

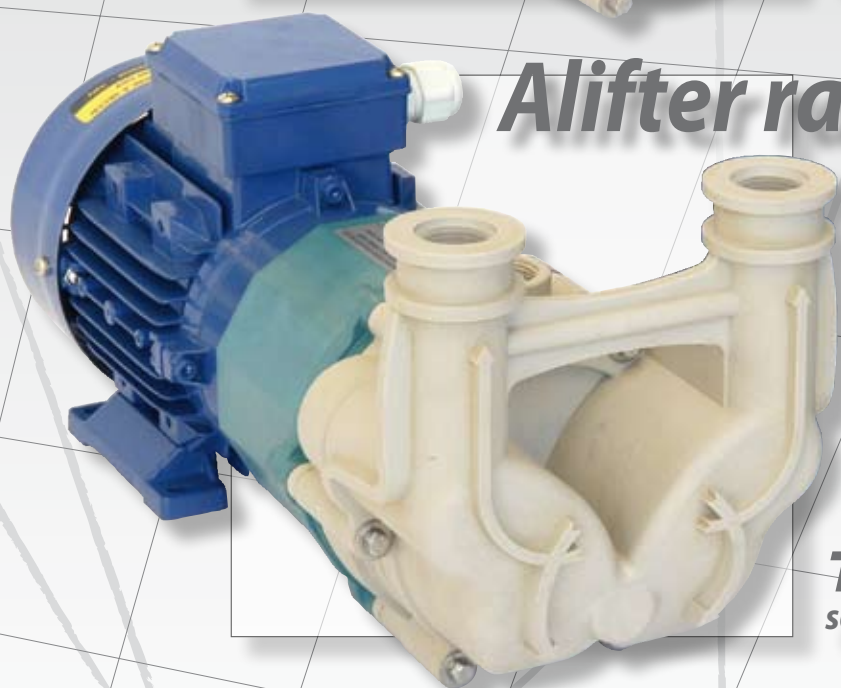
# ARGAL

CHEMICAL PUMPS



*Prima range*

**TMP**  
centrifugal



*Alifter range*

**TMA**  
self-priming

*magnetical driven pumps  
in thermoplastic materials*

In this catalog Argal proposes the range of PRIMA pumps, magnetical driven, inclusive of centrifugal serie named **TMP** and the self-priming volumetric execution named **TMA** of the ALIFTER range.

Single stage, close-coupled execution, strongly built through an injection-moulding process and ready to fit normalized motors. Argal operates with ISO 9001:2000 Quality System certified by SQS-IQNet.



View of TMP and TMA pumps in different materials.

### TMP PUMPS SERIE

The pumps of the **TMP** serie, magnetically driven, have been developed following the idea of previous AM serie, but trying to give a more concise answer to the actual demands of the market. These pumps are centrifugal, horizontal axis, close-coupled types, the bodies are entirely built with reinforced thermoplastic polymers, and materials for internal components are: ceramic oxides, HD carbon, fluorinated elastomers: which mean any contact of metallic parts with the pumped fluid is avoided. This combination of materials is correctly chosen to obtain the best in the performances and on a small scale: "chemical pumps".

### MAIN FEATURES

Versatility and performances.

You can practically pump all the chemicals at low and medium temperatures with all the bodies in GFR-PP (glass fibre reinforced polypropylene) or CFF-E-CTFE (Etylene-ChloroTrifluoroEtylene carbon fibre filled).

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..

#### "Hermetic" pump

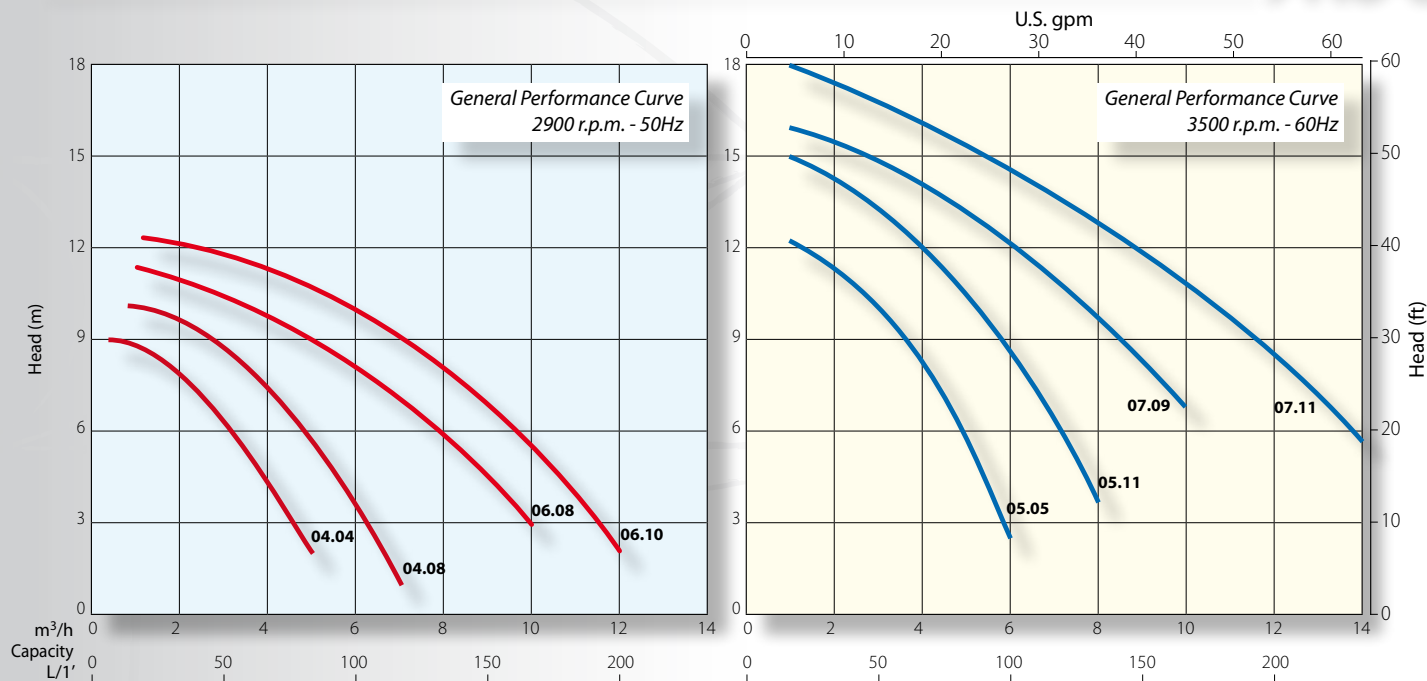
The outlet magnet assembly driven by the motor shaft, produces a magnetic torque dragging up in rotation the inside magnet assembly on which the impeller is over moulded.

