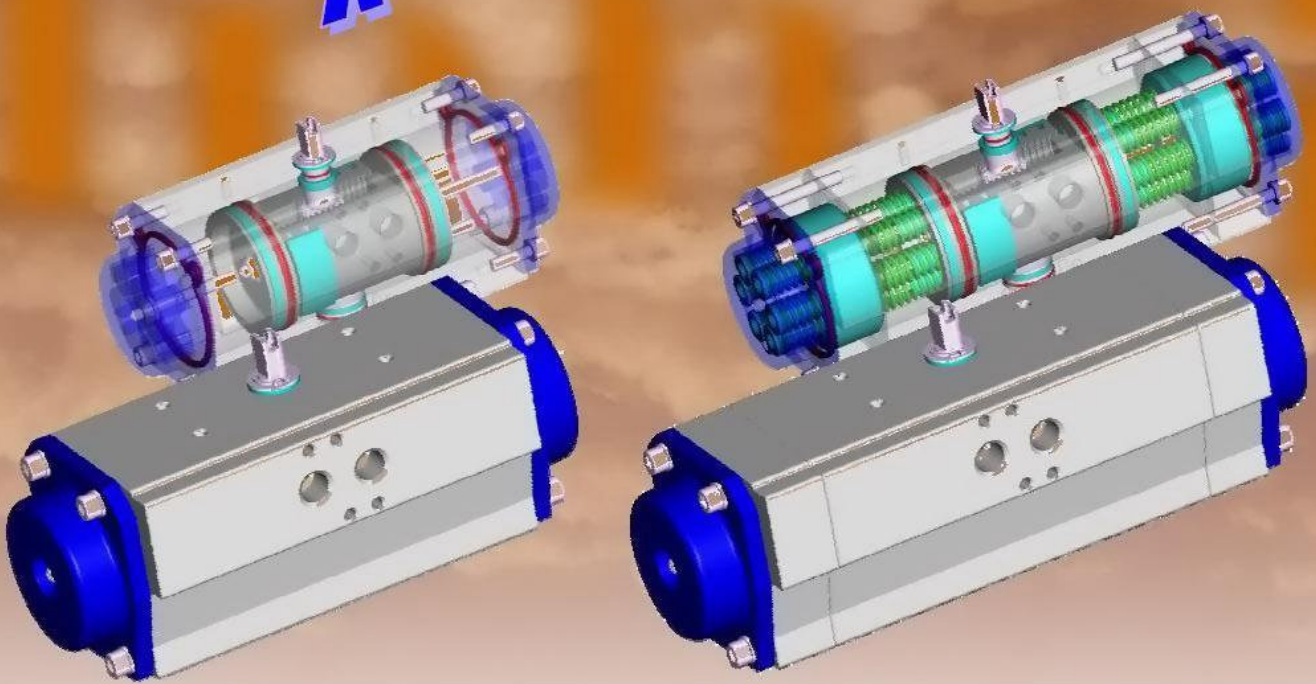


# Alphaair

**Y - 120° series**  
**X - 180° series**



## **ALUMINIUM**

Pneumatic Rack & Pinion Actuators



**January 2014**

## ALPHAIR PNEUMATIC ACTUATORS 120° Y SERIES - 180° X SERIES

**ALPHAIR AP-Y (120°) AND AP-X (180°) SERIES** pneumatic actuators are made by the best manufacture experience on design, material, machining, assembly.  
The internal rotation adjusting system is ever free of side-loads on pistons, shaft and body at every feeding pressure at the end-run positions. **HEAVY DUTY, MAXIMUM LIFETIME!**

ALPHAIR pneumatic actuators are compact, heavy and reliable. Easy assembly/change on every kind of valve.

Now also available, the "SR" SPRING RETURN version!

