

ARGAL SUB



WORLD PREMIERE



***Corrosion Resistant
Fiberglass
Submersible Pumps***

ARGALSUB - SUBMERSIBLE PUMPS IN COMPOSITES

Argal proposes in this catalog its new range of submersible pumps made in Fiber Reinforced Polymers (FRP).

CONSTRUCTION DATA

Submersible electric pumps, robust in construction, watertight electric motors accommodated in compartment, connected, by shafts of reduced lengths, to the impellers situated at the pump casing by the interposition of oil chamber between the hydraulic side and the electric motor.

THE COMPOSITES MADE ARGAL PUMPS OFFER MAXIMUM CHEMICAL AND MECHANICAL RESISTANCE.

Pumps are obtained deploying composite materials made of vinyl ester resins reinforced with long strand only glass fibres moulded with RTM technique in its factory located in Brescia. Pumps and parts wet by the liquid pumped in particular have important prerogatives:

- high chemical resistance (the highest among resins, polyester);
- mechanical resistance comparable to some metal alloys;
- dimensional stability, characteristic of the thermosetting resins which during catalysis transform themselves irreversibly becoming insoluble and infusible;
- abrasion resistance and resistance to aging;
- resistance to low and high temperatures (from -30°C to + 110°C);
- lightness typical of composites which, because of differentiated modulus of elasticity for the various parts of the pump and with the minimum thickness of 20 mm exceed the hydrostatic tests from 20 to 50 bar;
- resistance to flame propagation in case of fire.

MATERIALS PROFILE OF PUMPING PARTS

Pump Casings

Pump casings of **ARGALSUB** are of the following types of FRP:

- V1G** standard vinyl ester resin for general use;
- V1A** mixture of vinyl ester resin for abrasive liquids;
- V1C** mixture of vinyl ester resin for liquids with chlorine;
- V1F** mixture of vinyl ester resin for liquids with fluorine.

Electric motor

MAIN FEATURES

Shafts rectified down in ball bearings and mechanical seals seats, oversized compared to standard parameters of use, dynamically balanced.

Motor asynchronous three phase squirrel cage type, insulation class H (180°C). Dry motor, cooled by surrounding liquid. Protection degree IP 68. The motor is designed to continuous or intermittent operation, with a maximum of 15 starts per hour at regular intervals with 5% maximum of voltage imbalance between phases. **Ball bearings** over dimensioned, life lubricated, maintenance free.

Oil chamber. Oil lubricates and cools the seals and emulsifies eventual water infiltrations.

Mechanical seals

This electric pump has two types of seals for a perfect insulation between the electric motor and the pumped liquid.

Upper seal: mechanical, ceramic / graphite.

Lower seal: mechanical, Silicon Carbide / Silicon Carbide / Viton.

OPTION

Thermal protection

The thermal protections, connected singularly or in three groups within the windings of the stator, detect their temperature of exercise and switch-off the contact when the detected temperature achieve up to the set value for which they have been constructed within a tolerance of $\pm 3\%$. The thermal sensors start, once well connected to the control panel, safeguard motor from the risk of overloading and eventual burning.

ACCESSORY

SAFETY BOX LT2-A

The Safety Box LT2-A detects the safety devices installed inside submerged pumps. This device is divided in two sections: the first is specialised for the thermal protectors, the second one is specialised for detecting water seepage (infiltration) in the oil box. In the first case by means of bimetallic or PTC thermistor sensors applied inside the electric motor coils, the device LT 2 detects the temperature increase, no matter is the cause (heavy or repeated starts up, single phase operation, extended overload etc). In the applications with PTC thermistor the device controls that the sensors are not in short circuit (resistance lower than 25-30Ω). The second section of the device detects the water infiltration inside the machine, basing on a sensitivity variable from 10kΩ to 70 kΩ.

