.
- Ensure that the valve is not used for flow or pressure regulation, as it is not designed for this purpose and there is a risk of premature wear of the seats, particularly in the case of high pressure and/or temperature. For this particular application, we recommend using our "V-port" version with a V-shaped bore. Please consult us.
- Ensure that the valve is not used with gas that could condense at certain stages of the process. In this case, the pressure in the dead chamber could become negative, which could cause significant deformation of the seats. Please consult us.
- Static electricity: the tap is supplied with an internal electrical continuity device between the sphere, spindle and body. If the conditions of use require electrical continuity of the installation, check that it is earthed.
- If the tap is installed in an explosive area, it is essential to follow the additional instructions "IMEVMATEX".

1.2 - Storage before installation

- Comply with our general storage instructions "IMESTOCK".
- Check that the tap handles are not loose during transport.

1.3 - Installation

- Before installation, isolate the upstream and downstream pipes, depressurize the pipe and bring the installation to room temperature. Carefully clean the pipes of any particles (foreign bodies, dust, rust, etc.) or shavings by rinsing with water or blowing with air.
- For valves larger than DN50, use a hoist.
- Remove the protective caps from the ends of the taps.
- Check that the internal surfaces of the tap are clean and clean them if necessary.
- Installation direction: these valves have no preferred installation direction, unless a pressure relief hole has been drilled in the ball.
- Check that the upstream and downstream pipes and the valve are perfectly aligned and properly supported. Misalignment causes mechanical deformation, which can block the valve or cause leaks at the body joints.

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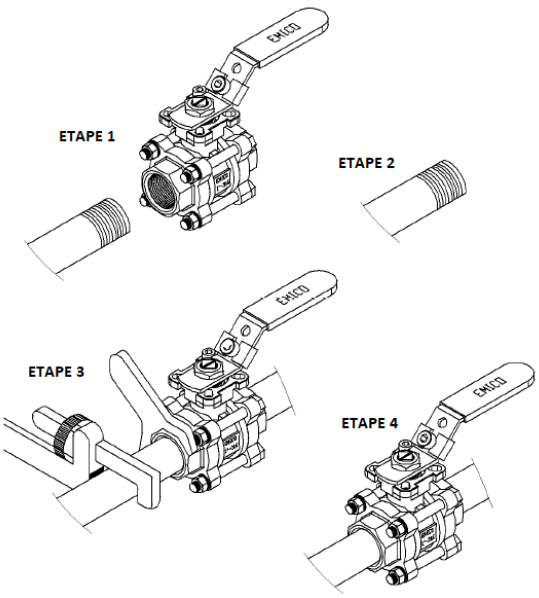
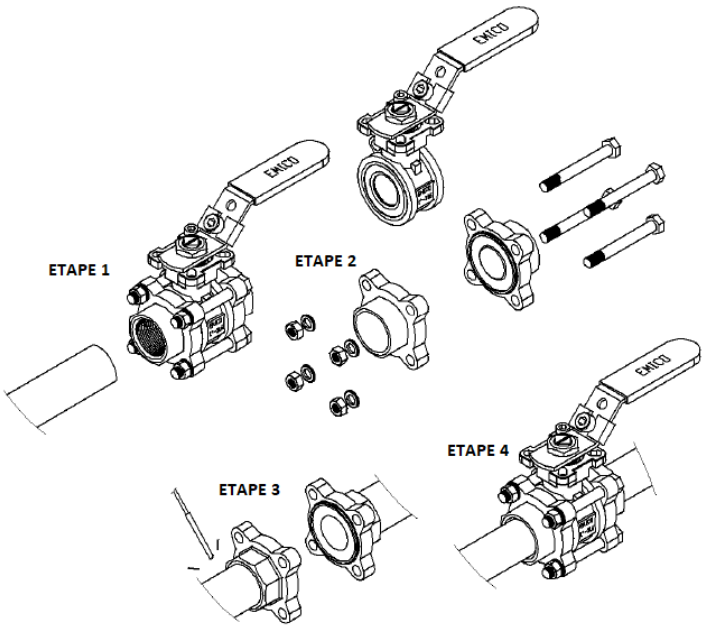
- **Threaded valve connection:**
  - Check that the standards for the valve internal thread and pipe thread are the same.
  - Cover the pipe threads using a sealing material (tow, PTFE tape, sealing glue, etc.) which is suitable for the fluids.
  - Screw the tube into the valve end clockwise, as shown in the diagram below.
  - Check the sealing of the connection using a suitable test (hydrostatic test or leak detection spray).



