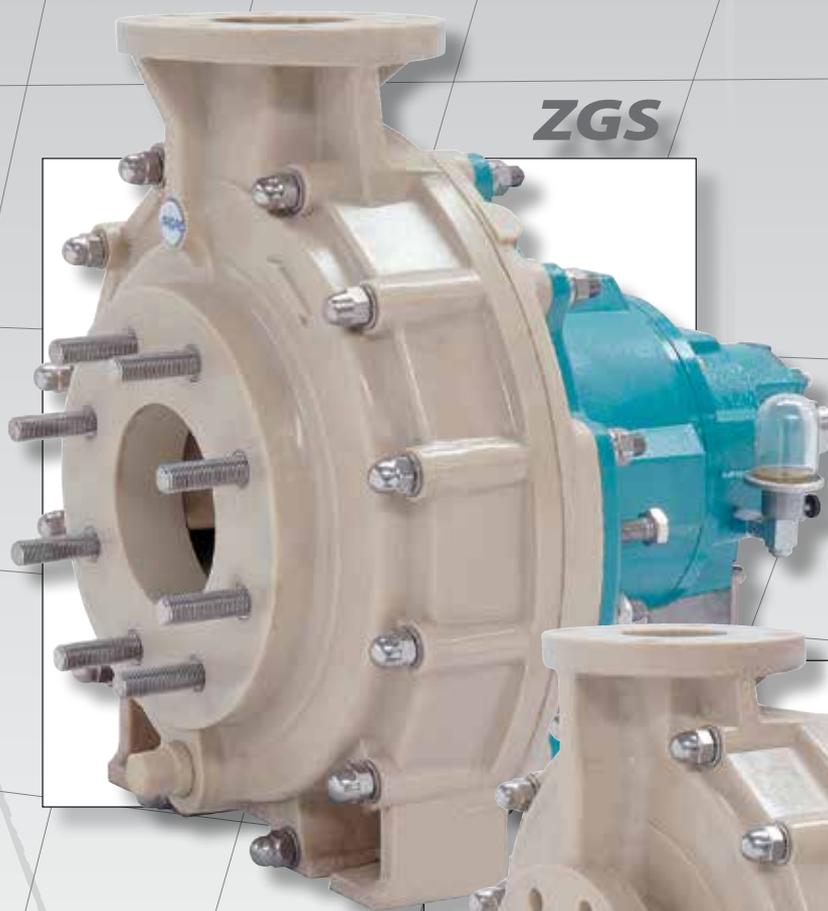


# ARGAL

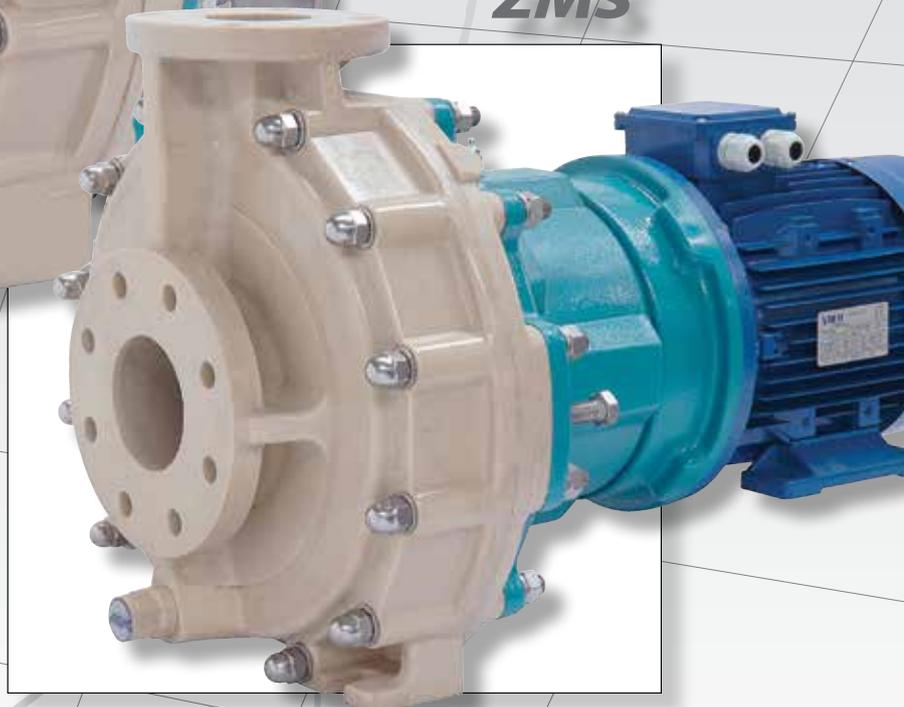
CHEMICAL PUMPS

## SATURN

*Fiberglass Reinforced Polyester Pumps*



**ZGS**



**ZMS**



EU product  
Made in Italy

**HEAVY DUTY CONSTRUCTION**

## SATURN - Fiberglass Reinforced Polyester Pumps

The Argal pumps of the new range Saturn are centrifugal, single stage and compliant to ANSI/ASME B73.1. Regulation. These pump are manufactured in FRP (fibre reinforced polyester) and do not need a protecting carcass or external frames to reinforce the structure.

Peculiar design and the intrinsic resistance of the material of construction confer to these pumps mechanical resistance comparable to that of the major metallic alloys. Use of different formulations of epoxy vinyl ester resins, extend the spectrum of chemical resistance of these pumps that are adequate and resistant to a large number of corrosive and moderately abrasive medias.

The Saturn pumps are a technical and economical alternative to metallic pumps made of special alloys and can be effectively applied in water treatment applications, water games, depuration of civil and industrial waste waters, and in general in productive processes deploying chemicals.

### THE MANUFACTURING PROCESS

The Saturn pumps are produced completely by Argal in its plant located in Italy by RTM injection moulding technology.

By this process parts are manufactured in moulds where reinforcing layers of glass fibre matt are arranged prior to the injection of the resin.

The use of glass fibers in form of layer of tissue of different weight allows to reinforce the structure in the areas of most mechanical stress and at the same time offers an excellent chemical resistance of the surfaces wetted by the liquid pumped.

The thermoset resins, differently from thermoplastics materials, can not be re processed once catalyzed and this is a warrantee for better mechanical properties, thermal and dimensional stability and longer life.



### APPLICATIONS

table 1

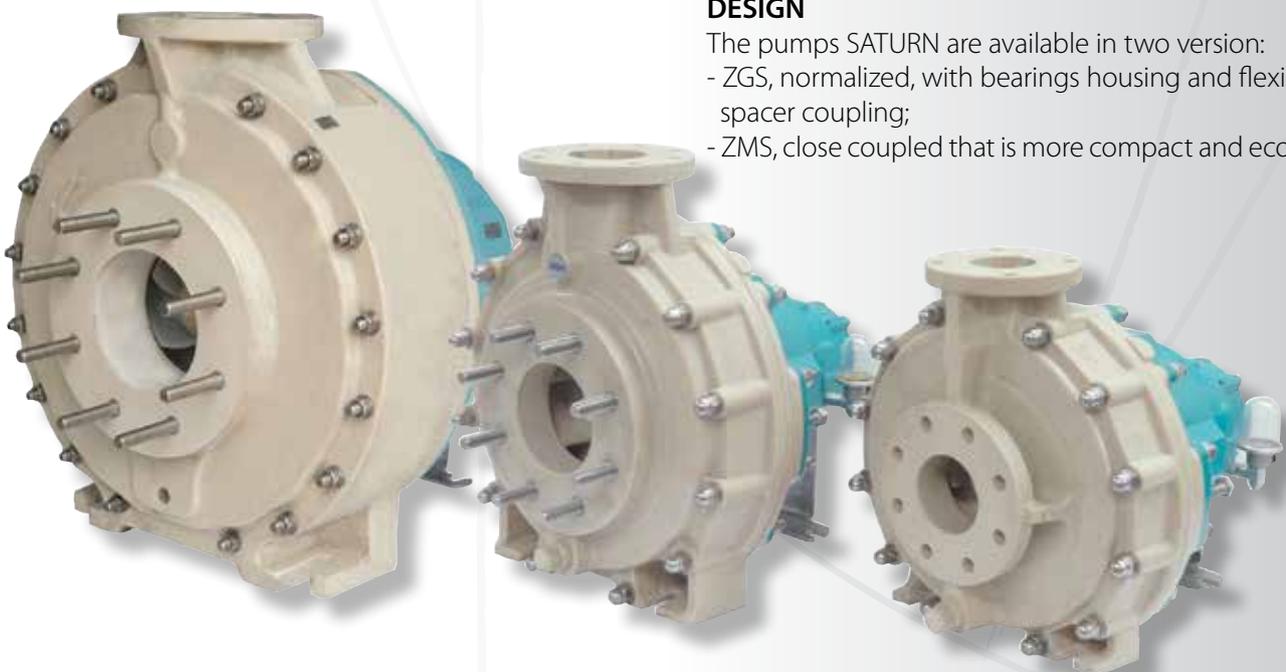
| FIBERGLASS RESIN                        | APPLICATIONS            |
|---|-------------------------|
| V1G standard vinyl ester resin compound | General purpose         |
| V1A vinyl ester resin compound          | Abrasive liquids        |
| V1C vinyl ester resin compound          | Bleaches applications   |
| V1F vinyl ester resin compound          | Fluoridric applications |

