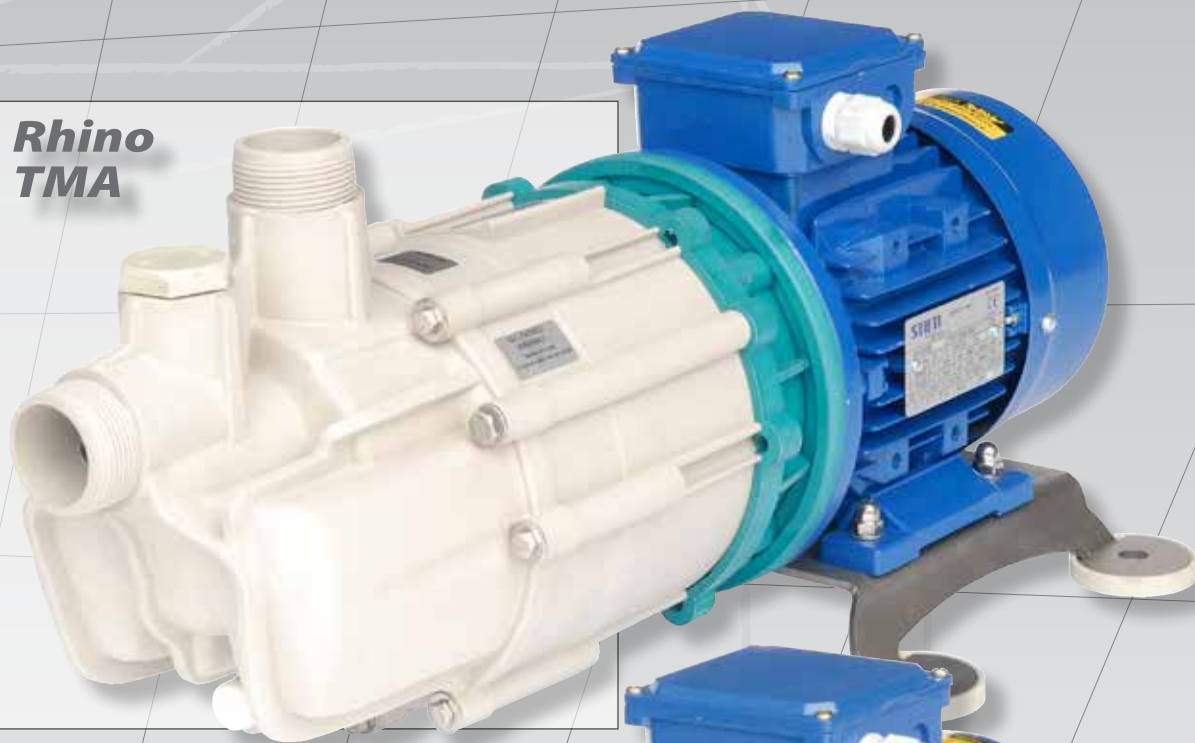


# ARGAL

## CHEMICAL PUMPS

**Rhino  
TMA**



**Alifter  
TMA**



**self-priming thermoplastics  
magnetic drive pumps**

**Chemical pumps**

In this catalog Argal offers self priming pumps with magnetic drive “Rhino” and “Alifter of TMA serie. The structural parts and pump casings are injection molded reinforced thermoplastic polymers. The internal components are: ceramic oxides, HD carbon, fluorinated elastomers, excluding any metal part in contact with the pumped liquid. Are combinations of materials for maximum performance.

**Pump “Hermetic”**

The outer magnet assembly rotates together with the motor shaft by generating a magnetic torque that rotates a second group of magnets which is overmolded on the internal centrifugal impeller. The rear casing, suitably shaped and coupled to the pump casing, separates the two magnetic groups, forming a hermetic casing.

**Safety and Life**

The magnetic drive system finally excludes any type of rotating seal. The only necessity of sealing is ensured by static Oring seals.

**Versatility and performance**

Strong magnetic coupling made up of rare-earth materials (Neodimium Iron Boron) and “N” (standard), “P” (powered) or “S” (strong-powered) versions allow to pump, also at maximum flow, liquids with 1.05 - 1.35 - 1.8 specific gravity respectively.

**R-N-X:** three internal configuration of constructive materials for many applications: from clean water to waste and slightly abrasive liquids, strong alkali or salts such as sodium hypochlorite, and acids such as chromic, nitric, sulphuric, etc..