PUMP INSTALLATION SUPPLIES

- FRP delivery pipe system
- Automatic submerged coupling foot system

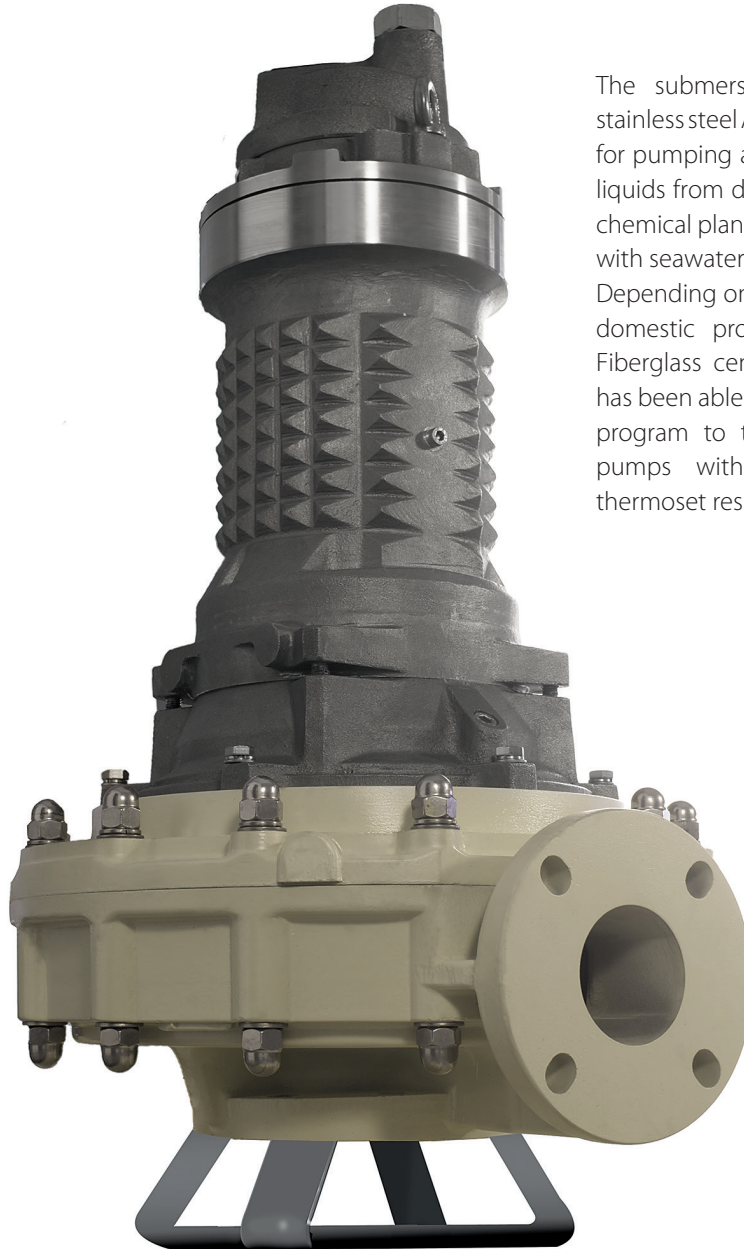


Argal operates with ISO 9001:2000 Quality System certified by SQS-Iqnet.



