

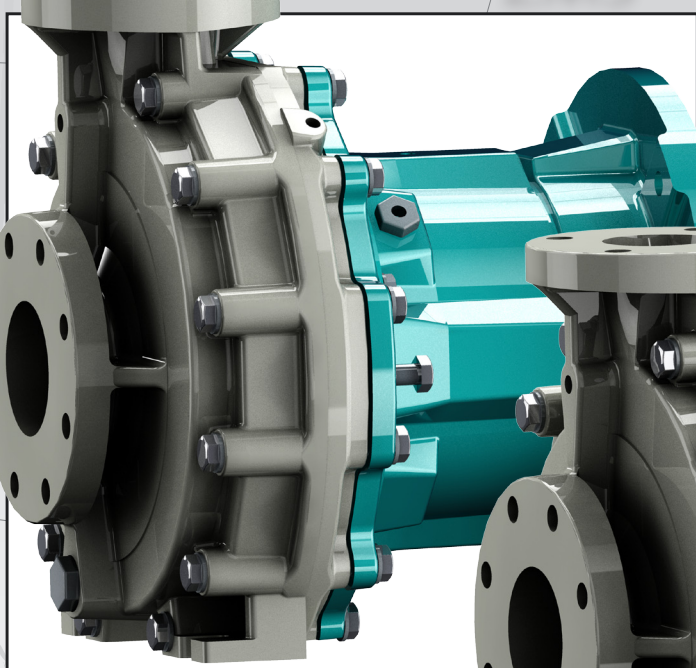
50Hz

ARGAL

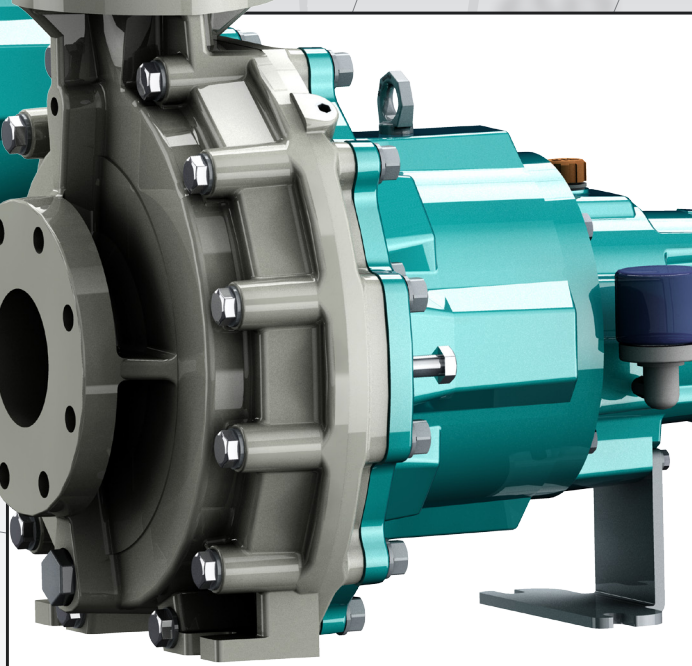
CHEMICAL PUMPS

SATURN *Fiberglass reinforced pumps*

ZMS



ZGS



HEAVY DUTY CONSTRUCTION

SATURN

Argal fiberglass reinforced pumps range

ARGAL SATURN chemical pump series consists of single-stage, horizontal axis centrifuges which conform to ANSI/ASME B73.1. regulations.

The pump bodies, made completely in FRP (thermosetting resins reinforced with fiberglass), do not need protective fairing or metallic reinforcement. Particular construction concepts and rules, in fact, provide these pumps with a considerable mechanical resistance, a resistance comparable to certain metal alloys.

The use of different formulas of the base resin (epoxy-vinylester) enables the expansion of the spectrum of chemical resistance and this makes the pumps suitable and resistant to almost all moderately abrasive corrosive chemical agents.

The combination of chemical and mechanical resistance, as well as the substantially low cost of the solutions proposed, has led the SATURN range to be the new point of reference in the field of pumps for application in sea water (from sanitation treatments to desalination), purification of industrial water and domestic water, anti air-pollution systems and generally in production processes which use liquid chemicals systems.