- **Connection of weld-on valves**:
  - Remove the end (items 2) by unscrewing the tie-bolts, and remove the central body.
  - Weld each end onto the upstream or downstream pipe, following the alignment of the tie-bolt holes.
  - Cool down to the room temperature the welded ends, then put back the central body complying with the tightening torques shown in the table below.
  - Check the sealing of the connection using a suitable test (hydrostatic test or leak detection spray).



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- 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 authorized pressure.

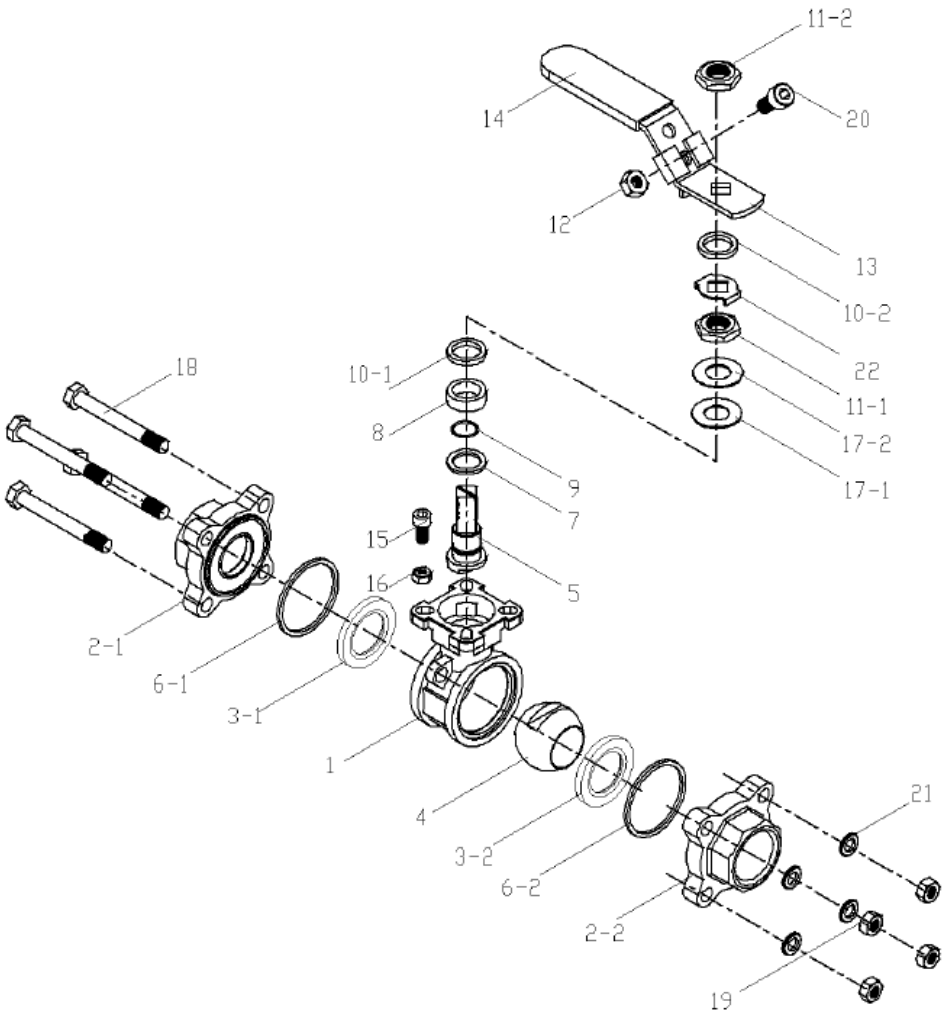
2 - Service

- If a hot fluid flows across the valve, do not touch the valve surface.
- Always operate the valve slowly and smoothly.
- Opening clockwise, closing anti-clockwise.

