

60Hz

ARGAL

CHEMICAL PUMPS

Route range



ZMR
mechanical sealed



TMR
magnetical driven

*centrifugal pumps
in thermoplastic materials*

In this catalog Argal proposes the range of ROUTE pumps, inclusive of magnetical driven serie named **TMR** embedding innovative patented technology, and traditional mechanical sealed serie named **ZMR**.

ARGAL with these series, offers more than competitors a complete solutions to pump almost all the chemical liquids: aggressive, clean or with solid in suspension included lightly abrasives.

The advantages of these series are

- simple and innovative constructions
- suitability to transfer chemicals in industrial applications
- minimised maintenance
- no need of specialized after sales service centers
- affordable purchase price and low operative cost.

To improve existing technology our R&D department developed and patented a solution called "two axial directions self alignment system" that controls the movement of the impeller through additional magnetic field.

ARGAL exploited this innovative idea to its best eliminating almost all frictions (both front and rear) except the attrition of rotation; In absence of hydraulic flow the magnetic field of this new system pulls the impeller in a central neutral position: the tolerance to dry running of the pump with the "R" self lubricating guide system is therefore guaranteed.



is member of



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



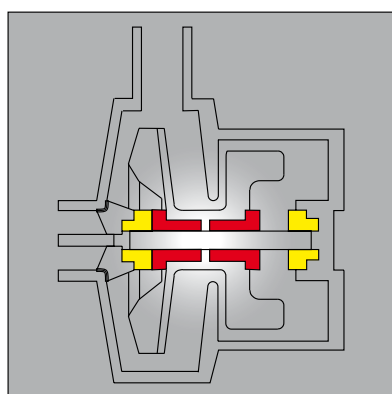
Magnetic driven pump G3 size in reinforced polypropylene (WR).

PATENTED SYSTEM: THE PRINCIPLE OF TWO AXIAL DIRECTIONS SELF-ALIGNMENT SYSTEM

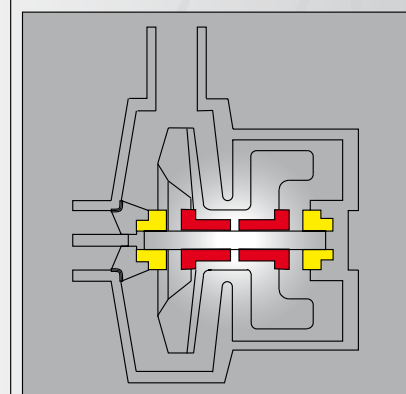
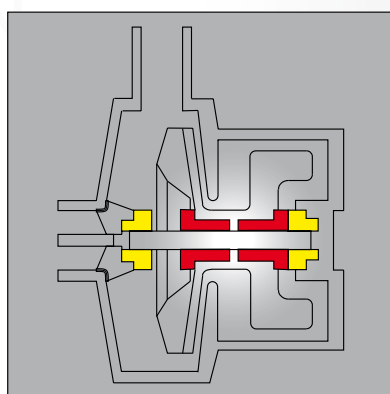
The impeller subjected to different hydraulic load is free to move axially.

Two rings which are limit devices of its excursion fix the work-space it engages during the standard operation. In case of anomalies due to pressure loss as dry running, the extra magnetic field (always active) contrasting the axial pushes, calls back the impeller in the neutral position.

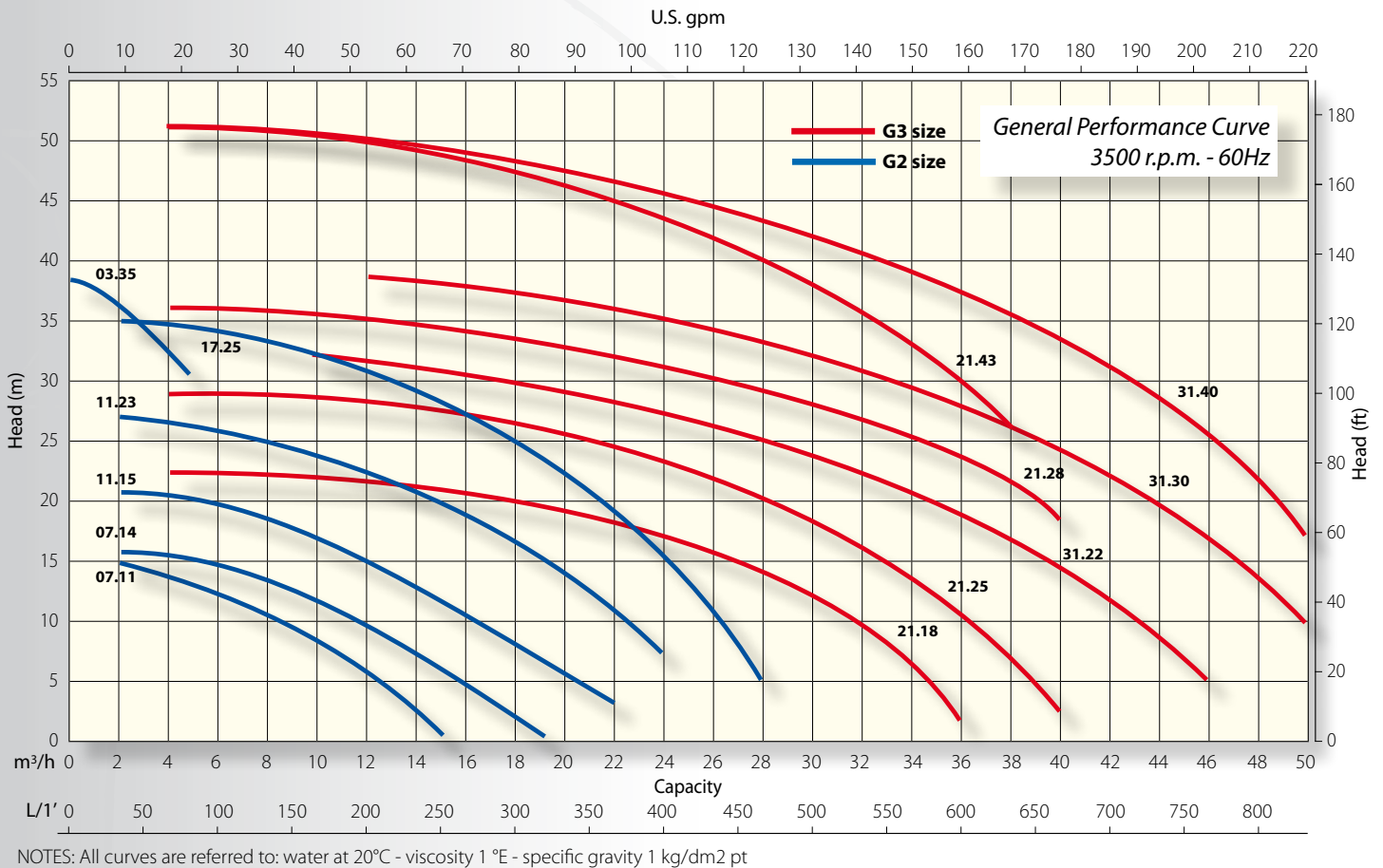
This distinctive automatism precisely prevents the contact with the rings (limiting devices) and consequently avoids frictions and heat increase. The shape of the magnets and the orientation of the fields are the key that shows the desired action.



