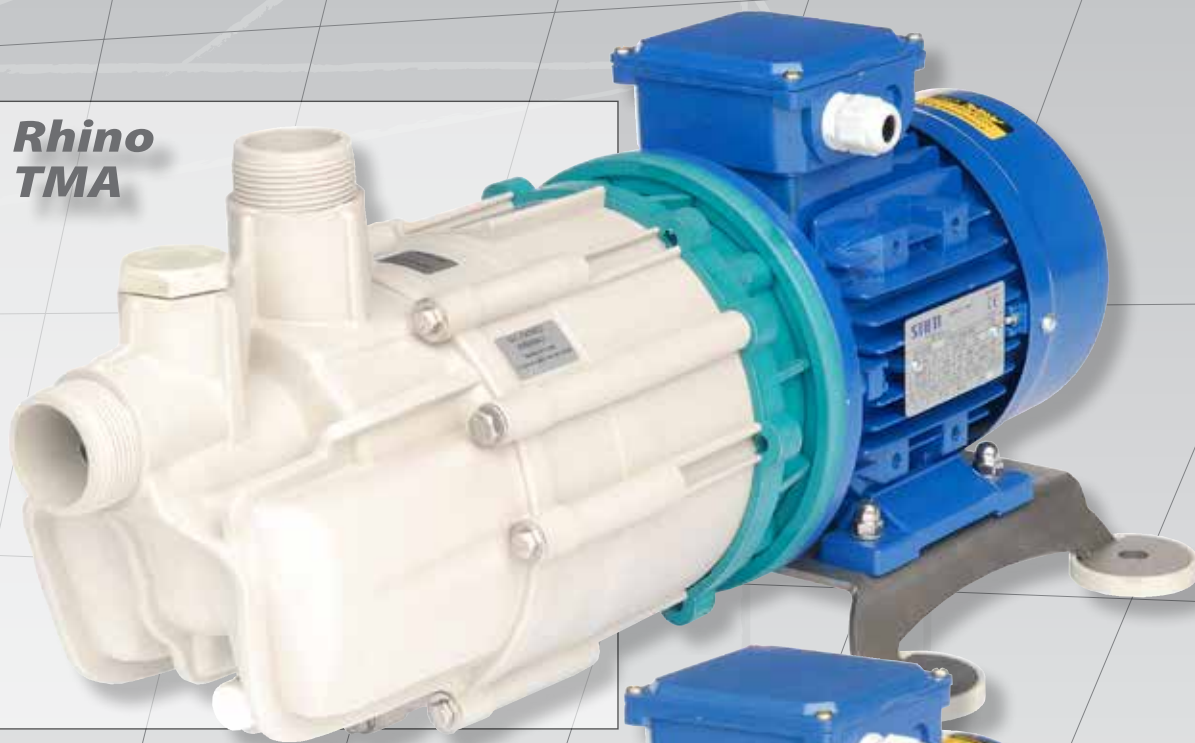


ARGAL

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 TMA series of Alifter range. 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. Powerful magnetic couplings in Neodymium Iron Boron.

Safety and Life

The magnetic drive system finally excludes any type of rotating seal. The only necessity of sealing is ensured by a seal of the static type OR in the conjunction between the volute casing and the rear casing.

Versatility and performance

N - R - X: "N" standard or "P" powered, "S" strong-powered : 3 combinations of materials of construction allow to pump, also at maximum flow, liquids with 1.05 - 1.35 - 1.8 specific gravity respectively.

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 3/3GD IIB at 135° C). Inside of pump should be placed safety device.