| 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           |
|                        | Chromic acids            |
| Metal Finishing        | Pickling acids           |
|                        | Plating solutions        |
|                        | Acids                    |
| Petrochemical          | Chemical waste           |
| Pharmaceutical         | Organic Solvents         |
| Pulp and Paper         | Bleach                   |
| Mining                 | Abrasives and Corrosives |
| Scrubbers/Odor Control | Acids and Caustics       |

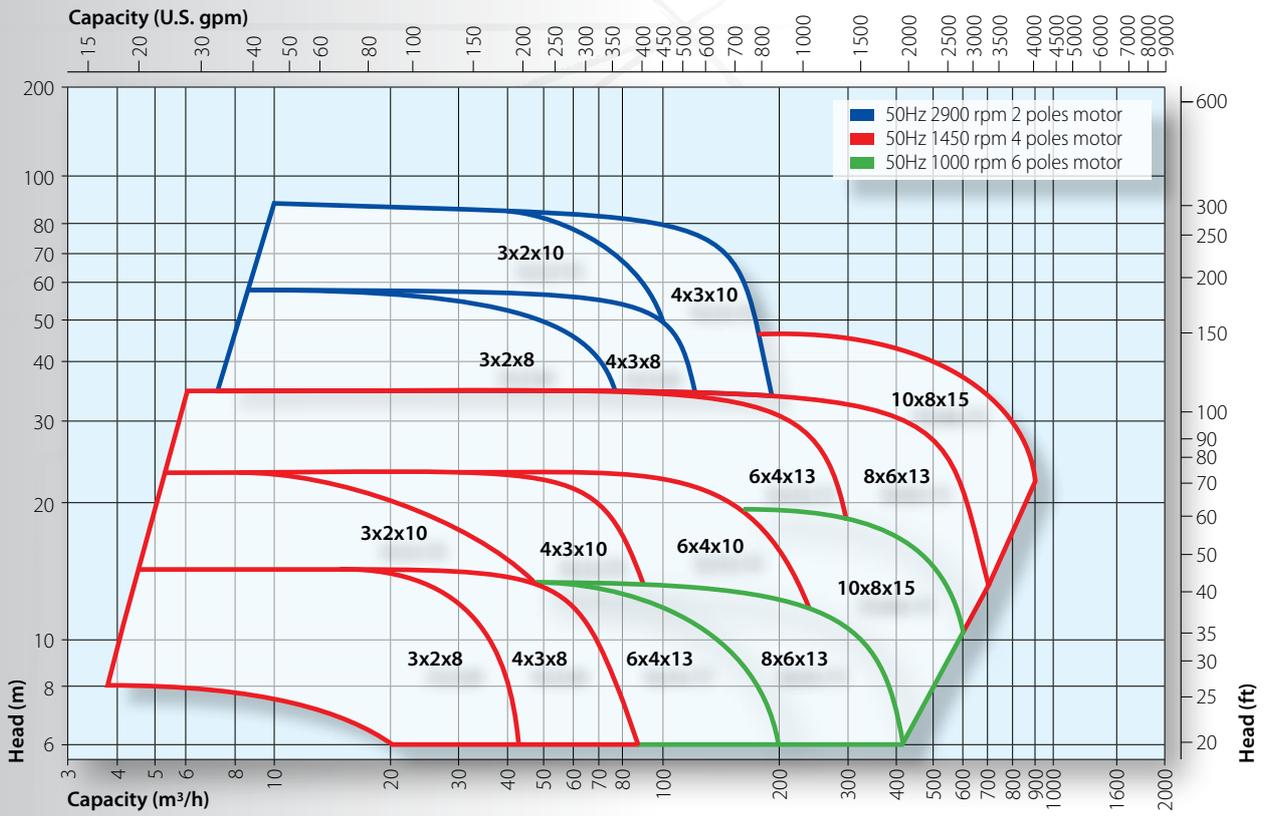
### DESIGN

The pumps SATURN are available in two version:

- ZGS, normalized, with bearings housing and flexible spacer coupling;
- ZMS, close coupled that is more compact and economical.



# General Performance Curves 50 Hz



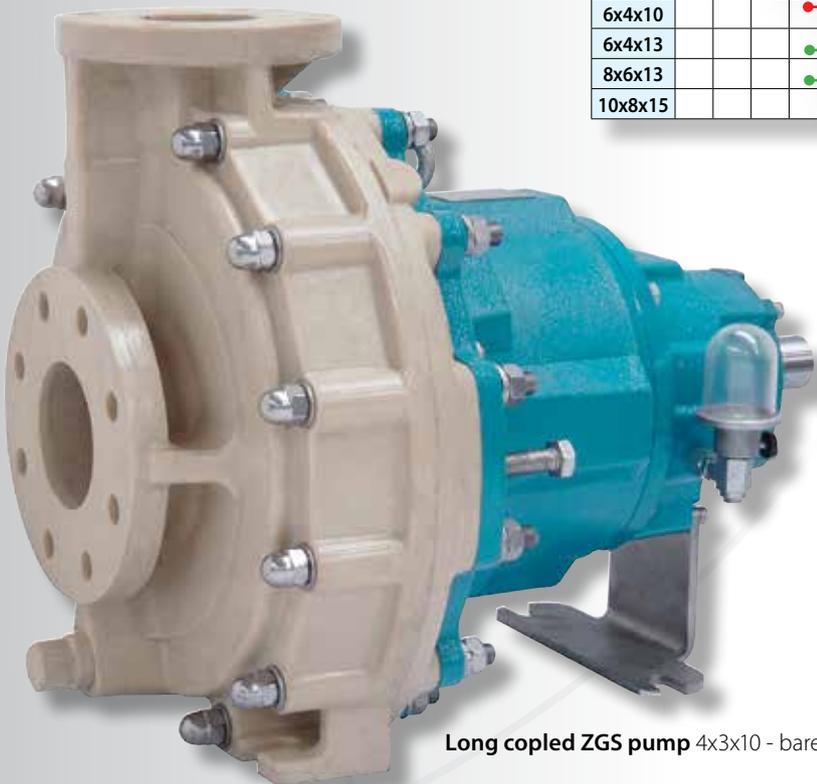
NOTE: All curves are referred to water at 20°C - viscosity 1<sup>e</sup>E - specific gravity 1 kg/dm<sup>3</sup>