**Conformity ATEX**

All pumps in the range ALIFTER, with specific execution GX (E-CTFE added with conductive carbon fibres and motor E-exd), are approved to operate in explosive atmospheres, classified as per ATEX directive, “CAT 2” Zone 1 (Series II 2GD IIB at 135 °C). Inside of pump should be placed safety device.



is member of



**THE MATERIALS**

table 1

VERSION	REINFORCED POLYMERS	MIN. TEMP.	MAX TEMP.	ENVIRONMENT TEMP.
WR	GFR/PP	-5°C (23°F)	80°C (176°F)	0÷40°C (14÷104°F)
GF	CFF/E-CTFE	-20°C (-4°F)	100°C (212°F)	-20÷40°C (-4÷104°F)
GX*				

Note: Maximum inlet pressure: 1,5 bar - (\*) Compliant to ATEX 94/9/EC regulations

**THE CONSTRUCTIONS**

table 2

VERSION	WR			GF			GX*	
	R1	X1	N1	R2	X2	N2	R2	N2
Volute casing	GFR-PP			CFF-E-CTFE				
Rear casing								
Centrifugal impeller	CER			SiC				
Guide bushing								
Shaft	CARB.HD			SiC			FKM (1) (2)	
Thrust bush	SiC			Stainless steel				
OR gasket	FKM (1)			Stainless steel				
Screws	Stainless steel							

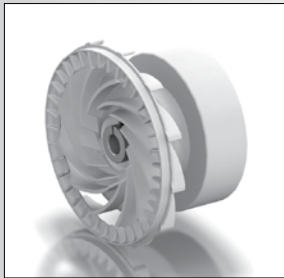
Upon request:(1)EPDM and (2) FFKM - \* Compliant to ATEX 94/9/EC regulations

**RHINO - TMA**

It is an innovative pump designed by the R&D department of Argal with a pending international patent. It is a magnetic drive, self-priming, biphasic turbo radial pump and is manufactured either in polyolefinic thermoplastic polymer (PP) or fluorinated (E-CTFE). Thanks to its construction this TMA pump develops higher suction head and shorter priming timethan self priming centrifugal pumps; its biphasic impeller primes fluids with high density, viscosity and vapour such as sulphuric 98%, hydrochloric 33%, nitric, phosphoric acids, sodium hypochlorite, caustic soda, ferric chlorite provided the negative suction head is up to 4 metres. The high torque magnetic joint and the option to adopt electric motors of increasing rated power allows this device to pump a broad range of chemical liquids of variable specific weight without compromising its typical hydraulic performances.

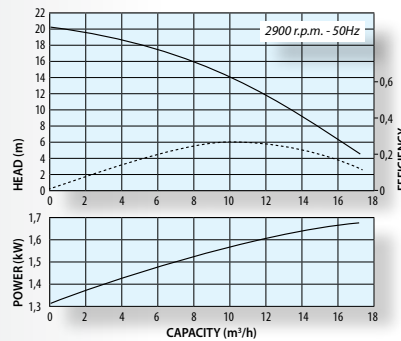
**MAIN FEATURES**

- Choice of material chemically resistant to all corrosiveliquid
- Ability to prime from an empty suction duct
- Fast priming
- Magnetic core embedded in the biphasic impeller
- Max. lift = -6 m
- Max. allowed specific gravity up to 2 kg/dm<sup>3</sup>
- Minimum NPSHa = 3 m (abs)
- Standard motors IEC or NEMA.

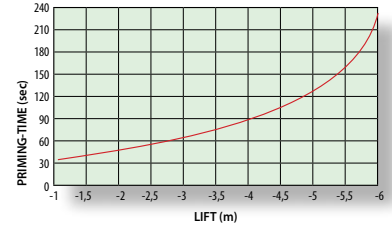


Biphasic patented impeller of self priming Rhino pump.