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	GFR-PP			CFF-E-CTFE				
Centrifugal impeller	GFR-PP			CFF-E-CTFE				
Guide bushing	CARB.HD	SiC	GFR-PTFE	CARB.HD	SiC	GFR-PTFE	CARB.HD	GFR-PTFE
Shaft	CER			SiC				
Thrust bush	CER			SiC				
OR gasket	FKM (1)			FKM (1) (2)				
Screws	Stainless steel							

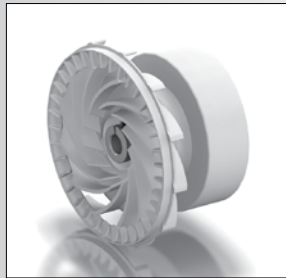
Upon request:(1)EPDM and (2) FFKM - * Compliant to ATEX 94/9/EC regulations

RHINO - TMA

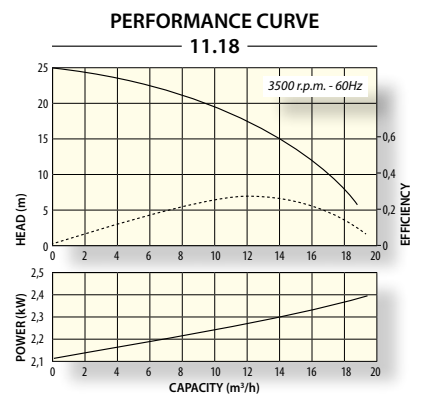
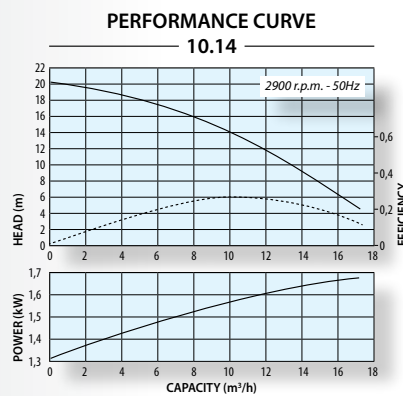
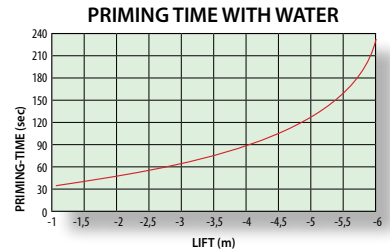
It is an innovative pump designed by the R&D department of Argal with a pending international patent. It is a magnetic drive, self-priming, biphasic turbo radial pump and is manufactured either in polyolefinic thermoplastic polymer (PP) or fluorinated (E-CTFE). Thanks to its construction this TMA pump 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/dm³
- Minimum NPSHa = 3 m (abs)
- Standard motors IEC or NEMA.



Patented impeller of the biphasic self priming radial turbo pump.