The rear casing, having appropriate shape and joined to the volute casing, divides the two magnetic units, making an hermetic case all around the impeller.

#### Safety and life

The drive magnetic system finally excludes any type of rotating seal. The only need of the seal is guaranteed thanks to an O-ring static gasket, in the connection between volute casing and rear casing.

Special solutions and employed materials occasionally allow dry running operation (starting from 15 min. up to many hours in function of working conditions), avoiding any damages inside the TMP pumps. These solutions require an internal structure "**R**".



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

#### 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*     |                     |              |               |                     |

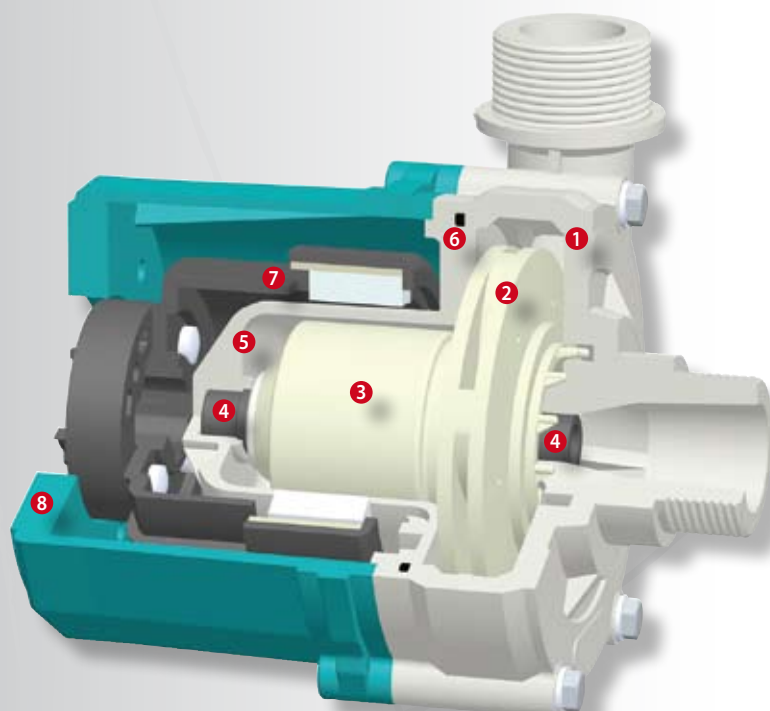
Note: Maximum inlet pressure: 1,5 bar - (\*) Compliant to ATEX 94/9/EC regulations

#### 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 |                 |     |          |             |     |          |         |          |
| Guide bushing        | CARB.HD         | SiC | GFR-PTFE | CARB.HD     | SiC | GFR-PTFE | CARB.HD | GFR-PTFE |
| Shaft                | CER             |     |          | SiC         |     |          |         |          |
| Thrust bush          |                 |     |          |             |     |          |         |          |
| OR gasket            | FKM (1)         |     |          | FKM (1) (2) |     |          |         |          |
| Screws               | Stainless steel |     |          |             |     |          |         |          |

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



#### TMP - SECTION VIEW

- 1 - Volute casing
- 2 - Centrifugal impeller (covered type)
- 3 - Centrifugal impeller (magnetic part)
- 4 - Guide bushings
- 5 - Rear casing
- 6 - OR gasket
- 7 - Drive magnet assembly
- 8 - Bracket

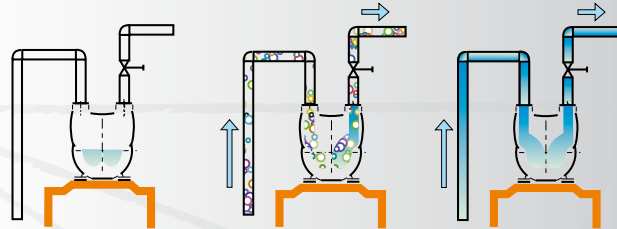


The self priming , magnetic drive pumps of the TMA serie are volumetric, can deliver the flow in both directions reversing the direction of rotation of the motor and are adequate to speedily prime chemical liquids with high specific gravity and/or high vapour tension.