Front and back side positions under hydraulic loads in different working conditions



Central position is dry running condition thank additional magnetic field.



View of Route range pumps in different materials and constructions.

Labels in this catalog

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

MAIN FEATURES OF SEAL-LESS MAGNETICAL DRIVEN “TMR”

HERMETIC PUMPS

The magnetical driven pumps are defined “hermetic” because of the exclusion of any rotating component of seal. The only necessity of seal between the volute casing and the back casing is guaranteed from a static gasket: O-ring type.

FOR ALL CHEMICALS

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- Chloro TrifluoroEtylene carbon fibre filled).

• LOADED FLUIDS, LIGHTLY ABRASIVE

The different internal configurations of the materials allow to pump both clean fluids and mediums with solids in suspensions or moderately abrasive

• HEAVY FLUIDS

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.

DRY RUNNING OPERATION

Dry running conditions with guide bushings in Carbon HD is guaranteed without damages thanks to the “two axial directions self-alignment” system (models 20.36 - 36.30 excluded). The conformation of the industrial plant, the fluid presence or absence in the pump body and its nature, affect the lenght of the dry running phase without damages or anomalous wear. All these details are listed in special time tables in the pumps manual.

POSSIBLE ROTATION OF VOLUTE CASING

Various shifts of the volute casing can be obtained thanks to rotation. The joint of the outlet connection of the pump with the tube of the plant is made easier.

CENTRIFUGAL IMPELLER PROPERLY BALANCED

Thanks to particular hydraulic and structural changes, the impeller is effectively balanced in order to reduce the assistance for maintenance. The separability of the bladed part from the one containing all magnets with driving and axial control, a significant amount of money is saved in case of impeller substitution (only G3 size).

VARIOUS TYPOLOGIES OF CONNECTIONS

Connections with BSP cylindrical thread or NPT; flanges ISO, ANSI, JIS.

INDEPENDENT MOTOR APPLICATION

The motor can be installed and removed easily without dismantling or opening the volute casing. Standard motors are IEC or NEMA.

VOLUTE CASING DRAINING

Draining connection is arranged and it is available upon request.

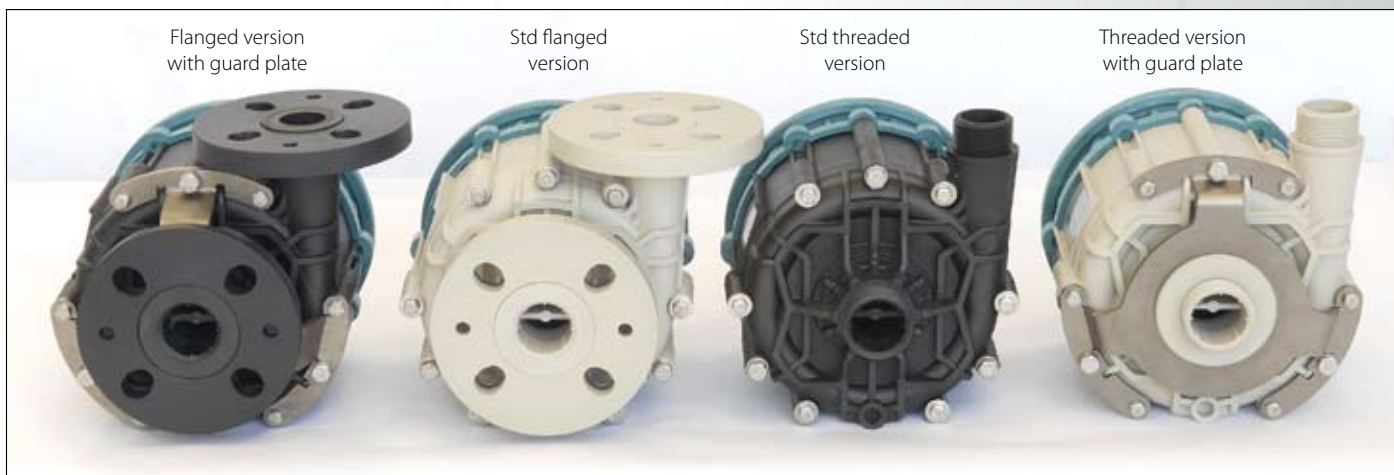
GUARD PLATE

A stainless steel guard plate is designed and fitted onto all models in order to protect the front casing from accidental mechanical shocks of various nature (e.g.: starts up with vacuum in inlet piping with possible piping excursions due to elastic brackets or thermal elongation). The guard plate is optional for G2 size of pumps.