3 - Servicing

3.1 - Frequency of servicing

- The servicing frequency depends upon the use of the valve, of the type of fluid, of its velocity, of its frequency of operation, of the cycles of rise and fall in pressure and temperature.
- Before any intervention, isolate the upstream and downstream pipe installation using the valves provided for this purpose. Depressurize the pipe installation and bring it to ambient temperature.
- If the lever has to be removed, do that before disassembling the body.
- To remove the central body, unscrew the tie-bolts symmetrically. Then gently remove the central part avoiding to drop the ball.
- To remove the ball from the body, turn the stem by a quarter turn.



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3.2 - Inspection of the condition of the tap and repair if necessary

- Check the condition of the sphere (Marker 4): it must be clean and free of scratches. If cleaning or polishing is not possible, replace it (see § spare parts).
- Check the condition of the seats (3.1 and 3.2): they must not be deformed, scratched, worn or dirty. If they are, replace them using the parts in the seal kit.
- Check the condition of the gland (7, 8 and 9): there must be no leakage at the shaft and the rings must not be excessively worn. Replace these seals if necessary.
- Check the condition of the body seals (6.1 and 6.2). Replace them if necessary.
- Reassemble the various parts of the valve, applying the tightening torques indicated in the table below.
- Check that the shaft moves smoothly. Operate it about ten times.

TABLE OF TIGHTENING TORQUES FOR TIE RODS AND LEVER NUTS

DN	Thread	Torque (Nm)	Lever nut (Nm)
1/4'' - 6	M6	10	4
3/8'' - 10	M6	10	4
1/2'' - 15	M6	10	4
3/4'' - 20	M8	20	4
1'' - 25	M8	20	4,5
1''1/4 - 32	M10	35	4,5
1''1/2 - 40	M10	35	5,5
2'' - 50	M10	40	5,5
2''1/2 - 65	M12	70	7
3'' - 80	M16	120	7
4 '' - 100	M16	120	7

SPARE PARTS

DN	Seal kit	Sphere	V30° sphere	V60° sphere	Tie rod kit	Lever
Repère	**3-6-7-8-18**	**4**	**4**	**4**	**15-16-17**	**11**
1/4'' - 6	Please contact us	Please contact us	Please contact us	Please contact us	Please contact us	Please contact us
3/8'' - 10	Please contact us	Please contact us	Please contact us	Please contact us	Please contact us	Please contact us
1/2'' - 15	982852	980032	980042	980052	982832	982802
3/4'' - 20	982853	980033	980043	980053	982833	982802
1'' - 25	982854	980034	980044	980054	982834	982804
1''1/4 - 32	982855	980035	980045	980055	982835	982804
1''1/2 - 40	982856	980036	980046	980056	982836	982806
2'' - 50	982857	980037	980047	980057	982837	982806
2''1/2 - 65	982858	Please contact us	Please contact us	Please contact us	982838	982808
3'' - 80	982859	Please contact us	Please contact us	Please contact us	Please contact us	982808
4 '' - 100	982860	Please contact us	Please contact us	Please contact us	Please contact us	982808