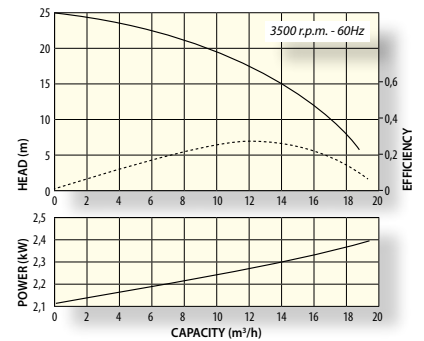
**PERFORMANCE CURVE**  
10.14



**PRIMING TIME WITH WATER**



**PERFORMANCE CURVE**  
11.18



**MOTORS**

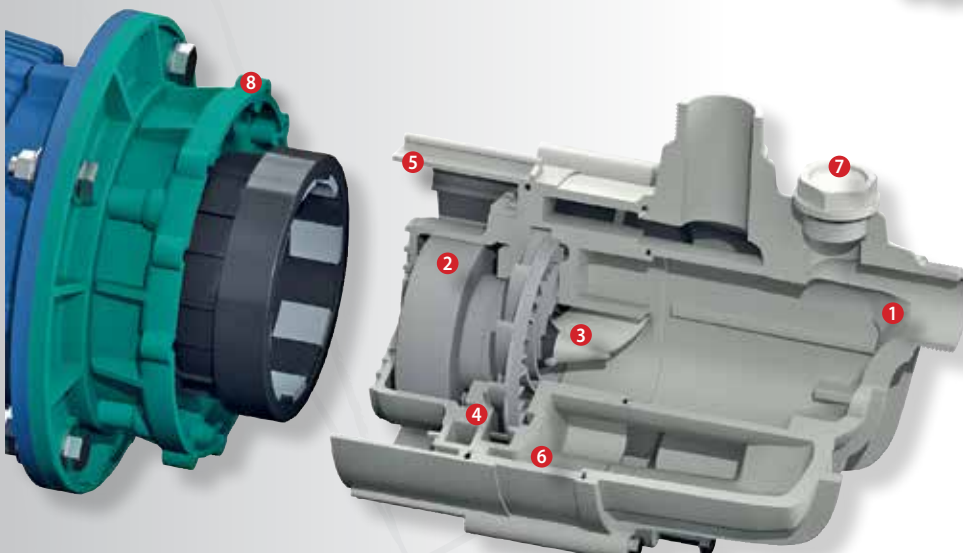
table 3

Model	Power (kW)	IEC frame	Phase	Voltage	Hz	Protection
10.14	P 2.2	90L	3 - 1	400 ± 5%	50	IP 55
	S 3	100	3 - 1	220 ± 5%		
11.18	P 3	100	3 - 3	460 ± 5%	60	IP 55
	S 4	112	3	230 ± 5%		

**CONNECTIONS**

table 4

Model	DN	DeA	DeM	ISO		ANSI	
				k	d x z	k	d x z
10.14	40	1 1/2"	1 1/2"	110	18 x 4	98	16 x 4
11.18	40	1 1/2"	1 1/2"	110	18 x 4	98	16 x 4



**TMA - SECTION VIEW**

- 1 - Connections casing
- 2 - Impeller
- 3 - Thrust bushing
- 4 - Central disk
- 5 - Rear casing
- 6 - Front volute casing
- 7 - Filling plug
- 8 - Bracket