MOTOR POWER INSTALLED (50 Hz)

table 2

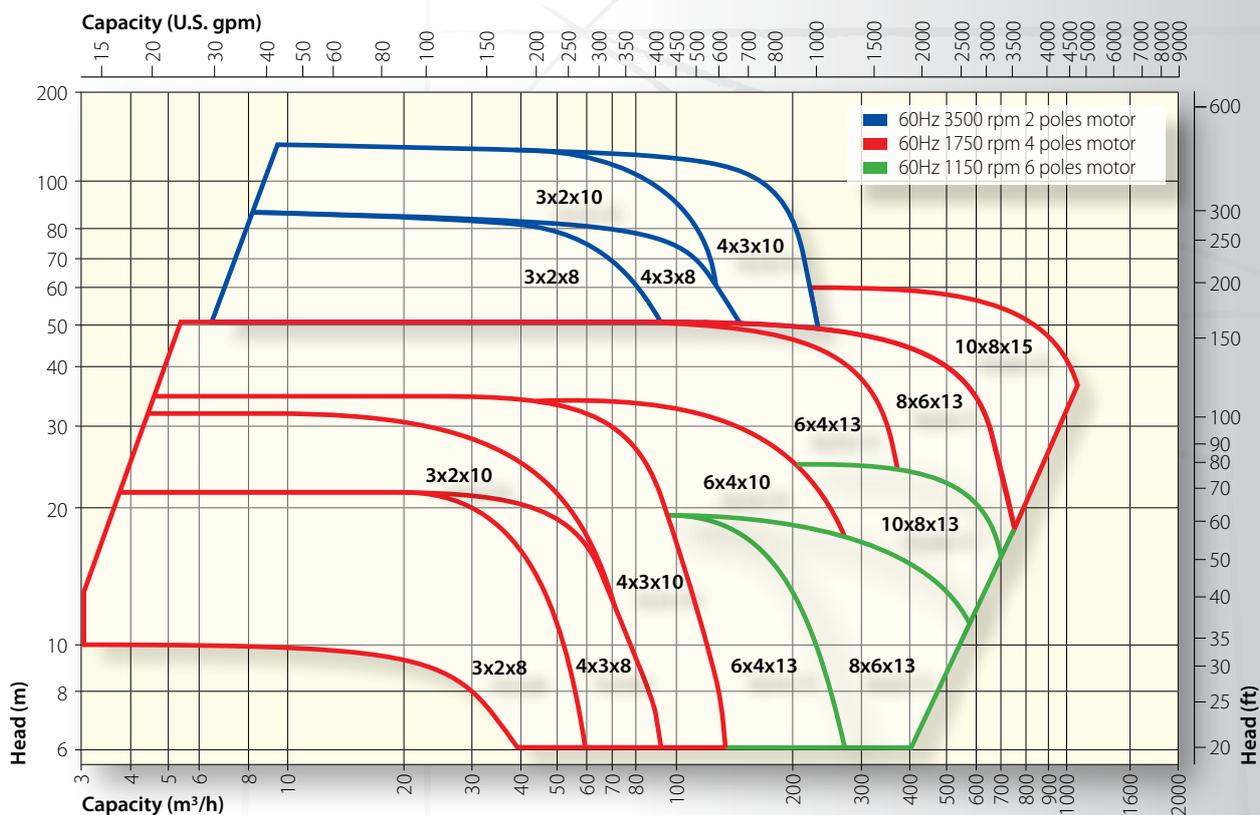
| Model   | kW  |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |  |
|---------|-----|-----|---|---|-----|-----|----|----|------|----|----|----|----|----|----|----|-----|-----|--|
|         | 1,5 | 2,2 | 3 | 4 | 5,5 | 7,5 | 11 | 15 | 18,5 | 22 | 30 | 37 | 45 | 55 | 75 | 90 | 110 | 132 |  |
| 3x2x8   |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |  |
| 3x2x10  |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |  |
| 4x3x8   |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |  |
| 4x3x10  |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |  |
| 6x4x10  |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |  |
| 6x4x13  |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |  |
| 8x6x13  |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |  |
| 10x8x15 |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |  |

2 poles IEC motors ●●●●  
 4 poles IEC motors ●●●●  
 6 poles IEC motors ●●●●



Long coupled ZGS pump 4x3x10 - bare shaft

# General Performance Curves 60 Hz



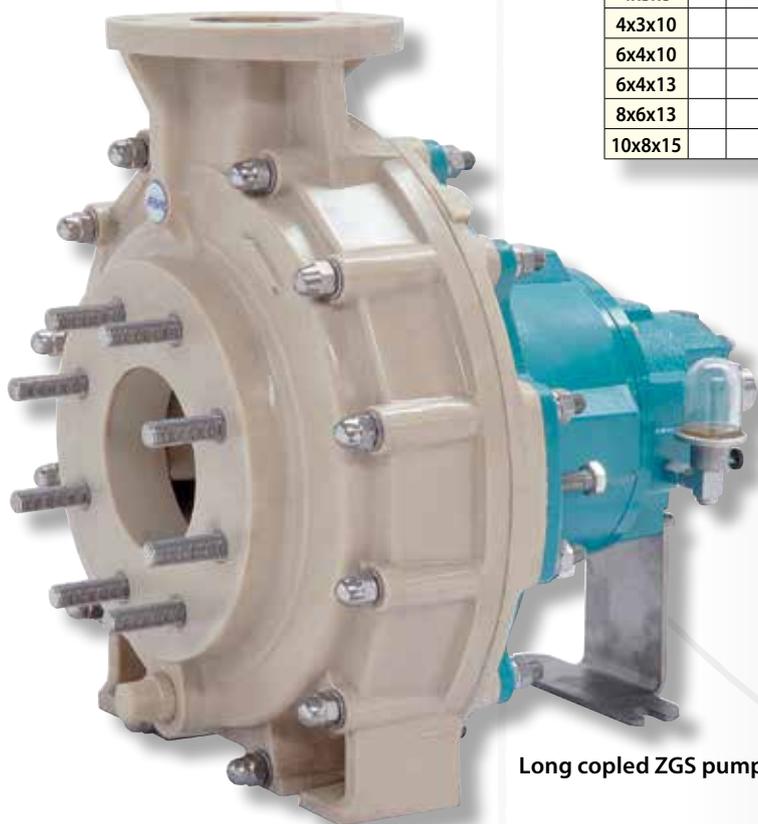
NOTE: All curves are referred to water at 20°C - viscosity 1°E - specific gravity 1 kg/dm<sup>3</sup>

MOTOR POWER INSTALLED (60 Hz)

table 3

| Model   | kW  |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |     |  |
|---------|-----|-----|---|---|-----|-----|----|----|------|----|----|----|----|----|----|----|-----|-----|-----|--|
|         | 1,5 | 2,2 | 3 | 4 | 5,5 | 7,5 | 11 | 15 | 18,5 | 22 | 30 | 37 | 45 | 55 | 75 | 90 | 110 | 132 | 160 |  |
| 3x2x8   |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |     |  |
| 3x2x10  |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |     |  |
| 4x3x8   |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |     |  |
| 4x3x10  |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |     |  |
| 6x4x10  |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |     |  |
| 6x4x13  |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |     |  |
| 8x6x13  |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |     |  |
| 10x8x15 |     |     |   |   |     |     |    |    |      |    |    |    |    |    |    |    |     |     |     |  |