member of





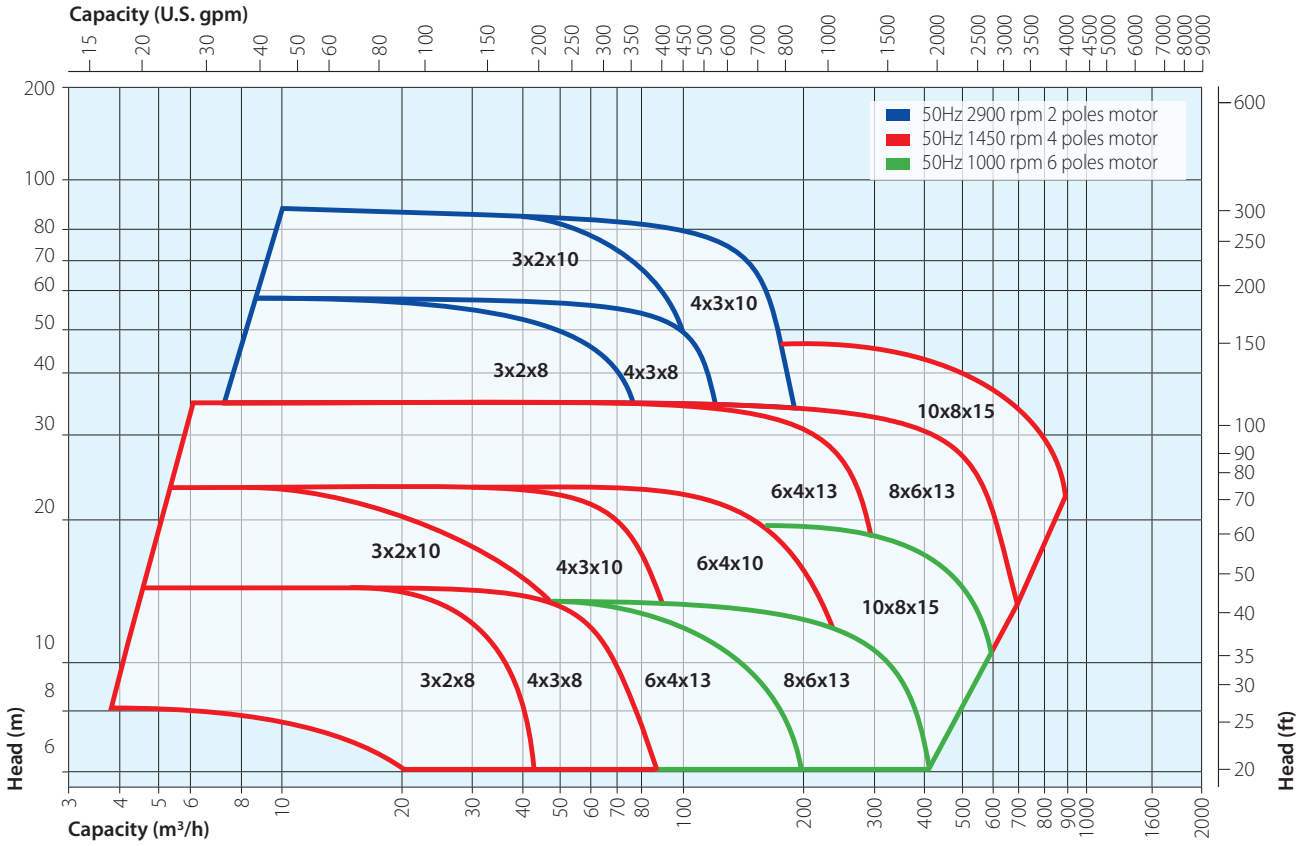
The submersible FRP pumps with stainless steel AISI 316L motors are used for pumping aggressive and corrosive liquids from disposal of wastewater of chemical plants to various applications with seawater.

Depending on its own know-how and domestic production experience of Fiberglass centrifugal pumps, ARGAL has been able to extend its production program to these new submersible pumps with original creation in thermoset resins.