### MAIN FEATURES

- Start-up with empty pipes
- Fast priming-phase
- Maximum Lift = -5 m
- Reversible (inlet-outlet reversal)
- Suitable for specific weight up to  $2 \text{ kg/dm}^3$
- 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

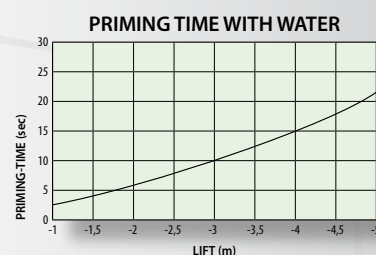
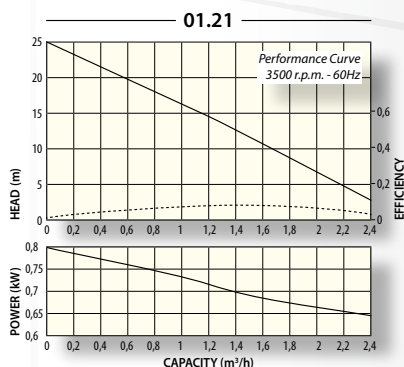
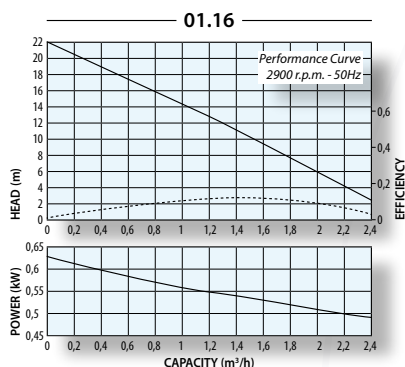
### OPERATING PRINCIPLES OF THE PUMP



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.



### THE MATERIALS

table 3

| VERSION | REINFORCED POLYMERS | MIN. TEMP.   | MAX TEMP.    | ENVIRONMENT TEMP.   |
|---------|---------------------|--------------|--------------|---------------------|
| WR      | GFR/PP              | -5°C (23°F)  | 60°C (140°F) | 0÷40°C (14÷104°F)   |
| GF      | CFF/E-CTFE          | -20°C (-4°F) | 90°C (194°F) | -20÷40°C (-4÷104°F) |

Note: Maximum inlet pressure: 1,5 bar

### THE CONSTRUCTIONS

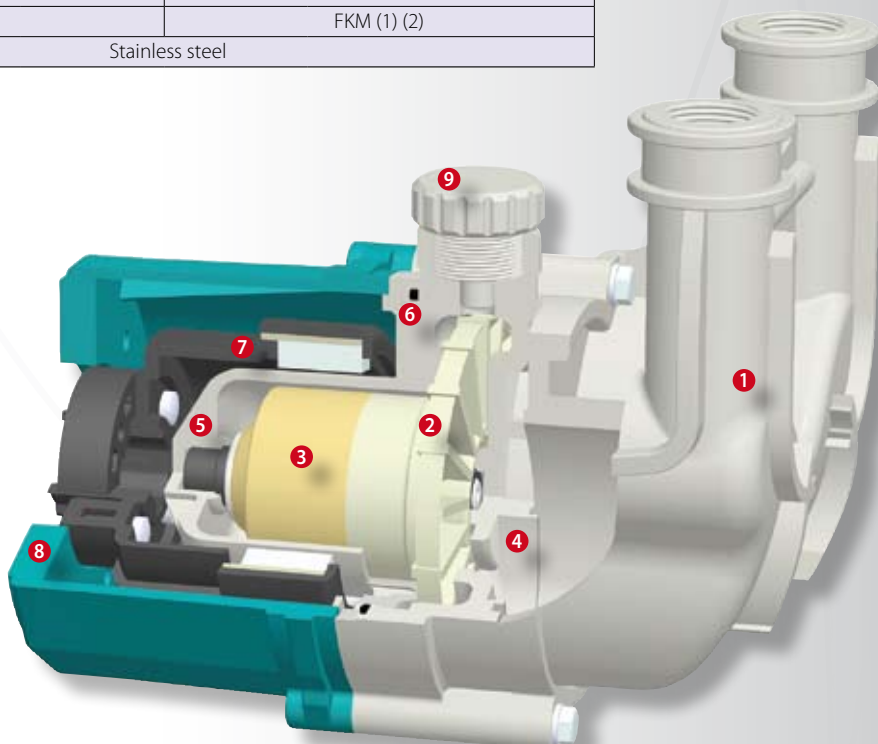
table 4

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

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

### 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



## PUMP SPECIFICATIONS

table 5

| Connections |         | TMP    |       |       |       |          |       |          |       | TMA    |       |
|-------------|---------|--------|-------|-------|-------|----------|-------|----------|-------|--------|-------|
|             | Thread  | 04.04  | 05.05 | 04.08 | 05.11 | 06.08    | 07.09 | 06.10    | 07.11 | 01.16  | 01.21 |
| DeM         | BSP-NPT | 3/4" m |       | 1" m  |       | 1 1/4" m |       | 1 1/4" m |       | 3/4" f |       |
| DeA         | BSP-NPT | 3/4" f |       | 1" m  |       | 1 1/4" m |       | 1 1/4" m |       | 3/4" f |       |
|             | Flange  |        |       |       |       |          |       |          |       |        |       |
| DnM-DnA     | ISO     |        |       | 25    |       | 32       |       | 32       |       | 20     |       |
| DnM-DnA     | ANSI    |        |       | 1"    |       | 1 1/4"   |       | 1 1/4"   |       | 1"     |       |