2 poles IEC motors ●  
 4 poles IEC motors ●  
 6 poles IEC motors ●

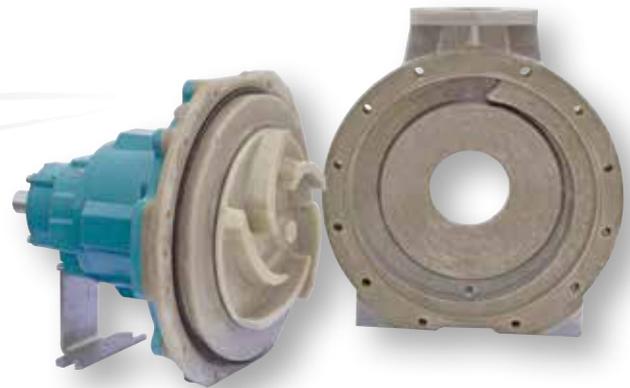
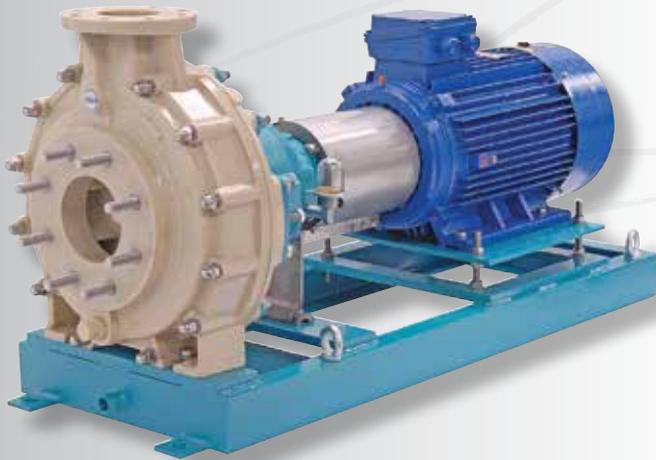


Long coupled ZGS pump 6x4x13 - bare shaft

## Saturn ZGS

**ZGS.** The coupling of the pump to the motor by a flexible joint deliver a longer operative life to the mechanical part of the pump and is the preferred solution for heavy duty application and continuous use.

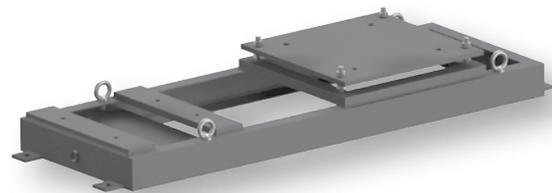
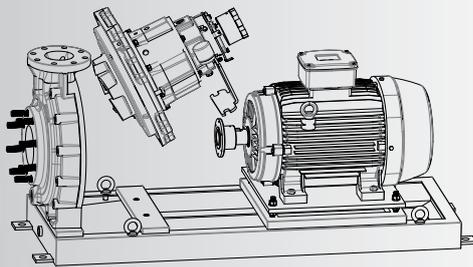
The flexible joint coupling allows maintaining the pump or the motor mounted on a mutual base plate, independently. The back pull-out construction allows to dismantle the support of the pump and some hydraulic parts subjected to periodic inspection without disconnecting the casing from the piping of the plant or removing the electric motor from the base plate.



**Long coupled pump ZGS** - Pump and electric motor are assembled on a common FRP base plate (optional) and coupled by flexible joint. Guard plate is made of Stainless steel and directly assembled on to the pumps (doesn't need to be anchored to the base plate.)

### Detail of the volute casing

Depending from the model the volute casing can be manufactured with a simple volute or with a double volute. In the latter case the final section of the volute is partly divided in two independent section that reduce the radial loads on to the bearings and the transmission shaft.



**Back pull-out execution** - All the SATURN pumps with elastic coupling are equipped with the back pull out system that allows the dismantling of the internal and mechanic parts of the pump without disconnecting the casing from the fittings and without moving the motor.

### Base plate

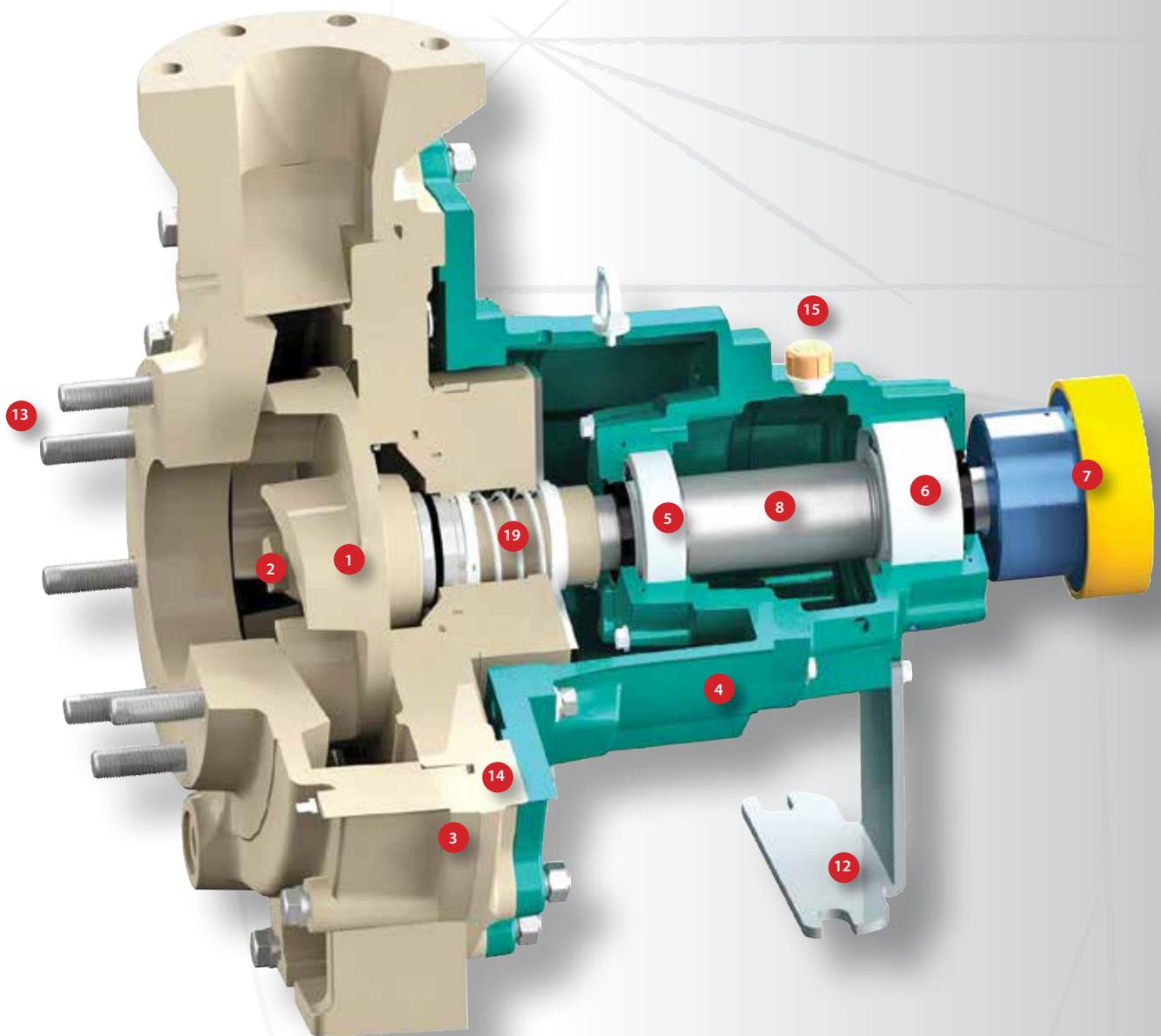
Made of carbon steel profiles, painted with anti corrosion enamel and provided with a system to adjust the position of the motor and ease its alignment with the pump.

### PUMP IDENTIFICATION LABEL

table 4

| ZGS    | 4x3x8   | V1G                                   | V  | TC8   | R                  | E                           | O                                   | A           |
|--------|---|---------------------------------------|--|---|--------------------|-----------------------------|-------------------------------------|-------------|
| SATURN | 4" Inlet<br>3" Outlet<br>8" impeller ø                                      | Vinyl ester resin for general purpose | V = FKM<br>E = EPDM<br>F = FEP<br>K = FFKM | TC8 ext. single SiC-SiC                                 | Integral           | E = IEC<br>U = NEMA         | 0 = without joint<br>1 = with joint | ANSI Flange |
| SERIE  | MODEL   | VERSION                               | GASKET MATERIAL                            | MECHANICAL SEAL   | EXTERNAL STRUCTURE | STANDARD MOTOR              | COUPLING                            | CONNECTIONS |
| ZGS    | 3x2x8<br>3x2x10<br>4x3x8<br>4x3x10<br>6x4x10<br>6x4x13<br>8x6x13<br>10x8x15 | V1G<br>V1A<br>V1C<br>V1F              | V<br>E<br>F<br>K                           | TR5_<br>TR8_<br>TC8_<br>BF8_<br>MTR5_<br>MTR8_<br>MTC8_ | R                  | E 132 38<br>...<br>E 355 95 | 0<br>1                              | A           |

## Saturn ZGS long-coupled pump



### 1 - Impeller

Centrifugal. Semi open type, with high efficiency vanes is manufactured by RTM injection as single piece with metallic core embedded.