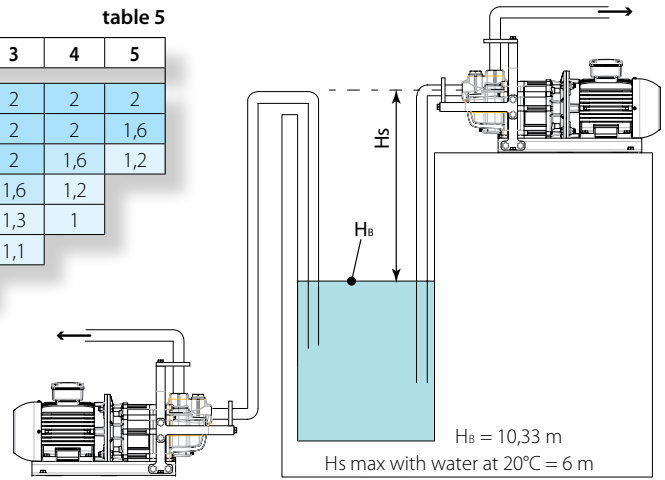


**ASSESS OF MAXIMUM LIFT** table 5

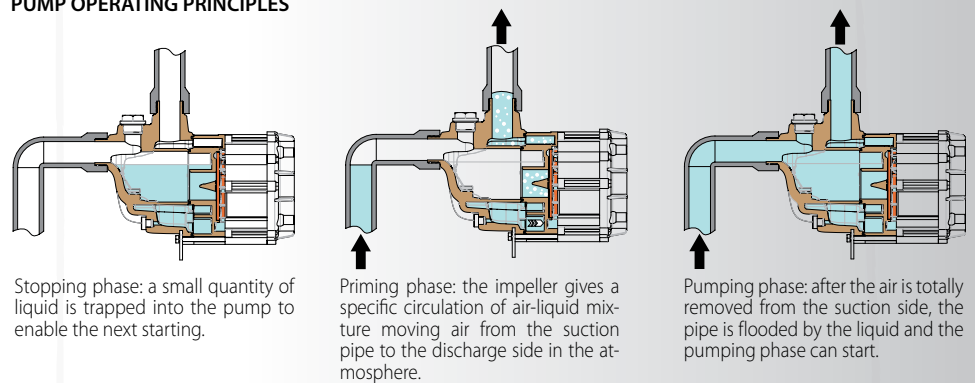
Vapour Pressure			$P_v[m_{H_2O}]$	0,25	0,75	1,25	2	2,5	3	4	5
Lift			$H_s[m_{H_2O}]$	2	2	2	2	2	2	2	2
			-1	2	2	2	2	2	2	2	1,6
			-1,5	2	2	2	2	2	2	1,6	1,2
			-2	2	2	2	2	1,8	1,6	1,2	
			-2,5	2	2	2	2	1,5	1,3	1	
			-3	2	2	2	1,7	1,2	1,1		
			-3,5	1,9	1,8	1,6	1,4	1,1			
			-4	1,7	1,5	1,4	1,2				
			-4,5	1,4	1,3	1,2	1				
			-5	1,3	1,2	1,1					
			-5,5	1,1	1,1	1					
			-6	1							

1  $[m_{H_2O}] = 9806 [Pa]$   
 (1) ref. to 20°C - 68°F

(2) In table 3 select the Pv e p.s. value  $\geq$  respect to the pumped fluid



**PUMP OPERATING PRINCIPLES**



**ACCESSORIES**

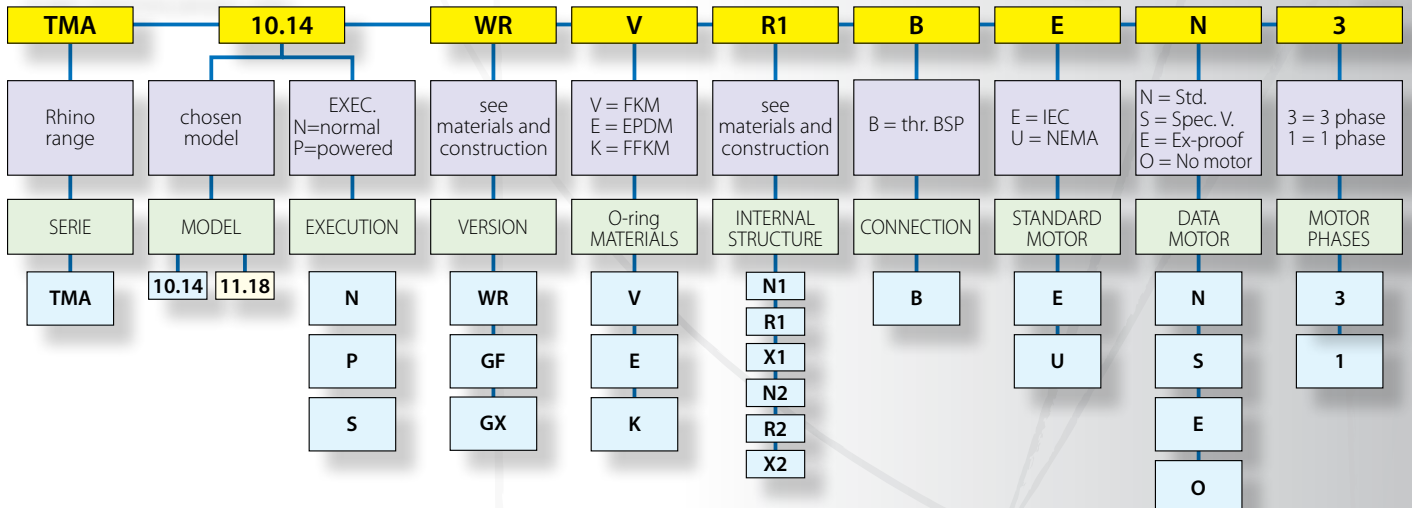
- Base in stainless steel
- Base prepared with pipe support (in stainless steel)
- Trolley in stainless steel (without electric device)
- Trolley in stainless steel (with electric device)