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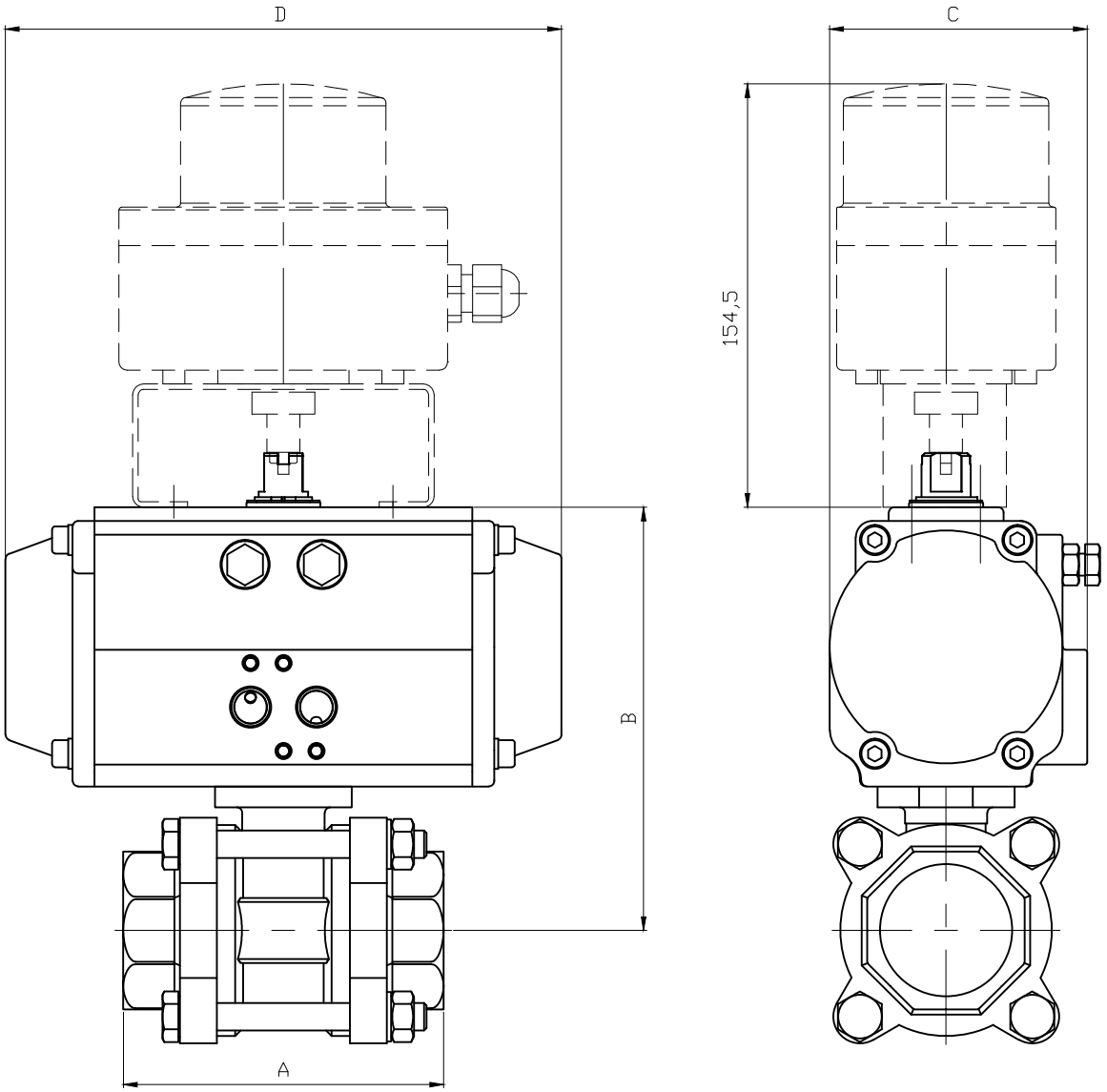


DN	1/4"		3/8"		1/2"		3/4"		1"	
ALPHAIR	RE43	RES43	RE43	RES43	RE43	RES43	RE43	RES51	RE43	RES64
A	65		65		75		80		90	
B	129		129		105		107	114	113	137
C	63.5		63.5		63.5		63.5	75	63.5	86
D	141		141		141		141	138	141	155
KG	1.65	1.74	1.62	1.70	1.57	1.65	1.83	2.22	2.31	3.32

DN	1"1/4		1"1/2		2"		2"1/2		3"		4"	
ALPHAIR	RE51	RES76	RE63	RES86	RE76	RES101	RE76	RES101	RE86	RES116	RE101	RES116
A	110		120		140		184		205		238	
B	128	162	160	186	186	210	209	234	232	266	160	179
C	75	94	86	104	94	120	94	120	104	134	120	134
D	138	203	155	239	203	261	203	261	239	304	261	304
KG	3.35	5.45	4.81	7.83	7.69	11.45	13.58	17.38	18.42	24.4	27.9	32.12

Informations données à titre indicatif et sous réserve de modifications éventuelles
data subject to alteration

Ech: /	Date :22/05/2019	Dessiné par : E.D.	Tolérances générales : +/- 0.2	Modifications	Date	REV.