## MOTOR SPECIFICATIONS 50Hz models

table 6

|                    |     | 04.04                         |      |      | 04.08 |      |      | 06.08 |      |      | 06.10 |      |     | 01.16 |      |     |
|--------------------|-----|-------------------------------|------|------|-------|------|------|-------|------|------|-------|------|-----|-------|------|-----|
|                    |     | N                             | P    | S    | N     | P    | S    | N     | P    | S    | N     | P    | S   | N     | P    | S   |
| Power (IEC) 50 Hz  | kW  | 0.18                          | 0.25 | 0.37 | 0.25  | 0.37 | 0.55 | 0.37  | 0.55 | 0.75 | 0.55  | 0.75 | 1.1 | 0.55  | 0.75 | 1.1 |
| Motor size         | IEC | 63A                           | 63B  | 71A  | 63B   | 71A  | 71B  | 71A   | 71B  | 80A  | 71B   | 80A  | 80B | 71B   | 80A  | 80B |
| Phases             | N.  | 3phase - 1phase               |      |      |       |      |      |       |      |      |       |      |     |       |      |     |
| Std. voltage (IEC) | V   | 400 ± 5% 50Hz - 220 ± 5% 50Hz |      |      |       |      |      |       |      |      |       |      |     |       |      |     |
| Motor protection   | IP  | 55                            |      |      |       |      |      |       |      |      |       |      |     |       |      |     |

## MOTOR SPECIFICATIONS 60Hz models

table 7

|                    |     | 05.05                           |      |      | 05.11 |      |      | 07.09 |      |     | 07.11 |     |   | 01.21 |     |   |
|--------------------|-----|---------------------------------|------|------|-------|------|------|-------|------|-----|-------|-----|---|-------|-----|---|
|                    |     | N                               | P    | S    | N     | P    | S    | N     | P    | S   | N     | P   | S | N     | P   | S |
| Power (IEC) 60 Hz  | kW  | 0.25                            | 0.37 | 0.55 | 0.37  | 0.55 | 0.75 | 0.55  | 0.75 | 1.1 | 0.75  | 1.1 |   | 0.75  | 1.1 |   |
| Motor size         | IEC | 63B                             | 71A  | 71B  | 71A   | 71B  | 80A  | 71B   | 80A  | 80B | 80A   | 80B |   | 80A   | 80B |   |
| Phases             | N.  | 3phase - 1phase                 |      |      |       |      |      |       |      |     |       |     |   |       |     |   |
| Std. voltage (IEC) | V   | 460 ± 10% 60Hz - 230 ± 10% 60Hz |      |      |       |      |      |       |      |     |       |     |   |       |     |   |
| Motor protection   | IP  | 55                              |      |      |       |      |      |       |      |     |       |     |   |       |     |   |

## WEIGHT 50-60Hz models

table 8

| Pump weight (without motor) |          |    | Motor weight |                     |     |     |     |      |
|-----------------------------|----------|----|--------------|---------------------|-----|-----|-----|------|
| WR                          | GF       | GX | Version      | IEC 3phase - 1phase |     |     |     |      |
| 1,5 - (2,5*)                | 2 - (3*) |    | Frame        | 63A                 | 63B | 71A | 71B | 80A  |
|                             |          |    | Kg           | 5,6                 | 6,3 | 7,3 | 8,2 | 10,8 |