BASE AVAILABILITY

The base for anchorage of the pump is in stainless steel with ground terminals in chemical-resistant thermoplastic materials. It is supplied upon request.

PREPARATIONS OF G2 SIZE



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*	CFF/E-CTFE	-20°C (-4°F)	100°C (212°F)	-20÷40°C (-4÷104°F)

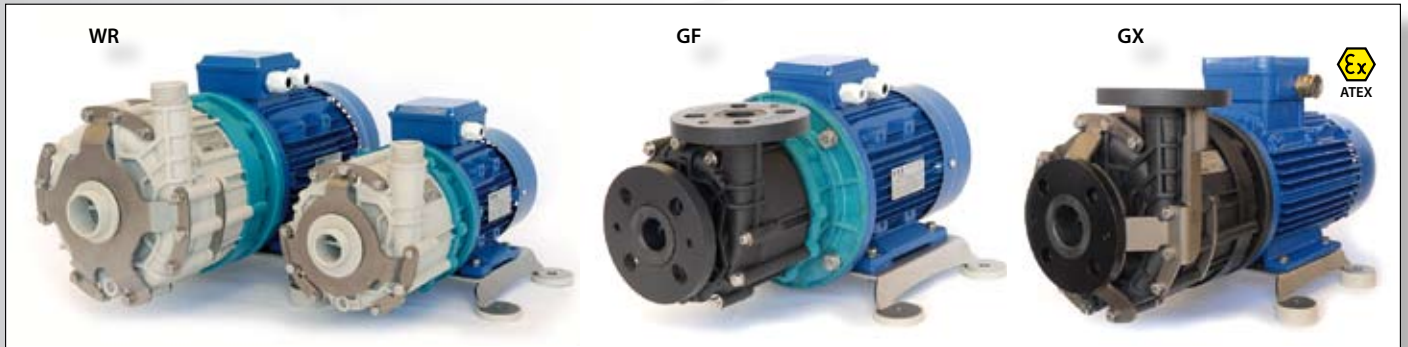
Note: Maximum inlet pressure: 1,5 bar - (*) Compliant to ATEX 94/9/EC regulations

THE CONSTRUCTIONS

table 2

TMR (G2 - G3 sizes)	WR	GF	GX*
Volute casing	GFR/PP	CFF/E-CTFE	CFF/E-CTFE
Rear casing			
Centrifugal impeller			
OR gasket	FKM (1)	FKM (1); (2)	FKM (1); (2)

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



GUIDE SYSTEMS

table 3

TMR (G2 - G3 sizes)	R1	X1	N1	R2	X2	N2	R2	N2
Guide bushing	Carbon HD	SiC	GFR/PTFE	Carbon HD	SiC	GFR/PTFE	Carbon HD	GFR/PTFE
Thrust bush		CER			SiC			SiC
Shaft		CER			SiC			SiC

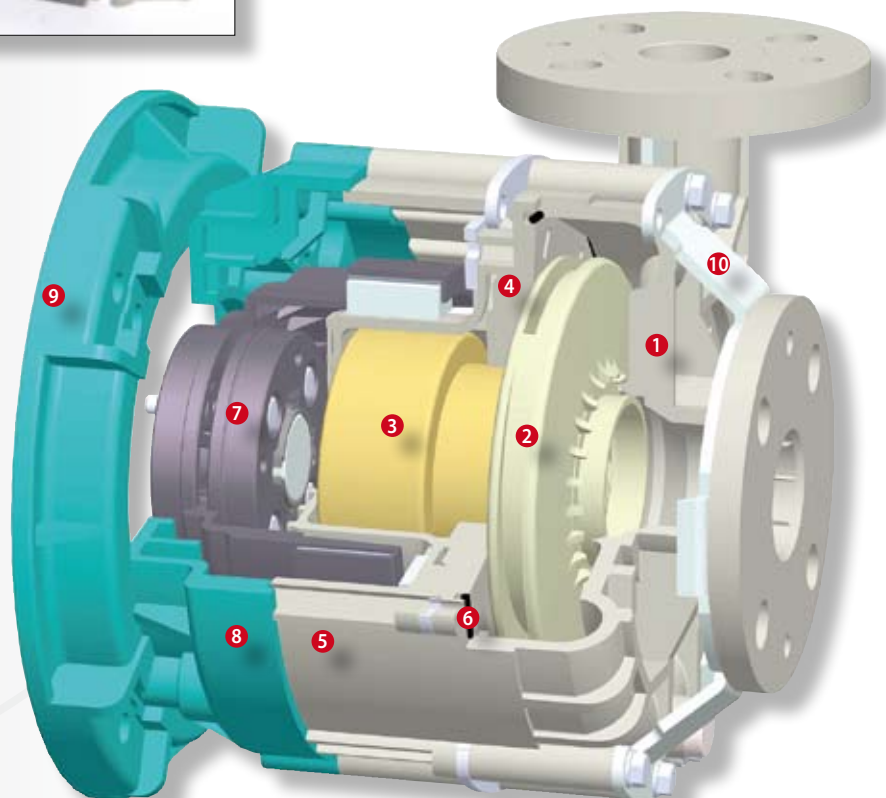


11 - R2 guide system (G2 size)

12 - X1 guide system (G3 size)

TMR - SECTION VIEW (G3 size)

- 1 - Volute casing
- 2 - Centrifugal impeller (covered type)
- 3 - Centrifugal impeller (magnetic part)
- 4 - Central disk
- 5 - Rear casing
- 6 - OR gasket
- 7 - Drive magnet assembly
- 8 - Bracket
- 9 - Motor adapter
- 10 - Guard plate



MAIN FEATURES OF MECHANICAL SEALED "ZMR"

VARIOUS TYPES OF MECHANICAL SEALS FOR ALL CHEMICALS

Different types of mechanical seals are available, single lubricated by pumped liquid or with flushing systems with liquid from the outside. Thanks to bodies in GFR-PP (glass fibre-reinforced polypropylene) or in CFF-E-CTFE (Etylene-ChloroTrifluoroEtylene carbon fibre filled) all chemicals at low and medium temperatures can be pumped.

