PM® Technology

Italian Submersible Motors

discover our excellence

www.pmtechnology.eu

# contents


## 01 PM: who, what, how, where, why

pg. 78-87

## 02 Our product range

pg. 89-91 **4OM**
4” rewindable oil filled submersible motors

pg. 92-93 **4OM2W**
4” 1-phase 2-wire oil filled submersible motors

pg. 94-97 **6OM**
6” rewindable oil filled submersible motors

pg. 99-101 **4WM**
4” water cooled submersible motors, canned type

pg. 102-103 **4WM2W**
4” 1-phase 2-wire water cooled submersible motors, canned type

pg. 104-106 **4WMU**
4” water cooled submersible motors, canned type

pg. 108-109 **4WMU2W**
4” 1-phase 2-wire water cooled submersible motors, canned type

pg. 110-114 **6WMI/6WM**
6” rewindable water cooled submersible motors

pg. 116-120 **8WM**
8” rewindable water cooled submersible motors

pg. 122-127 **4OME**
4” variable speed submersible motors with inverter on-board

pg. 128-131 **4OME SOLAR**
4” solar-powered submersible motors with inverter on-board

pg. 133-137 **FROG**
5” submersible monoblock electropumps

pg. 139-143 ***E.S.P.*, C-BOX, CU-BOX and WHITE**
Control panels

pg. 144-146 **ACCESSORIES**

## 03 Charts

pg. 150 Cables sizing charts

pg. 151 Units conversion charts

## 04 General sales conditions

pg. 153



# who we are

PM S.r.l. was established in 2008 to then quickly become one of the leading Italian and international companies operating in the production of submersible motors.
Our strengths are based on over 30 years of experience of the founding partner applied to the most modern technologies and an in-depth knowledge of international markets.
As a result PM has managed to establish itself as a modern, dynamic company focusing on continuous improvement. Each PM product is the expression of careful and enthusiastic work based on research and design with exclusive attention to performance, quality of the materials used and highest competitiveness possible. The result is an extremely reliable and efficient product range in which every detail is carefully researched, all distinguishing features of Made in Italy excellence. These key elements which embody profound love for an art passed down from father to son currently guide PM S.r.l.

PM is committed to offering high quality and reliable products at a competitive price, while meeting the needs of its customers with meticulous and punctual service. Substantial annual investments in product, production process and machinery innovation go with our daily activity to make our products ever more competitive and efficient.

**ISO 9001:2015 Certified Company**





english

# what we make

PM S.r.l. offers submersible motors and electropumps to get underground clean water, having about **150.000 items** produced per year.
The use of very high quality **MADE IN ITALY** materials and our strict tests, together with consolidated know how, ensure products characterised by high mechanical resistance and high performing electric features.

Our product range consists of:

- **4” and 6” rewindable oil filled submersible motors**;
- **4” water cooled submersible motors, canned type**;
- **6” and 8” rewindable water cooled submersible motors**;
- **5” submersible monoblock electropumps**.

In addition to these traditional products, PM S.r.l. offers also innovative 4” submersible motors:

- **4” variable speed submersible motors with inverter on-board;**
- **4” solar-powered submersible motors with inverter on-board**.

Finally, our control panels series for protection and control of motors, ***E.S.P.,*** **C-BOX, CU-BOX** and **WHITE**, and our **accessories** complete PM products range.

Made in Italy







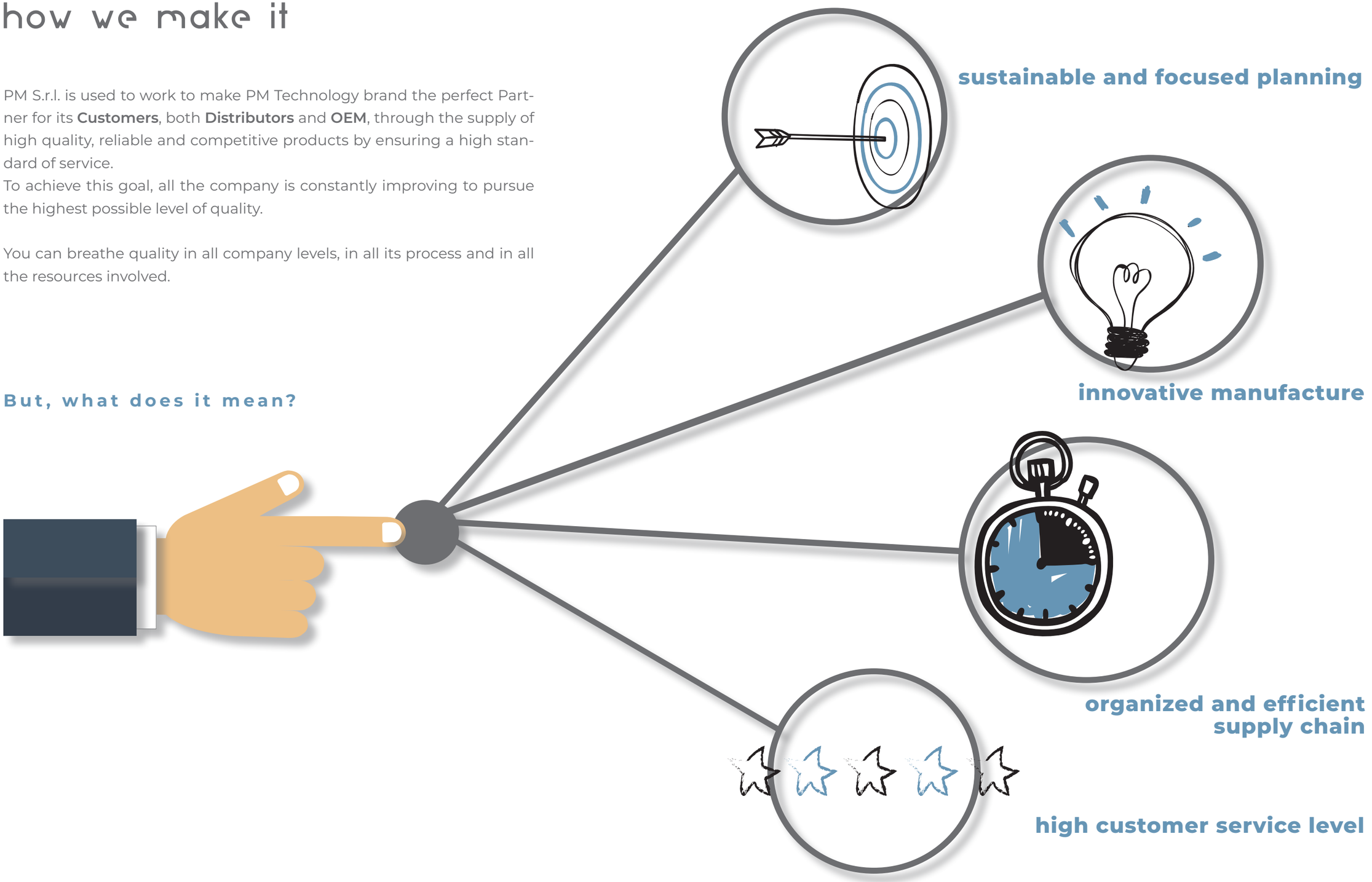
english

# how we make it

PM S.r.l. is used to work to make PM Technology brand the perfect Partner for its **Customers**, both **Distributors** and **OEM**, through the supply of high quality, reliable and competitive products by ensuring a high standard of service.
To achieve this goal, all the company is constantly improving to pursue the highest possible level of quality.