PUMP VERSIONS

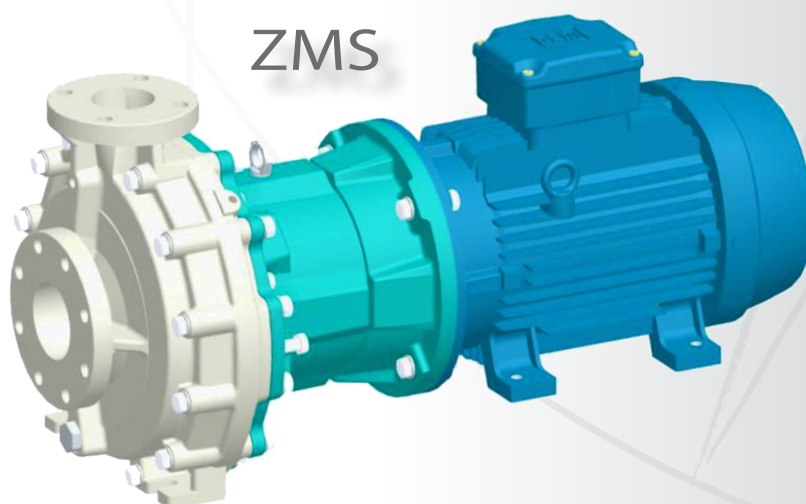
SATURN pumps come in two different versions: normalized ZGS (long-coupled), with its own independent mechanical support and mono-block ZMS (close-coupled), more practical and economical.

ZMS. The mono-block pump, which comes in versions of up to 37kW in power, offers an important novelty with both functional and application advantages. The thrust bearing block lodged in the electric motor bracket especially designed to support the radial burden, reducing the shaft's jolts and consequently the burden on the motor's bearings. This gives a greater resistance to the entire pump-motor unit and consequently the capacity to endure heavier applications.

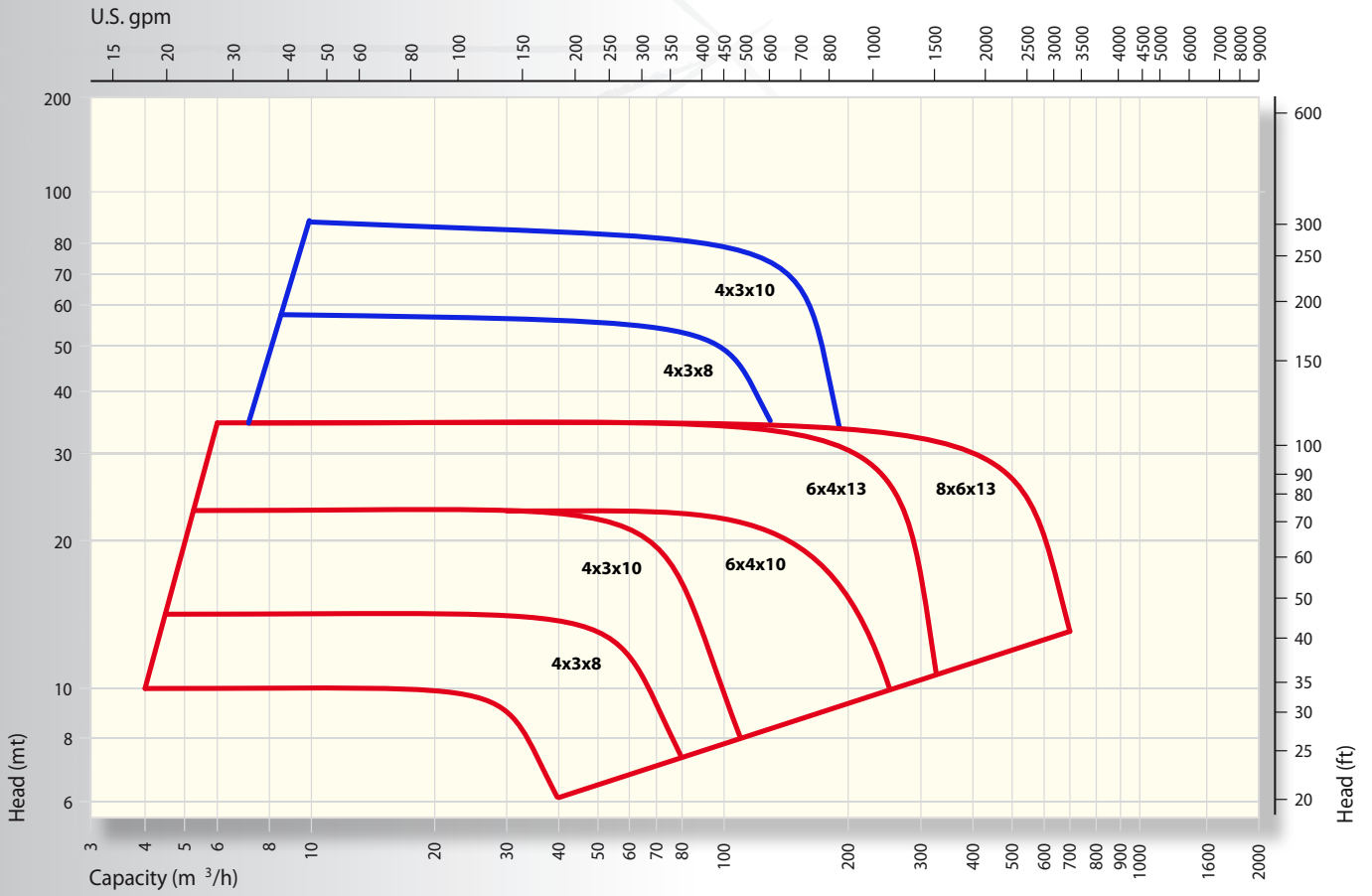
ZGS. The independent mechanical bearings support connected with electric motor by the flexible joint coupling offers the advantage of a longer life of all mechanical parts of the pump and motor, even in the heaviest applications characterized by a continuous use. Coupling by means of a flexible joint eases the dismantling of the pump and motor which are lodged on the same base. The 'back pull out' characteristic enables the operator to dismantle the support and the rotating hydraulic parts without disconnecting the pump's body from the system and without moving the electric motor from the base.