MOTORS

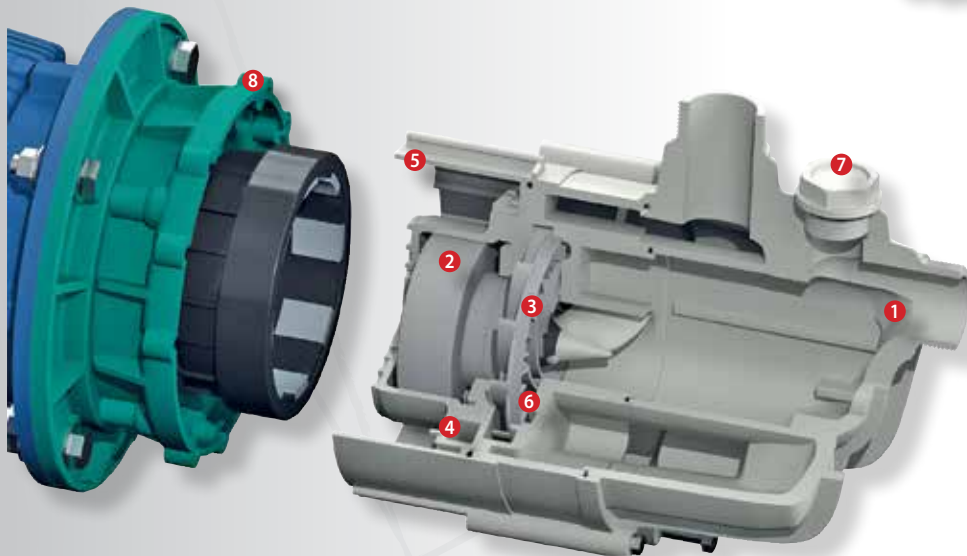
table 3

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

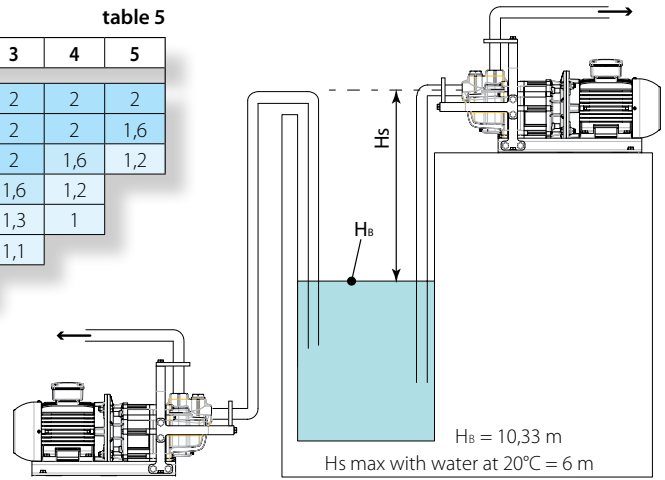
table 5

Vapour Pressure			Lift								
Medium	P _v (1)(2)	p.s.(1)(2)	P _v [m _{H2O}]	0,25	0,75	1,25	2	2,5	3	4	5
HF - 50 ~ 40%	0,4	1,15	-1	2	2	2	2	2	2	2	2
HCl - 37%	2	1,17	-1,5	2	2	2	2	2	2	1,6	1,2
NaOCl	0,2	1,26	-2	2	2	2	2	1,8	1,6	1,2	
HNO ₃ - 70%	0,65	1,41	-2,5	2	2	2	2	1,5	1,3	1	
NaOH - 50%	0,02	1,52	-3	2	2	2	1,7	1,2	1,1		
H ₂ SO ₄ - 98%	1x10 ⁻⁴	1,8	-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_{H2O}] = 9806 [Pa]

(1) ref. to 20°C - 68°F

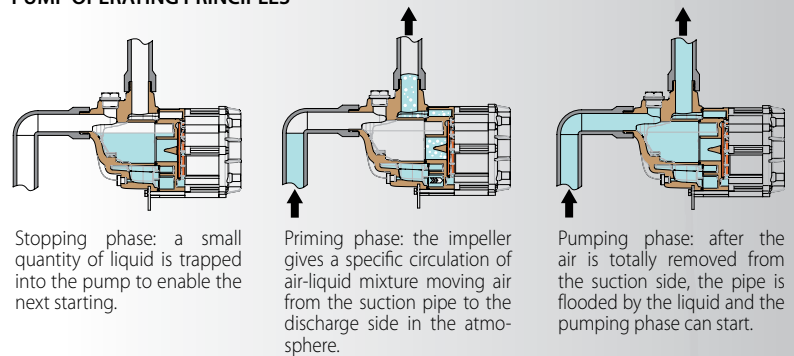
(2) In table 3 select the P_v e p.s. value ≥ respect to the pumped fluid