\*Weight referred to TMA

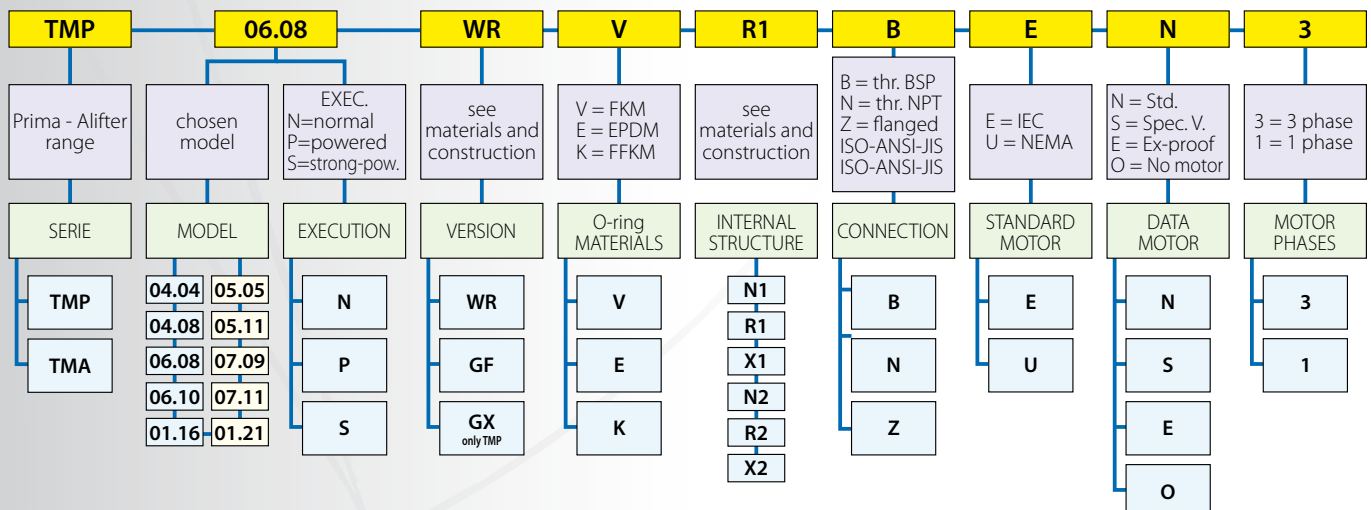


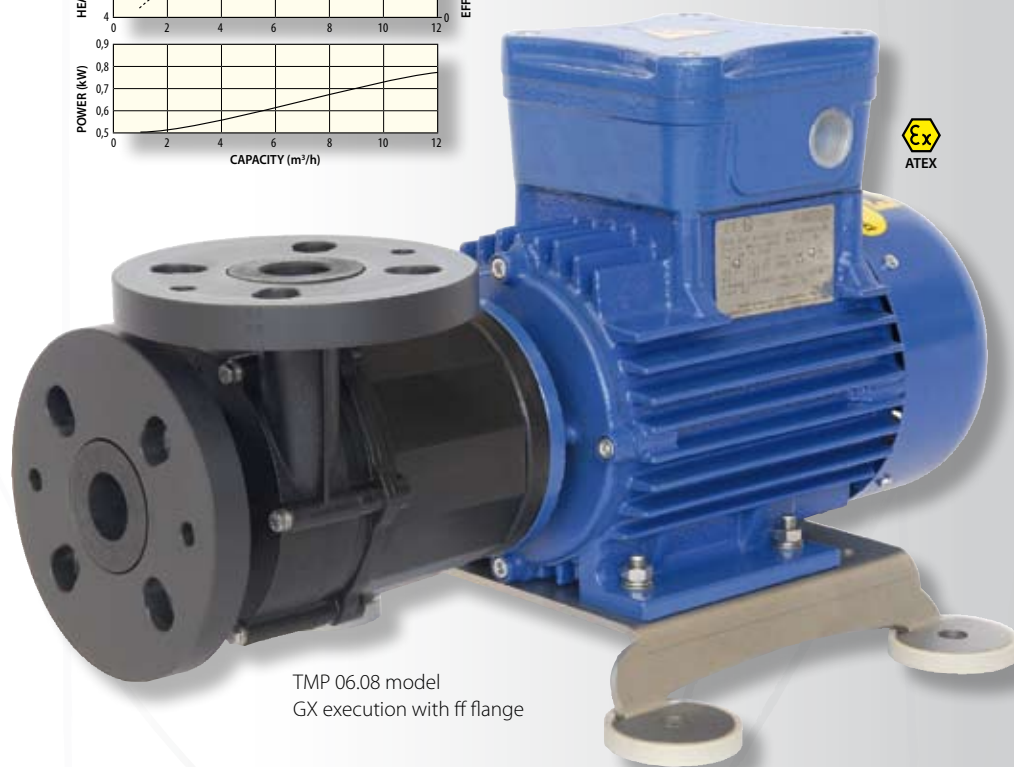
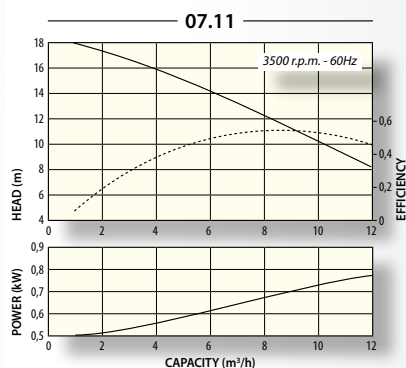
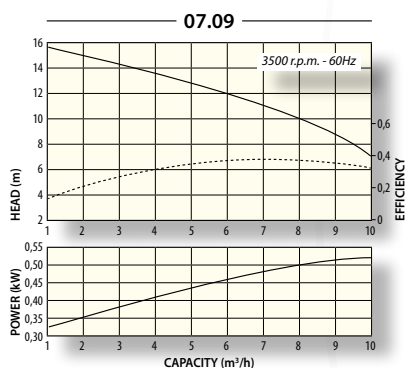
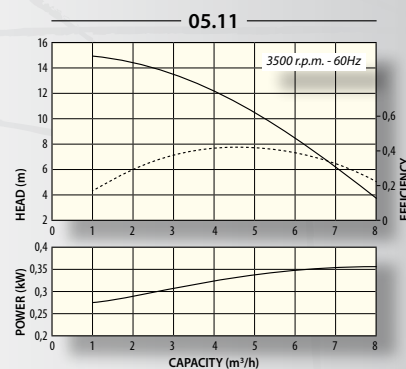