ROBINET A TOURNANT SPHERIQUE 736XS A 746XS/BALL VALVE 736XS TO 746XS + ACTIONNEUR ALPHAIR RE + BFC/ ALPHAIR ACTUATOR RE + LIMIT SWITCH BOX

Matière :

Poids (Kg) :

SECTORIEL

45, Rue du Ruisseau

38297 SAINT QUENTIN FALLAVIER

Traitement : SANS

Plan n° Ens 1350

Alphair

RE SERIES

PNEUMATIC ACTUATORS
WITH EXTERNAL ADJUSTMENT

ROTATION 90°

ALPHA POMPE s.p.a.

Alphair

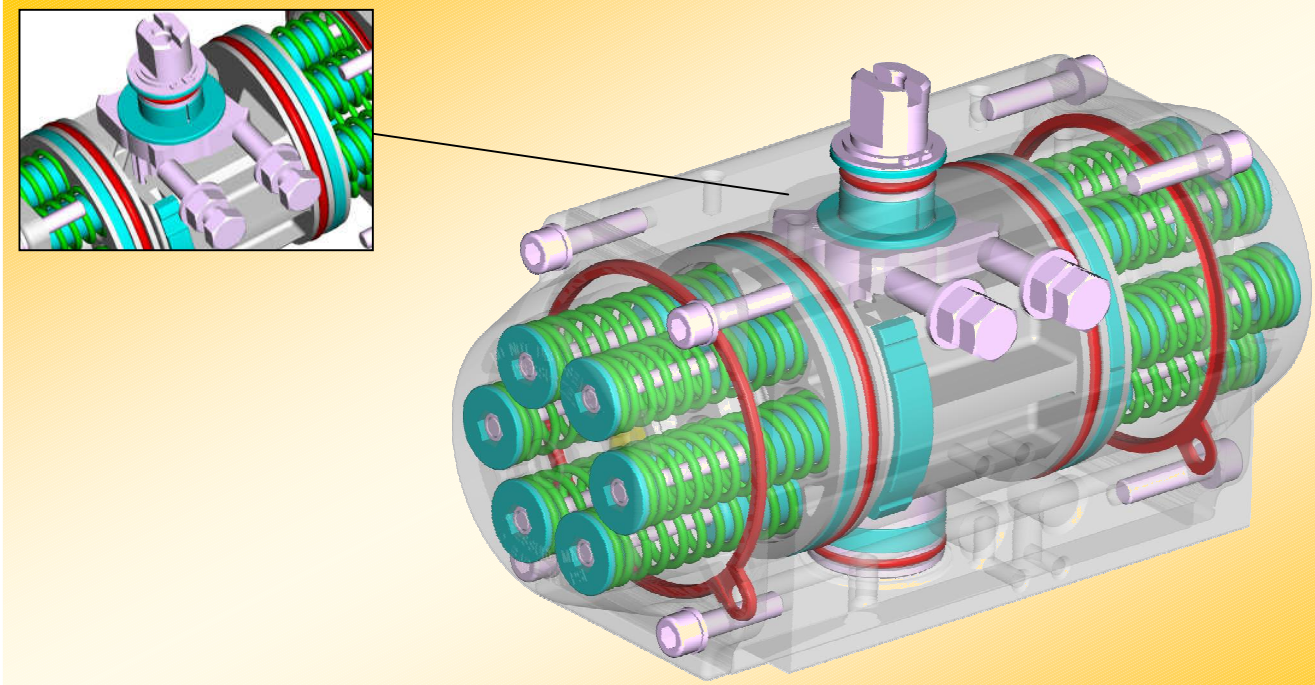
IR 3

Distributed in FRANCE by SECTORIEL

English edition

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 nubber 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 +\-5° in both opening and closing position. Assembly precision +\-1°, 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°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° +80°C (-4 +175°F) HIGH Temperature -20° +150°C (-4 + 300°F) LOW Temperature -40° +80°C (-40 + 175°F) VERY LOW Temperature -60° +80°C (-76 + 175°F)	8 bar/120 psi Continuous working - 10 bar/142 psi MAXIMUM	+/- 5° in both OPENING and CLOSING position