### 2 - Ogive

It is polyester made part with a stainless steel core embedded in the part when it is injected designed to lock the impeller permanently in its home position. It has a hexagonal shape compatible with a standard wrench.

### 3 - Volute casing and rear casing

RTM Injection moulded in single piece without joints are extremely resistant.

The areas of the rear casing subjected to localise mechanical stress as flanges and supports are manufactured with peculiar design attentions.

### 4 - Bearings housing and rear flange

Cast iron parts produced by a mechanised process. The support hosts the bearings' housing and the lubricant oil. The lantern located in intermediate position connects the support to the rear-casing flange.

### 5 - Bearing pump side

Taper roller bearing to counter axial and radial loads.

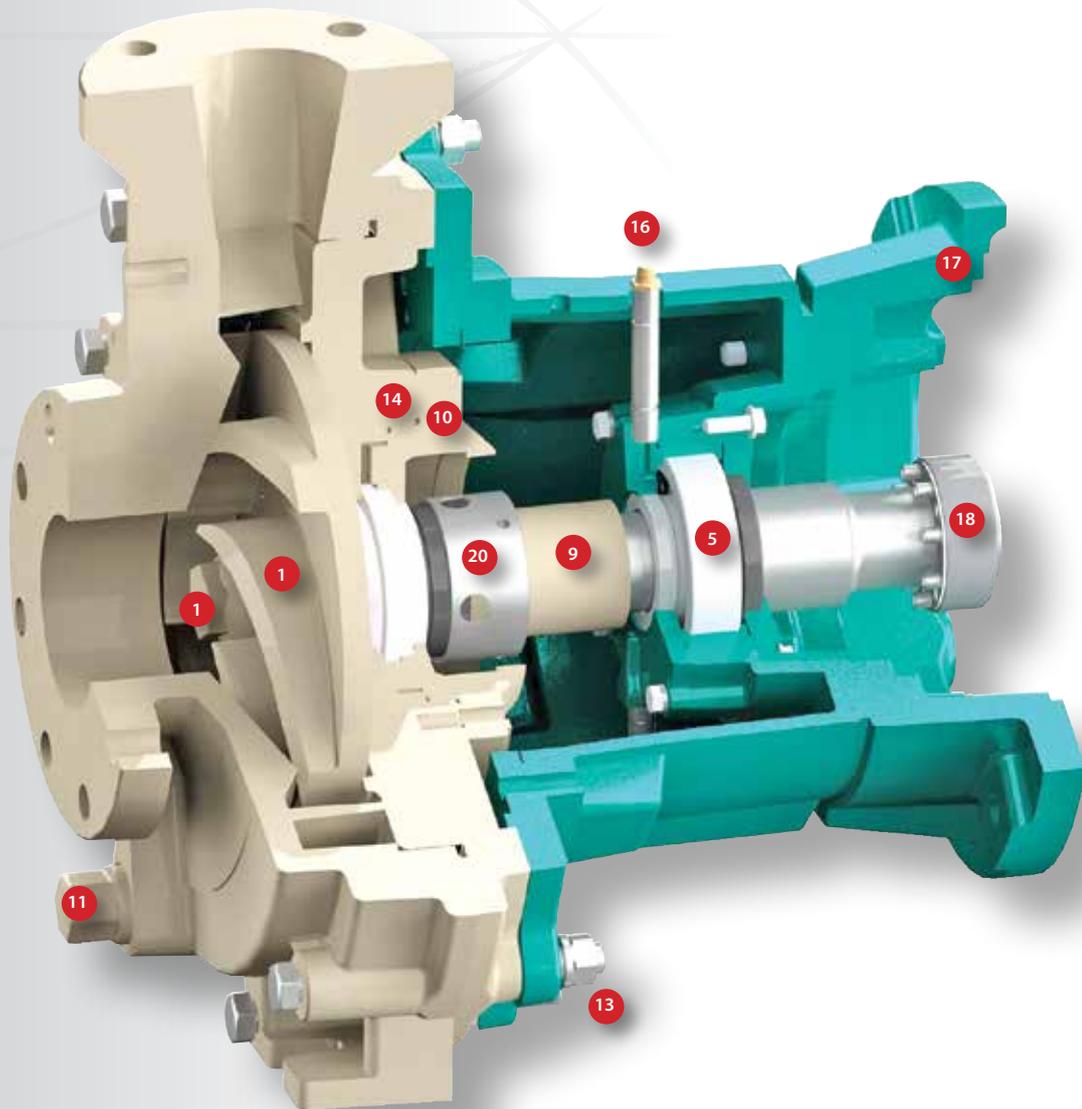
### 6 - Bearing motor side

Double row ball bearing.

### 7 - Flexible spacer coupling

Made of cast steel and single piece with crown in plastic polymer: It's complete with removable spacer to allow pulling out the pump for dis assembly purposes.

## Saturn ZMS close-coupled pump



### 8 - Shaft

Is machined from a steel made bar and designed to resist to hydraulic loads and corresponding vibrations. Is totally protected by the shaft sleeve made of FRP.

### 9 - Shaft Sleeve

Single piece without additional metallic parts.

### 10 - Diaphragm

Manufactured in FRP, is designed to support the stationary part of the mechanical seal and it is easily replaceable if it fails.

### 11 - Drain port

Optional.

### 12 - Support foot

Made of stainless steel plate.

### 13 - Locking bolts and tie rods

Made of stainless steel.

### 14 - O-ring gaskets

FKM Standard.

### 15 - Oil fill plug.

### 16 - Grease nipple.

### 17 - Flanged adaptor.

### 18 - Shrink disc.

### 19 - BF8 mechanical seal.

### 20 - TR5 mechanical seal.

## Saturn ZMS

**ZMS.** The close coupled construction, proposed for installed power up to 37 kW has also important functional advantages. The shaft of the pump is supported by a bearing located in the lantern: This bearing counters all the radial load of the shaft and by reducing its overhung section reduces the loads on the bearings of the electric motor contributing to extend their life. This solution is characterized by reduced overall dimensions and allows installing these pumps also in plants dimensioned for different devices.



### Detail of the volute casing

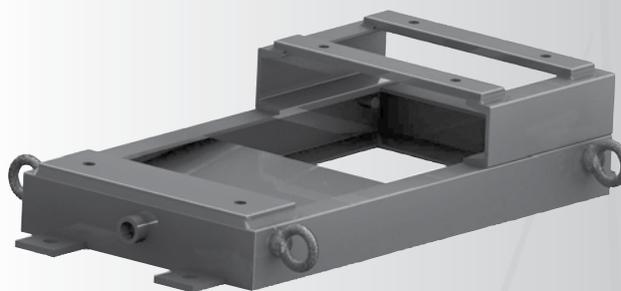
Depending from the model the volute casing can be manufactured with a simple volute or with a double volute. In the latter case the final section of the volute is partly divided in two independent section that reduce the radial loads on to the bearings and the transmission shaft.

### Close coupled pump ZMS

Pump and electric motor are assembled directly.

### Base plate (optional)

Made of carbon steel profiles, painted with anti corrosion enamel.



