

# ARGAL

CHEMICAL PUMPS

*Alifter range*



series **ZMA**

*Sealed self-priming  
thermoplastic pumps*



EU product  
Made in Italy

## ALIFTER range

### ZMA series of self-priming pumps.

These horizontal pumps, for their construction, after the first filling, are able to self-priming automatically also with the suction pipe empty and without the requirement of the bottom valve.

Particularly suitable for the transfer operations of non-viscous liquids with suction lift up to 5 meters, to be reduced in accordance with their specific weight and value of the vapor pressure.

Another important use is in the discharge of chemicals from tankers because, in the final phase, there is no risk of dry running.

The open impeller construction makes them suitable for the carriage liquids with solids.



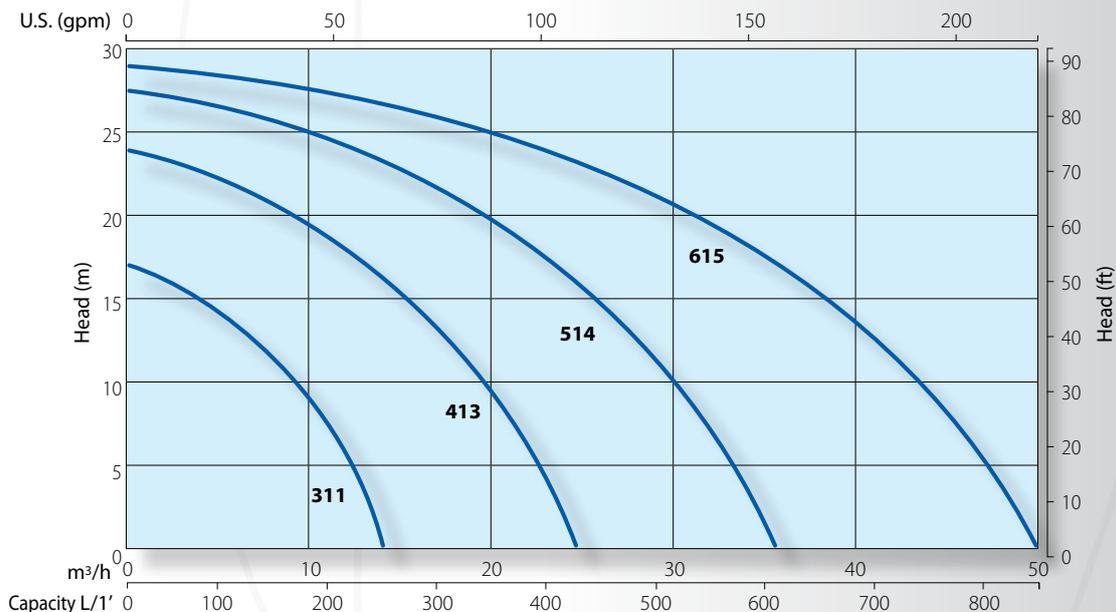
Argal operates with ISO 9001:2000 Quality System certified by SQS-Iqnet.

### KEY FEATURES

- no metal parts in contact with the pumped liquid;
- simplified construction;
- versatility of the various systems of the shaft seal according to the characteristics of the liquids;
- structural strength of the pump;
- possibility of pumping liquids with high specific weight as it is provided the application of different motor powers of each model of the pump;
- on request base or wheeled version.



### GENERAL PERFORMANCE CURVES - 2900 r.p.m. - 50 Hz



NOTES. All curves are referred to: water at 20°C - viscosity 1 °E - specific gravity 1 kg/dm<sup>3</sup>

### THE CONNECTIONS

table 1

PUMPS		ZMA			
		311	413	514	615
Ø inlet (BSP)	DeA	1/4" f	1/2" f	2" f	2 1/2" f
Ø outlet (BSP)	DeM	1/4" f	1/2" f	2" f	2 1/2" f
ISO flange	DnA	32	40	50	60
	DnM	32	40	50	60
ANSI flange	DnA	32	40	50	60
	DnM	32	40	50	60
MOTOR POWER	kW	0,75	2,2	4	5,5
		1,1	3	5,5	7,5
		1,5	4	7,5	
Fases	N°	3			
Voltage std	V	400 ± 5%			
Motor protection	IP	55			