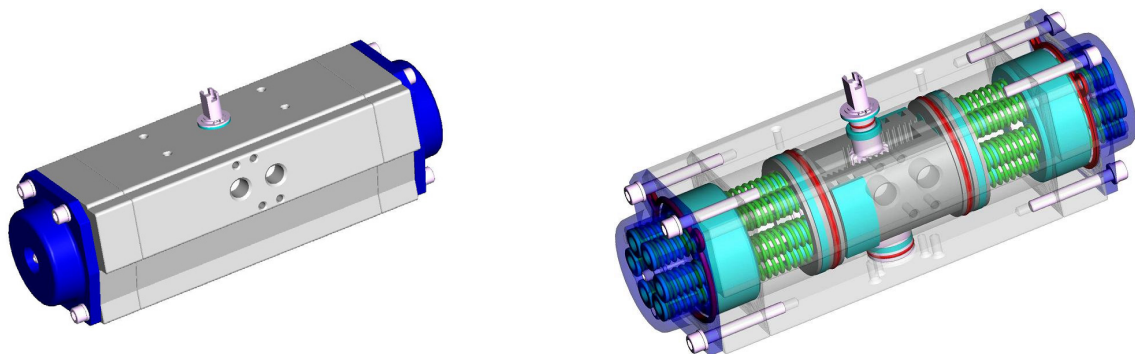
→ From AP 042 to AP 125 ←

Side dimensions and torque ratings, are identical to **standard AP 90° Series**.