You can breathe quality in all company levels, in all its process and in all the resources involved.

## But, what does it mean?



**sustainable and focused planning**

**innovative manufacture**

**organized and efficient supply chain**

**high customer service level**





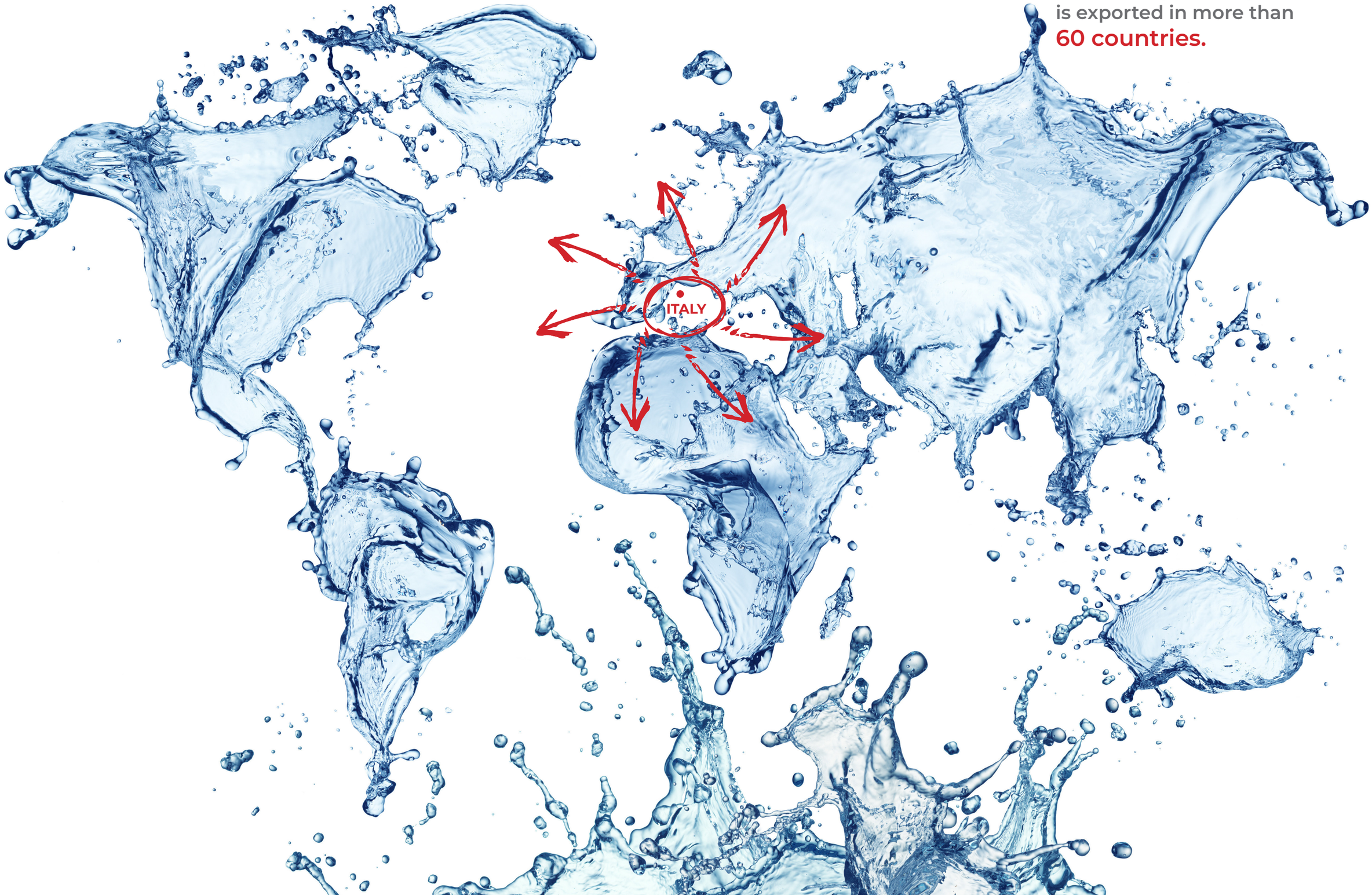


english

# where we make it

**3 production plants**
located in Vicenza (Italy),
district of excellence of engineering industry.

From here our product range
is exported in more than
**60 countries.**





english

# why we make it

“ Water is life’s matter and matrix,
mother and medium.
**There is no life without water.** ”
Albert Szent-Gyorgyi



english

# 40M

50 Hz - 60 Hz



# Oil filled submersible motors

Made in Italy

## 4” REWINDABLE OIL FILLED SUBMERSIBLE MOTORS





english

# 4OM

## TECHNICAL SPECIFICATIONS

**REWINDABLE MOTORS**

**MOTOR/PUMP FLANGE**
4" NEMA STANDARD

**POWERS**
Single-phase: from 0,5 to 5,5 Hp
Three-phase: from 0,5 to 10 Hp

**VOLTAGE**
Single-phase: 230 V / 50 Hz - 110;220 V / 60 Hz
Three-phase: 230;400 V / 50 Hz - 220;380 V / 60 Hz

**THRUST LOAD**
From 0,5 to 3 Hp: 2000 N
From 3 to 4 Hp: 3000 N
From 5,5 to 10 Hp: 5000 N

## CONSTRUCTION FEATURES

**PARTS IN CONTACT WITH WATER** all made in AISI 304 stainless steel.

**EXTERNAL SLEEVE AND BOTTOM** made in AISI 304 stainless steel. More specifically, sleeve is made of AISI 304L (Low carbon) to avoid possible corrosions of the welding.

**UPPER BRACKET** made in cast iron with cataphoresis treatment and protected with an AISI 304 stainless steel cover. Sleeve clamping is ensured by 4 inserts in low power motors and 6 inserts in motors bigger than 3 Hp.

**MECHANICAL SEAL** made in graphite/ceramic in the standard version; SIC-SIC version available upon request.

**BALL BEARING** duly oversized to ensure a long lasting motor.

**STATOR** with 24 slots, specifically developed to achieve maximum electrical yield. Airtight sealed and immerged in selected mineral white and highly refined oil, suitable to be used in drinking water (F.D.A., *Food and Drug Administration*, approved).

**REMOVABLE POWER CABLE-CONNECTOR** to ensure a perfect sealing, also in the most critical conditions, and to aid maintenance operations. More specifically, the connector prevents oil from rising in the conductors up to the joint, thus enabling immersion at greater depths. The power cable complies with all major standards on the use in drinking water (KTW, ACS, WRAS).