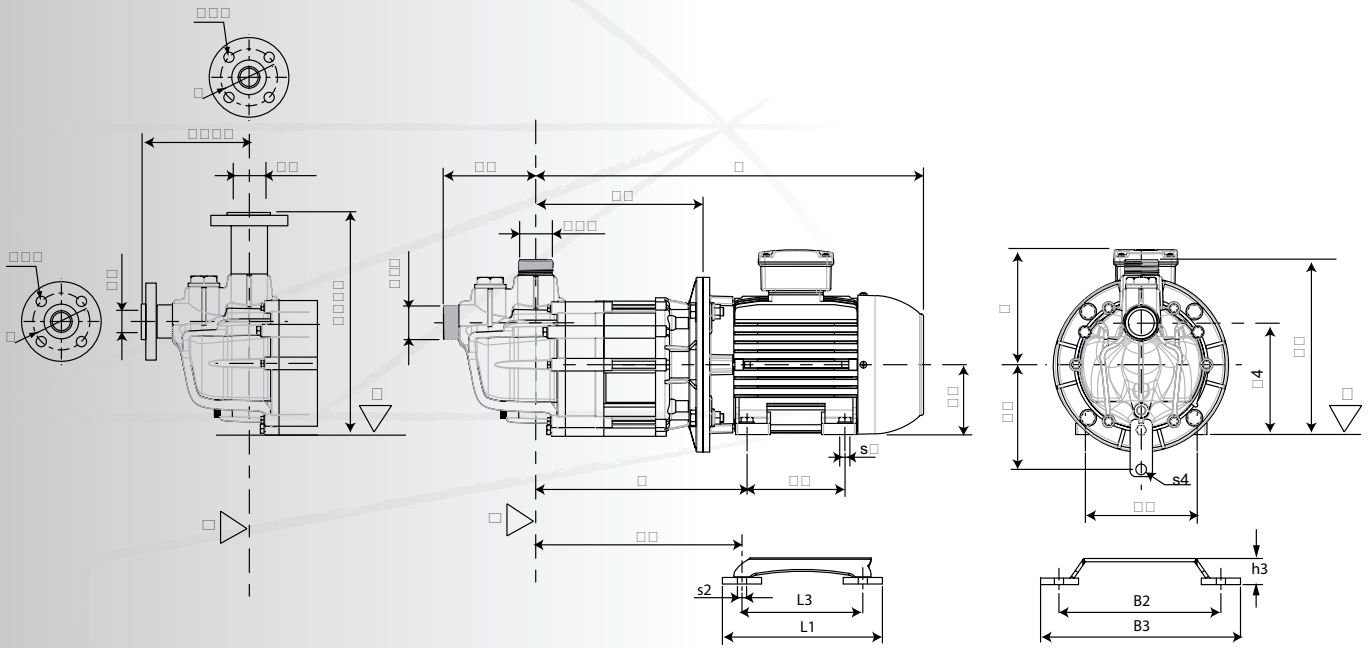
Rhino pump on prepared base



**PUMP IDENTIFICATION LABEL**

table 6



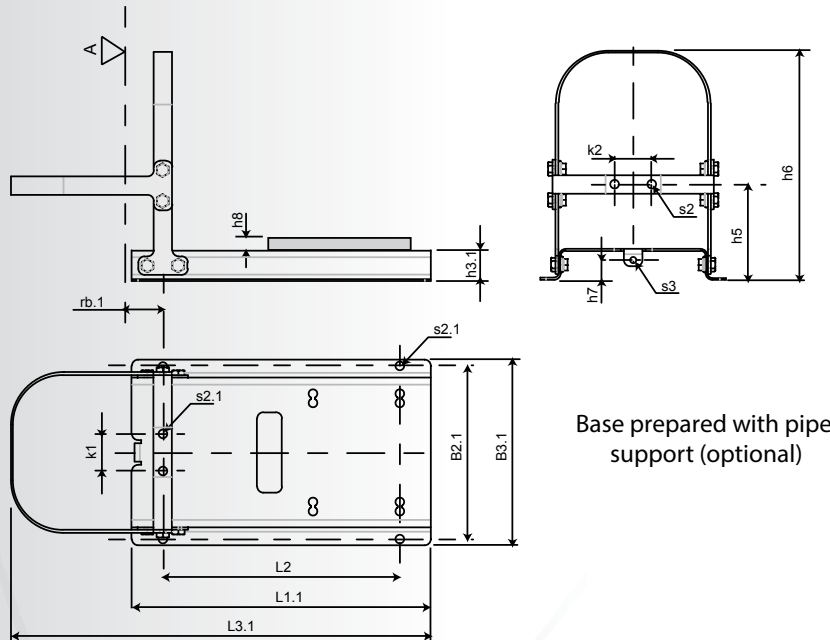


**PUMP DIMENSIONS**

**table 7**

model		a1	a1.1	h2	h2.1	h4	L(1)	r	r1	g(1)	h1	m1	n1	s1	HF	s4
10.14	P	132	140	240	285	150	510	224.5	224.5	140	90	125	140	10	130	ø8
	S			250	295	160	570	239.5	239.5	150	100	140	160	12		
11.18	N	132	140	250	295	160	570	302.5	239.5	150	100	140	160	12	130	ø8
	P			262	307	172	580	309.5		180	112		190			

- (1) can change for different motors builder



Base prepared with pipe support (optional)

**BASE DIMENSIONS**

**table 8**

model		Base standard (optional)						Base prepared with pipe support (optional)															
		rb	B2	B3	L1	L3	h3	s2	rb1	B2.1	B3.1	L1.1	L2	L3.1	h3.1	s2.1	h5	h6	h7	h8	k1	k2	s3
10.14	P	237	248	308	245	185	40	ø14	60.5	250	300	482	382	677	50	ø14	154.5	370	32	20	60	60	ø10
	S	252	305	359	259	205	40	ø14	60.5	250	300	482	382	677	50	ø14	154.5	370	32	10			