ACCESSORIES

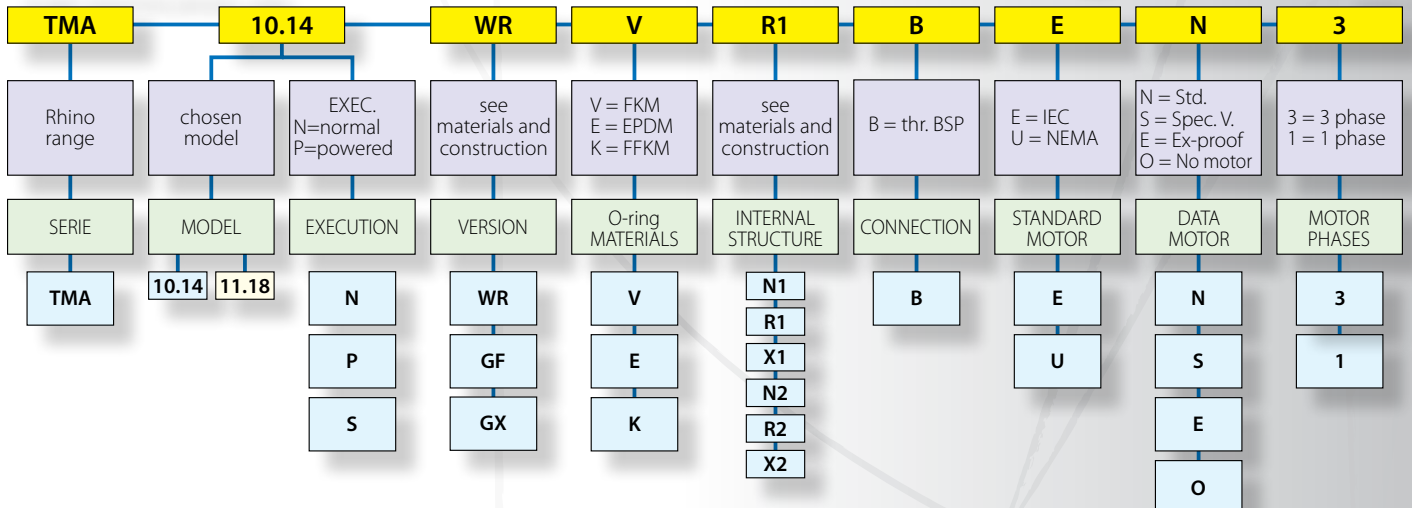
- base in stainless steel
- Base prepared with pipe support (in stainless steel)
- Trolley in stainless steel (without electric device)
- Trolley in stainless steel (with electric device)
- check valve + filter (PP)
- drum pipe with check valve and foot strainer (PP)
- nozzle (PP)
- complete set with flexible pipe (m. 7), hose connectors, nozzle