### PUMP IDENTIFICATION LABEL

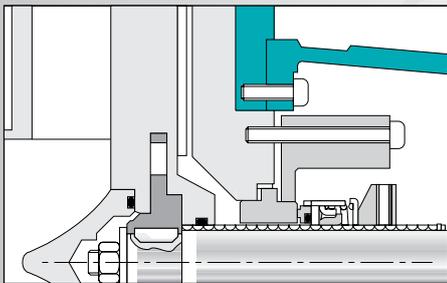
table 5

| ZMS    | 4x3x8  | V1G                                   | V  | TC8   | R                  | E                           | T                               | A           |             |
|--------|--|---------------------------------------|--|---|--------------------|-----------------------------|---------------------------------|-------------|-------------|
| SATURN | 4" Inlet<br>3" Outlet<br>8" impeller ø                 | Vinyl ester resin for general purpose | V = FKM<br>E = EPDM<br>F = FEP<br>K = FFKM | TC8 ext. single SiC-SiC                                 | Integral           | E = IEC<br>U = NEMA         | T=Shrink disc                   | ANSI Flange |             |
| SERIE  | MODEL  | VERSION                               | GASKET MATERIAL                            | MECHANICAL SEAL   | EXTERNAL STRUCTURE | STANDARD MOTOR              | STANDARD MOTOR                  | COUPLING    | CONNECTIONS |
| ZMS    | 3x2x8<br>3x2x10<br>4x3x8<br>4x3x10<br>6x4x10<br>6x4x13 | V1G<br>V1A<br>V1C<br>V1F              | V<br>E<br>F<br>K                           | TR5_<br>TR8_<br>TC8_<br>BF8_<br>MTR5_<br>MTR8_<br>MTC8_ | R                  | E 132 38<br>...<br>E 200 55 | U 182T 29<br>...<br>U 326 TS 48 | T           | A           |

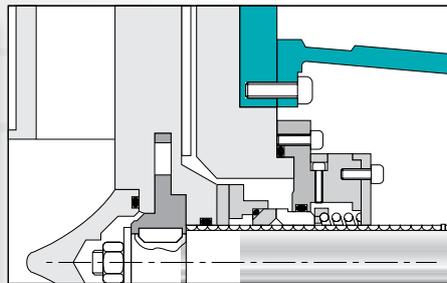
## Mechanical Seals

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.

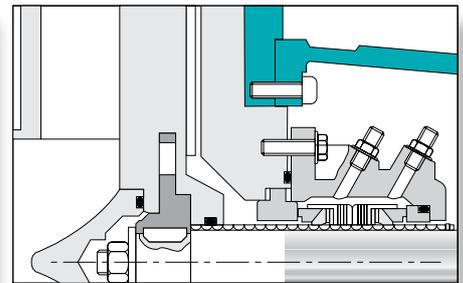
TR5 - TR8 - TC8



BF8



MTR5 - MTR8 - MTC8



### APPLICATIONS

table 6

| MODEL                           | TR5 (1)  | TR8 (2) | TC8 (3) | BF8 (4) | MTR5 (5) | MTR8 (6) | MTC8 (7) |
|---------------------------------|----------|---------|---------|---------|----------|----------|----------|
| 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:

- TR5-1 Argal
- TR5-2 Crane 8-1T
- TR5-3 Flowserve RA-C

Nota 2:

- TR8-1 Argal
- TR8-2 Crane 8-1T
- TR8-3 Flowserve RA-C

Note 3:

- TC8-1 Argal
- TC8-2 Crane 8-1T

Note 4:

- BF8-1 Argal
- BF8-2 Flowserve Allpac 481

Note 5:

- MTR5-1 Argal
- MTR5-2 Crane 8-1T/8-1T

Note 6:

- MTR8-1 Argal
- MTR8-2 Crane 8-1T/8-1T
- MTR8-3 Flowserve CRO

Note 7:

- MTC8-1 Argal
- MTC8-2 Crane 8-1T/8-1T

### MATERIALS

table 7

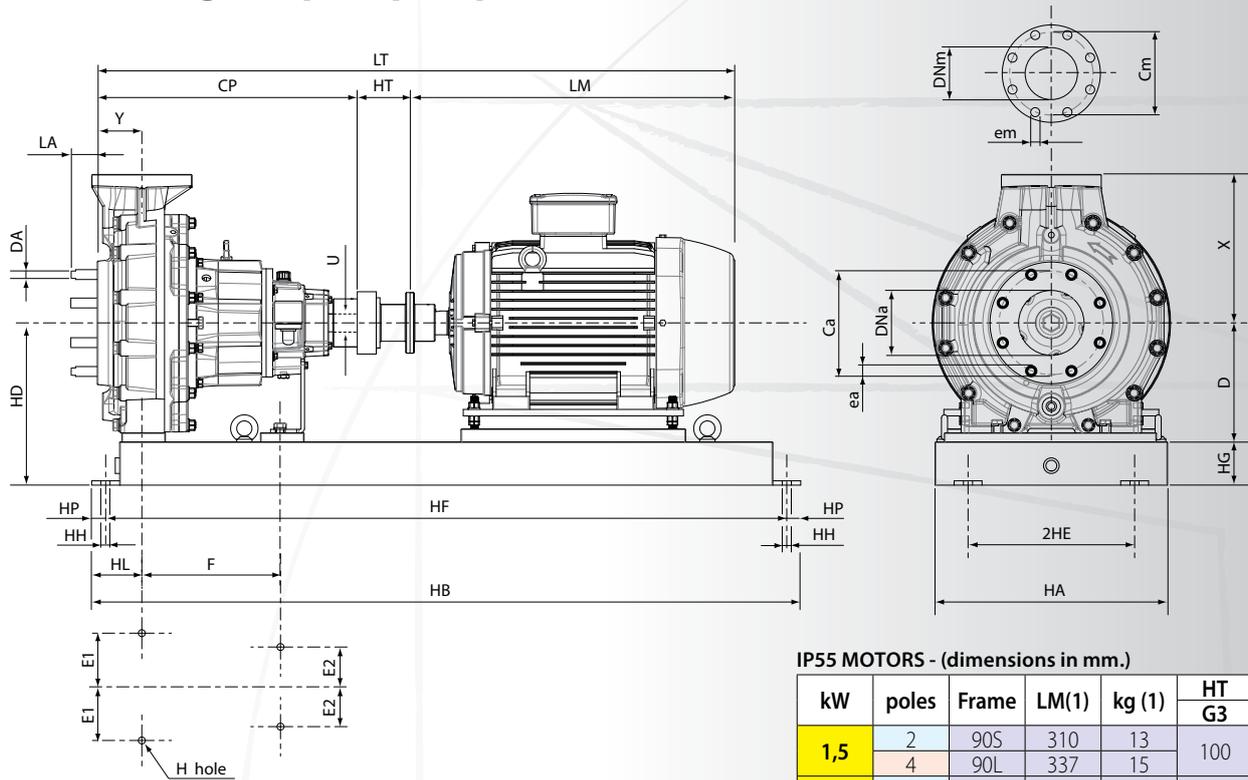
| MODEL        | TR5 (1)         | TR8 (2)                        | TC8 (3) | BF8 (4)         | MTR5 (5)                       | MTR8 (6)                       | MTC8 (7)                       |     |
|--------------|-----------------|--------------------------------|---------|-----------------|--------------------------------|--------------------------------|--------------------------------|-----|
| Construction | external single |                                |         | internal single | double flushed                 |                                |                                |     |
| Part         | rotating        | Car                            | SiC     | SiC             | SiC                            | Car                            | SiC                            | SiC |
|              | fixed           | Al <sub>2</sub> O <sub>3</sub> | SiC     | SiC             | SiC                            | Al <sub>2</sub> O <sub>3</sub> | SiC                            | SiC |
| Gasket       | FKM*            | FKM*                           | FFKM    | FKM*            | FKM*                           | FKM*                           | FFKM                           |     |
| Part         | 2° rotating     | -                              | -       | -               | Car                            | Car                            | Car                            |     |
|              | 2° fixed        | -                              | -       | -               | Al <sub>2</sub> O <sub>3</sub> | Al <sub>2</sub> O <sub>3</sub> | Al <sub>2</sub> O <sub>3</sub> |     |