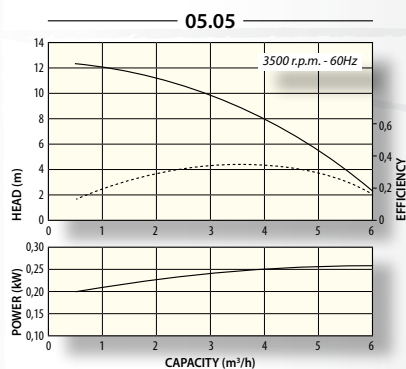
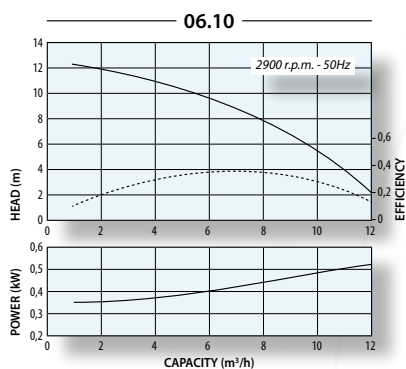
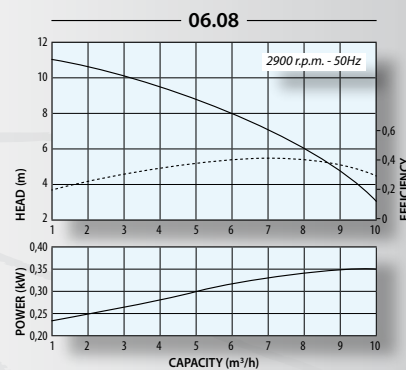
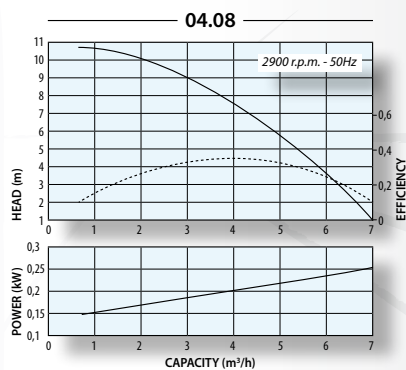
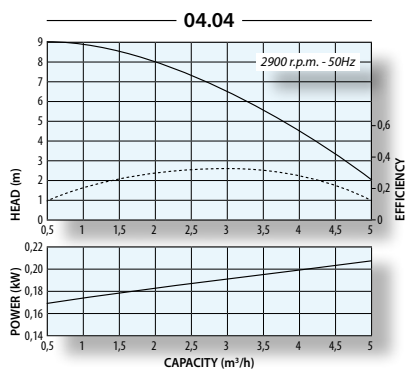
TMA pump and trolley