11.18	N	252	305	359	259	205	40	ø14	60.5	250	300	482	382	677	50	ø14	154.5	370	32	10	60	60	ø10
	P																			0			

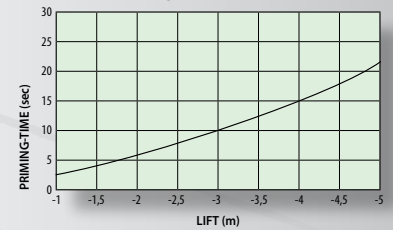
## ALIFTER TMA

This Peripheral pump is a product between the displacement and the centrifugal pump, in which the medium is pumped in a peripheral channel. It can operate with inlet and outlet reversible by reversing the direction of motor rotation and are adequate to suck up chemical liquids with high specific gravity and/or high vapour tension.

## MAIN FEATURES

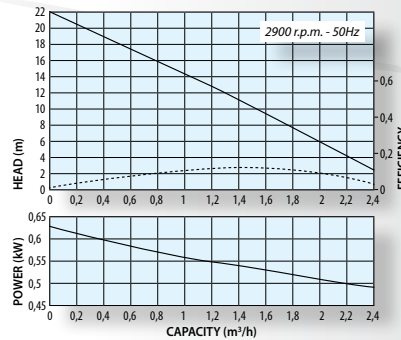
- Start-up with empty pipes
- Fast priming-phase
- Maximum Lift = -5 m
- Reversible (inlet-outlet reversal)
- Suitable for specific gravity up to 2 kg/dm<sup>3</sup>
- Suitable for vapour pressure up to 1 m (H<sub>2</sub>O @ 45°C)
- Minimum NPSHa (available on the plant) = 3 m (abs)
- Impeller replaceable apart from magnets
- IEC or NEMA standard motors can be installed