### Double Acting "DA" VERSION (air-air)



### Single Acting "SR" VERSION (spring return)



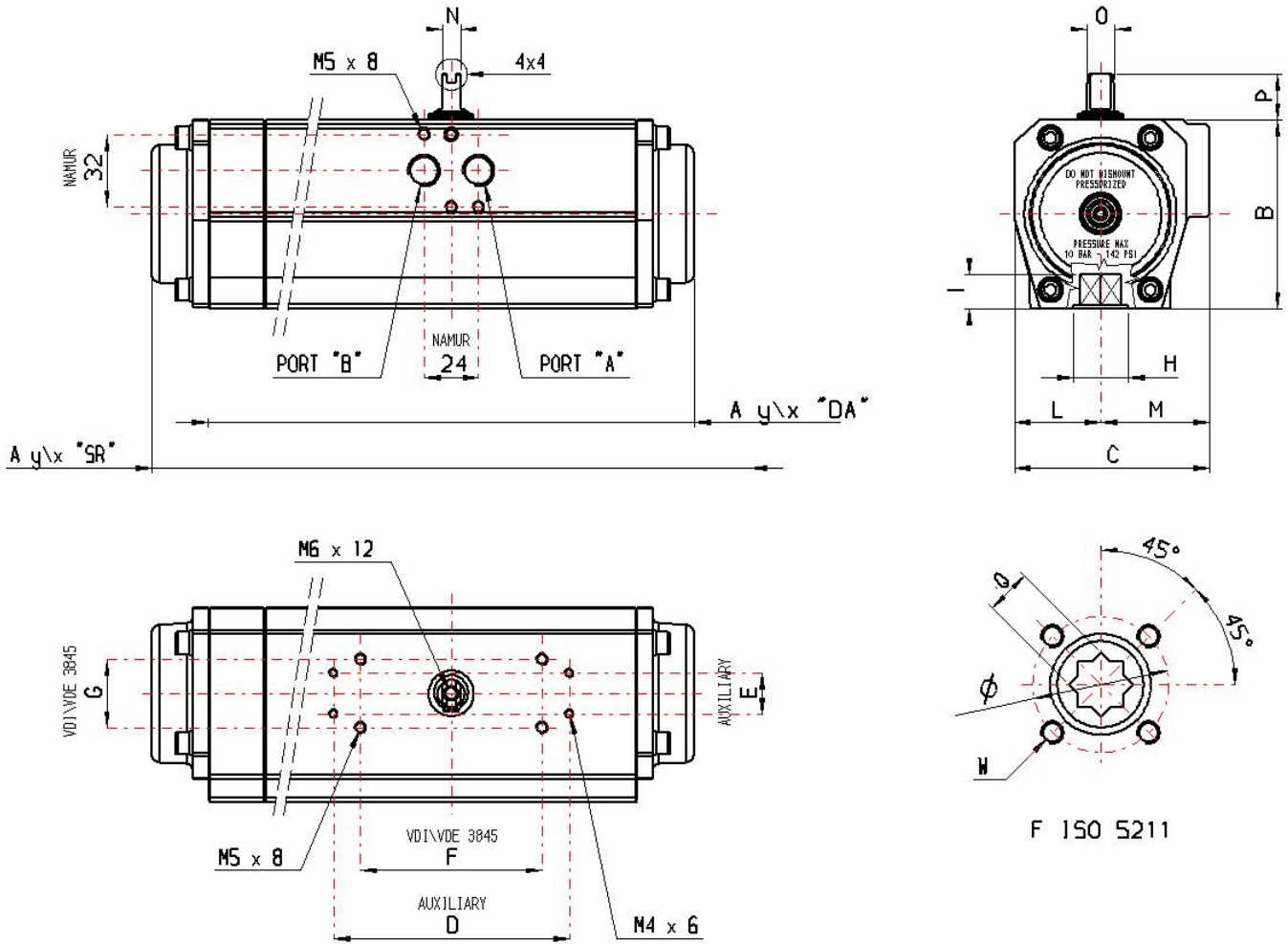
### STANDARD VERSION FEATURES

- **ASTM 6063 extruded Aluminium Body**, inside surface finish Ra=0,4-0,6. 50 micron Hard Anodizing.
- **ASTM B179 die-casted Aluminium alloy Pistons**, 15 micron Anodizing.
- **ASTM B179 die-casted Aluminium alloy Covers**, painted with 60-80 micron polyester powder.
- **Carbon steel Shaft**, 20 micron nickel-plated. Optional in Stainless Steel AISI 316 (A4).
- Screws in Stainless Steel AISI 304 (A2).
- Seals in nitrile nubber NBR. Optional HIGH Temperature = FPM/FKM. Optional LOW Temperature = SILICONE.
- Bearings in low friction acetal resin LAT-LUB, easily replaceable for maintenance. Optional HIGH/LOW Temperature = PA 66.
- Pre-compressed Spring Cartridges, easily replaceable for maintenance, 60-80 micron polyester painted.
- Standard grease: High performances Syntetic Grease. Optional: special grease for HIGH/LOW Temperature.
- Several special protections available for chemical, pharmaceutical, food and industrial environments.
- 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.
- Lubrification 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 each individual product.
- Standard execution for temperatures from -20°C to +80°C (optional, special execution for extreme temperatures).
- Suitable for explosive environment; STANDARD version actuator: II 2GD c Tmax = 95°C.
- According to **EN 15714-3** design and manufacture standard requirements.

AIR SUPPLY	TEMPERATURE RANGE	FEEDING PRESSURE	ROTATION ADJUSTING
Dry or lubricated filtered compressed air.	Standard -20° +80°C (-4 +175°F)	<b>8 bar/120 psi – CONTINUOUS</b> 10 bar/142 psi - MAXIMUM	+ \- 5°
	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)		