## PUMP IDENTIFICATION LABEL

table 9



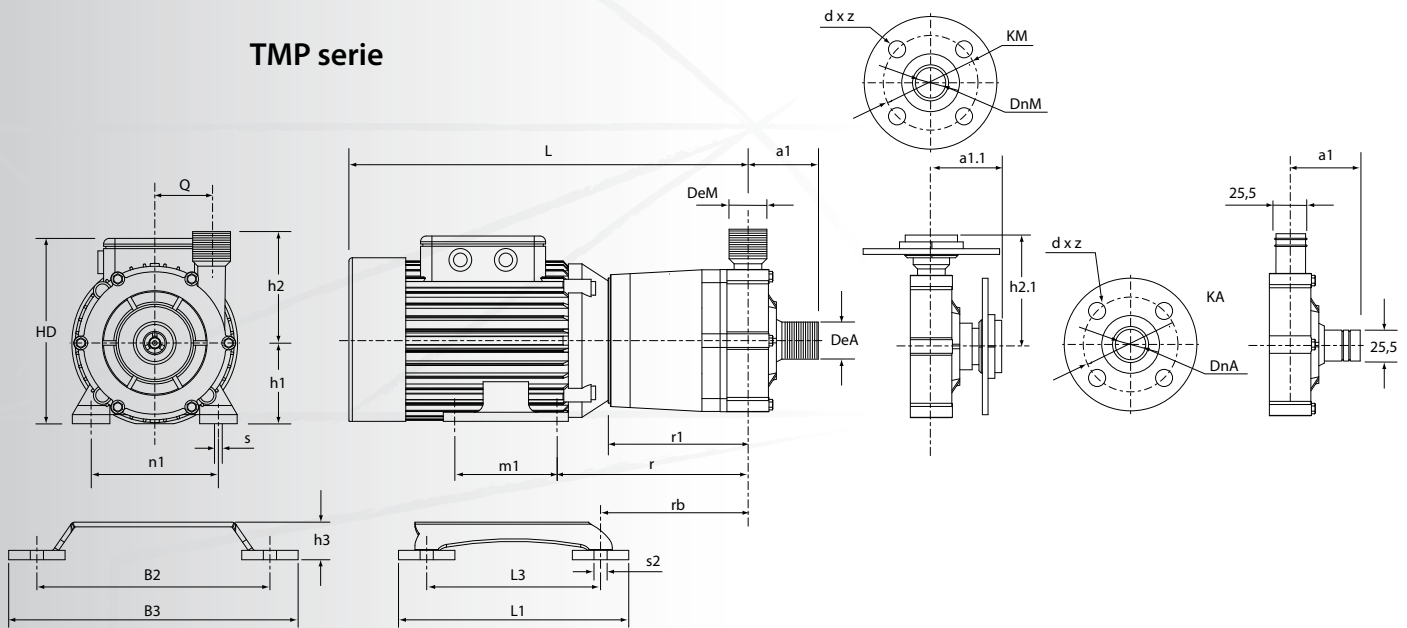


TMP 06.08 model  
GX execution with ff flange

#### Labels in this catalog

|                   |                                                              |                |                                                            |
|-------------------|--------------------------------------------------------------|----------------|------------------------------------------------------------|
| <b>GFR/PP</b>     | Glass fibre reinforced Polypropylene (30%)                   | <b>EPDM</b>    | Ethylene-Propylene rubber                                  |
| <b>CFF/E-CTFE</b> | Ethylene-Chloro Trifluoro Ethylene carbon fibre filled (20%) | <b>BSP - m</b> | BSP parallel threaded male connect. (according to ISO 7/1) |
| <b>CARB. H.D.</b> | Carbon high density                                          | <b>NPT - m</b> | Threaded male NPT connections                              |
| <b>SiC</b>        | Silicon Carbide                                              | <b>ND</b>      | Nominal diameter                                           |
| <b>CER</b>        | Alumina ceramic at 99,7%                                     | <b>ISO</b>     | Ref. Flange ISO 2084 - NP10                                |
| <b>GFR/PTFE</b>   | Glass fibre reinforced PTFE                                  | <b>ANSI</b>    | Ref. Flange ANSI B 16.5 - Flat Face                        |
| <b>FKM</b>        | Fluorine elastomer                                           | <b>IEC</b>     | According to E.C. motors                                   |
| <b>FFKM</b>       | Perfluorelastomer                                            | <b>NEMA</b>    | According to U.S. motors                                   |