### PRIMING TIME WITH WATER



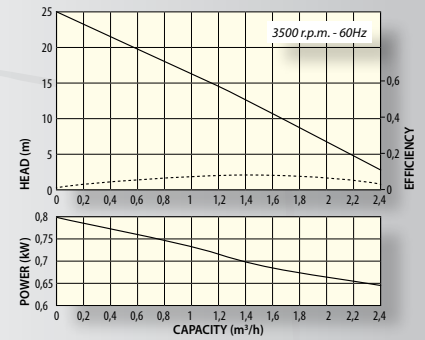
### PERFORMANCE CURVE

01.16



### PERFORMANCE CURVE

01.21



## MOTORS

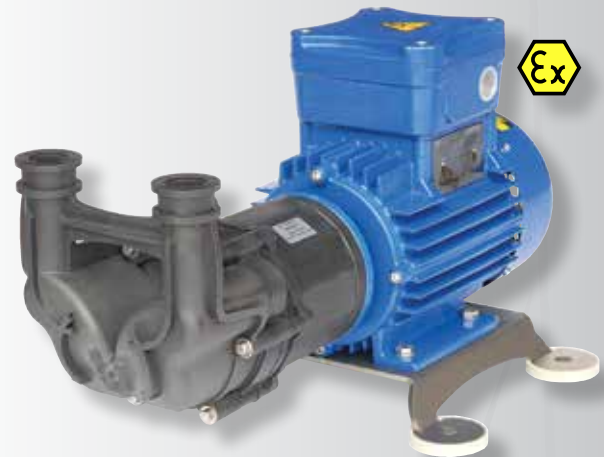
table 9

Model	Power (kW)	IEC frame	Phase	Voltage	Hz	Protection
01.16	N	71	3	400 ± 5%	50	IP 55
	P	80	-	-		
	S	80	1	220 ± 5%		
01.21	P	80	3	460 ± 5%	60	IP 55
	S	80	-	-		
			1	230 ± 5%		

## CONNECTIONS

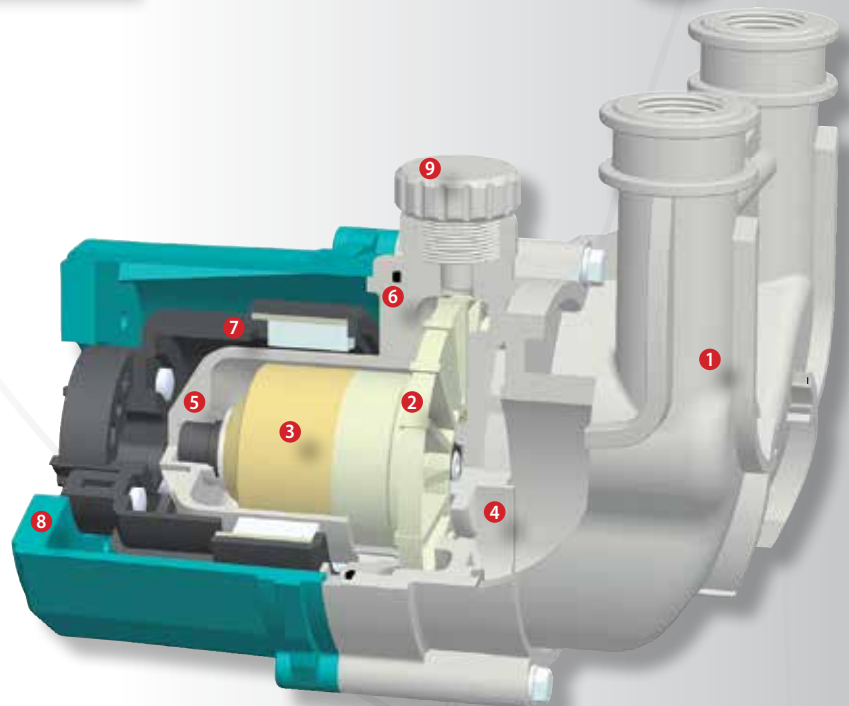
table 10

Model	DN	DeA	DeM	ISO		ANSI		JIS	
				k	d x z	k	d x z	k	d x z
01.16	20	3/4" f	3/4" f	75	14 x 4	70	16 x 4	75	15 x 4
01.21	20	3/4" f	3/4" f	75	14 x 4	70	16 x 4	75	15 x 4



## TMA - SECTION VIEW

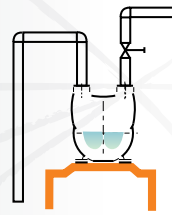
- 1 - Connections casing
- 2 - Impeller
- 3 - Magnetic core
- 4 - Front volute casing
- 5 - Rear casing
- 6 - OR gasket
- 7 - Drive magnet assembly
- 8 - Bracket
- 9 - Filling plug



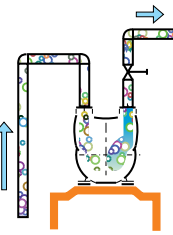
**ACCESSORIES**

- Base in stainless steel
- Trolley in stainless steel (without electric device)
- Trolley in stainless steel (with electric device)
- Check valve + foot strainer in PP or PVDF
- Drum pipe (m. 1,2) with check valve and foot strainer in PP or PVDF
- Dispenser nozzle in PP or PVDF

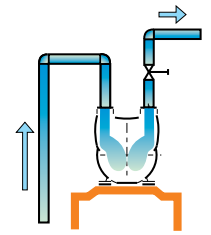
**PUMP OPERATING PRINCIPLES**



Stopping phase: a small quantity of liquid is trapped into the pump to enable the next starting.