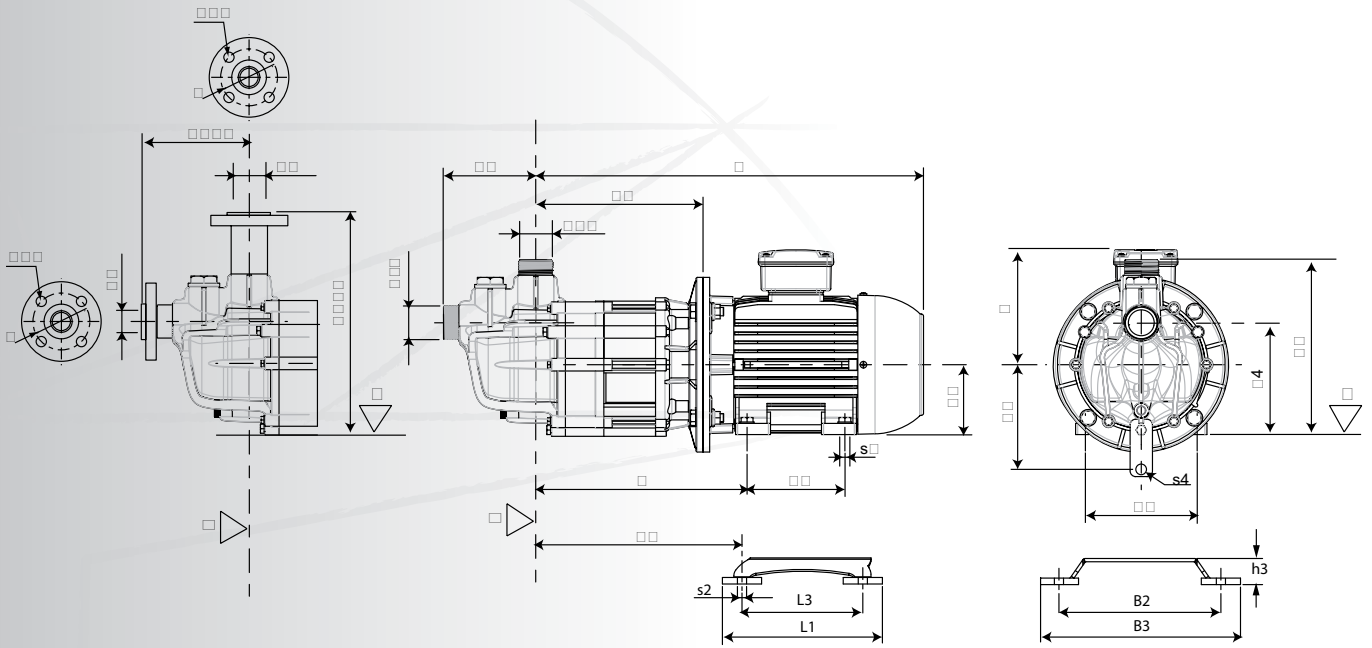
PUMP OPERATING PRINCIPLES



PUMP IDENTIFICATION LABEL

table 6



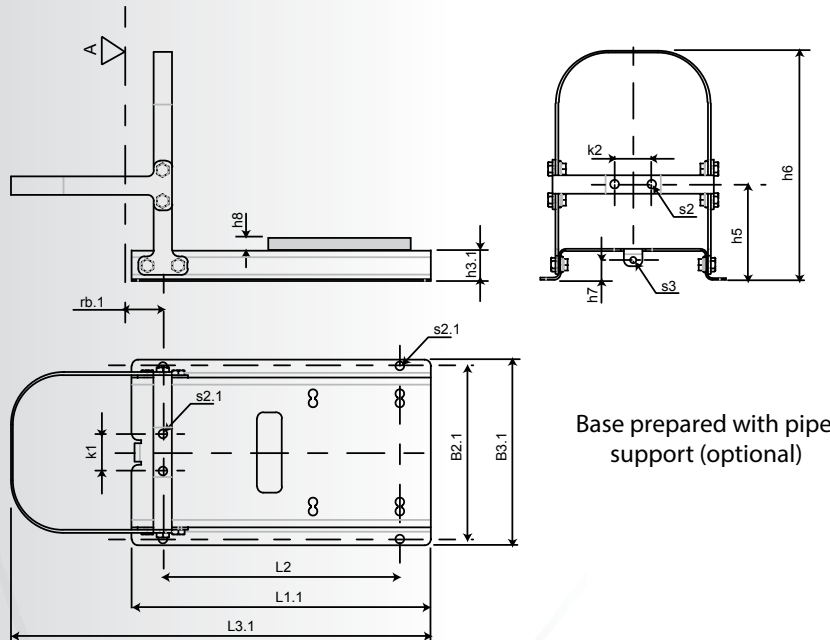


PUMP DIMENSIONS

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			

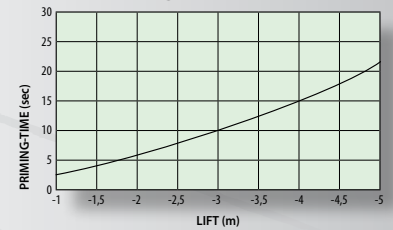
ALIFTER TMA

This pump is volumetric and 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

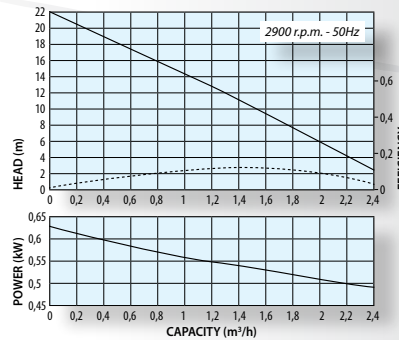
- Start-up with empty pipes
- Fast priming-phase
- Maximum Lift = -5 m
- Reversible (inlet-outlet reversal)
- Suitable for specific gravity up to 2 kg/dm³
- Suitable for vapour pressure up to 1 m (H₂O @ 45°C)
- Minimum NPSHa (available on the plant) = 3 m (abs)
- Impeller replaceable apart from magnets
- IEC or NEMA standard motors can be installed