FIBERGLASS RESIN	APPLICATIONS
V1G standard vinyl ester resin compound	General purpose
V1A vinyl ester resin compound	Abrasive liquids
V1C vinyl ester resin compound	Bleaches applications
V1F vinyl ester resin compound	Fluoridric applications
E1S Epoxy resin	Strong chemical and solvents

MARKET	APPLICATIONS
Aquariums/Zoos	Salt water
Chemical Process	Acids
	Chemical waste
	Waste water
Desalination	Filtration
	Seawater In-take
	Chemical Transfer
	Concentrated Brine
Electric Utilities	Coal pile run-off
Electronics	Acids
	Chemical waste
Metal Finishing	Chromic acids
	Pickling acids
	Plating solutions
Petrochemical	Acids
	Chemical waste
Pharmaceutical	Organic Solvents
Pulp and Paper	Bleach
Mining	Abrasives and Corrosives
Scrubbers/Odor Control	Acids and Caustics



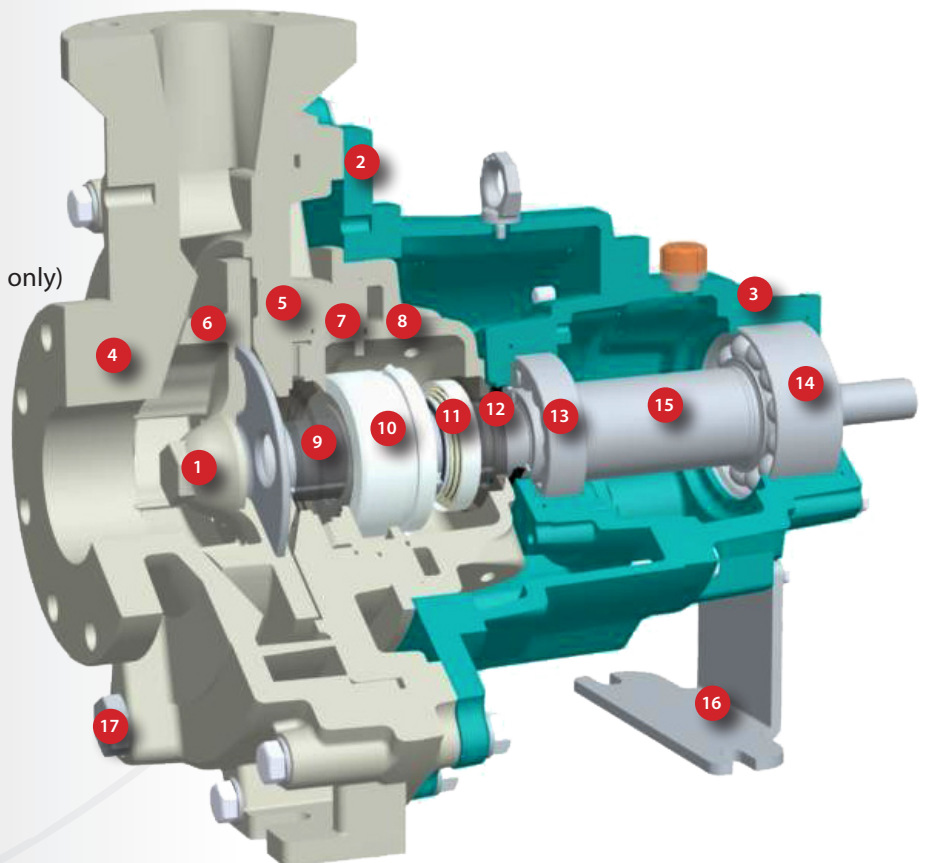
General Performance Curve - 50Hz



NOTES: All curves are referred to: water at 20°C - viscosity 1 °E - specific gravity 1 kg /dm³ ■ motor 1450 rpm 50Hz - 4 poles ■ motor 2900 rpm 50Hz - 2 poles

