ARGAL

CHEMICAL PUMPS

Hippo range

Sealed self-priming thermoplastic pumps

EU product
Made in Italy

Hippo range

ZMA series of self-priming pumps.

These horizontal pumps, for their construction, after the first filling, are able to self-primes 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.

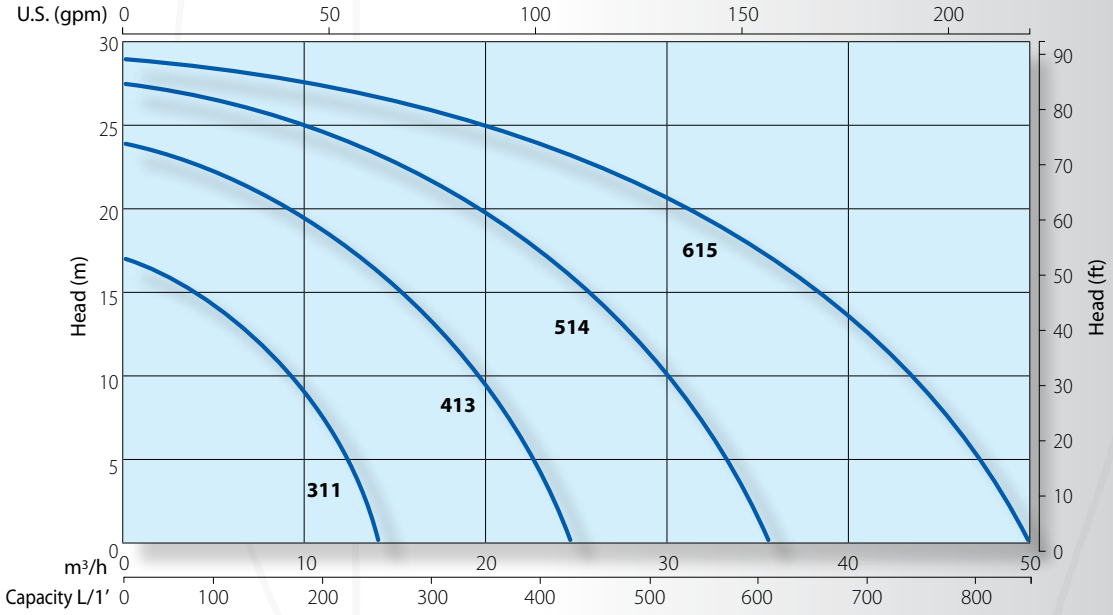
Argal operates with ISO 9001:2000
Quality System certified by SQS-Iqnet.

ASSOPOMPE member of Europump

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 PERFORMACE CURVES - 2900 r.p.m. - 50 Hz



NOTES. All curves are referred to: water at 20°C - viscosity 1 °E - specific gravity 1 kg/dm³

THE CONNECTIONS **table 1**

		ZMA			
PUMPS		**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 4

Version	Reinforced Polymers	Min temp.	Max temp.	Environment temp.
WR	GFR-PP	-5°C (23°F)	80°C	0÷40°C (14÷104°F)
WF	GFR-PP/PVDF	-5°C (23°F)	80°C	0÷40°C (14÷104°F)
FC	CFF-PVDF	-30°C (-22°F)	110°C	-20÷40°C (-4÷104°F)
QR	UPVC/PVDF	0°C (32°F)	40°C	0÷40°C (14÷104°F)

WR - The main resin is **PP** (polypropylene) reinforced with 30% glass fibre. It has a good mechanical resistance and has good dimensional stability when hot.

WF - The main resin is **PP** (polypropylene) reinforced with 30% fibre glass. The main components are in PVDF because this material has got a higher resistance to abrasion and use.

FC - The main resin is **PVDF** (Vinylidene polyfluoride) reinforced with 20% fibre glass. Good resistance to abrasion and is also mechanically resistant.

QR - Main resin is **PVC** (Polyvinyl chloride). Other parts are made in **PVDF**.
This version is particularly suitable to chromic acid, sulphur nitrite mixtures, sulphuric acid, sodium hypochlorite, turpentine and ozone.