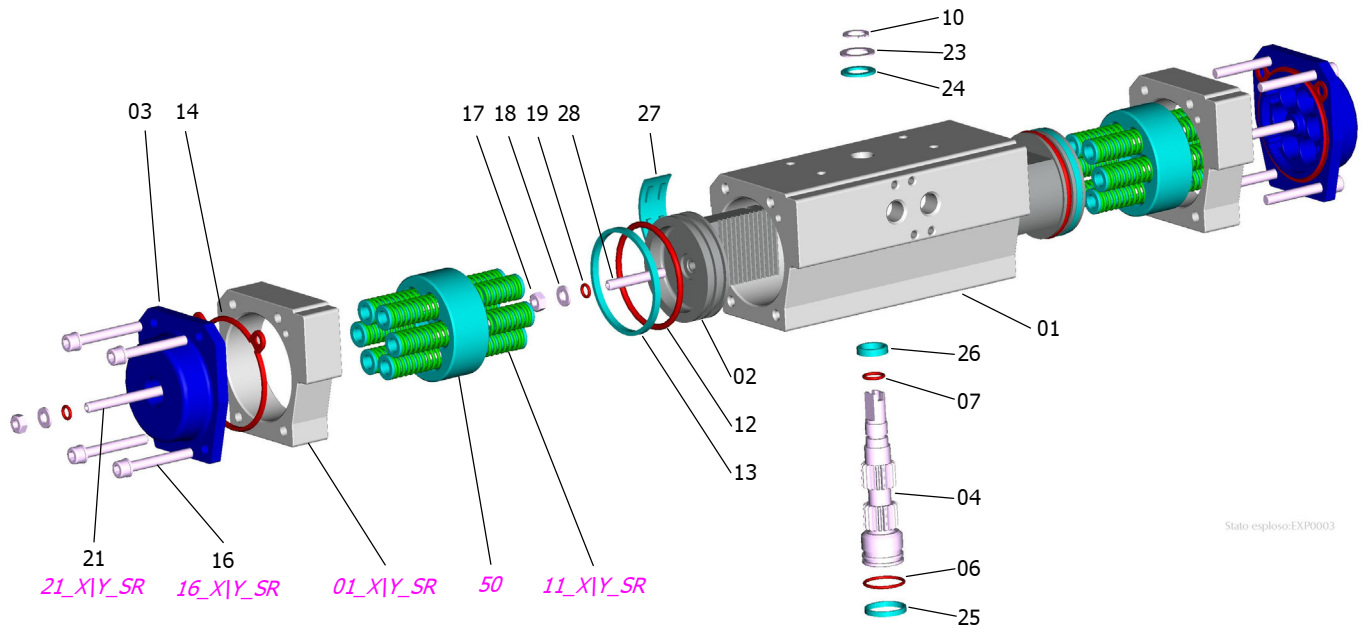






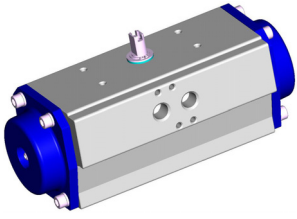
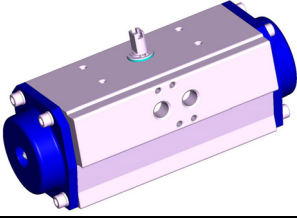
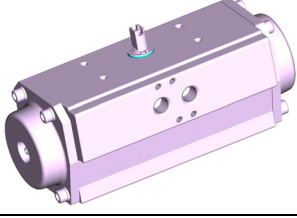
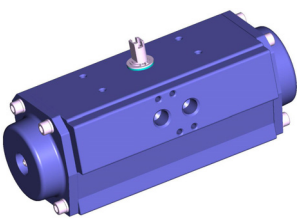
POSITION	TYPE										
	AP 032	AP 042	AP 050	AP 063	AP 075	AP 085	AP 100	AP 115	AP 125	AP 145	AP 160
<b>Ay 120° "DA" - Double Acting</b>	116	154	163	180	239	273	322	363	424	457	540
<b>Ay 120° "SR" - Spring return</b>	-	201	218	251	315	358	428	487	562	-	-
<b>Ax 180° "DA" - Double Acting</b>	149	190	196	214	297	332	398	451	518	566	652
<b>Ax 180° "SR" - Spring return</b>	-	237	242	264	363	408	494	576	700	-	-
<b>B</b>	45	57	67	83	100	110	125	142	155	175	196
<b>C</b>	48	60,5	75	86	94	104	120	134	141	163	176
<b>AUXILIARY D x E</b>	-					105 x 22			139 x 22		
<b>VDI/VDE 3845 F x G</b>	50 x 25		80 x 30					130 x 30			
<b>L</b>	22,5	27	33,5	38	42,5	49	55	63,5	69,5	80	88
<b>M</b>	25,5	33,5	41,5	48	51,5	55	65	70,5	71,5	83	88
<b>Port A Port B DIN 259</b>	1/8" GAS - NPT				1/4" GAS - NPT						
<b>N x O</b>	8 x 12				14 x 18			27 x 36			
<b>P</b>	20							30		50	
<b>F ISO 5211</b>	F03	F03/05	F03/05 F04	F03/05/07 F05/07	F05/07	F05/07	F05/07/10	F07/10	F07/10/12	F10/12	F10/12
<b>Q x I</b>	9 x 10	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	17 x 20 22 x 25	17 x 20 22 x 25	17 x 20 22 x 25 27 x 30	22 x 25 27 x 30	22 x 25 27 x 30
<b>Ø</b>	Ø 36	Ø 36 Ø 50	Ø 42	Ø 50	Ø 50 Ø 70		Ø 70 Ø 102			Ø 102 Ø 125	Ø 102 Ø 125
<b>W</b>	M5 x 8	M5 x 8 M6 x 9	M5 x 8	M6 x 9	M6 x 9 M8 x 12		M8 x 12 M10 x 15			M10 x 15 M12 x 18	M10 x 15 M12 x 18
<b>H</b>	-	25	30	35	35	40		55		70	75