The different combinations of materials of the sliding counter-face of the mechanical seal allow to pump liquids with solids in suspensions or abrasive. Various electrical powers are available in the "N" (standard) "P" (powered) or "S" (strong-powered) versions. They allow to pump, also at maximum flow, liquids with 1,05 – 1,35 – 1,8 specific gravity respectively.

POSSIBLE ROTATION OF VOLUTE CASING

Various shifts of the volute casing can be obtained thanks to rotation. The joint of the outlet connection of the pump with the tube of the plant is made easier.

VARIOUS TYPOLOGIES OF CONNECTIONS

Connections with BSP cylindrical thread or NPT; flanges ISO, ANSI, JIS.

ELECTRICAL MOTORS

IEC or NEMA standard motors can be installed.

GUARD PLATE

A stainless steel guard plate is designed and fitted onto all models in order to protect the front casing from accidental mechanical shocks of various nature (e.g.: starts up with vacuum in inlet piping with possible piping excursions due to elastic brackets or thermal elongation). The guard plate is optional for G2 size of pumps.

BASE AND VOLUTE CASING DRAINING are available upon request.

ZMR CONSTRUCTIONS (G2 - G3 sizes)

table 4

VERSION	WR	GF	GX*
Volute casing	GFR/PP	CFF/E-CTFE	
Rear casing			
Centrifugal impeller			
OR gasket	FKM (1)	FKM (1); (2)	

Note: Maximum inlet pressure: 1,5 bar - Upon request: (1) EPDM or (2) FFKM - (*) Compliant to ATEX 94/9/EC regulations

Mechanical sealed
Route ZMR G3 size pump
in PP reinforced material (WR)



Mechanical sealed
Route ZMR G2 size pump
in E-CTFE reinforced material (GF)

THE CONSTRUCTIONS OF MECHANICAL SEALS

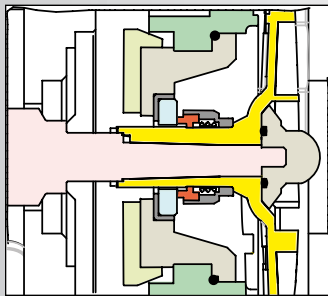
table 5

construction	model	rotating part	fixed ring	bellow	2nd rotating part	2nd fixed part	WORKING CONDITIONS			
INTERNAL SINGLE	BS5	CARBON	CER	FKM			LOW COST (easy maintenance)			
	BS7		SiC							
	BS6	SiC	CER				LOW COST HARD PARTICLES (easy maintenance)			
	BS8 - BF3**		SiC				HARD PARTICLES			
EXTERNAL SINGLE	SF1	GFR/PTFE	CER	PTFE					NORMAL USE	
	SF2		SiC							
	TS5	CARBON	CER	FKM						HARD PARTICLES
	TS7		SiC							
	TS6	SiC	CER							
	TS8		SiC							
DOUBLE	MSF1	GFR/PTFE	CER	PTFE	CARBON	CER	CRITICAL			
	MSF2		SiC							
	MTS5	CARBON	CER	FKM				EXTREME		
	MTS7		SiC							
	MTS6	SiC	CER							
	MTS8		SiC							