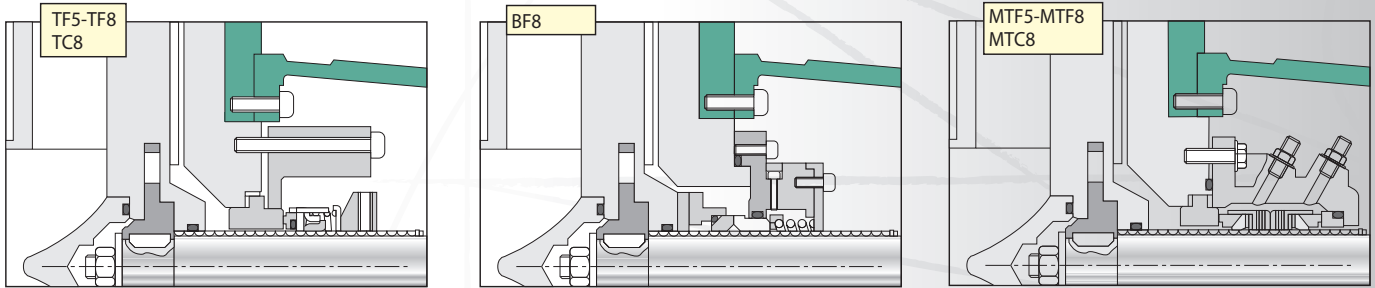
ZMG - SECTION VIEW

- 1 - Ogive
- 2 - Rear cover
- 3 - Support
- 4 - Volute casing
- 5 - Intermediate plate
- 6 - Impeller
- 7 - Seal cover
- 8 - Seal chamber (double mechanical seal only)
- 9 - Mechanical seal - Stationary ring
- 10 - Mechanical seal - Rotating part
- 11 - Mechanical seal (double mechanical seal only) - Rotating part
- 12 - Mechanical seal (double mechanical seal only) - Stationary ring
- 13 - Bearing
- 14 - Bearing
- 15 - Shaft
- 16 - Support foot
- 17 - Drain plug



MECHANICAL SEALS

SATURN pumps can be installed with various types of mechanical seals, both those produced by ARGAL and those produced by other leading Manufacturers. These can be classified by type of installation (single internal or external, double flushing) and by the materials used for the sliding parts and the packing. The metal parts are never in contact with the pumped fluid.



APPLICATIONS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	TF5	TF8	TC8	BF8	MTF5	MTF8	MTC8
concentrated fluorine compounds			x	x			
clear chemical	x	x					
volatile liquids					x	x	x
abrasive liquids		x	x	x		x	x
precipitation risk solutions				*	x	x	x
liquids with solids				x		x	x
max. %	1-3	1-3	1-3	1-5	1-3	1-3	1-3
max. dimension (mm)	0,1-0,6	0,1-0,6	0,1-0,6	1-2	0,1-0,6	0,1-0,6	0,1-0,6
max. hardness (Mohs)	1-3	3-6	3-6	3-6	1-2	3-6	3-6
WORKING CONDITIONS	standard	extreme			critical	heavy	

* only with external flushing

NOTE 1:

TF5-1 Argal manufacture
 TF5-2 Crane 8B2
 TF5-3 Flowserve RA-C

NOTE 2:

TF8-1 Argal manufacture
 TF8-2 Crane 8B2
 TF8-3 Flowserve RA-C

NOTE 3:

TC8-1 Argal manufacture
 TC8-2 Crane 9T

NOTE 4:

BF8-1 Argal manufacture
 BF8-2 Flowserve Allpac 481

NOTE 5:

MTF5-1 Argal manufacture
 MTF5-2 Crane 8-1T

NOTE 6:

MTF8-1 Argal manufacture
 MTF8-2 Crane 8-1T
 MTF8-3 Flowserve CRO

NOTE 7:

MTC8-1 Argal manufacture
 MTC8-2 Crane 9T-9T

MATERIALS

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
MATERIALS		TF5	TF8	TC8	BF8	MTF5	MTF6	MTC8
Construction		external single			internal single	double flushed		
Part	rotating	Car	SiC	SiC	SiC	Car	SiC	SiC
	fixed	Al ₂ O ₃	SiC	SiC	SiC	Al ₂ O ₃	SiC	SiC
Gasket		FKM*	FKM*	PTFE	FKM*	FKM*	FKM*	PTFE
Part	2° rotating	-	-	-	-	Car	Car	Car
	2° fixed	-	-	-	-	Al ₂ O ₃	Al ₂ O ₃	Al ₂ O ₃