\* Available also in EPDM

### 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.

# Saturn ZGS long-coupled pumps



ANSI/ASME B73.1 PUMPS - (dimensions in mm.)

table 8

| MODEL       | CP  | Y   | D   | X   | F   | E1  | E2    | H  | U    | LA   | DA   | (kg) |
|-------------|-----|-----|-----|-----|-----|-----|-------|----|------|------|------|------|
| 3 x 2 x 8   | 597 | 102 | 210 | 242 | 318 | 124 | 92    | 16 | 41,3 | n.a. | n.a. | 95   |
| 3 x 2 x 10  | 597 | 102 | 210 | 242 | 318 | 124 | 92    | 16 | 41,3 | n.a. | n.a. | 95   |
| 4 x 3 x 8   | 597 | 102 | 210 | 280 | 318 | 124 | 92    | 16 | 41,3 | n.a. | n.a. | 100  |
| 4 x 3 x 10  | 597 | 102 | 210 | 280 | 318 | 124 | 92    | 16 | 41,3 | n.a. | n.a. | 100  |
| 6 x 4 x 10  | 597 | 102 | 254 | 343 | 318 | 124 | 92    | 16 | 41,3 | 60   | 20   | 120  |
| 6 x 4 x 13  | 597 | 102 | 254 | 343 | 318 | 124 | 92    | 16 | 41,3 | 60   | 20   | 120  |
| 8 x 6 x 13  | 860 | 152 | 368 | 406 | 476 | 203 | 114,5 | 22 | 60,3 | 60   | 20   | 240  |
| 10 x 8 x 15 | 860 | 152 | 368 | 483 | 476 | 203 | 114,5 | 22 | 60,3 | 60   | 20   | 280  |

CONNECTIONS - ANSI/ASME B16.5 class 150 - (dimensions in mm.)

table 9

| MODEL       | INLET |     |    |    |         | OUTLET |     |    |    |      |
|-------------|-------|-----|----|----|---------|--------|-----|----|----|------|
|             | DNa   | Ca  | ea | n° | type    | DNm    | Cm  | em | n° | type |
| 3 x 2 x 8   | 80    | 152 | 19 | 4  | hole    | 50     | 121 | 19 | 4  | hole |
| 3 x 2 x 10  | 80    | 152 | 19 | 4  | hole    | 50     | 121 | 19 | 4  | hole |
| 4 x 3 x 8   | 100   | 191 | 19 | 8  | hole    | 80     | 152 | 19 | 4  | hole |
| 4 x 3 x 10  | 100   | 191 | 19 | 8  | hole    | 80     | 152 | 19 | 4  | hole |
| 6 x 4 x 10  | 150   | 241 | 20 | 8  | tie rod | 100    | 191 | 19 | 8  | hole |
| 6 x 4 x 13  | 150   | 241 | 20 | 8  | tie rod | 100    | 191 | 19 | 8  | hole |
| 10 x 8 x 15 | 200   | 362 | 20 | 12 | tie rod | 150    | 241 | 22 | 8  | hole |

ISO flanged on request

BASE PLATE - (dimensions in mm.)

table 10

| N°  | HA  | HB   | HE  | HF   | HG  | HH | HL  | HP | (kg) |
|-----|-----|------|-----|------|-----|----|-----|----|------|
| 245 | 381 | 1143 | 114 | 1080 | 95  | 19 | 114 | 32 | 50   |
| 252 | 457 | 1321 | 152 | 1257 | 105 | 19 | 114 | 32 | 65   |
| 258 | 533 | 1473 | 191 | 1410 | 121 | 25 | 114 | 32 | 85   |
| 264 | 533 | 1626 | 191 | 1562 | 121 | 25 | 114 | 32 | 95   |
| 268 | 660 | 1727 | 241 | 1664 | 121 | 25 | 114 | 32 | 110  |
| 280 | 660 | 2032 | 241 | 1969 | 121 | 25 | 114 | 32 | 125  |
| 368 | 660 | 1727 | 241 | 1664 | 121 | 25 | 165 | 32 | 140  |
| 380 | 660 | 2032 | 241 | 1969 | 121 | 25 | 165 | 32 | 150  |
| 398 | 660 | 2489 | 241 | 2426 | 121 | 25 | 165 | 32 | 190  |

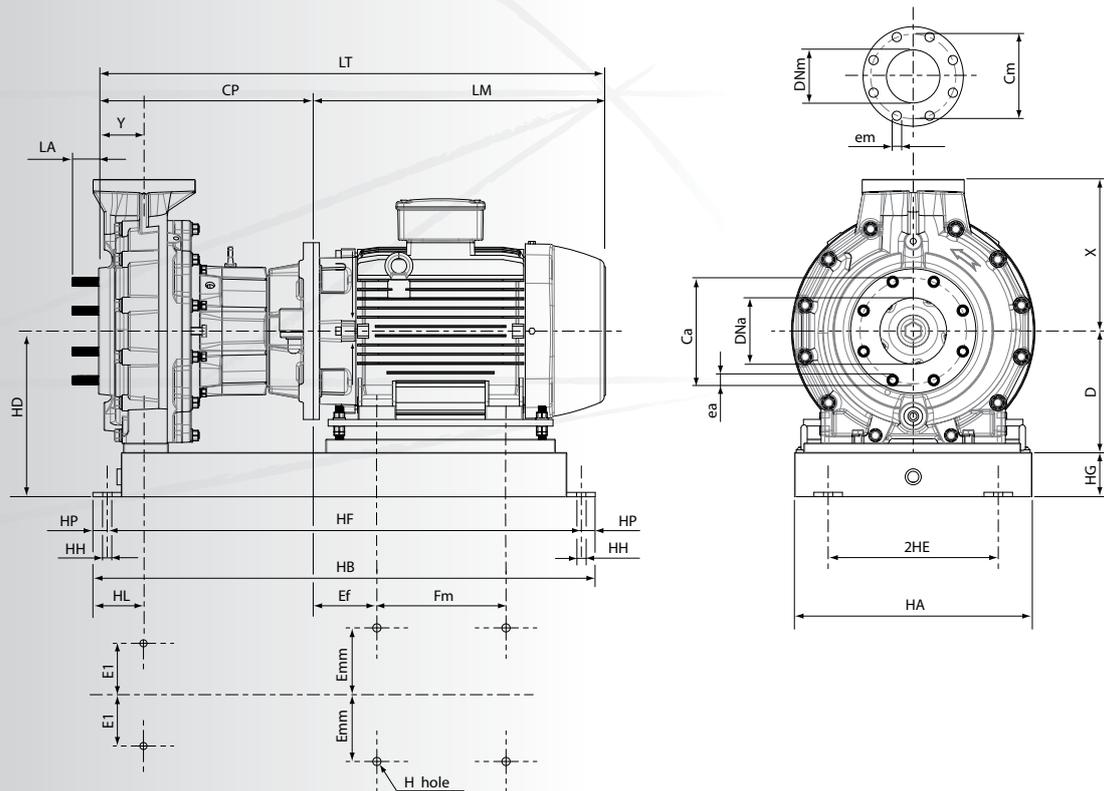
IP55 MOTORS - (dimensions in mm.)