## TMP serie

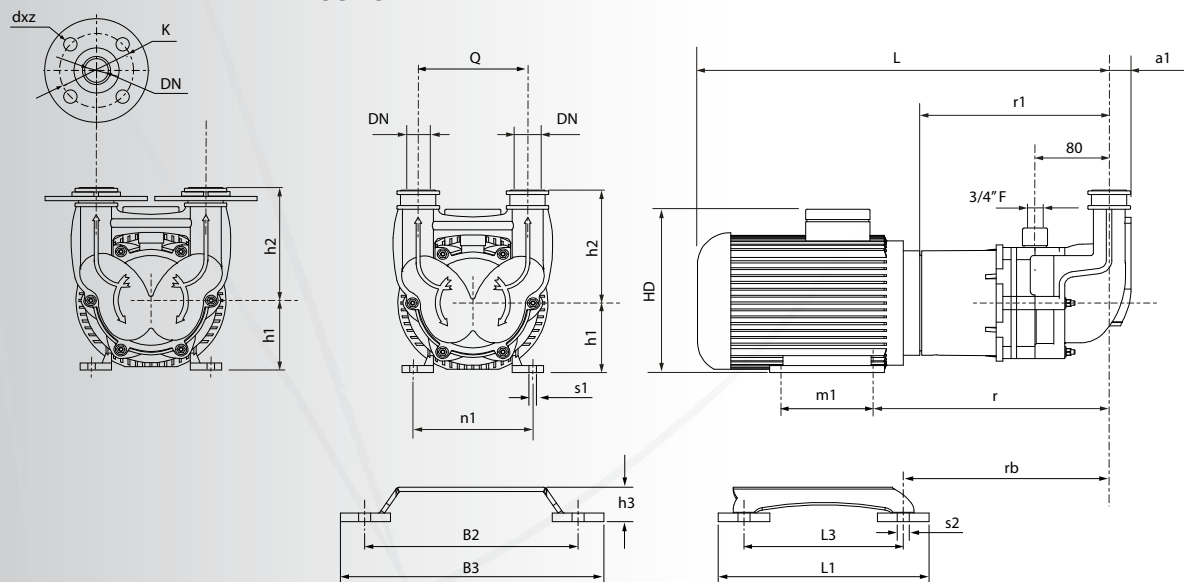


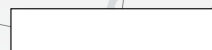
### DIMENSIONS WITH IEC MOTORS

table 8

|       | TMP 50Hz |     |     |       |     |     |       |     |     |       |     |     | TMP 60Hz |     |     |       |     |     |       |     |     |       |     |   | TMA 50HZ |     |     | TMA 60HZ |     |     |
|-------|----------|-----|-----|-------|-----|-----|-------|-----|-----|-------|-----|-----|----------|-----|-----|-------|-----|-----|-------|-----|-----|-------|-----|---|----------|-----|-----|----------|-----|-----|
|       | 04.04    |     |     | 04.08 |     |     | 06.08 |     |     | 06.10 |     |     | 05.05    |     |     | 05.11 |     |     | 07.09 |     |     | 07.11 |     |   | 01.16    |     |     | 01.21    |     |     |
|       | N        | P   | S   | N     | P   | S   | N     | P   | S   | N     | P   | S   | N        | P   | S   | N     | P   | S   | N     | P   | S   | N     | P   | S | N        | P   | S   | N        | P   | S   |
| a1    | 62       |     |     | 62    |     |     | 62    |     |     | 62    |     |     | 62       |     |     | 62    |     |     | 62    |     |     | 62    |     |   | 23,5     |     |     | 23,5     |     |     |
| a1.1  | 70       |     |     | 70    |     |     | 70    |     |     | 70    |     |     | 70       |     |     | 70    |     |     | 70    |     |     | 70    |     |   |          |     |     |          |     |     |
| Q     | 47       |     |     | 49    |     |     | 53    |     |     | 53    |     |     | 47       |     |     | 49    |     |     | 53    |     |     | 53    |     |   | 118      |     |     | 118      |     |     |
| h2    | 100      |     |     | 100   |     |     | 100   |     |     | 100   |     |     | 100      |     |     | 100   |     |     | 100   |     |     | 100   |     |   | 129      |     |     | 129      |     |     |
| h2.1  | 108      |     |     | 108   |     |     | 108   |     |     | 108   |     |     | 108      |     |     | 108   |     |     | 108   |     |     | 108   |     |   |          |     |     |          |     |     |
| L(*)  | 330      | 330 | 348 | 330   | 348 | 348 | 348   | 348 | 388 | 348   | 388 | 388 | 330      | 348 | 348 | 348   | 348 | 388 | 348   | 388 | 388 | 388   | 388 |   | 435      | 450 | 450 | 435      | 450 | 450 |
| h1    | 63       | 63  | 71  | 63    | 71  | 71  | 71    | 71  | 80  | 71    | 80  | 80  | 63       | 71  | 71  | 71    | 71  | 80  | 71    | 80  | 80  | 80    | 80  |   | 71       | 80  | 80  | 71       | 80  | 80  |
| HD(*) | 160      | 160 | 177 | 160   | 177 | 177 | 177   | 177 | 190 | 177   | 190 | 190 | 160      | 177 | 177 | 177   | 177 | 190 | 177   | 190 | 190 | 190   | 190 |   | 177      | 190 | 190 | 177      | 190 | 190 |
| m1    | 80       | 80  | 90  | 80    | 90  | 90  | 90    | 90  | 100 | 90    | 100 | 100 | 80       | 90  | 90  | 90    | 90  | 100 | 90    | 100 | 100 | 100   | 100 |   | 90       | 100 | 100 | 90       | 100 | 100 |
| n1    | 100      | 100 | 112 | 100   | 112 | 112 | 112   | 112 | 125 | 112   | 125 | 125 | 100      | 112 | 112 | 112   | 112 | 125 | 112   | 125 | 125 | 125   | 125 |   | 112      | 125 | 125 | 112      | 125 | 125 |
| r1    | 123      | 123 | 123 | 123   | 123 | 123 | 123   | 123 | 133 | 123   | 133 | 133 | 123      | 123 | 123 | 123   | 123 | 133 | 123   | 133 | 133 | 133   | 133 |   | 205      | 215 | 215 | 205      | 215 | 215 |
| r     | 163      | 163 | 168 | 163   | 168 | 168 | 168   | 168 | 183 | 168   | 183 | 183 | 163      | 168 | 168 | 168   | 168 | 183 | 168   | 183 | 183 | 183   | 183 |   | 250      | 265 | 265 | 250      | 265 | 265 |
| rb    | 135      | 135 | 135 | 135   | 135 | 135 | 135   | 135 | 145 | 135   | 145 | 145 | 135      | 135 | 135 | 135   | 135 | 145 | 135   | 145 | 145 | 145   | 145 |   | 216      | 282 | 282 | 216      | 282 | 282 |
| s     | 7        | 7   | 7   | 7     | 7   | 7   | 7     | 7   | 10  | 7     | 10  | 10  | 7        | 7   | 7   | 7     | 10  | 7   | 10    | 10  | 10  | 10    | 10  |   | 7        | 10  | 10  | 7        | 10  | 10  |
| B2    |          |     | 248 |       | 248 | 248 | 248   | 248 | 248 | 248   | 248 | 248 |          | 248 | 248 | 248   | 248 | 248 | 248   | 248 | 248 | 248   | 248 |   | 248      | 248 | 248 | 248      | 248 | 248 |
| B3    |          |     | 308 |       | 308 | 308 | 308   | 308 | 308 | 308   | 308 | 308 |          | 308 | 308 | 308   | 308 | 308 | 308   | 308 | 308 | 308   | 308 |   | 308      | 308 | 308 | 308      | 308 | 308 |
| L1    |          |     | 245 |       | 245 | 245 | 245   | 245 | 245 | 245   | 245 | 245 |          | 245 | 245 | 245   | 245 | 245 | 245   | 245 | 245 | 245   | 245 |   | 245      | 245 | 245 | 245      | 245 | 245 |
| L3    |          |     | 185 |       | 185 | 185 | 185   | 185 | 185 | 185   | 185 | 185 |          | 185 | 185 | 185   | 185 | 185 | 185   | 185 | 185 | 185   | 185 |   | 185      | 185 | 185 | 185      | 185 | 185 |
| h3    |          |     | 40  |       | 40  | 40  | 40    | 40  | 40  | 40    | 40  | 40  |          | 40  | 40  | 40    | 40  | 40  | 40    | 40  | 40  | 40    | 40  |   | 40       | 40  | 40  | 40       | 40  | 40  |
| s2    |          |     | 14  |       | 14  | 14  | 14    | 14  | 14  | 14    | 14  | 14  |          | 14  | 14  | 14    | 14  | 14  | 14    | 14  | 14  | 14    | 14  |   | 14       | 14  | 14  | 14       | 14  | 14  |

## TMA serie





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industriale  
Bresciana

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