**SHAFT** made in carbon-steel alloys in the rotor area, to foster electrical features. AISI 304 stainless steel projection. DUPLEX, a special type of stainless steel, replaces AISI 304 in motors bigger than 3 Hp. This steel combines excellent resistance to corrosion and high mechanical resistance, which is necessary where static torque becomes really important.

**SAND PROTECTION FILTER** in addition to the standard sand protection system. It's a special filter that stops any impurities that may get in contact with the external face of mechanical seal. This ensures a longer mechanical seal lifetime.

**100% TESTED**, all motors are tested at the end of the line. Seal and electrical checks are carried out on all motors.

## VERSIONS UPON REQUEST

Different thrust loads
Different voltage
Sic-Sic mechanical seal

## OPERATING LIMITS

**DEGREE OF PROTECTION**
IP 68

**INSULATION CLASS**
F

**VOLTAGE TOLERANCE**
-10% / +10%

**PUMPED LIQUID TEMPERATURE**
0°C – 35°C

**MIN. COOLING FLOW**
0,1 m/s

**MAX. STARTS / HOUR**
30

**MOUNTING**
Vertical and/or horizontal

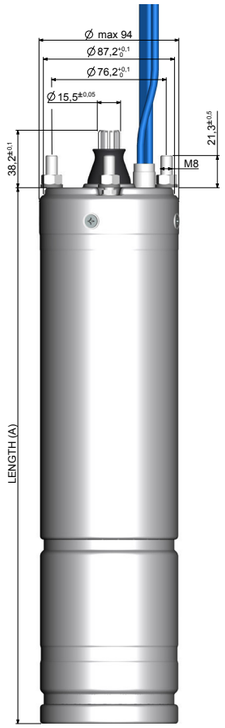
**MAX. IMMERSION DEPTH**
200 m

**SINGLE-PHASE VERSION**
PSC type (Permanent Split Capacitor).

## ACCESSORIES *refer to page 147 - 148 - 152 - 153*

Different cable lengths
Sacrificial anode
Capacitors
Control panels

## DIMENSIONS




ATTESTATION DE CONFORMITÉ SANITAIRE
ACS

## ELECTRICAL DATA 4OM - 50Hz

| Type | $P_2$ [Hp] | $P_2$ [kW] | Voltage [V] | Ph | $I_n$ [A] | $I_{avv}$ [A] | rpm | cos φ | η [%] | Capacitor [µF] | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4OM-S050 | 0,5 | 0,37 | 230 | 1 | 3,6 | 12 | 2810 | 0,87 | 52 | 20 | 2000 | 311,3 | 6,45 | 1,7 | 4 x 1,5 |
| 4OM-S075 | 0,75 | 0,55 | 230 | 1 | 4,7 | 16,5 | 2810 | 0,88 | 57 | 25 | 2000 | 331,4 | 7,2 | 1,7 | 4 x 1,5 |
| 4OM-S100 | 1 | 0,75 | 230 | 1 | 5,9 | 18,9 | 2825 | 0,9 | 62 | 35 | 2000 | 356,4 | 8,45 | 1,7 | 4 x 1,5 |
| 4OM-S150 | 1,5 | 1,1 | 230 | 1 | 8,3 | 26,2 | 2840 | 0,91 | 64 | 40 | 2000 | 396,4 | 10,2 | 1,7 | 4 x 1,5 |
| 4OM-S200 | 2 | 1,5 | 230 | 1 | 10,7 | 35 | 2845 | 0,93 | 66 | 60 | 2000 | 436,5 | 11,65 | 1,7 | 4 x 1,5 |
| 4OM-S300 | 3 | 2,2 | 230 | 1 | 15,2 | 47 | 2820 | 0,93 | 67 | 80 | 2000 | 491,5 | 14,9 | 1,7 | 4 x 1,5 |
| | | | | | | | | | | | 3000 | 505 | 15,1 | | |
| 4OM-S400 | 4 | 3 | 230 | 1 | 20,4 | 86 | 2850 | 0,94 | 72 | 90 | 5000 | 505 | 15,1 | 2,7 | 4 x 2 |
| 4OM-S500 | 5 | 3,7 | 230 | 1 | 24,5 | 95 | 2810 | 0,95 | 73 | 100+250/300 | 5000 | 700,2 | 24,15 | 2,7 | 4 x 2 |
| 4OM-S550 | 5,5 | 4 | 230 | 1 | 25,1 | 104 | 2840 | 0,96 | 73 | 120+250/300 | 5000 | 800,2 | 28,95 | 2,7 | 4 x 2 |
| 4OM-T050 | 0,5 | 0,37 | 230 | 3 | 2,2 | 8,9 | 2855 | 0,75 | 57 | - | 2000 | 311,3 | 6,45 | 1,7 | 4 x 1,5 |
| | | | 400 | | 1,8 | 5,8 | 2850 | 0,54 | 58 | | | | | | |
| 4OM-T075 | 0,75 | 0,55 | 230 | 3 | 3,4 | 13,5 | 2830 | 0,70 | 62 | - | 2000 | 331,4 | 7,2 | 1,7 | 4 x 1,5 |
| | | | 400 | | 2 | 8 | 2835 | 0,65 | 63 | | | | | | |
| 4OM-T100 | 1 | 0,75 | 230 | 3 | 4,1 | 15,5 | 2820 | 0,74 | 62 | - | 2000 | 356,4 | 8,45 | 1,7 | 4 x 1,5 |
| | | | 400 | | 2,5 | 9,4 | 2825 | 0,77 | 63 | | | | | | |
| 4OM-T150 | 1,5 | 1,1 | 230 | 3 | 5,9 | 25 | 2825 | 0,68 | 68 | - | 2000 | 371,4 | 9,35 | 1,7 | 4 x 1,5 |
| | | | 400 | | 3,4 | 15,5 | | 0,69 | | | | | | | |
| 4OM-T200 | 2 | 1,5 | 230 | 3 | 8,2 | 27,5 | 2830 | 0,64 | 70 | - | 2000 | 396,4 | 10,2 | 1,7 | 4 x 1,5 |
| | | | 400 | | 4,8 | 18 | 2835 | 0,63 | 71 | | | | | | |
| 4OM-T300 | 3 | 2,2 | 230 | 3 | 10,6 | 39,5 | 2815 | 0,70 | 72 | - | 2000 | 436,5 | 11,65 | 1,7 | 4 x 1,5 |
| | | | | | | | | | | | 3000 | 450 | 11,9 | | |
| | | | 400 | | 6,1 | 39,5 | 2810 | 0,69 | | | 2000 | 436,5 | 11,65 | | |
| | | | | | | | | | | | 3000 | 450 | 11,9 | | |
| 4OM-T400 | 4 | 3 | 230 | 3 | 12,8 | 39,5 | 2830 | 0,81 | 75 | - | 3000 | 450 | 12,1 | 1,7 | 4 x 1,5 |
| | | | 400 | | 7,1 | 39,5 | 2835 | 0,69 | | | | | | | |
| 4OM-T550 | 5,5 | 4 | 230 | 3 | 15,6 | 86 | 2840 | 0,83 | 76 | - | 5000 | 505 | 15,1 | 2,7 | 4 x 2 |
| | | | 400 | | 9,2 | 49,5 | 2845 | | | | | | | | |
| 4OM-T750 | 7,5 | 5,5 | 230 | 3 | 22,7 | 109 | 2825 | 0,78 | 78 | - | 5000 | 589 | 19,8 | 2,7 | 4 x 2 |
| | | | 400 | | 12,3 | 64 | 2830 | 0,82 | | | | | | | |
| 4OM-T1000 | 10 | 7,5 | 400 | 3 | 16,4 | 88 | 2840 | 0,81 | 81 | - | 5000 | 800,2 | 28,95 | 2,7 | 4 x 2 |