table 11

| kW   | poles | Frame | LM(1) | kg (1) | HT  | HT  |
|------|-------|-------|-------|--------|-----|-----|
|      |       |       |       |        | G3  | G4  |
| 1,5  | 2     | 90S   | 310   | 13     | 100 |     |
|      | 4     | 90L   | 337   | 15     |     |     |
| 2,2  | 2     | 90L   | 337   | 16     | 100 |     |
|      | 4     |       |       | 22     |     |     |
| 3    | 2     | 100L  | 368   | 23     | 100 |     |
|      | 4     |       |       | 27     |     |     |
| 4    | 2     | 112   | 395   | 27     | 100 |     |
|      | 4     |       |       | 32     |     |     |
| 5,5  | 2     | 132S  | 437   | 42     | 100 |     |
|      | 4     |       |       | 43     |     |     |
| 7,5  | 2     | 132S  | 437   | 46     | 100 |     |
|      | 4     | 132M  | 475   | 53     |     |     |
| 11   | 2     | 160M  | 655   | 122    | 100 | 120 |
|      | 4     |       |       | 134    |     |     |
| 15   | 2     | 160L  | 675   | 121    | 100 | 120 |
|      | 4     |       |       | 133    |     |     |
| 18,5 | 2     | 160L  | 675   | 169    | 100 | 120 |
|      | 4     | 180L  | 768   | 173    |     |     |
| 22   | 2     | 160L  | 675   | 163    | 100 | 120 |
|      | 4     | 180M  | 720   | 196    |     |     |
| 30   | 2     | 200LA | 760   | 221    | 120 | 140 |
|      | 4     | 180M  | 720   | 190    |     |     |
| 37   | 2     | 180L  | 768   | 242    | 100 | 120 |
|      | 4     | 200LB | 760   | 236    |     |     |
| 45   | 2     | 200L  | 760   | 252    | 120 | 140 |
|      | 4     |       |       | 275    |     |     |
| 55   | 2     | 225M  | 850   | 301    | 120 | 140 |
|      | 4     |       |       | 275    |     |     |
| 75   | 2     | 200L  | 760   | 275    | 100 | 140 |
|      | 4     | 225S  | 825   | 328    |     |     |
| 90   | 2     | 250M  | 925   | 370    | 120 | 180 |
|      | 4     |       |       | 315    |     |     |
| 110  | 2     | 225M  | 820   | 315    | 120 | 140 |
|      | 4     |       |       | 355    |     |     |
| 132  | 2     | 280S  | 975   | 478    | 120 | 140 |
|      | 4     |       |       | 417    |     |     |
| 160  | 2     | 250M  | 925   | 402    | 120 | 140 |
|      | 4     |       |       | 615    |     |     |
| 180  | 2     | 280M  | 1015  | 615    | 120 | 140 |
|      | 4     |       |       | 512    |     |     |
| 200  | 2     | 280S  | 975   | 540    | 120 | 140 |
|      | 4     |       |       | 540    |     |     |
| 225  | 2     | 315S  | 1190  | 790    | 140 | 180 |
|      | 4     |       |       | 540    |     |     |
| 250  | 2     | 280M  | 1015  | 615    | 120 | 140 |
|      | 4     |       |       | 540    |     |     |
| 280  | 2     | 315M  | 1300  | 880    | 140 | 180 |
|      | 4     |       |       | 870    |     |     |
| 315  | 2     | 315LA | 1300  | 997    | 140 | 180 |
|      | 4     |       |       | 870    |     |     |
| 350  | 2     | 315M  | 1300  | 990    | 140 | 180 |
|      | 4     |       |       | 1103   |     |     |
| 390  | 2     | 315LA | 1270  | 1053   | 140 | 180 |
|      | 4     |       |       | 1400   |     |     |
| 450  | 2     | 355MA | 1570  | 1400   | 140 | 180 |
|      | 4     |       |       | 1400   |     |     |

(1) It can change for various manufacturers

## Saturn ZMS close-coupled pumps



ANSI/ASME B73.1 PUMPS - (dimensions in mm.)

table 12

| MODEL      | CP  | Y   | D   | X   | E1  | H  | U    | LA   | Weight (kg) |
|------------|-----|-----|-----|-----|-----|----|------|------|-------------|
| 3 x 2 x 8  | 597 | 102 | 210 | 242 | 124 | 16 | 41,3 | n.a. | 95          |
| 3 x 2 x 10 | 597 | 102 | 210 | 242 | 124 | 16 | 41,3 | n.a. | 95          |
| 4 x 3 x 8  | 597 | 102 | 210 | 280 | 124 | 16 | 41,3 | n.a. | 100         |
| 4 x 3 x 10 | 597 | 102 | 210 | 280 | 124 | 16 | 41,3 | n.a. | 100         |
| 6 x 4 x 10 | 597 | 102 | 254 | 343 | 124 | 16 | 41,3 | 60   | 120         |
| 6 x 4 x 13 | 597 | 102 | 254 | 343 | 124 | 16 | 41,3 | 60   | 120         |

CONNECTIONS - ANSI/ASME B16.5 class 150 - (dimensions in mm.)

table 13

| MODEL      | INLET |     |    |    |         | OUTLET |     |    |    |      |
|------------|-------|-----|----|----|---------|--------|-----|----|----|------|
|            | DNa   | Ca  | ea | n° | type    | DNm    | Cm  | em | n° | type |
| 3 x 2 x 8  | 80    | 152 | 19 | 4  | hole    | 50     | 121 | 19 | 4  | hole |
| 3 x 2 x 10 | 80    | 152 | 19 | 4  | hole    | 50     | 121 | 19 | 4  | hole |
| 4 x 3 x 8  | 100   | 191 | 19 | 8  | hole    | 80     | 152 | 19 | 4  | hole |
| 4 x 3 x 10 | 100   | 191 | 19 | 8  | hole    | 80     | 152 | 19 | 4  | hole |
| 6 x 4 x 10 | 150   | 241 | 20 | 8  | tie rod | 100    | 191 | 19 | 8  | hole |
| 6 x 4 x 13 | 150   | 241 | 20 | 8  | tie rod | 100    | 191 | 19 | 8  | hole |

BASE PLATE - (dimensions in mm.)

table 14

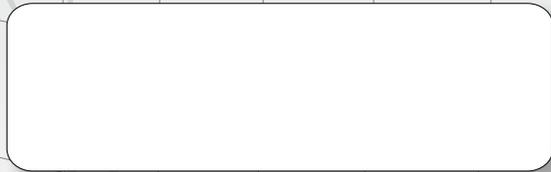
| N°  | HA  | HB   | HE  | HF   | HG | HH | HL  | HP | Weight (kg) |
|-----|-----|------|-----|------|----|----|-----|----|-------------|
| 233 | 381 | 838  | 114 | 774  | 95 | 19 | 114 | 32 | 30          |
| 244 | 381 | 1143 | 114 | 1080 | 95 | 19 | 114 | 32 | 40          |

IP55 MOTORS - (dimensions in mm.)

table 15

| kW           | 1,5 |     | 2,2 |      | 3   |      | 4    |      | 5,5  |      | 7,5  |      | 11   |      | 15   |      | 18,5  |      | 22   |       | 30    |      | 37    |     |     |     |     |     |
|--------------|-----|-----|-----|------|-----|------|------|------|------|------|------|------|------|------|------|------|-------|------|------|-------|-------|------|-------|-----|-----|-----|-----|-----|
| Poles        | 2   | 4   | 2   | 4    | 2   | 4    | 2    | 4    | 2    | 4    | 2    | 4    | 2    | 4    | 2    | 4    | 2     | 4    | 2    | 4     | 2     | 4    | 2     |     |     |     |     |     |
| FRAME        | 90S | 90L | 90L | 100L | 112 | 132S | 132S | 132M | 160M | 160M | 160L | 160M | 160L | 180L | 160L | 180M | 200LA | 180M | 180L | 220LA | 200LB | 200L | 200LB |     |     |     |     |     |
| LM (°)       | 260 | 285 | 285 | 326  | 335 | 356  | 356  | 396  | 500  | 500  | 545  | 500  | 545  | 610  | 545  | 570  | 650   | 570  | 610  | 650   | 650   | 650  | 650   |     |     |     |     |     |
| Weight kg(!) | 12  | 15  | 16  | 22   | 23  | 27   | 27   | 32   | 42   | 43   | 46   | 53   | 103  | 122  | 134  | 121  | 133   | 169  | 173  | 163   | 196   | 221  | 190   | 242 | 236 | 226 | 240 | 245 |

(1) It can change for various manufacturers



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.argal.it](http://www.argal.it) - 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.*