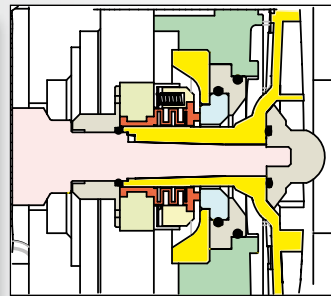
(**) Only for ZMR G3 size

SECTIONS OF VARIOUS KIND OF MECHANICAL SEALS

BS5 - BS6 - BS7 - BS8



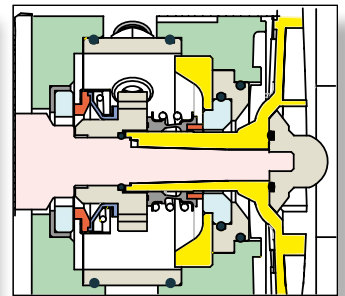
SF1 - SF2



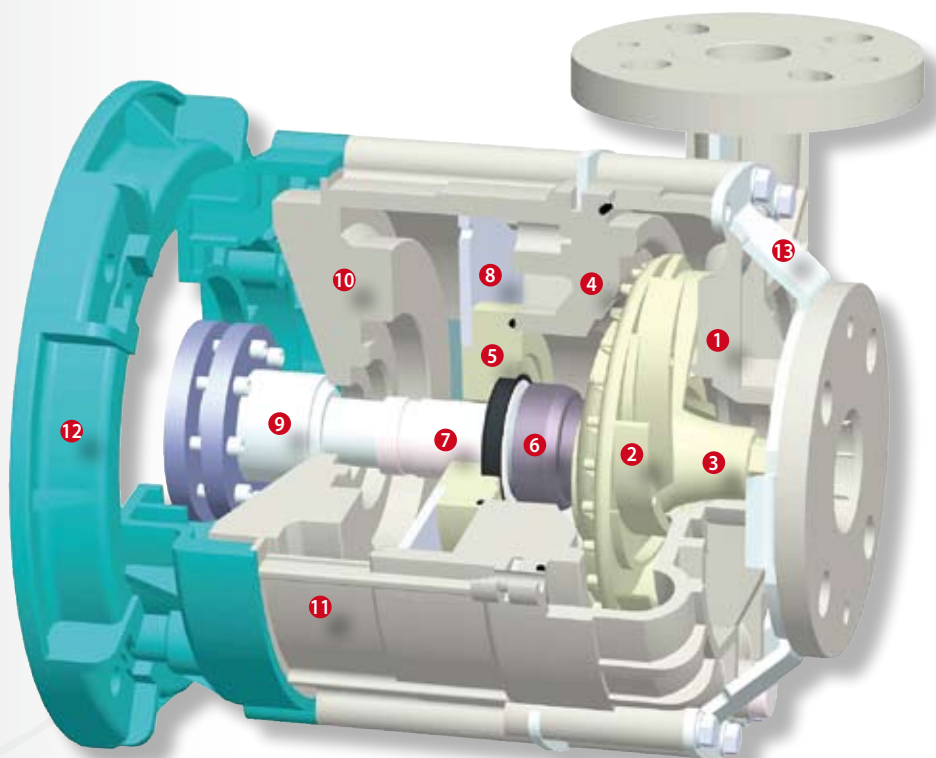
TS5 - TS6 - TS7 - TS8



MSF_ - MTS_

**ZMR - SECTION VIEW** (G3 size)

- 1 - Volute casing
- 2 - Centrifugal impeller (open type)
- 3 - Ogive
- 4 - Rear casing
- 5 - Diaphragm
- 6 - Internal mechanical seal
- 7 - Sleeve shaft
- 8 - Counter plate
- 9 - Shaft
- 10 - Dividing plate
- 11 - Bracket
- 12 - Motor adapter
- 13 - Guard plate



PUMP SPECIFICATIONS (G2 - G3 sizes)

table 6

TMR - ZMR	60Hz	All models (G2 size)	All models (G3 size)
∅ Inlet	BSP	1 1/2"	2"
∅ Outlet	BSP	1 1/4"	1 1/2"
∅ Inlet	NPT	1 1/2"	2"
∅ Outlet	NPT	1 1/4"	1 1/2"
ISO flange	DNA (mm)	40	50
	DNM (mm)	32 (40*)	40
ANSI flange	DNA (Inch)	1 1/2"	2"
	DNM (Inch)	1 1/4" (1 1/2"*)	1 1/2"
JIS flange	DNA (Inch)	1 1/2"	2"
	DNM (Inch)	1 1/4" (1 1/2"*)	1 1/2"

(*) Available on request

MOTOR SPECIFICATIONS (G2 size)

table 7

		07.11			07.14			11.15			11.23			17.25			03.35		
		N	P	S	N	P	S	N	P	S	N	P	S	N	P	S	N	P	S
Power (IEC) 60 Hz	kW	0,75	1,1	1,5	1,1	1,5	2,2	1,5	2,2	3	2,2	3		4			4		
Motor size	IEC	80A	80B	90S	80B	90S	90L	90S	90L	100	90L	100		112			112		
Power (NEMA) 60 Hz	HP	1	1,5	2	1,5	2	3	2	3	5	3	5		5			5		
Motor size	NEMA	56C	56C	145TC	143TC	145TC	182TC	145TC	182TC	184TC	182TC	184TC		184TC			184TC		
Phases	N.	3phase (all models) - 1phase (< 3 kW)																	
Std. voltage (IEC)	V	460 ± 10% 60Hz - 230 ± 10% 60Hz																	
Motor protection	IP	55																	

WEIGHT (G2 size)

table 8

Pump weight (without motor)			Motor weight												
WR	GF	GX	Version	IEC 3phase						IEC 3phase E-exd					
4	5		Frame	80A	80B	90S	90L	100	112*	80A	80B	90S	90L	100	112*
			Kg	8	10	13	17	22	31	20	20	30	31	41	65

(*) ZMR only

MOTOR SPECIFICATIONS (G3 size)

table 9

		21.18			21.25			21.28			21.43			31.22			31.30			31.40		
		N	P	S	N	P	S	N	P	S	N	P	S	N	P	S	N	P	S	N	P	S
Power (IEC) 60 Hz	kW	3	4	5,5	4	5,5	7,5	5,5	7,5	11	7,5	11	15*	5,5	7,5	11	7,5	11	15*	11	15*	
Motor size	IEC	100L	112M	132SA	112M	132SA	132SB	132SA	132SB	160MA	132SB	160MA	160MB	132SA	132SB	160MA	132SB	160MA	160MB	160MA	160MB	
Power (NEMA) 60 Hz	HP	5	5	7,5	5	7,5	10	7,5	10	15	10	15	20*	7,5	10	15	10	15	20*	15	20*	
Motor size	NEMA	184TC	184TC	213TC	184TC	213TC	215TC	213TC	215TC	254TC	215TC	254TC	256TC	213TC	215TC	254TC	215TC	254TC	256TC	254TC	256TC	
Phases	N.	3phase																				
Std. voltage (IEC)	V	460 ± 10% 60Hz																				
Motor protection	IP	55																				

(*) ZMR only

WEIGHT (G3 size)

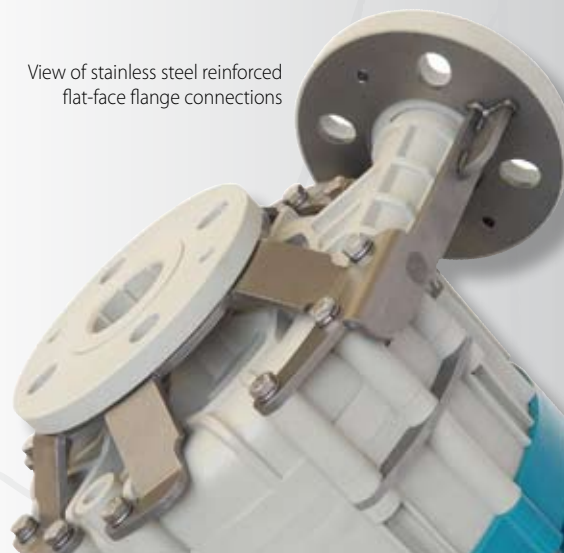
table 10

Pump weight (without motor)			Motor weight												
WR	GF	GX	Version	IEC 3phase						IEC 3phase E-exd					
12 (TMR)	13 (TMR)		Frame	100L	112M	132SA	132SB	160MA	160MB	100L	112M	132SA	132SB	160MA	160MB
8 (ZMR)	9 (ZMR)		Kg	22	31	53	61	75	85	41	65	80	80	155	155