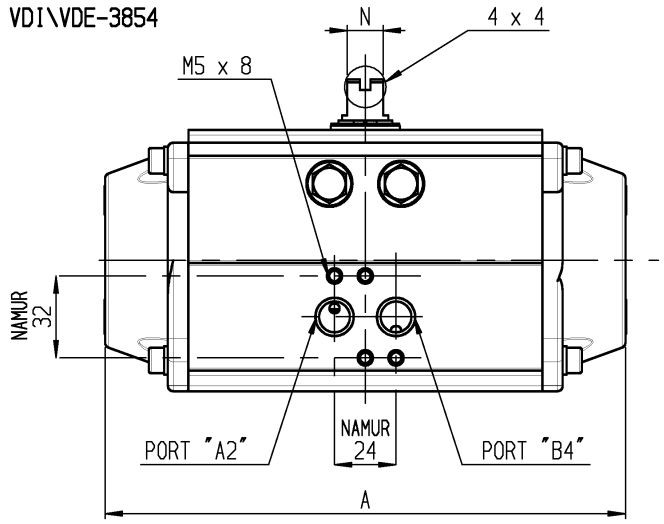
DOUBLE ACTING TORQUES IN Nm

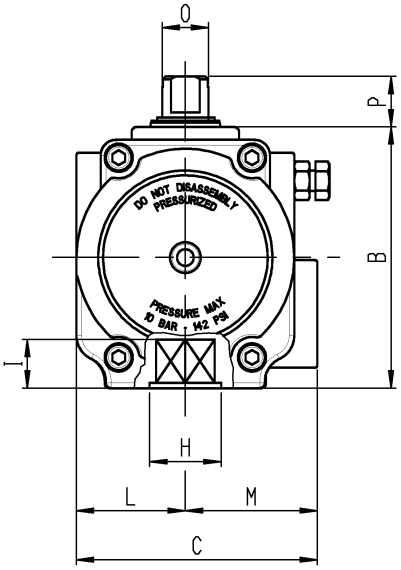
TYPE	AIR SUPPLY PRESSURE (bar)									
	1	2	3	4	5	6	7	8	9	10
RE 043	-	-	6,5	8,7	10,9	**13,0**	15,2	17,3	19,5	21,7
RE 051	3,3	6,7	10,0	13,4	16,7	**20,1**	23,4	26,8	30,1	33,5
RE 064	5,9	11,8	17,8	23,7	29,6	**35,5**	41,4	47,4	53,3	59,2
RE 076	11,8	23,5	35,3	47,1	58,9	**70,6**	82,4	94,2	105,9	117,7
RE 086	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**	6835	7292	8204	9115
RE 421	1671	3342	5013	6684	8354	**10025**	11696	13367	-	-