## CONSTRUCTION PARTS - SPECIFICATIONS



PART	QUANTITY	DESCRIPTION	MATERIAL	SPECIFICATION	PROTECTION
01	1	Body	Extruded aluminium alloy	EN AW 6063 T6	A, N, TF
02	2	Piston	Aluminium alloy	EN AB 46100 T6	A
03	2	Cover	Aluminium alloy	EN AB 46100 T6	N, V, TF
04	1	Shaft	Carbon steel optional S.S. AISI 304 (A2) optional S.S. AISI 316 (A4)	ASTM A105	N
06 *	2	Antiejection key	Acetalic resin – PA66\PA66 – LEXAN		
07 *	1	Lower shaft O-Ring	NBR - Viton - Silicone		
10 *	1	Upper shaft O-Ring	NBR - Viton - Silicone		
12 *	1	Seeger ring	Carbon steel		N
13 *	2	Piston head bearing	Acetalic resin – PA66\PA66 – LEXAN		
14 *	2	Cover gasket	NBR - Viton - Silicone		
16	8	Cover fastening screw	Stainless Steel	AISI 304 (A2)	
17	4	Nut	Stainless Steel	AISI 304 (A2)	
18	4	Washer	Stainless Steel	AISI 304 (A2)	
19 *	4	O-Ring	NBR - Viton - Silicone		
21	2	Cover dowel	Stainless Steel	AISI 304 (A2)	
23 *	1	Shaft thrust washer	Stainless Steel	AISI 304 (A2)	
24 *	1	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	Piston dowel	Stainless Steel	AISI 304 (A2)	
<i>Only for "SR" Single Acting versions</i>					
01_X Y_SR	2	Added body	Extruded aluminium alloy	EN AW 6063 T6	A, N, TF
11_X Y_SR	0-12	Spring cartridge	Carbon Steel, PA 66, S.S. Steel	C-98	V
16_X Y_SR	8	Cover fastening screw	S.S. Steel	AISI 304 (A2)	
21_X Y_SR	2	Cover dowel	S.S. Steel	AISI 304 (A2)	
50	2	Spring internal guide	Polyamide		
* SPARE PARTS SET: Standard, Special HIGH Temperatures, Special LOW Temperatures, Special VERY-LOW Temperatures					
Protections					
A = Anodizing		N = chemical Nickel-plating		V = Painting    TF = Anodizing+PTFE	

## COATINGS - MATERIAL TREATMENTS

	AV	DESCRIPTION				APPLICATION FIELD
		Body	Covers	Pistons	Shaft	
	standard	Hard Anodizing	Polyester painting	Anodizing	High phosphorous nickel-plating (12%) <i>opt. AISI 316 (A4)</i>	- Industry, general use.
	Colour	Dark gray	Several av.ble	Brown	Polished steel	
	Thickness	50 µ	60/80 µ	15 µ	20 µ	
	NV	DESCRIPTION				APPLICATION FIELD
		Body	Covers	Pistons	Shaft	
		High phosphorous nickel-plating (12%)	Polyester painting	Anodizing	High phosphorous nickel-plating (12%) <i>opt. AISI 316 (A4)</i>	- Industry, general use. - Caustic soda. - Detergents. - Low alkaline solutions.
	Colour	Polished steel	Several av.ble	Brown	Polished steel	
	Thickness	20 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%) <i>opt. AISI 316 (A4)</i>	- Industry, general use. - Caustic soda. - Detergents. - Low alkaline solutions.
	Colour	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	
		Hard Anodizing + PTFE coating	Anodizing + PTFE coating	Anodizing	High phosphorous nickel-plating (12%) <i>opt. AISI 316 (A4)</i>	- Industry, general use. - Low alkaline and low acid solutions. - Marine environments. - High temperatures.
	Colour	Blue	Blue	Brown	Polished steel	
	Thickness	Anodizing 50 µ PTFE 15 µ	Anodizing 50 µ PTFE 15 µ	15 µ	20 µ	

### HARD 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 Hard Anodizing (alumine thickness 50 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 phosphor at a percentage of 12% (high-phospor). 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 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 appearance and several available colours, resistance to chemicals.**

### HARD ANODIZING + PTFE COATING

As further improvement of the hard anodizing on aluminium alloys, protective coating made of PTFE is used, 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 surfaces, subjected to corrosion).

- > **Best corrosion resistance, protection against high temperatures, crashes, extreme resistance to chemicals and in marine environment.**

### AIS I 316 (A4) STAINLESS STEEL SHAFT (OPTIONAL)

AISI 316 (A4) Stainless Steel shaft, with its great corrosion resistance, is recommended for special applications such as: marine and chemical environments, food and pharmaceutical industry, high temperature applications.



### ALPHA POMPE SPA

Via Molino Emili, 16 - 25030 MACLODIO (BS) Italy  
Tel. +39 030 97 86 61/2- Fax +39 030 97 86 63  
[www.alphair.it](http://www.alphair.it) - [www.alphapompe.it](http://www.alphapompe.it)

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