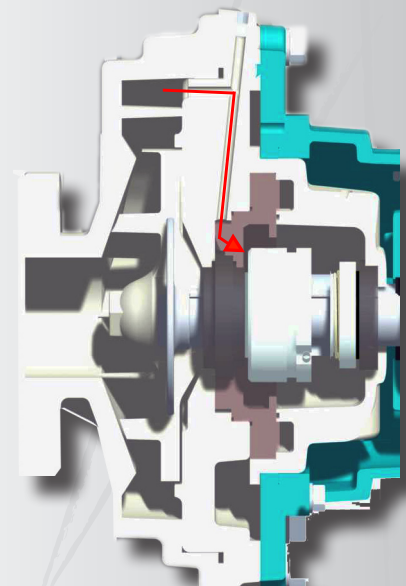
* Upon request: EPDM O-ring

SEAL FLUSHING ARRANGEMENTS

All mechanical seals require flushing to lubricate the seal faces and maintain normal operating temperatures. Seals are normally flushed with either a clean external fluid or by the liquid being pumped.

INTERNAL COVER FLUSH

This option removes seal heat by circulating high pressure liquid internally through the drilled rear cover to the seal chamber and then recirculating this liquid back to the impeller.



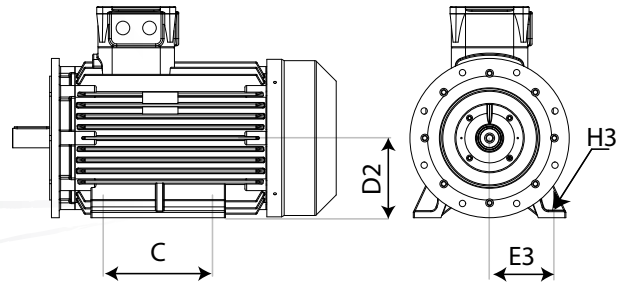
MOTOR

Standard motors are IEC and NEMA.

MOTOR POWER INSTALLED (50 Hz)

HP	3	5,5	5,5	7,5	10	15	20	25	30	40	50	60	75
kW	2,2	3	4	5,5	7,5	11	15	18,5	22	30	37	45	55
4x3x8													
4x3x10													
6x4x10													
6x4x13													
8x6x13													

■ motor 2 poles
 ■ motor 4 poles
 ■ motor 2 poles and 4 poles



IEC MOTORS (50 Hz) - ZMS PUMPS

Kw	2,2	3	4	5,5	7,5	7,5	11	15	15	18,5	18,5	22	22	30	37
rpm	1450 2900	1450 2900	1450 2900	1450 2900	2900	1450	1450 2900	2900	1450	2900	1450	2900	1450	1450 2900	2900
IEC motor frame	90L	100L	112	132S	132S	132M	160M	160M	160L	160L	180M	180M	180L	200L	200L
C	125	140	140	140	140	178	210	210	254	254	241	241	279	305	305
D2	90	100	112	132	132	132	160	160	160	160	180	180	180	200	200
2E3	140	160	190	216	216	216	254	254	254	254	279	279	279	318	318
H3	10	12	12	12	12	12	14,5	14,5	14,5	14,5	14,5	14,5	14,5	18,5	18,5
FL*	0	0	0	50	50	50	80	80	80	80	80	80	80	90	90

* see page 7

NOTE: Dimensions in millimeter

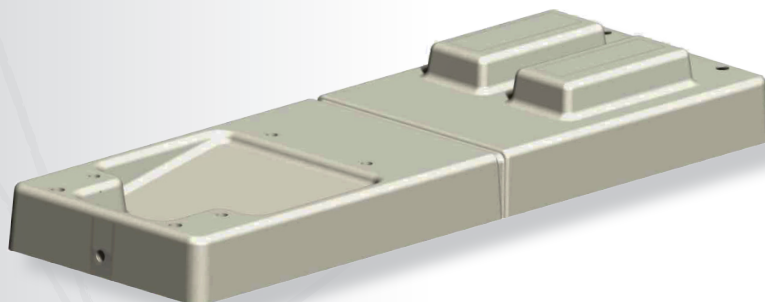
IEC MOTORS (50 Hz) - ZGS PUMPS

Kw	2,2	3	4	5,5	7,5	7,5	11	15	15	18,5	18,5	22	22	30	37	45	45	55	55	75	75		
rpm	1450 2900	1450 2900	1450 2900	1450 2900	2900	1450	1450 2900	2900	1450	2900	1450	2900	1450	1450 2900	2900	1450	2900	1450	2900	1450	2900	1450	2900
IEC motor frame	90L	100L	112	132S	132S	132M	160M	160M	160L	160L	180M	180M	180L	200L	200L	225M	225M	250M	250M	280S	280S	280S	280S
C	125	140	140	140	140	178	210	210	254	254	241	241	279	305	305	311	311	349	349	368	368	368	368
D2	90	100	112	132	132	132	160	160	160	160	180	180	180	200	200	225	225	250	250	280	280	280	280
2E3	140	160	190	216	216	216	254	254	254	254	279	279	279	318	318	356	356	406	406	457	457	457	457
H3	8	10	10	10	10	10	14	14	14	14	15	15	15	19	19	19	19	24	24	24	24	24	24