**THE MATERIALS**

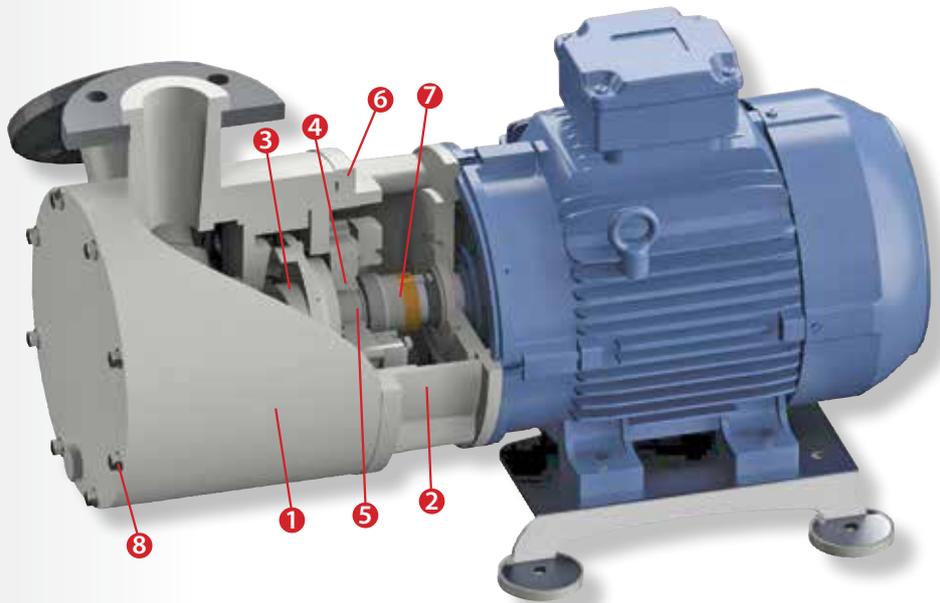
table 2

Versions	WR	WF	FC	QR
Pump casing	GFR-PP	GFR-PP	CFF-PVDF	PVC
Bracket	GFR-PP	GFR-PP	CFF-PVDF	CFF-PVDF
Impeller	GFR-PP	CFF-PVDF	CFF-PVDF	CFF-PVDF
Ogive	GFR-PP	CFF-PVDF	CFF-PVDF	CFF-PVDF
Diaphragm	PP	PP	PVDF	GFR-PTFE
Sleeve	GFR-PTFE	GFR-PTFE	PVDF	GFR-PTFE
Gasket	FKM (1)	FKM (1)	FKM (1),(2)	FKM (1),(2)
Baseplate	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Screws	Stainless steel	Stainless steel	Stainless steel	Stainless steel