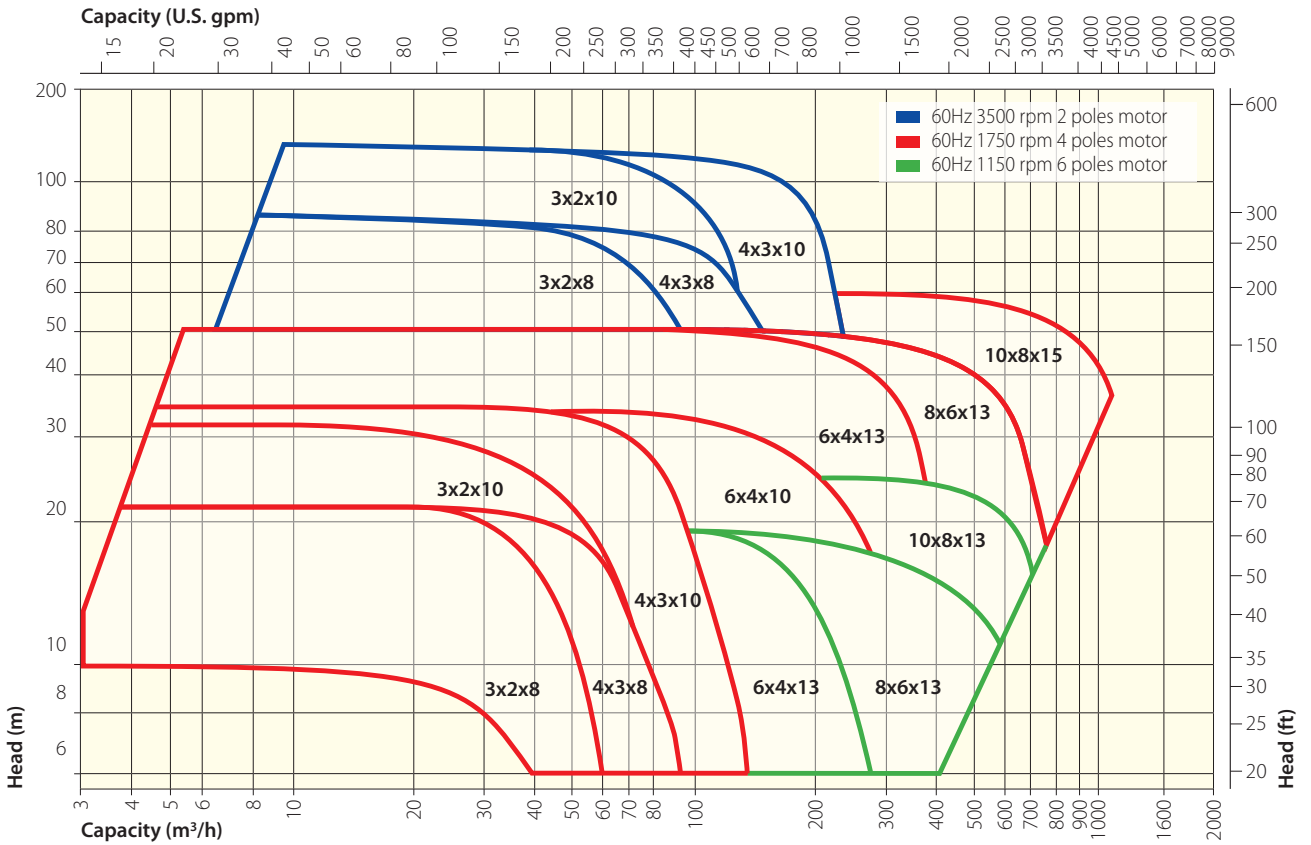
PUMP IDENTIFICATION LABEL

table 1

ARGALSUB	4x3x8	V1G	V	MTS8 - F	SS	10	2	50
SUBMERSIBLE PUMPS	4" Inlet 3" Outlet 8" impeller ø	Vinyl ester resin for general purpose	V = FKM E = EPDM F = FEP	Double mechanical seal	Std. SS (stainless steel AISI 316L)	Power kW	2 = 2900-3600 4 = 1450-1750 6 = 910-1100	50 Hz 60 Hz
SERIE	MODEL	VERSION	GASKET MATERIAL	MECHANICAL SEAL	CASING MOTOR MATERIAL	MOTOR	MOTOR SPEED r.p.m.	ELECT. FREQUENCY Hz
Argal Sub	3x2x8 3x2x10 4x3x8 4x3x10 6x4x10 6x4x13 8x6x13 10x8x15	V1G V1A V1C V1F	V E F	MTS8-F	SS	7,5 80	2 4 6	50 60