"BSP" outlet cylindrical threaded connection

Detail of outlet flanged connection directly to the plant flange

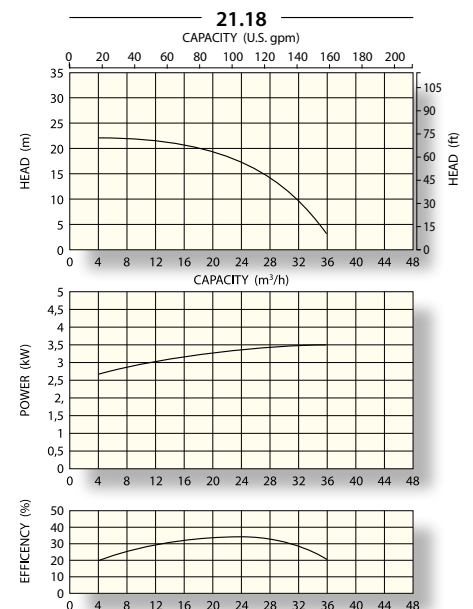
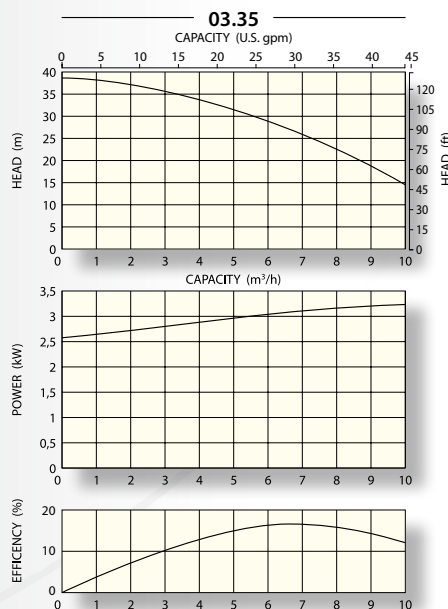
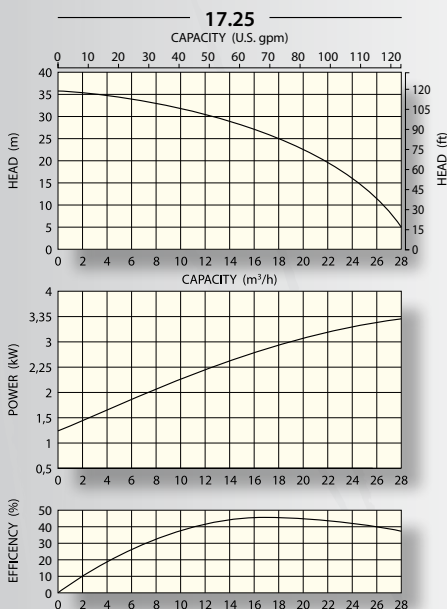
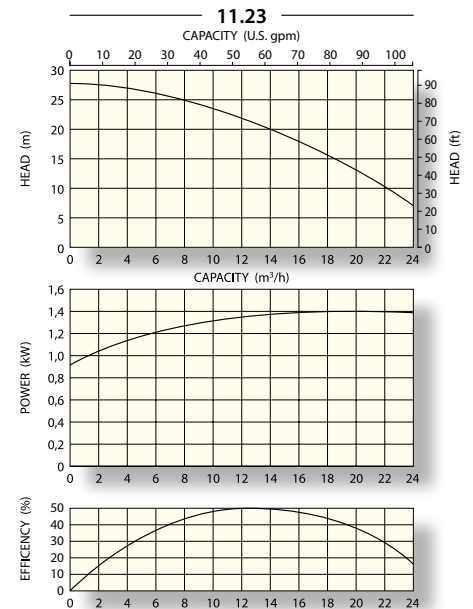
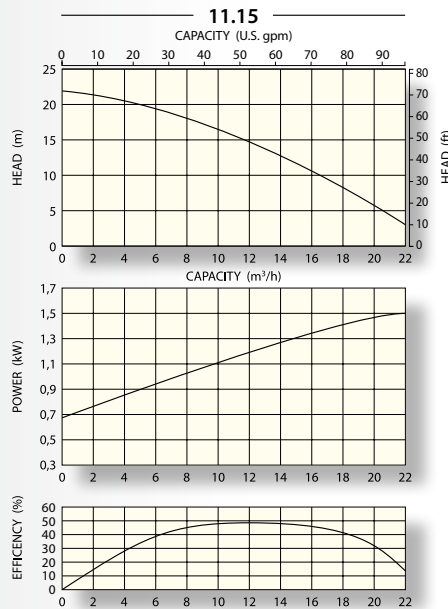
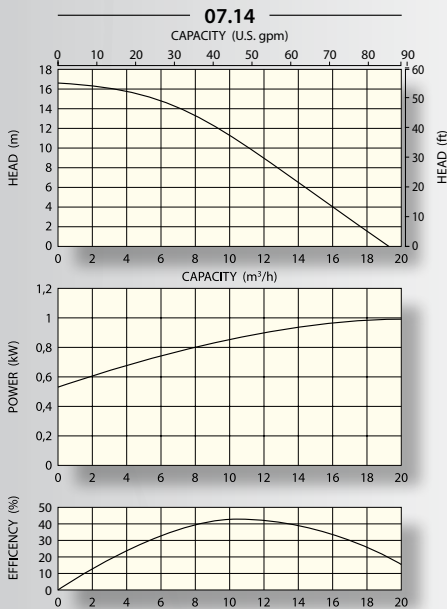
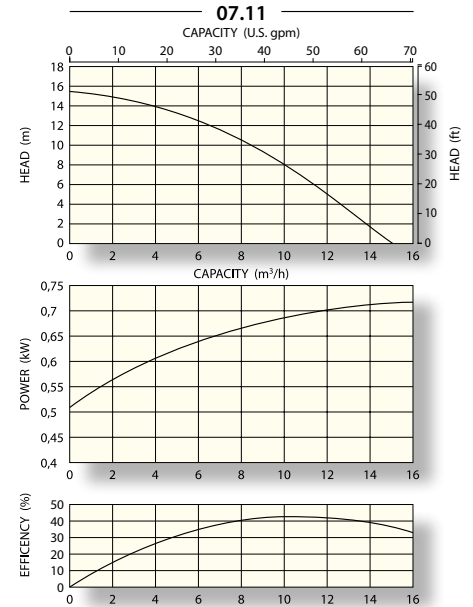
View of stainless steel reinforced flat-face flange connections