## ELECTRICAL DATA 4OM - 60Hz

| Type | $P_2$ [Hp] | $P_2$ [kW] | Voltage [V] | Ph | $I_n$ [A] | $I_{max}$ [A] | $I_{avv}$ [A] | rpm | cos φ | η [%] | Capacitor [µF] | S.F. | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4OM-S050 | 0,5 | 0,37 | 220 | 1 | 3,4 | 4,2 | 16 | 3450 | 0,92 | 54 | 20 | 1,6 | 2000 | 331,4 | 7,2 | 1,7 | 4 x 1,5 |
| | | | 110 | | 6,8 | 9,9 | 29 | 3470 | 0,89 | 48 | 80 | | | | | | |
| 4OM-S075 | 0,75 | 0,55 | 220 | 1 | 4,7 | 6,8 | 20,2 | 3420 | 0,95 | 57 | 25 | 1,5 | 2000 | 331,4 | 7,2 | 1,7 | 4 x 1,5 |
| | | | 110 | | 9,9 | 13,1 | 39 | 3435 | 0,84 | 53 | 100 | | | | | | |
| 4OM-S100 | 1 | 0,75 | 220 | 1 | 6,1 | 8,1 | 22,6 | 3435 | 0,95 | 58 | 35 | 1,4 | 2000 | 356,4 | 8,45 | 1,7 | 4 x 1,5 |
| | | | 110 | | 11,8 | 15,6 | 48 | 3445 | 0,89 | 61 | 120 | | | | | | |
| 4OM-S150 | 1,5 | 1,1 | 220 | 1 | 8,3 | 10,8 | 32 | 3455 | 0,98 | 64 | 40 | 1,3 | 2000 | 396,4 | 10,2 | 1,7 | 4 x 1,5 |
| | | | 110 | | 15,4 | 19,2 | 72 | 3430 | 0,91 | 63 | 140 | | | | | | |
| 4OM-S200 | 2 | 1,5 | 220 | 1 | 10,8 | 13,3 | 41 | 3445 | 0,95 | 67 | 60 | 1,25 | 2000 | 436,5 | 11,65 | 1,7 | 4 x 1,5 |
| 4OM-S300 | 3 | 2,2 | 220 | 1 | 15,5 | 16,6 | 47 | 3425 | 0,96 | 68 | 80 | 1,15 | 2000 | 491,5 | 14,9 | 1,7 | 4 x 1,5 |
| | | | | | | | | | | | | | 3000 | 505 | 15,1 | | |
| 4OM-S500 | 5 | 3,7 | 220 | 1 | 24,1 | 27,2 | 92 | 3460 | 0,93 | 72 | 100+250/300 | 1,15 | 5000 | 700,2 | 24,15 | 2,7 | 4 x 2 |
| 4OM-S550 | 5,5 | 4 | 220 | 1 | 26,2 | 30,8 | 107 | 3430 | 0,93 | 73 | 120+250/300 | 1,15 | 5000 | 800,2 | 28,95 | 2,7 | 4 x 2 |
| 4OM-T050 | 0,5 | 0,37 | 220 | 3 | 2 | 2,9 | 11,5 | 3455 | 0,56 | 59 | - | 1,6 | 2000 | 331,4 | 7,2 | 1,7 | 4 x 1,5 |
| | | | 380 | | 1,2 | 1,6 | 10,5 | | 0,77 | | | | | | | | |
| 4OM-T075 | 0,75 | 0,55 | 220 | 3 | 3,2 | 4,1 | 19 | 3450 | 0,55 | 64 | - | 1,5 | 2000 | 331,4 | 7,2 | 1,7 | 4 x 1,5 |
| | | | 380 | | 1,9 | 2,3 | 11,5 | | 0,72 | | | | | | | | |
| 4OM-T100 | 1 | 0,75 | 220 | 3 | 4,5 | 5,3 | 26,5 | 3460 | 0,62 | 67 | - | 1,4 | 2000 | 356,4 | 8,45 | 1,7 | 4 x 1,5 |
| | | | 380 | | 2,7 | 3 | 16,5 | | 0,72 | | | | | | | | |
| 4OM-T150 | 1,5 | 1,1 | 220 | 3 | 5,7 | 5,9 | 35 | 3440 | 0,63 | 68 | - | 1,3 | 2000 | 371,4 | 9,35 | 1,7 | 4 x 1,5 |
| | | | 380 | | 3,9 | 4,3 | 21,5 | | 0,68 | | | | | | | | |
| 4OM-T200 | 2 | 1,5 | 220 | 3 | 6,8 | 8,2 | 43 | 3445 | 0,67 | 71 | - | 1,25 | 2000 | 396,4 | 10,2 | 1,7 | 4 x 1,5 |
| | | | 380 | | 4,5 | 5,1 | 24,5 | | 0,75 | | | | | | | | |
| 4OM-T300 | 3 | 2,2 | 220 | 3 | 9,6 | 10,6 | 51 | 3430 | 0,73 | 72 | - | 1,15 | 2000 | 436,5 | 11,65 | 1,7 | 4 x 1,5 |
| | | | | | | | | | | | | | 3000 | 450 | 11,90 | | |
| | | | 380 | | 6,7 | 7,4 | 30 | 3430 | 0,72 | | | | 2000 | 436,5 | 11,65 | | |
| | | | | | | | | | | | | | 3000 | 450 | 11,90 | | |
| 4OM-T400 | 4 | 3 | 220 | 3 | 13,4 | 15,2 | 73 | 3450 | 0,73 | 74 | - | 1,15 | 3000 | 450 | 12,1 | 1,7 | 4 x 1,5 |
| | | | 380 | | 8,3 | 8,8 | 41 | | | | | | | | | | |
| 4OM-T550 | 5,5 | 4 | 220 | 3 | 16,5 | 18,4 | 118 | 3440 | 0,72 | 77 | - | 1,15 | 5000 | 505 | 15,1 | 2,7 | 4 x 2 |
| | | | 380 | | 9,9 | 11,2 | 67 | | 0,74 | | | | | | | | |
| 4OM-T750 | 7,5 | 5,5 | 220 | 3 | 21,9 | 25,1 | 137 | 3460 | 0,78 | 79 | - | 1,15 | 5000 | 589 | 19,8 | 2,7 | 4 x 2 |
| | | | 380 | | 12,9 | 14,2 | 79 | 3450 | | | | | | | | | |
| 4OM-T1000 | 10 | 7,5 | 220 | 3 | 28,1 | 31,4 | 163 | 3440 | 0,79 | 81 | - | 1,15 | 5000 | 800,2 | 28,95 | 2,7 | 4 x 2 |
| | | | 380 | | 16,9 | 18,9 | 94 | | 0,80 | | | | | | | | |