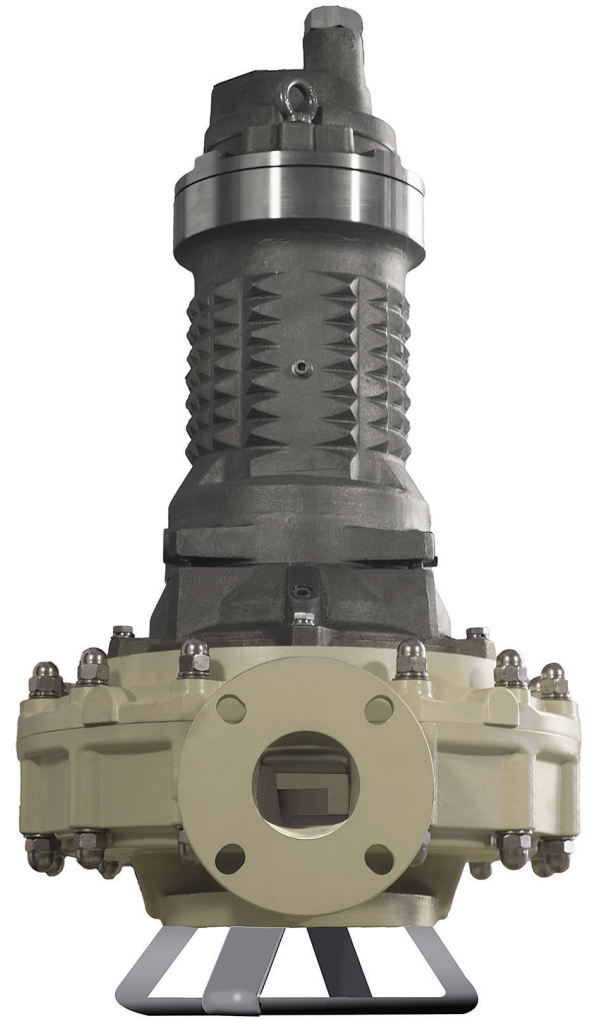
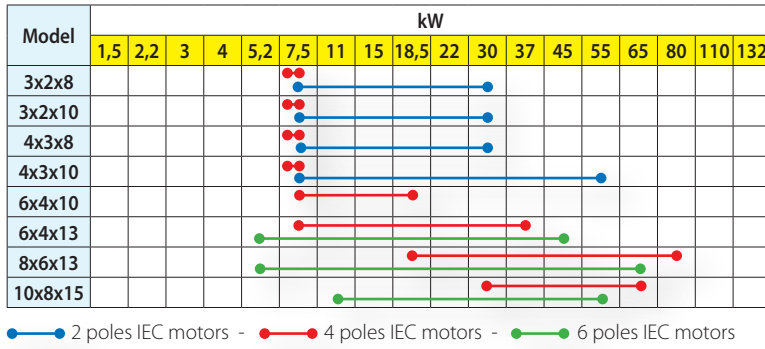
NOTE: All curves are referred to water at 20°C - viscosity 1°E - specific gravity 1 kg/dm³