PRIMING TIME WITH WATER



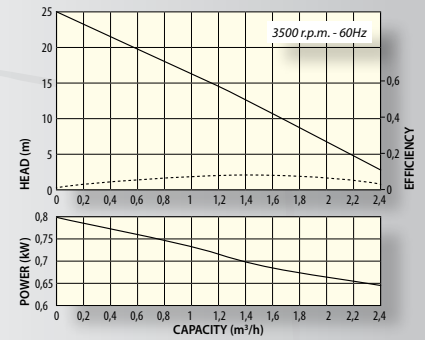
PERFORMANCE CURVE

01.16



PERFORMANCE CURVE

01.21



MOTORS

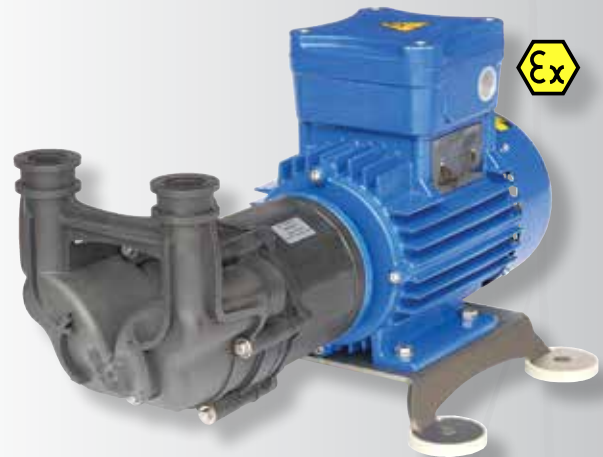
table 9

Model		Power (kW)	IEC frame	Phase	Voltage	Hz	Protection
01.16	N	0.55	71	3	400 ± 5%	50	IP 55
	P	0.75	80	-	-		
	S	1.1	80	1	220 ± 5%		
01.21	P	0.75	80	3	460 ± 5%	60	IP 55
	S	1.1	80	1	230 ± 5%		

CONNECTIONS

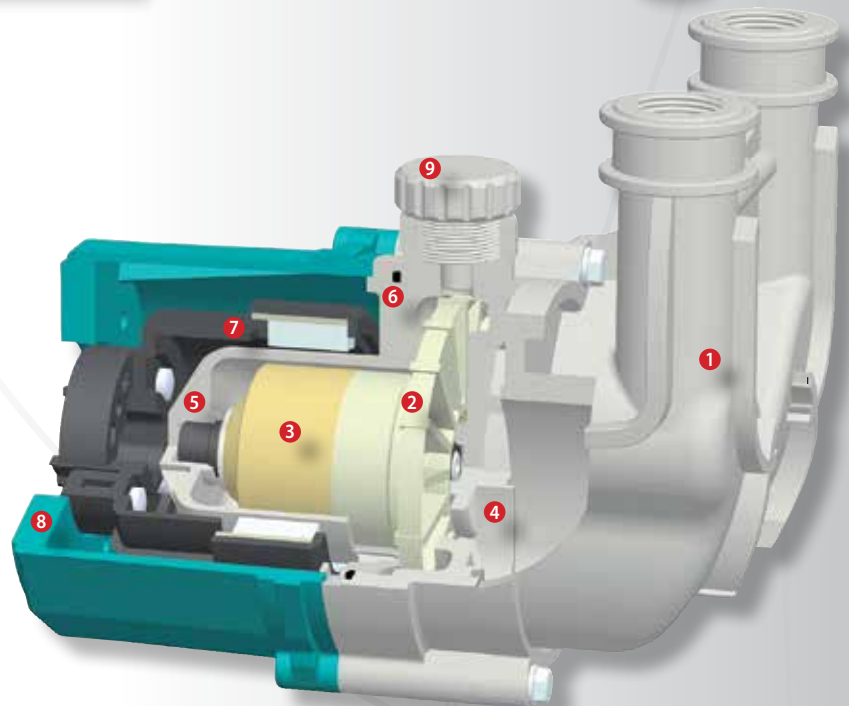
table 10

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

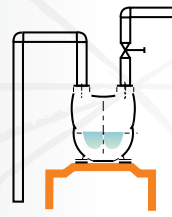
- 1 - Connections casing
- 2 - Impeller
- 3 - Magnetic core
- 4 - Front volute casing
- 5 - Rear casing
- 6 - OR gasket
- 7 - Drive magnet assembly
- 8 - Bracket
- 9 - Filling plug



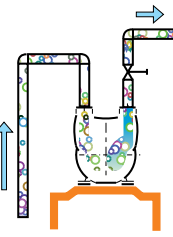
ACCESSORIES

- base in stainless steel
- Trolley in stainless steel (without electric device)
- Trolley in stainless steel (with electric device)
- check valve + filter (PP)
- drum pipe with check valve and foot strainer (PP)
- nozzle (pp)
- complete set with flexible pipe (m. 7), hose connectors, nozzle

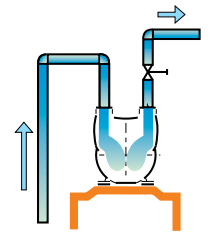
PUMP OPERATING PRINCIPLES



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 side in the atmosphere.