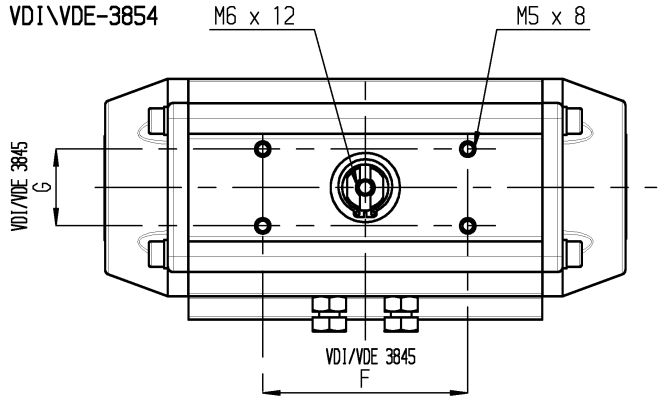
SINGLE ACTING TORQUES IN Nm

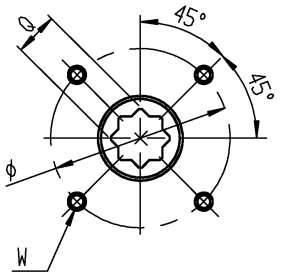
TYPE	SPRING SET	AIR SUPPLY PRESSURE (bar)												SPRING TORQUE	
		3		4		5		6		7		8			
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	90°	0°
RE 043	SR 3/3	-	-	-	-	**7,1**	**4,1**	9,3	6,3	11,5	8,5	13,7	10,7	**6,8**	**3,8**
	SR 4/4							**8,1**	**4,1**	10,2	6,2	12,4	8,4	**9,0**	**5,0**
RE 051	SR 3/3	**5,8**	**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	**281,5**	**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	9369	**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