(1),(2) Upon request: (1) EPDM, (2) FFKM

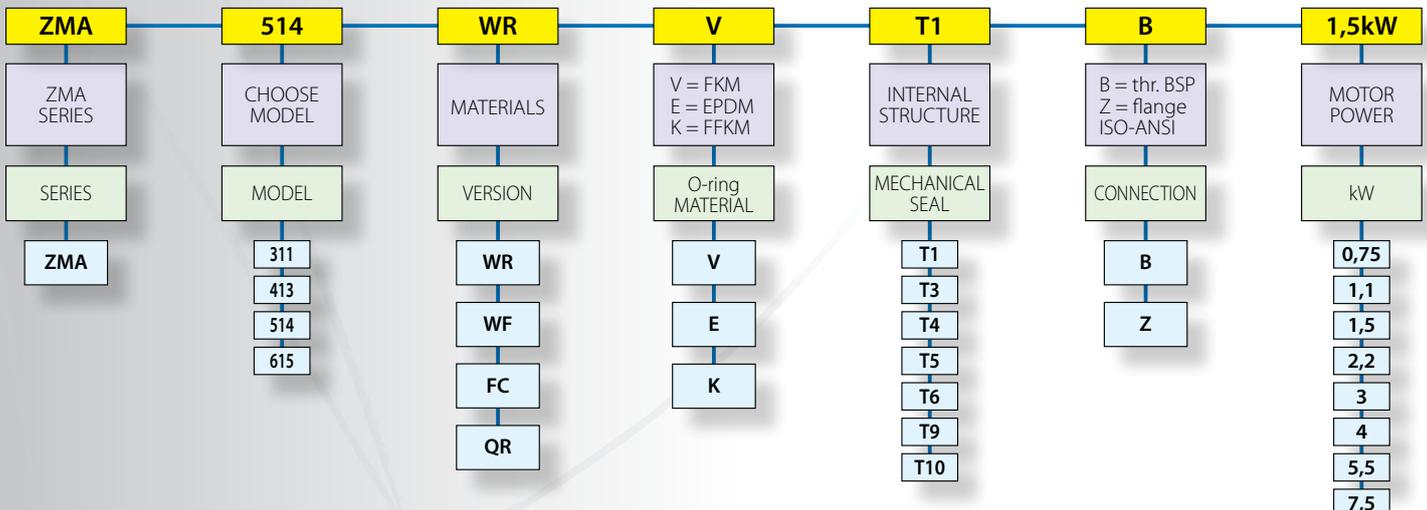
**TECHNICAL SPECIFICATIONS**

- 1 Stable dimension and strong structure guaranteed by the molding of thermoplastic materials; these features are insured by the thickness of each part.
- 2 Bracket with large windows in order to void accumulation of corrosive vapours.
- 3 Solid plastic open impeller with metal core to allow frequent start-stop cycles.
- 4 Diaphragm: special building procedure limits the damages in case of dry running and allows a quicker intervention and easy maintenance.
- 5 Sleeve: a good protection of the shaft.
- 6 Simple construction: only two parts (casing and bracket) carry out all the hydraulic and mechanical process by reducing the surface of static sealage (OR).
- 7 Total interchangeability of the most common mechanical seals. There are different types according to the liquid pumped.
- 8 Screws and nuts in stainless steel.