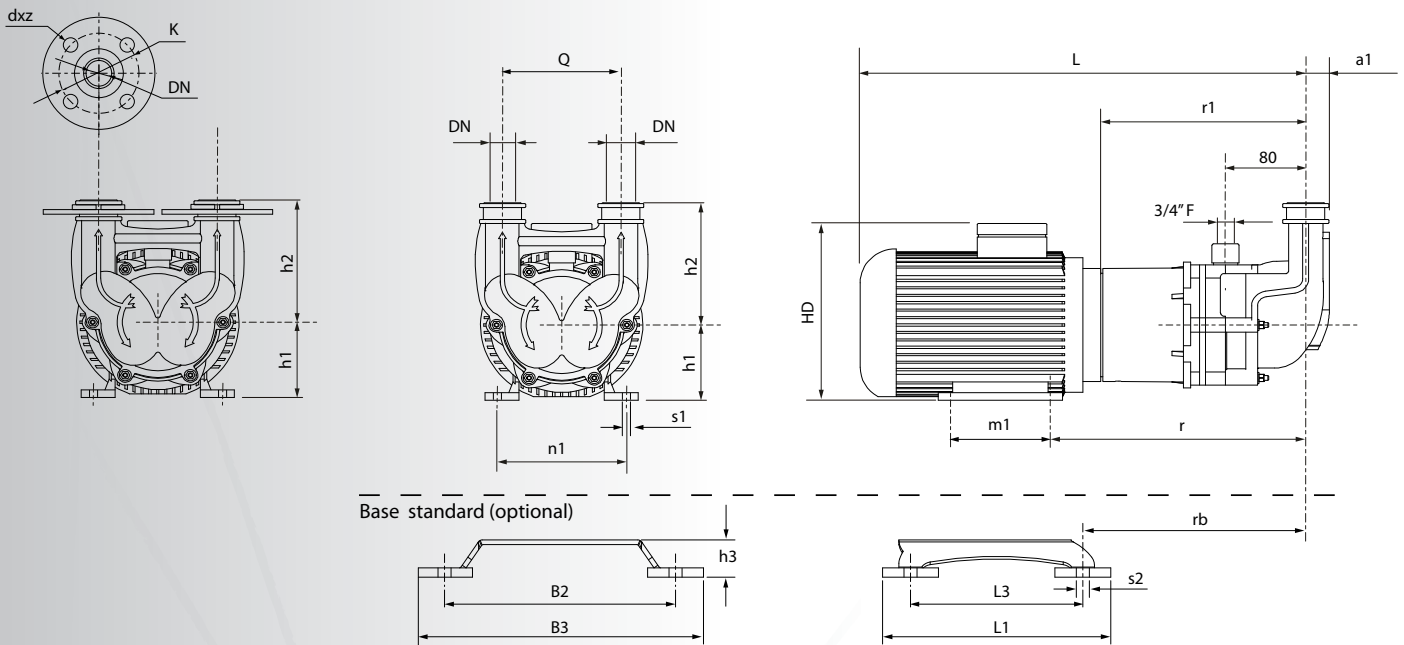


Pumping phase: after the air is totally removed from the suction side, the pipe is flooded by the liquid and the pumping phase can start.

PUMP IDENTIFICATION LABEL

table 11

TMA	06.08		WR	V	R1	B	E	N	3
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

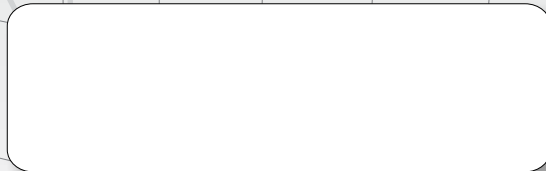


BASE DIMENSIONS

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



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