Priming phase: the impeller gives a specific circulation of air-liquid mixture moving air from the suction pipe to the discharge pipe to the atmosphere.

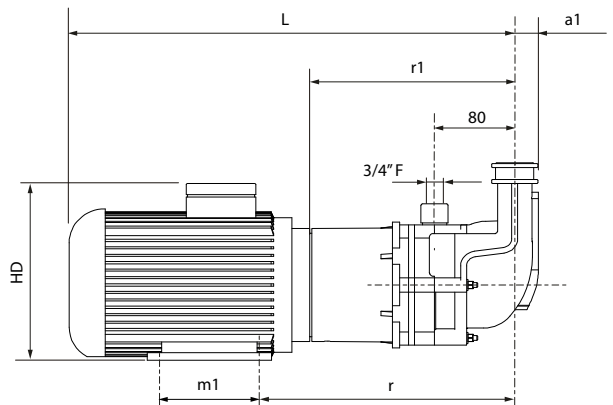
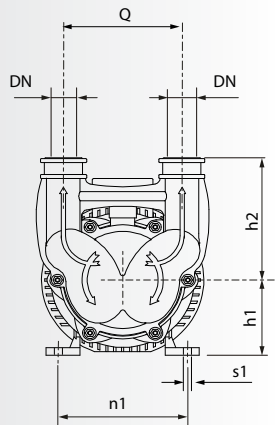
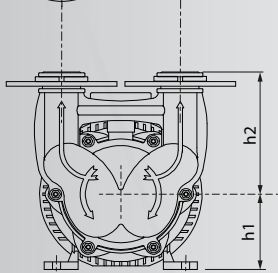
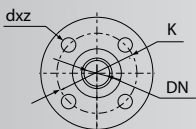


Pumping phase: after the air is totally removed from the suction side, the pipe is flooded by the liquid and the pumping phase can start.

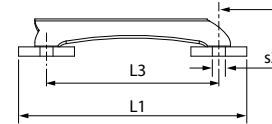
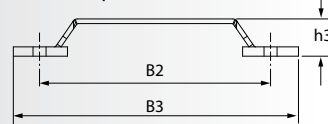
**PUMP IDENTIFICATION LABEL**

table 11

<b>TMA</b>	<b>06.08</b>		<b>WR</b>	<b>V</b>	<b>R1</b>	<b>B</b>	<b>E</b>	<b>N</b>	<b>3</b>
Alifter range	chosen model	EXEC. N=normal P=powered	see materials and construction	V = FKM E = EPDM K = FFKM	see materials and construction	B = thr. BSP	E = IEC U = NEMA	N = Std. S = Spec. V. E = Ex-proof O = No motor	3 = 3 phase 1 = 1 phase
SERIE	MODEL	EXECUTION	VERSION	O-ring MATERIALS	INTERNAL STRUCTURE	CONNECTION	STANDARD MOTOR	DATA MOTOR	MOTOR PHASES
TMA	01.16 01.21	N P S	WR GF GX	V E K	N1 R1 X1 N2 R2 X2	B	E U	N S E O	3 1



Base standard (optional)



**BASE DIMENSIONS**

table 12

model	a1	Q	h2	L(!)	r	r1	h1	m1	n1	s1	Base standard (optional)							
											rb	B2	B3	L1	L3	h3	s2	
01.16	N	23.5	118	129	435	249.5	204.5	71	90	112	7	216	248	308	245	185	40	ø14
	P																	
	S																	
01.21	N	23.5	118	129	450	264.5	214.5	80	100	125	10	227	248	308	245	185	40	ø14
	P																	

- (!) can change for different motors builder



Member of AIB  
associazione  
industriale  
Bresciana

Via Labirinto, 159 - 25125 BRESCIA - ITALY  
Tel. +39.030.3507011 - Fax +39.030.3507077 - Export dpt. Tel. +39.030.3507033  
Web: [www.argalpumps.com](http://www.argalpumps.com) - E-mail: [export@argal.it](mailto:export@argal.it)

*It is the policy of ARGAL to always improve its products and the right is reserved to alter specifications at any time without prior notice.  
No part of this publication may be reproduced in any form or any means.*