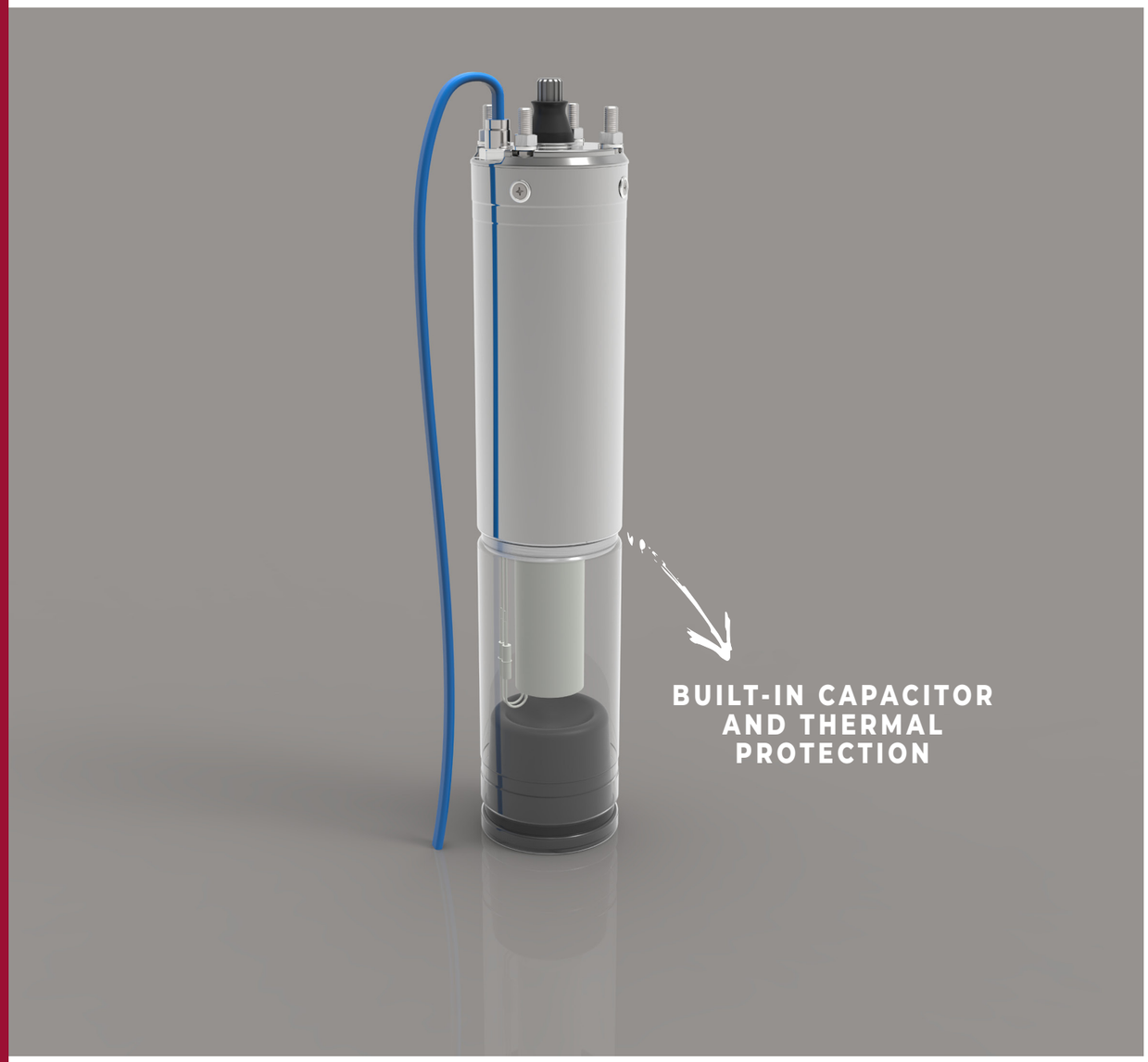




english

# 4OM2W

## 50 Hz - 60 Hz




## 4” SINGLE-PHASE 2-WIRE OIL FILLED SUBMERSIBLE MOTORS



## TECHNICAL SPECIFICATIONS

**REWINDABLE MOTORS**

**MOTOR/PUMP FLANGE**
4” NEMA STANDARD

**POWERS**
Single-phase 50 Hz: from 0,75 to 1,5 Hp
Single-phase 60 Hz: from 0,5 to 1,5 Hp

**VOLTAGE**
Single-phase: 230 V / 50 Hz - 110;220 V / 60 Hz

**THRUST LOAD**
2000 N

## CONSTRUCTION FEATURES

**BUILT-IN CAPACITOR AND THERMAL PROTECTION**, which allow an immediate use of the motor without needing to install an electrical control panel of protection.

*For further features refer to 4OM series (page 94).*

## OPERATING LIMITS

**DEGREE OF PROTECTION**
IP 68

**INSULATION CLASS**
F

**VOLTAGE TOLERANCE**
-10% / +10%

**PUMPED LIQUID TEMPERATURE**
0°C – 35°C

**MIN. COOLING FLOW**
0,1 m/s

**MAX. STARTS / HOUR**
30

**MOUNTING**
Vertical and/or horizontal

**MAX. IMMERSION DEPTH**
200 m

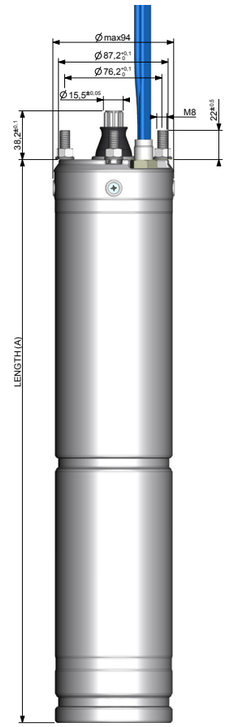
## VERSIONS UPON REQUEST

Different voltage
Sic-Sic mechanical seal

## ACCESSORIES *refer to page 147 - 152 - 153*

Cable lengths: 20 m or 30 m
Sacrificial anode
Control panels *E.S.P.*

## DIMENSIONS




## ELECTRICAL DATA 4OM2W - 50Hz

| Type | $P_2$ [Hp] | $P_2$ [kW] | Voltage [V] | Ph | $I_n$ [A] | $I_{avv}$ [A] | rpm | cos φ | η [%] | Capacitor [µF] | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4OM2W-S075 | 0,75 | 0,55 | 230 | 1 | 4,7 | 16,5 | 2810 | 0,88 | 57 | 25 | 2000 | 417 | 7,90 | 1,5 | 3 x 1,5 |
| 4OM2W-S100 | 1 | 0,75 | 230 | 1 | 5,9 | 18,9 | 2825 | 0,9 | 62 | 35 | 2000 | 442 | 9,10 | 1,5 | 3 x 1,5 |
| 4OM2W-S150 | 1,5 | 1,1 | 230 | 1 | 8,3 | 26,2 | 2840 | 0,91 | 64 | 40 | 2000 | 482 | 10,70 | 1,5 | 3 x 1,5 |