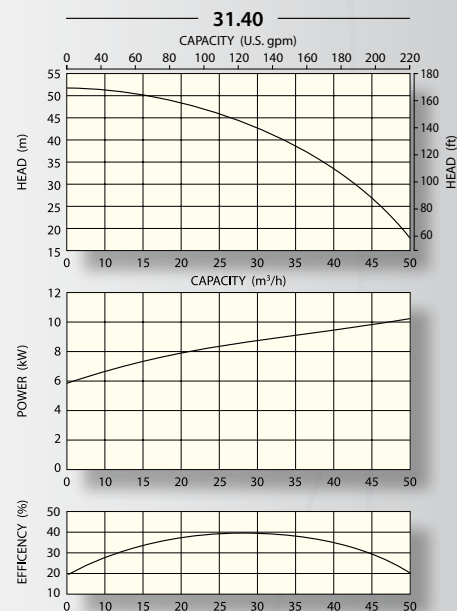
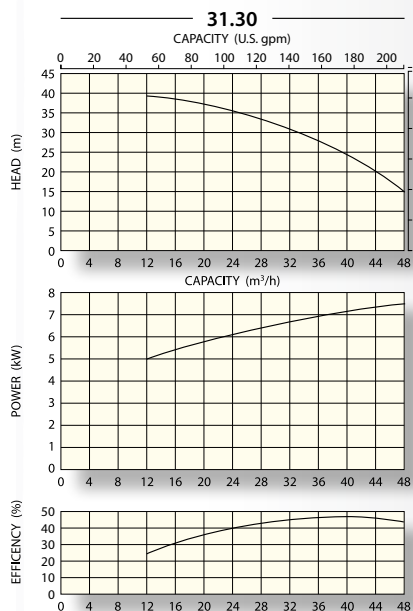
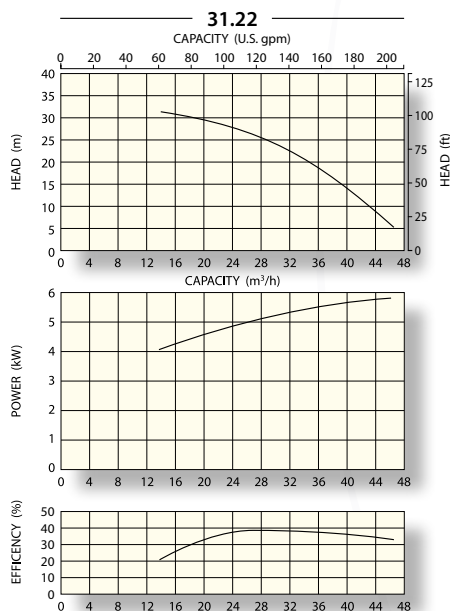
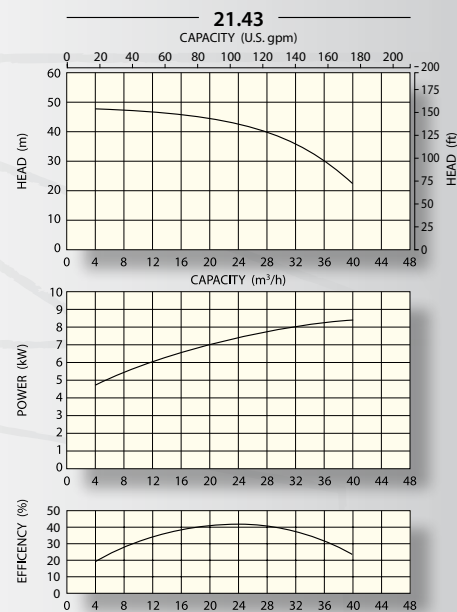
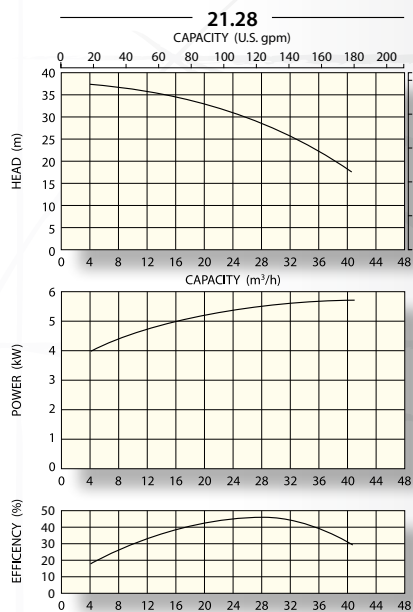
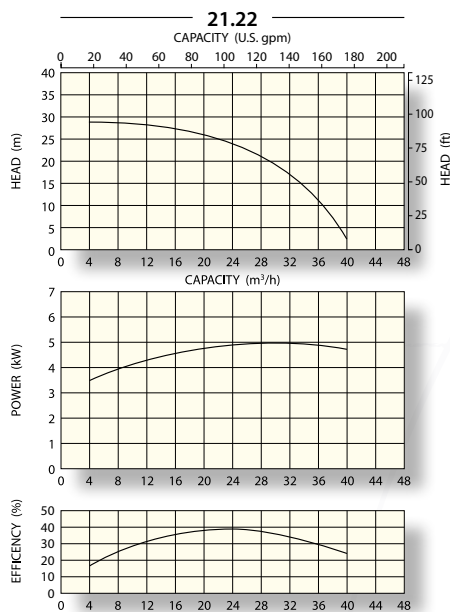
3500 r.p.m. 60Hz



In the magnetical execution the motor is easily installed without disassembling the wet-end.