NOTE: Dimensions in millimeter

BASE

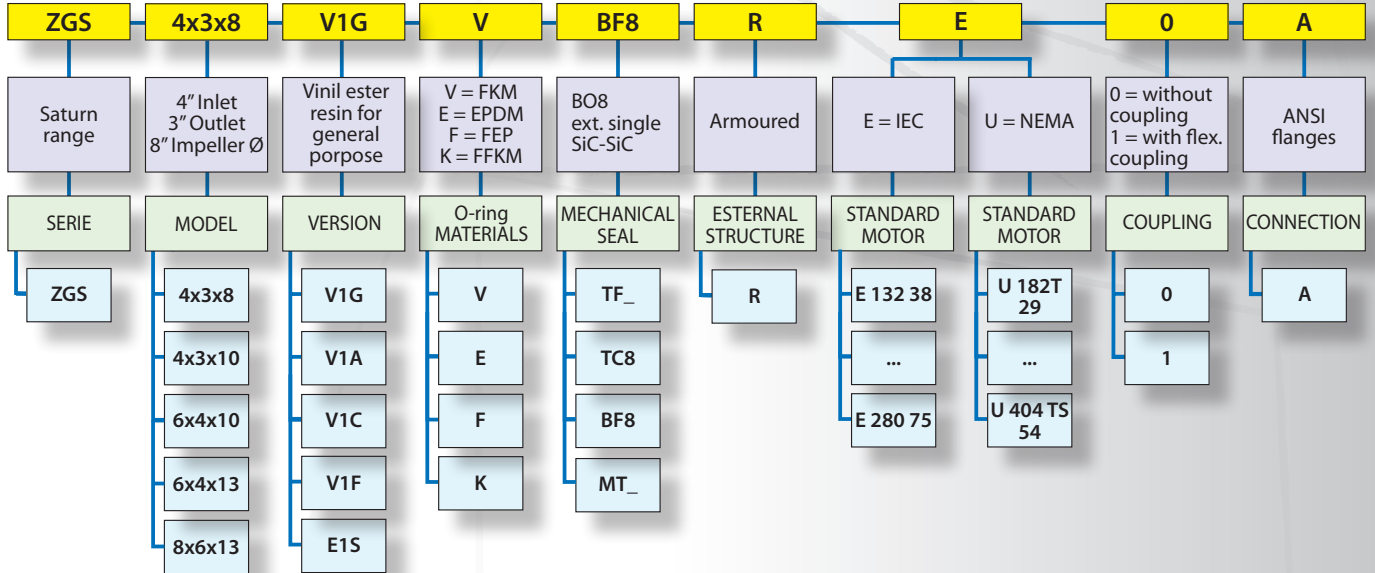
This is entirely made in fiberglass to guarantee resistance to corrosion, dimensional stability and structural solidity. The dimensions respect ANSI/ASME regulations accepting both NEMA and IEC motors.