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MOTOR POWER INSTALLED

table 2



MOTORS IP 65 50Hz

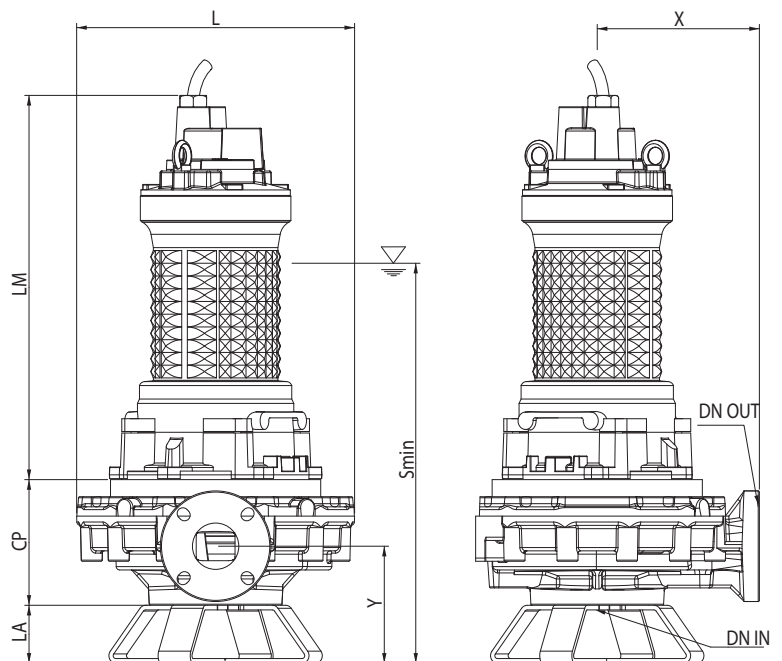
table 3

FRAME	kW	POLI	LM	L motor	Smin
112	7,5	2	590	370	CP+LA+330
112	10	2	590	370	CP+LA+330
132	14,9	2	660	370	CP+LA+392
132	16,6	2	660	370	CP+LA+392
160	20	2	1130	485	CP+LA+560
160	27	2	1130	485	CP+LA+560
160	35	2	1130	485	CP+LA+560
180	52	2	1133	485	CP+LA+560
112	7,5	4	590	370	CP+LA+330
132	11,6	4	660	370	CP+LA+392
132	14,4	4	660	370	CP+LA+392
160	17,8	4	931	485	CP+LA+440
160	27	4	1104	485	CP+LA+530
180	24,5	4	1133	485	CP+LA+560
180	30	4	1133	485	CP+LA+560
180	41	4	1133	485	CP+LA+560
200	40	4	1268	560	CP+LA+632
200	48	4	1268	560	CP+LA+632
250	80	4	1351	580	CP+LA+660
112	5,2	6	590	370	CP+LA+330
132	8,8	6	660	370	CP+LA+392
160	14	6	931	485	CP+LA+440
160	18,9	6	1104	485	CP+LA+530
180	32,2	6	1133	485	CP+LA+560
200	33,4	6	1268	560	CP+LA+632
200	39,2	6	1268	560	CP+LA+632
250	65	6	1351	580	CP+LA+660

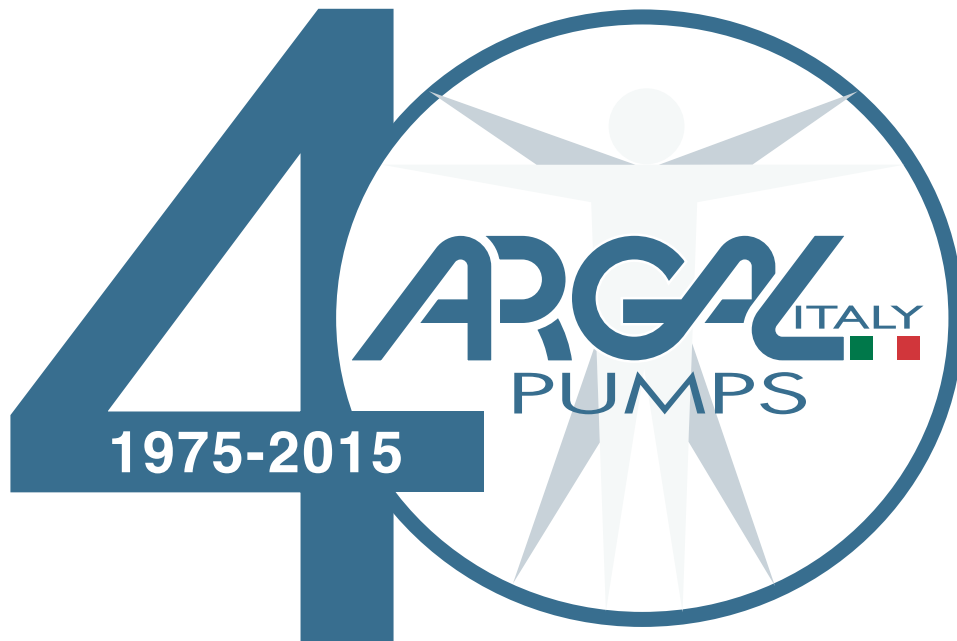
SUMMERSIBLE PUMP - (dimensions in mm.)

table 4

MODEL	CP	Y	LA	L (pump)	X	DN IN	DN OUT
3x2x8	214	202	100	420	242	80	50
3x2x10	214	202	100	420	242	80	50
4x3x8	217	202	100	480	280	100	80
4x3x10	217	202	100	480	280	100	80
6x4x10	232	202	100	550	343	150	100
6x4x13	232	202	100	550	343	150	100
8x6x13	260	292	140	705	406	200	150
10x8x15	260	292	140	780	483	250	200



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