**IDENTIFICATION LABEL**

table 3



**THE MATERIALS**

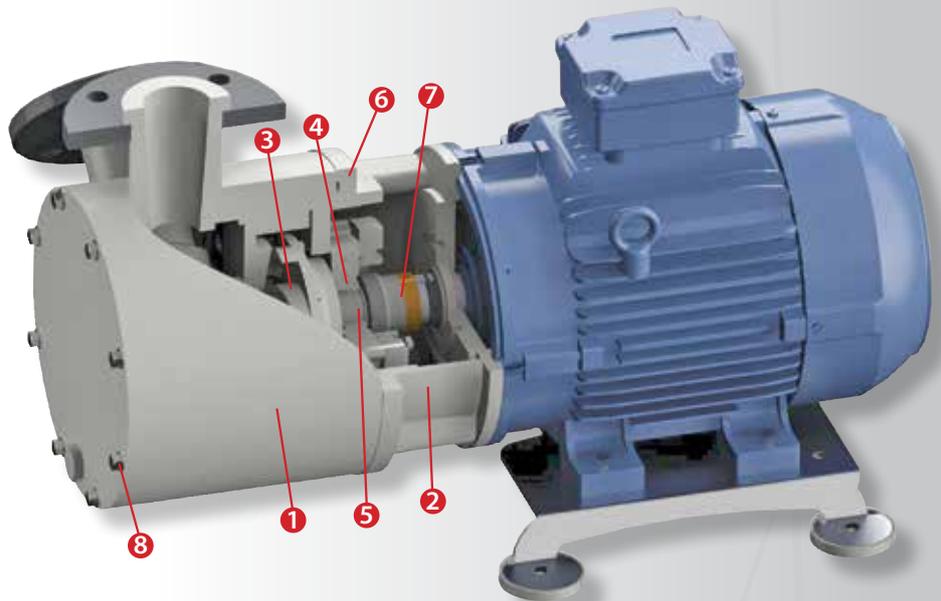
**table 2**

Versions	WR	WF	FC	QR
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Bracket	GFR-PP	GFR-PP	CFF-PVDF	CFF-PVDF
Impeller	GFR-PP	CFF-PVDF	CFF-PVDF	CFF-PVDF
Ogive	GFR-PP	CFF-PVDF	CFF-PVDF	CFF-PVDF
Diaphragm	PP	PP	PVDF	GFR-PTFE
Sleeve	GFR-PTFE	GFR-PTFE	PVDF	GFR-PTFE
Gasket	FKM (1)	FKM (1)	FKM (1),(2)	FKM (1),(2)
Baseplate	Stainless steel	Stainless steel	Stainless steel	Stainless steel
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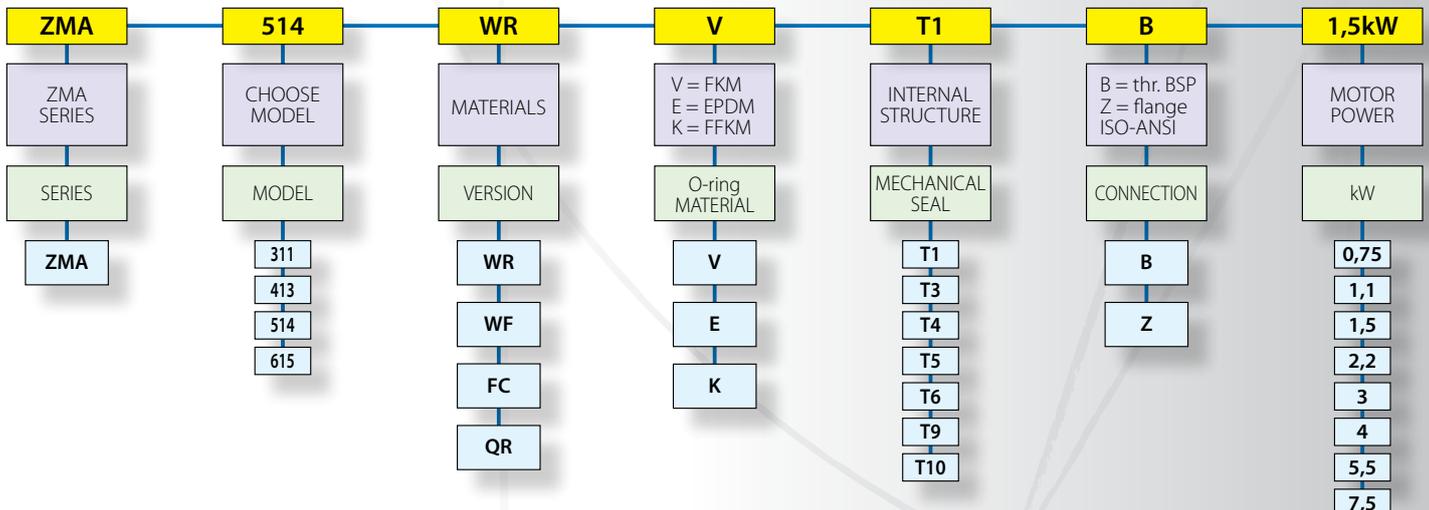
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**table 3**



## INSTALLATION STANDARDS OF ZMA PUMPS

If the specific gravity is more than 1 Kg/dm<sup>3</sup> the maximum suction head is to be reduced (see diagram 1).

If the temperature is more than 20 degrees Celsius the maximum suction head is to be reduced (see diagram 2).

To self-prime liquid with considerable emission of fumes at normal condition (1 atm; 20 °C) is permissible with limited suction head (e.g. HCL).

Maximum value of kinematic viscosity is 10 cSt.

An increase of the nominal diameter of the pipes involves an extension of the self-priming time.

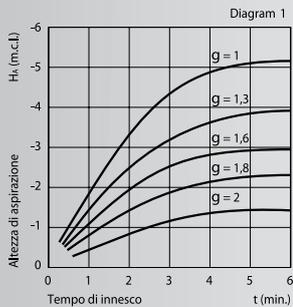
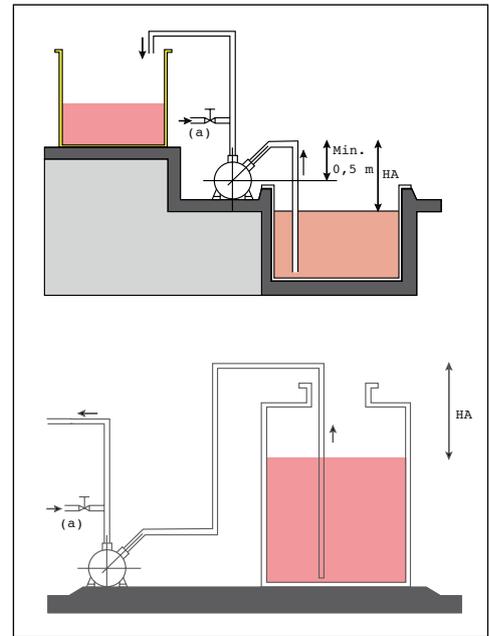
In presence of suction horizontal pipes the priming time is extended (e.g. at Ha = 5 m with horizontal pipe length of one meter the priming time is of 5.2 minutes [only 4.2 min. with vertical pipe]).