ELASTOMERS table 5

Version	Material	Description
V	FKM	Fluorine elastomer
E	EPDM	Ethylene-propylene rubber
K	FFKM	Perfluorelastomer

THE CONSTRUCTION OF MECHANICAL SEALS table 6

	External - Single				Double		
SEAL MODEL	**T1**	**T3**	**T4**	**T5**	**T6**	**T9**	**T10**
ROTATING PART	Carbon	SiC	PTFE/GFR	SiC	Carbon	SiC	SiC
FIXED RING	CER	CER	CER	SiC	CER	CER	SiC
BELLOWS	FKM	FKM	PTFE	FKM/EPDM	FKM	FKM	FKM/EPDM
2^ ROTATING PART	/	/	/	/	Carbon	Carbon	Carbon
2^ FIXED RING	/	/	/	/	CER	CER	CER

T1

T3

T4

T6

SPECIFICATION OF MECHANICAL SEALS table 7

Condition of work	Model	Tipology
Clean chemical mediums – max pressure 3 bar	T1	Single external, elastomer bellows
Clean chemical mediums – suspended solids	T3	Single external, elastomer bellows
Concentrated acids – no suspended solids	T4	Single external, PTFE bellows
Clean chemical mediums – hard suspended solids	T5	Single external, elastomer bellows
General purpose	T6	Double flushed, elastomer bellows
Suspended solids	T9	Double flushed, elastomeric bellows
Hard suspended solids / salts	T10	Double flushed, elastomer bellows

INSTALLATION STANDARDS OF ZMA PUMPS

If the specific gravity is more than 1 Kg/dm³ 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 permittable with limited suction head (e.g. HCL).
Maximum value of kinematic viscosità iis 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 lenght 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. ad 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.

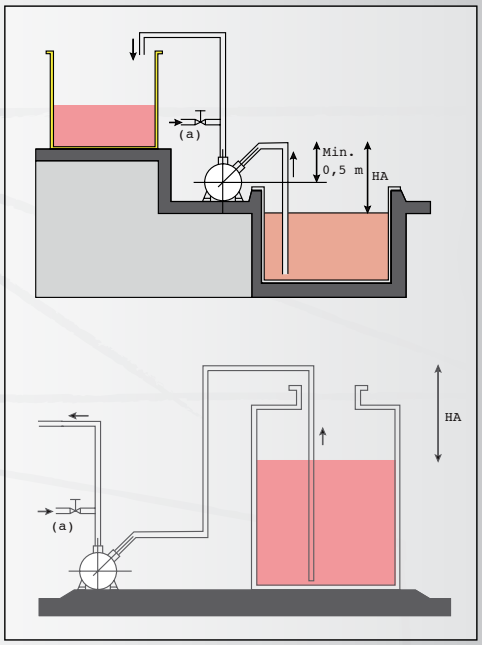
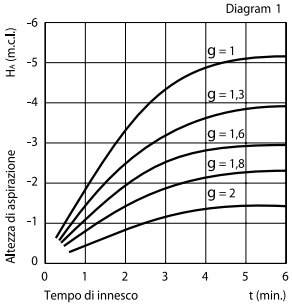


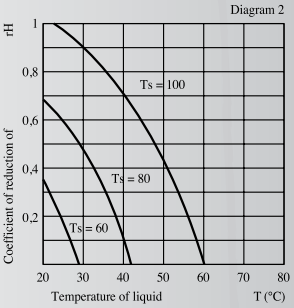
Diagram 1



Example:

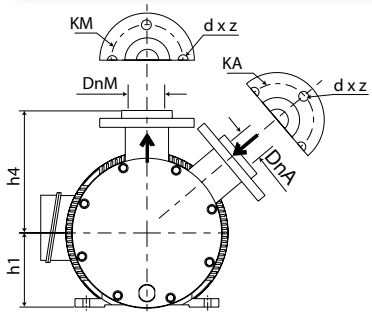
liquid: NaOH 42 Bè (g = 1,41 Kg/ dm³) T= 40° C
plant: HA = 2 m
suction head check
diagram 1: HA max (rif.: g = 1,41 Kg/ dm³) = 3,5 m
diagram 2: rH (rif.: T = 40° C) = 0,7; HA max = 3,5 x 0,7 = 2,45 m (> 2; OK).
Please contact us in order to give you our technical support and assistance.
g = (Kg/dm³) specific gravity of the liquid.
TS = boiling or decomposition temperature (°C).