ZGS

long-coupled pumps range

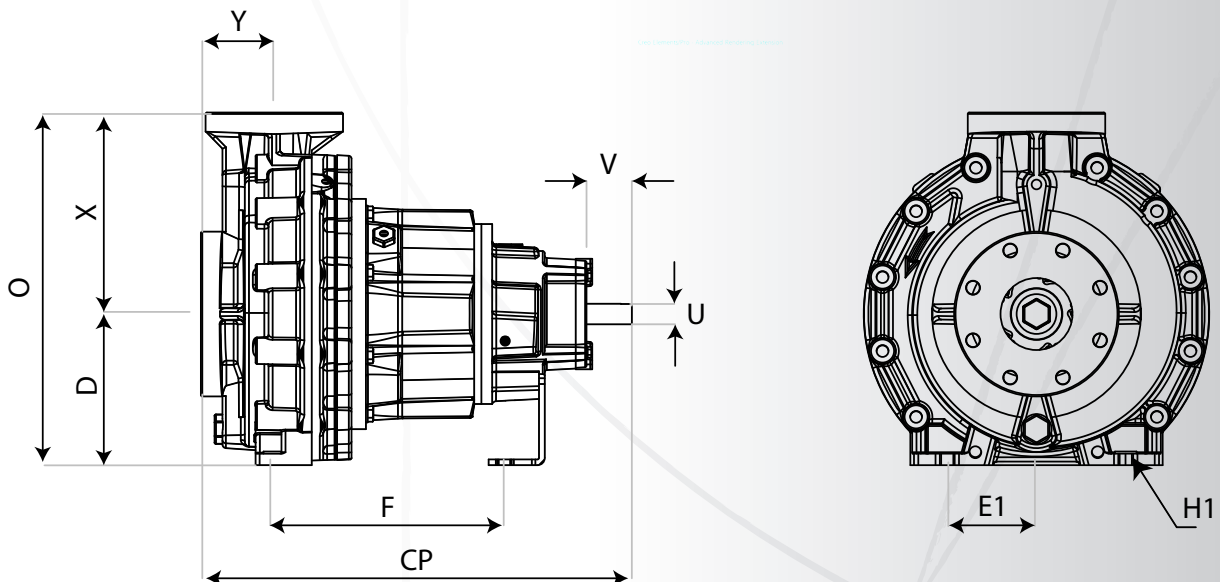
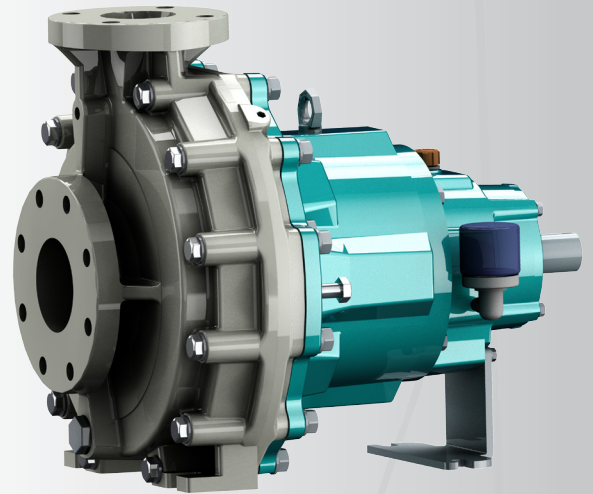
PUMP IDENTIFICATION LABEL



DIMENSIONS

Pump size	4x3x8	4x3x10	6x4x10	6x4x13	8x6x13
Suction	100	100	150	150	200
Discharge	80	80	100	100	150
X	279	279	343	343	406
Y	102	102	102	102	152
D	254	254	254	254	368
O	489	489	597	597	775
2E1	248	248	248	248	406
H1	16	16	16	16	22
F	318	318	318	318	476
CP	597	597	597	597	860
U	28,3	28,3	28,3	28,3	60
V	67	67	67	67	102

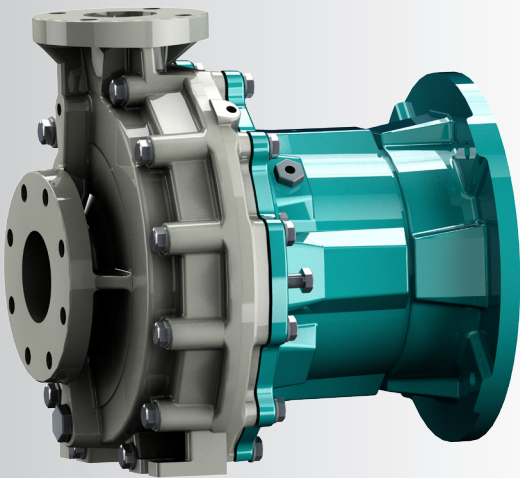
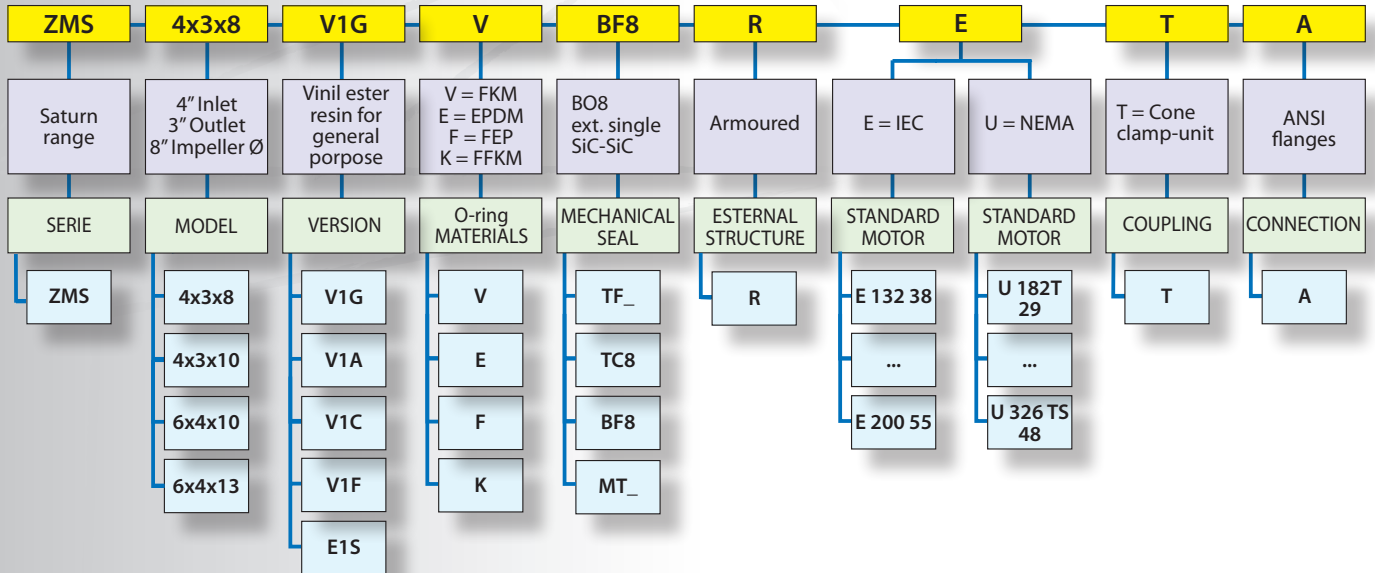
NOTE: Dimensions in millimeter