Planning the complex system do keep the priming time less than 6 min. and the NPSH value more than 0,4 atm. (for liquids at room temperature).

Siphon-shaped pipes (filled with liquids) could hamper the air flow during the priming phase.

In the suction tank the surface of the liquids must be at atmospheric pressure.

The delivery pipe outlet has to work at atmospheric pressure.



Example:

liquid: NaOH 42 Bè (g = 1,41 Kg/ dm<sup>3</sup>) T= 40° C

plant: HA = 2 m

suction head check

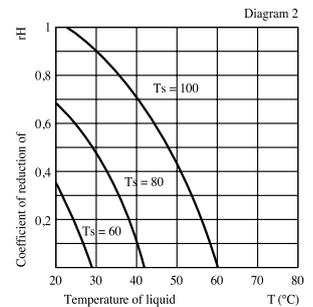
diagram 1: HA max (rif: g = 1,41 Kg/ dm<sup>3</sup>) = 3,5 m

diagram 2: rH (rif: T = 40° C) = 0,7; HA max = 3,5 x 0,7 = 2,45 m (> 2; OK).

Please contact us in order to give you our technical support and assistance.

g = (Kg/dm<sup>3</sup>) specific gravity of the liquid.

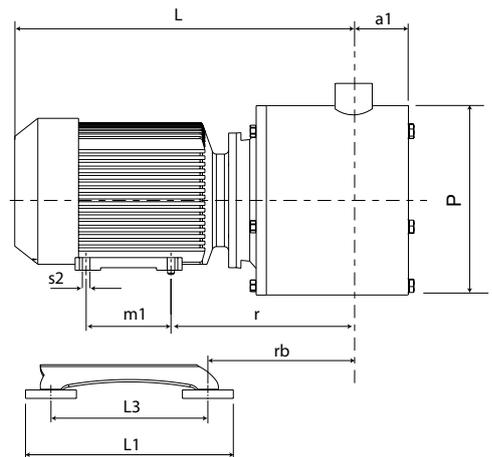
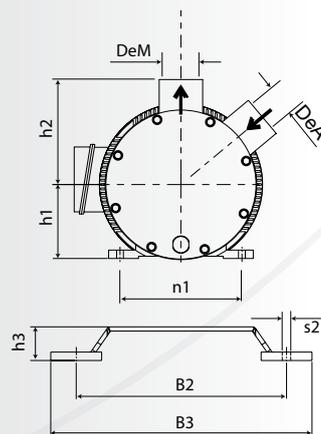
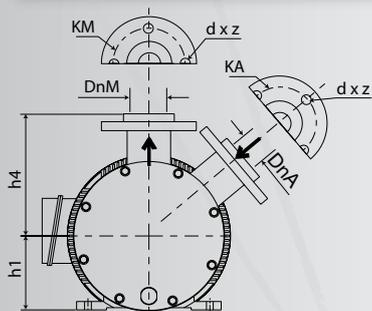
TS = boiling or decomposition temperature (°C).



## DIMENSIONS

table 8

ZMA	Motor power (kW)	Flanged connections				Pump and motor dimensions											Baseplate dimensions (optional)						
		Outlet (ISO/ANSI)	Inlet (ISO/ANSI)		KA	Ødxz	a1	L(*)	G(*)	h1	h2	h4	s	P	m1	n1	r	L1	L3	B2	B3	s2	h3
311	0.75	100 / 89	18 x 4	100 / 89	18 x 4	53	453	132	80	107	200	9	185	100	125	253	245	185	248	308	14	40	215.5
	1.1		/		/		453	132	80														
	1.5		16 x 4		16 x 4		463	140	90														
	2.2		/		/		500	140	90														
413	3	110 / 98	18 x 4	110 / 98	18 x 4	73	542	147	100	130	210	10	223	140	125	140	245	185	248	308	14	40	228
	4		16 x 4		16 x 4		550	174	112														
	5		/		/		550	174	112														
514	5.5	125 / 121	18 x 4	125 / 121	18 x 4	79	540	166	112	165	230	12	268	140	190	299	259	205	305	359	14	55	241.5
	7.5		19 x 4		19 x 4																		
615	5.7	145 / 140	18 x 4	145 / 140	18 x 4	124	688	166	112	165	250	12	268	140	190	317	259	205	305	359	14	55	259.5
	7.5		19 x 4		19 x 4																		





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