## ELECTRICAL DATA 4OM2W - 60Hz

| Type | $P_2$ [Hp] | $P_2$ [kW] | Voltage [V] | Ph | $I_n$ [A] | $I_{max}$ [A] | $I_{avv}$ [A] | rpm | cos φ | η [%] | Capacitor [µF] | S.F. | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4OM2W-S050 | 0,5 | 0,37 | 220 | 1 | 3,4 | 4,2 | 16 | 3450 | 0,92 | 54 | 20 | 1,6 | 2000 | 417 | 7,90 | 1,5 | 3 x 1,5 |
| | | | 110 | | 6,8 | 9,9 | 29 | 3470 | 0,89 | 48 | 80 | | | | | | |
| 4OM2W-S075 | 0,75 | 0,55 | 220 | 1 | 4,7 | 6,8 | 20,2 | 3420 | 0,95 | 57 | 25 | 1,5 | 2000 | 417 | 7,90 | 1,5 | 3 x 1,5 |
| | | | 110 | | 9,9 | 13,1 | 39 | 3435 | 0,84 | 53 | 80 | | | | | | |
| 4OM2W-S100 | 1 | 0,75 | 220 | 1 | 6,3 | 8,1 | 22,6 | 3435 | 0,95 | 58 | 35 | 1,4 | 2000 | 442 | 9,10 | 1,5 | 3 x 1,5 |
| 4OM2W-S150 | 1,5 | 1,1 | 220 | 1 | 8,3 | 10,8 | 32 | 3455 | 0,98 | 64 | 40 | 1,3 | 2000 | 482 | 10,70 | 1,5 | 3 x 1,5 |

# 60M

## 50 Hz - 60 Hz



## 6” REWINDABLE OIL FILLED SUBMERSIBLE MOTORS



## TECHNICAL SPECIFICATIONS

**REWINDABLE MOTORS**

**MOTOR/PUMP FLANGE**
6” NEMA STANDARD

**POWERS**
Three-phase: from 5,5 to 50 Hp

**VOLTAGE**
Three-phase: 380;400;415 V / 50 Hz - 220;380;460 V / 60 Hz

**THRUST LOAD**
From 5,5 to 20 Hp: 10000 N
From 25 to 50 Hp: 20000 N

**CONNECTION**
D.O.L.
⅄/Δ

## CONSTRUCTION FEATURES

**PARTS IN CONTACT WITH WATER** all made in AISI 304 stainless steel.

**EXTERNAL SLEEVE AND BOTTOM** made in AISI 304 stainless steel. More specifically, the sleeve is in 304L (Low Carbon) to avoid possible corrosions on the welding.

**UPPER BRACKET** made in cast iron with cataphoresis treatment in the standard version; 316 stainless steel available upon request. Sleeve clamping is ensured for the whole series by 8 inserts.

**DOUBLE OIL CHAMBER** interposed between the mechanical seal and motor’s sand protection system thanks the bracket specifically designed on two levels. In this way a special mechanical seal protection is guaranteed.

**MECHANICAL SEAL** made in graphite/ceramic in the standard version; SIC-SIC version available upon request.

**BALL BEARINGS** duly oversized to ensure a long lasting motor.

**STATOR** specifically developed to achieve maximum electrical yield. Airtight sealed and immerged in selected mineral white and highly refined oil, suitable to be used in drinking water (F.D.A., *Food and Drug Administration*, approved).

**REMOVABLE POWER CABLE-CONNECTOR** to ensure a perfect sealing, also in the most critical conditions, and to aid maintenance operations. More specifically, the connector prevents oil from rising in the conductors up to the joint, thus enabling immersion at greater depths. The power cable complies with all major standards on the use in drinking water (KTW, ACS, WRAS).

**SHAFT** made in carbon-steel alloys in the rotor area, to foster electrical features. DUPLEX stainless steel projection. This steel combines excellent resistance to corrosion and high mechanical resistance, which is necessary where static torque becomes really important.

**100% TESTED,** all motors are tested at the end of the line. Seal and electrical checks are carried out on all motors.

## VERSIONS UPON REQUEST

Different thrust loads
Different voltage
Sic-Sic mechanical seal
Upper bracket made in 316 stainless steel

## OPERATING LIMITS

**DEGREE OF PROTECTION**
IP 68

**INSULATION CLASS**
F

**VOLTAGE TOLERANCE**
-10% / +10%

**PUMPED LIQUID TEMPERATURE**
0°C – 35°C

**MIN. COOLING FLOW**
0,1 m/s

**MAX. STARTS / HOUR**
30

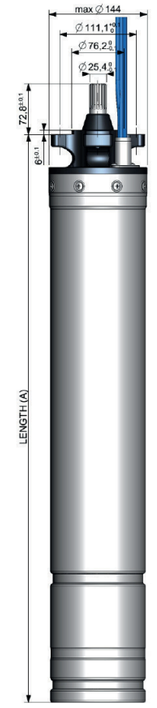
**MOUNTING**
Vertical (Horizontal up to 20 Hp)

**MAX. IMMERSION DEPTH**
200 m

## ACCESSORIES *refer to page 147 - 153*

Different cable lengths
Control panels *E.S.P.* (up to 15 Hp)