ZMS

close-coupled pumps range

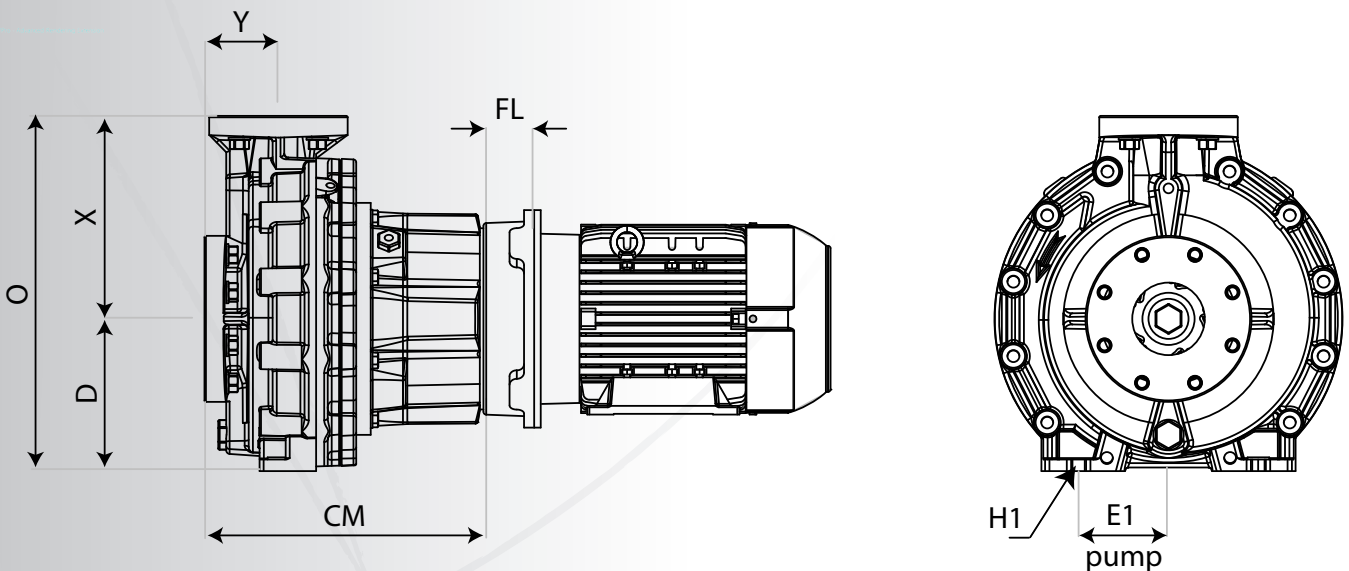
PUMP IDENTIFICATION LABEL



DIMENSIONS

Pump size	4x3x8	4x3x10	6x4x10	6x4x13
Suction	100	100	150	150
Discharge	80	80	100	100
X	279	279	343	343
Y	102	102	102	102
D	210	210	254	254
O	489	489	597	597
2E1	248	248	248	248
H1	16	16	16	16
CM	391	391	391	391

NOTE: Dimensions in millimeter





rev. 04



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