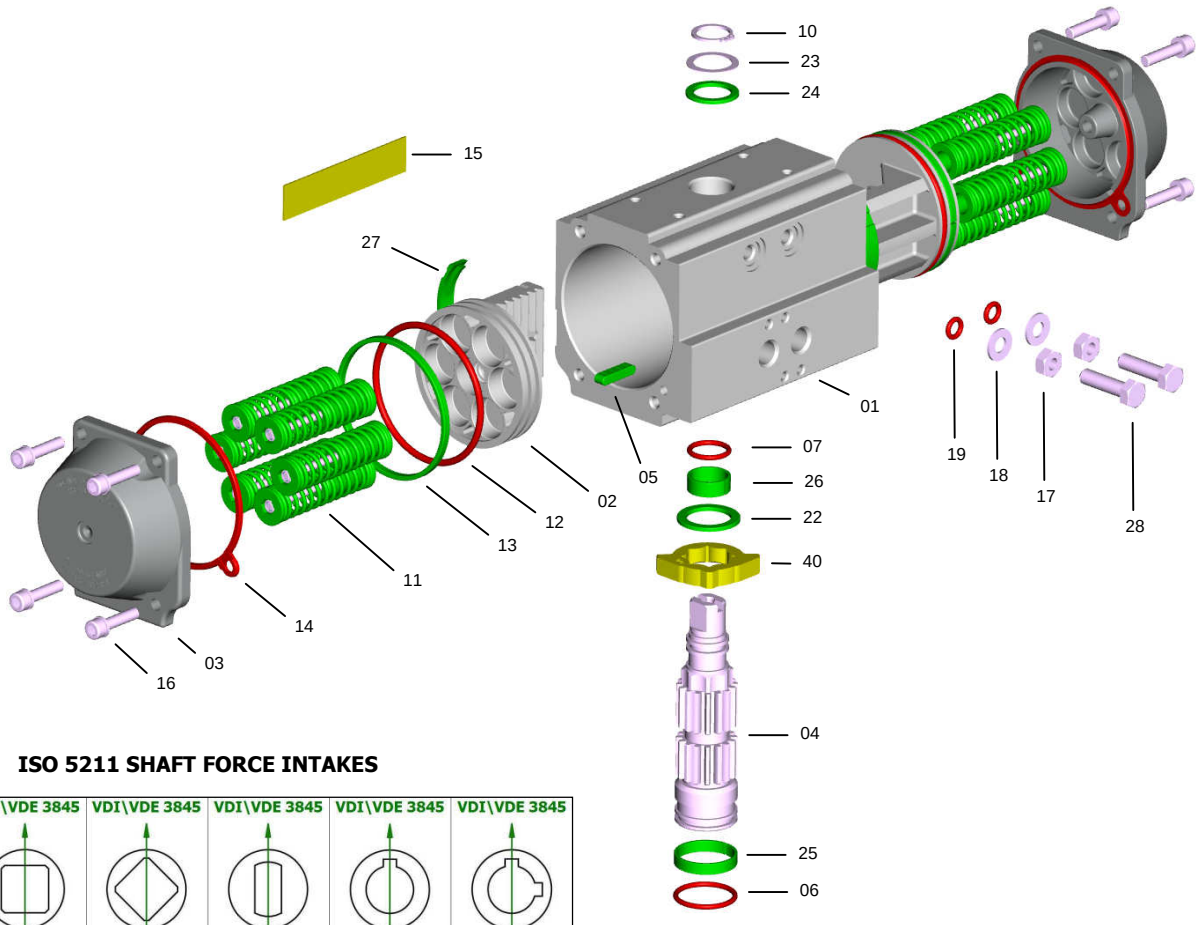




POSITION	TYPE															
	RE 043	**RE 051**	**RE 064**	**RE 076**	**RE 086**	**RE 101**	**RE 116**	**RE 126**	**RE 146**	**RE 161**	**RE 181**	**RE 201**	**RE 241**	**RE 271**	**RE 331**	**RE 421**
A	141	138	155	203	239	261	304	333	398	424	482	528	604	684	850	940
B	62	69	86	102	112	127	145,5	157,5	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\VDE 3845	VDI\VDE 3845	VDI\VDE 3845	VDI\VDE 3845	VDI\VDE 3845	VDI\VDE 3845
STANDARD ALPHAIR S = L\D	L	D	H	V	W

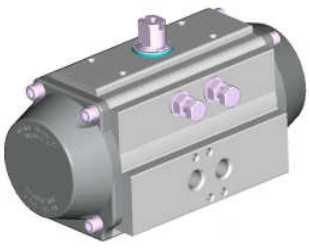
PART	QUANTITY	DESCRIPTION	MATERIAL	SPECIFICATION	PROTECTION
1	1	Body	Extruded aluminium alloy	EN AW 6063 T6	A - N - TF
2	2	Piston	Aluminium alloy	EN AB 46100 T6	A
3	2	Cover	Aluminium alloy	EN AB 46100 T6	N - V - TF
4	1	Shaft	Carbon steel Stainless Steel – optional	ASTM A-105 AISI 304 (A2) AISI 316 (A4)	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)	

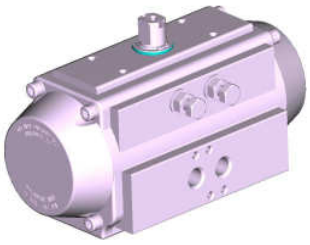
*** SPARE PARTS SET:** Standard, Special HIGH Temperatures, Special LOW Temperatures, Special EXTRA LOW Temperatures

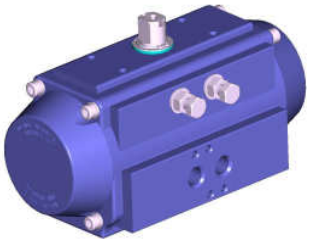
PROTECTIONS

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

COATINGS – MATERIAL TREATMENTS

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

		DESCRIPTION				APPLICATION FIELD
	**NN**	**Body**	**Covers**	**Pistons**	**Shaft**	- Industry, general use. - Caustic soda. - Detergents. - Low alcaline solutions.
		High phosporous nickel-plating (12%)	High phosporous nickel-plating (12%)	Anodizing	High phosporous nickel-plating (12%) opt. AISI 304 (A2) opt. AISI 316 (A4)	
	Colour	Polished steel	Polished steel	Brown	Polished steel	
	Thickness	20 µ	20 µ	15 µ	20 µ	

		DESCRIPTION				APPLICATION FIELD
	**TF TF**	**Body**	**Covers**	**Pistons**	**Shaft**	- Industry, general use. - Low alcaline and low acid solutions. - Marine environments. - High temperatures.
		Anodizing + PTFE coating	Anodizing + PTFE coating	Anodizing	High phosporous nickel-plating (12%) opt. AISI 304 (A2) opt. AISI 316 (A4)	
	Colour	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 know 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 phospor at a percentage of 12% (hig-phospor). The obtained surface hardness is about 400-480 HV (45-55 HRC).

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

POLYESTER PAINTING

Polyester painting is obtained throug 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 appearence 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 environnements.**

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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COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

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