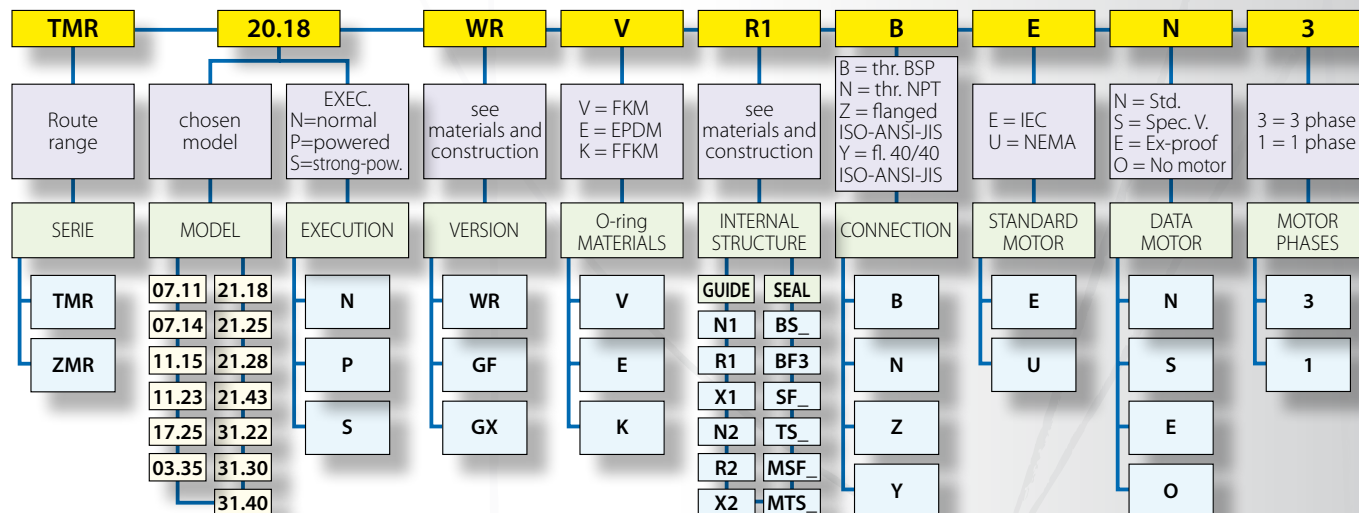


3500 r.p.m. 60Hz



PUMP IDENTIFICATION LABEL

table 11



DIMENSIONS WITH IEC MOTORS - 60 Hz

table 12

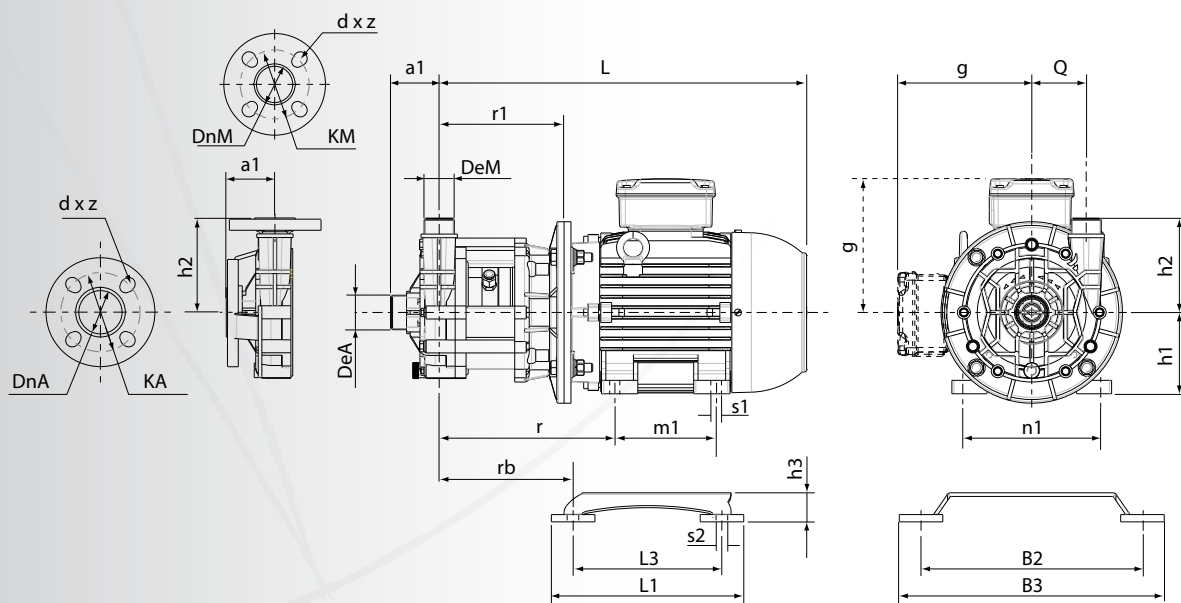
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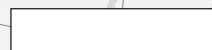
DIMENSIONS WITH IEC MOTORS - 60 Hz

table 13

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(¹) can change for motors of different brands - (²) only ZMR





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industriale
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