## DIMENSIONS



# 6OM

## VERSIONS AVAILABLE



D.O.L. VERSION



λ/Δ VERSION



UPPER BRACKET MADE IN CAST IRON WITH CATAPHORESIS TREATMENT



UPPER BRACKET MADE IN 316 STAINLESS STEEL

## ELECTRICAL DATA 6OM - 50Hz

| Type | Voltage [V] | $P_2$ [Hp] | $P_2$ [kW] | Ph | $I_n$ [A] | $I_{avv}$ [A] | rpm | cos φ | η [%] | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6OM-T0550 | 380 | 5,5 | 4 | 3 | 8,9 | 47 | 2830 | 0,85 | 76 | | 595 | 33 | | 4 x 4 |
| | 400 | | | | 9,1 | | 2840 | 0,86 | 74 | | | | | |
| | 415 | | | | 9,3 | | 2850 | 0,86 | 72 | | | | | |
| 6OM-T0750 | 380 | 7,5 | 5,5 | 3 | 12,9 | 66 | 2830 | 0,82 | 75 | | 625 | 35 | | |
| | 400 | | | | 12,8 | | 2840 | 0,84 | 74 | | | | | |
| | 415 | | | | 12,7 | | 2850 | 0,83 | 75 | | | | | |
| 6OM-T1000 | 380 | 10 | 7,5 | 3 | 17,1 | 81 | 2840 | 0,80 | 79 | | 660 | 38 | | |
| | 400 | | | | 16,8 | | 2850 | 0,83 | 78 | | | | | |
| | 415 | | | | 16,4 | | 2860 | 0,85 | 78 | | | | | |
| 6OM-T1250 | 380 | 12,5 | 9,2 | 3 | 21,8 | 98 | 2860 | 0,76 | 80 | 10000 | 700 | 40 | 3 | |
| | 400 | | | | 21,2 | | 2880 | 0,77 | 81 | | | | | |
| | 415 | | | | 19,7 | | 2890 | 0,85 | 79 | | | | | |
| 6OM-T1500 | 380 | 15 | 11 | 3 | 23,8 | 123 | 2840 | 0,79 | 84 | | 765 | 44 | | |
| | 400 | | | | 22,9 | | 2850 | 0,82 | 85 | | | | | |
| | 415 | | | | 23,2 | | 2870 | 0,83 | 82 | | | | | |
| 6OM-T1750 | 380 | 17,5 | 13 | 3 | 27,8 | 141 | 2850 | 0,80 | 83 | | 820 | 51 | | |
| | 400 | | | | 27,6 | | 2860 | 0,80 | 84 | | | | | |
| | 415 | | | | 27,3 | | 2870 | 0,83 | 82 | | | | | |
| 6OM-T2000 | 380 | 20 | 15 | 3 | 31,6 | 158 | 2830 | 0,85 | 81 | | 820 | 52 | | |
| | 400 | | | | 30,7 | | 2840 | 0,86 | 82 | | | | | |
| | 415 | | | | 29,9 | | 2860 | 0,89 | 80 | | | | | |
| 6OM-T2500 | 380 | 25 | 18,5 | 3 | 39,0 | 231 | 2840 | 0,82 | 83 | | 883 | 62 | | |
| | 400 | | | | 38,0 | | 2850 | 0,84 | 84 | | | | | |
| | 415 | | | | 38,5 | | 2860 | 0,84 | 83 | | | | | |
| 6OM-T3000 | 380 | 30 | 22 | 3 | 44,0 | 258 | 2830 | 0,88 | 82 | | 953 | 67 | | |
| | 400 | | | | 45,5 | | 2850 | 0,83 | 84 | | | | | |
| | 415 | | | | 46,5 | | 2860 | 0,82 | 83 | | | | | |
| 6OM-T3500 | 380 | 35 | 26 | 3 | 53,5 | 296 | 2830 | 0,84 | 84 | 20000 | 1018 | 74 | 4 | 4 x 8 |
| | 400 | | | | 52,0 | | 2850 | 0,85 | 85 | | | | | |
| | 415 | | | | 51,5 | | 2860 | 0,86 | 85 | | | | | |
| 6OM-T4000 | 380 | 40 | 30 | 3 | 63,5 | 348 | 2850 | 0,81 | 84 | | 1098 | 83 | | |
| | 400 | | | | 61,5 | | 2860 | 0,83 | 85 | | | | | |
| | 415 | | | | 63,0 | | 2870 | 0,83 | 83 | | | | | |
| 6OM-T5000 | 380 | 50 | 37 | 3 | 78,0 | 396 | 2810 | 0,82 | 83 | | 1233 | 92 | | |
| | 400 | | | | 76,0 | | 2840 | 0,84 | 84 | | | | | |
| | 415 | | | | 77,0 | | 2850 | 0,85 | 82 | | | | | |

## ELECTRICAL DATA 6OM - 60Hz

| Type | Voltage [V] | $P_2$ [Hp] | $P_2$ [kW] | Ph | $I_n$ [A] | $I_{max}$ [A] | rpm | cos φ | η [%] | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6OM-T0550 | 220 | 5,5 | 4 | 3 | 16,1 | 16,9 | 3435 | 0,79 | 74 | 10000 | 595 | 33 | 3 | 4 x 4 |
| | 380 | | | | 9,7 | 16,8 | 3435 | 0,81 | 75 | | | | | |
| | 460 | | | | 7,9 | 9,1 | 3435 | 0,79 | 76 | | | | | |
| 6OM-T0750 | 220 | 7,5 | 5,5 | 3 | 23,7 | 26,4 | 3440 | 0,81 | 77 | | 625 | 35 | | |
| | 380 | | | | 13,2 | 15,3 | 3440 | 0,78 | 78 | | | | | |
| | 460 | | | | 11,3 | 12,7 | 3440 | 0,79 | 79 | | | | | |
| 6OM-T1000 | 220 | 10 | 7,5 | 3 | 28,4 | 32,9 | 3435 | 0,81 | 79 | | 660 | 38 | | |
| | 380 | | | | 17,3 | 19,3 | 3435 | 0,84 | 79 | | | | | |
| | 460 | | | | 14,7 | 16,6 | 3435 | 0,85 | 80 | | | | | |
| 6OM-T1250 | 220 | 12,5 | 9,2 | 3 | 34,6 | 36,2 | 3455 | 0,80 | 80 | | 700 | 40 | | |
| | 380 | | | | 19,9 | 22,1 | 3455 | 0,79 | 81 | | | | | |
| | 460 | | | | 19,7 | 22,2 | 3455 | 0,79 | 82 | | | | | |
| 6OM-T1500 | 220 | 15 | 11 | 3 | 38,4 | 46,7 | 3450 | 0,79 | 79 | | 765 | 44 | | |
| | 380 | | | | 25,8 | 29,6 | 3450 | 0,81 | 80 | | | | | |
| | 460 | | | | 21,2 | 24,3 | 3450 | 0,83 | 81 | | | | | |
| 6OM-T2000 | 220 | 20 | 15 | 3 | 54,1 | 60,8 | 3435 | 0,77 | 80 | | 820 | 52 | | |
| | 380 | | | | 33,8 | 37,2 | 3435 | 0,81 | 81 | | | | | |
| | 460 | | | | 27,8 | 30,9 | 3435 | 0,80 | 82 | | | | | |
| 6OM-T2500 | 220 | 25 | 18,5 | 3 | 66,5 | 75,5 | 3445 | 0,81 | 81 | | 883 | 62 | | |
| | 380 | | | | 40,1 | 45,9 | 3445 | 0,78 | 82 | | | | | |
| | 460 | | | | 35,7 | 38,5 | 3445 | 0,8 | 83 | | | | | |
| 6OM-T3000 | 220 | 30 | 22 | 3 | 79,1 | 89,0 | 3450 | 0,76 | 81 | 20000 | 953 | 67 | 4 | 4 x 8 |
| | 380 | | | | 46,2 | 53,8 | 3450 | 0,81 | 83 | | | | | |
| | 460 | | | | 43,1 | 46,0 | 3450 | 0,82 | 84 | | | | | |
| 6OM-T4000 | 380 | 40 | 30 | 3 | 65,1 | 74,2 | 3445 | 0,82 | 84 | | 1098 | 83 | | |
| | 460 | | | | 55,2 | 61,2 | 3445 | 0,80 | 85 | | | | | |
| 6OM-T5000 | 380 | 50 | 37 | 3 | 82,2 | 93,5 | 3440 | 0,83 | 83 | | 1233 | 92 | | |
| | 460 | | | | 74,3 | 77,0 | 3440 | 0,84 | 84 | | | | | |







english

# 4WM

50 Hz - 60 Hz



# Water filled submersible motors

Made in Italy

## 4” WATER COOLED SUBMERSIBLE MOTORS, CANNED TYPE





english

# 4WM

## TECHNICAL SPECIFICATIONS

**MOTORS WITH AIRTIGHT SEALED AND RESIN ENCAPSULATED STATOR**

**MOTOR/PUMP FLANGE**
4" NEMA STANDARD

**POWERS**
Single-phase: from 0,5 to 5 Hp
Three-phase: from 0,5 to 10 Hp

**VOLTAGE**
Single-phase:
PSC type 230 V / 50 Hz
3-wire 115;230 V / 60 Hz
Three-phase:
230;400 V / 50 Hz
3-wire 230;380;460 V / 60 Hz