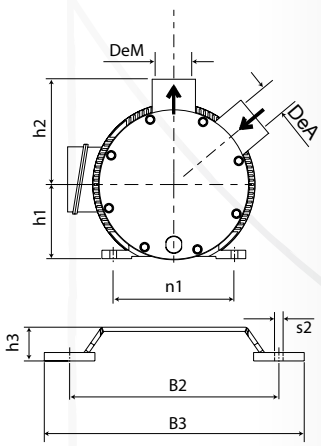
Diagram 2

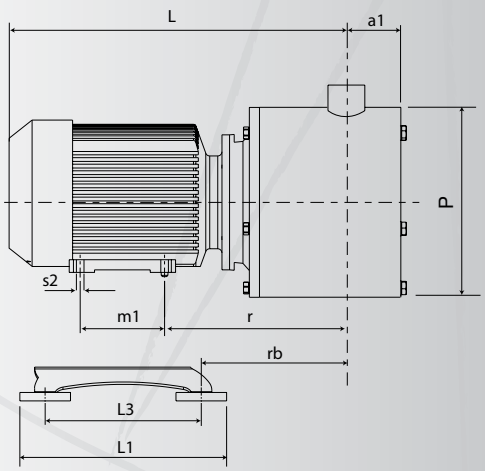


DIMENSIONS **table 8**

		Flanged connections				Pump and motor dimensions											Baseplate dimensions (optional)						
		Outlet (ISO/ANSI)		Inlet (ISO/ANSI)																			
ZMA	Motor power (kW)	KM	Ødxz	KA	Ødxz	a1	L(*)	G(*)	h1	h2	h4	s	P	m1	n1	r	L1	L3	B2	B3	s2	h3	rb
311	0.75	100 / 89	18 x 4 / 16 x 4	100 / 89	18 x 4 / 16 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						463	140	90			10			140	259							
413	2.2	110 / 98	18 x 4 / 16 x 4	110 / 98	18 x 4 / 16 x 4	73	500	140	90	130	210	10	223	125	140	271.5	245	185	248	308	14	40	228
	3						542	147	100					140		278.5	259	205	305	359			
	4						550	174	112			12			160	285.5							
514	4	125 / 121	18 x 4 / 19 x 4	125 / 121	18 x 4 / 19 x 4	79	540	166	112	165	230	12	268	140	190	299	259	205	305	359	14	55	241.5
	5.5																						
	7.5																						
615	5.7	145 / 140	18 x 4 / 19 x 4	145 / 140	18 x 4 / 19 x 4	124	688	166	112	165	250	12	268	140	190	317	259	205	305	359	14	55	259.5
	7.5																						







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 (optional)	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.

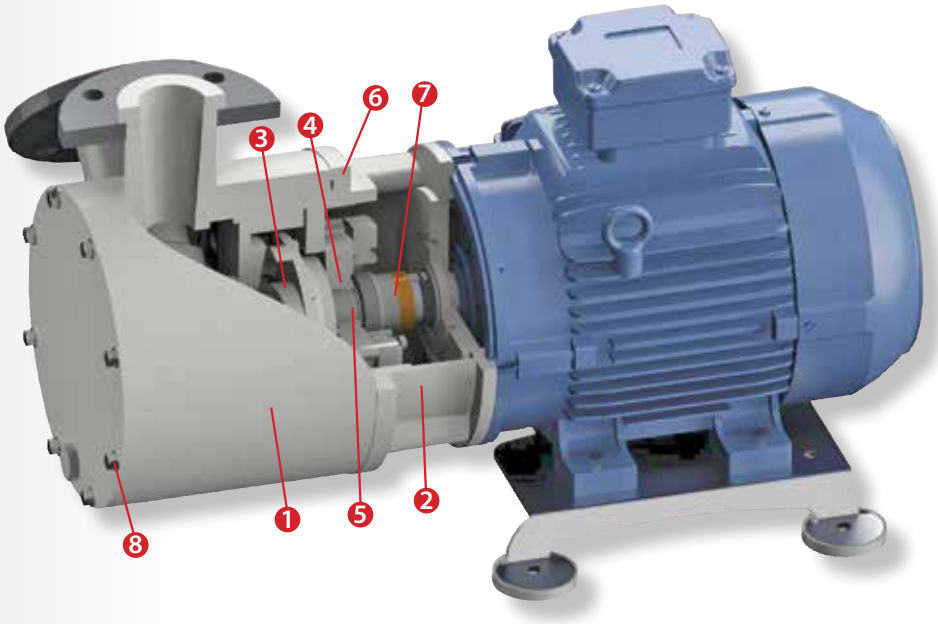
4 Diaphragm: special building procedure limits the damages in case of dry running and allows a quicker intervention and easy maintenance.

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

ZMA	514	WR	V	T1	B	5,5kW
HIPPO SERIES	CHOOSE MODEL	MATERIALS	V = FKM E = EPDM K = FFKM	INTERNAL STRUCTURE	B = thr. BSP Z = flange ISO-ANSI	MOTOR POWER
SERIES	MODEL	VERSION	O-ring MATERIAL	MECHANICAL SEAL	CONNECTION	kW
ZMA	311 413 514 615	WR WF FC QR	V E K	T1 T3 T4 T5 T6 T9 T10	B Z	0,75 1,1 1,5 2,2 3 4 5,5 7,5

ARGAL CHEMICAL PUMPS

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