**THRUST LOAD**
50 Hz from 0,5 to 1 Hp: 2000 N
from 1,5 to 4 Hp: 3000 N
from 4 to 10 Hp: 6500 N
60 Hz from 0,5 to 0,75 Hp: 2000 N
from 1 to 3 Hp: 3000 N
from 5 to 10 Hp: 6500 N

## CONSTRUCTION FEATURES

**PARTS IN CONTACT WITH WATER** all made in AISI 304 stainless steel which ensures resistance to corrosion even in the most extreme conditions of use. External sleeve made in AISI 304L (Low Carbon) for a greater resistance to corrosion.

**STATOR** with 24 slots, specifically developed to achieve maximum electrical performance. Airtight sealed and resin encapsulated. A solution which ensures excellent heat exchange and extremely high mechanical resistance with high pressure, something typical of very deep immersions.

**REMOVABLE POWER CABLE-CONNECTOR** to ensure a perfect sealing, also in the most critical conditions, and to aid maintenance operations. The power cable complies with all major standards on the use in drinking water (KTW, ACS, WRAS).

**FILLING LIQUID** is a mixture of water and propylene glycol to ensure adequate lubrication of the thrust bearing system and to lower the freezing point when stored in very cold places.

**RESTORE LIQUID VALVE** which allows water in to restore internal level.

**SHAFT** made in carbon-steel alloys in the rotor area, to foster electrical features. AISI 304 stainless steel projection. DUPLEX, a special type of stainless steel, replaces AISI 304 in motors bigger than 3 Hp. This steel combines excellent resistance to corrosion and high mechanical resistance, which is necessary where static torque becomes really important.



**THRUST BEARING SYSTEM** Kingsbury-type with stainless steel thrust bearing runners oscillating on a self-aligning system.
A specific runner lapping process makes this system extremely reliable and efficient.

**100% TESTED**, all motors are tested at the end of the line. Seal and electrical checks are carried out on all motors.

## VERSIONS UPON REQUEST

Different thrust load
Different voltage

## OPERATING LIMITS

**DEGREE OF PROTECTION**
IP 68

**INSULATION CLASS**
F

**VOLTAGE TOLERANCE**
-10% / +10%

**PUMPED LIQUID TEMPERATURE**
0°C – 35°C

**MIN. COOLING FLOW**
0,1 m/s

**MAX. STARTS / HOUR**
30

**MOUNTING**
Vertical and/or horizontal

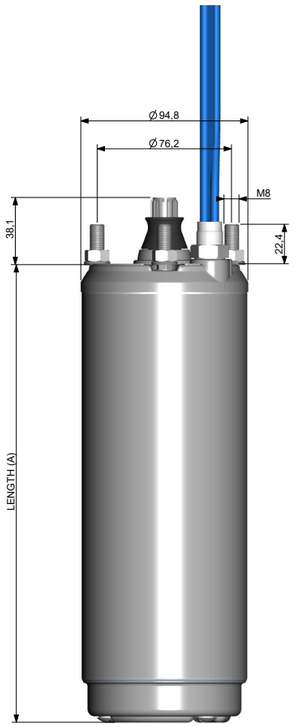
**MAX. IMMERSION DEPTH**
300 m

**SINGLE-PHASE VERSION**
PSC type 50 Hz
3-wire CSIR from 0,5 to 1 Hp 60 Hz
3-wire CSCR from 1,5 to 5 Hp 60 Hz

## ACCESSORIES *refer to page 147 - 148 - 152 - 153*

Different cable lengths
Capacitors
Control panels

## DIMENSIONS




## ELECTRICAL DATA 4WM - 50Hz

| Type | $P_2$ [Hp] | $P_2$ [kW] | Voltage [V] | Ph | $I_n$ [A] | $I_{avv}$ [A] | rpm | cos φ | η [%] | Capacitor [µF] | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4WM-S050 | 0,5 | 0,37 | 230 | 1 | 3,2 | 13,4 | 2855 | 0,95 | 55 | 20 | 2000 | 260 | 7,8 | 1,7 | 4 x 1,5 |
| 4WM-S075 | 0,75 | 0,55 | 230 | 1 | 4,2 | 17,4 | 2850 | 0,96 | 60 | 25 | 2000 | 280 | 8,4 | 1,7 | 4 x 1,5 |
| 4WM-S100 | 1 | 0,75 | 230 | 1 | 5,8 | 23,3 | 2850 | 0,93 | 59 | 35 | 2000 | 306 | 9,2 | 1,7 | 4 x 1,5 |
| 4WM-S150 | 1,5 | 1,1 | 230 | 1 | 7,8 | 32,7 | 2845 | 0,97 | 67 | 40 | 3000 | 351 | 10,5 | 1,7 | 4 x 1,5 |
| 4WM-S200 | 2 | 1,5 | 230 | 1 | 10,4 | 42 | 2835 | 0,99 | 66 | 60 | 3000 | 386 | 11,6 | 1,7 | 4 x 1,5 |
| 4WM-S300 | 3 | 2,2 | 230 | 1 | 14,8 | 61,5 | 2830 | 0,98 | 68 | 70 | 3000 | 441 | 13,3 | 1,7 | 4 x 1,5 |
| 4WM-S500 | 5 | 3,7 | 230 | 1 | 21,8 | 102 | 2840 | 0,99 | 76 | 100+250/300 | 6500 | 654 | 27,8 | 2,7 | 4 x 2 |
| 4WM-T050 | 0,5 | 0,37 | 230 | 3 | 1,2 | 9,3 | 2860 | 0,64 | 63 | - | 2000 | 240 | 7,2 | 1,7 | 4 x 1,5 |
| | | | 400 | | 1,3 | 5,5 | | | | | | | | | |
| 4WM-T075 | 0,75 | 0,55 | 230 | 3 | 2,8 | 12,5 | 2850 | 0,74 | 70 | - | 2000 | 260 | 7,8 | 1,7 | 4 x 1,5 |
| | | | 400 | | 1,6 | 7,4 | | | | | | | | | |
| 4WM-T100 | 1 | 0,75 | 230 | 3 | 3,8 | 18,1 | 2855 | 0,69 | 72 | - | 2000 | 280 | 8,4 | 1,7 | 4 x 1,5 |
| | | | 400 | | 2,2 | 10,6 | | | | | | | | | |
| 4WM-T150 | 1,5 | 1,1 | 230 | 3 | 5,3 | 27,3 | 2855 | 0,66 | 76 | - | 3000 | 306 | 9,2 | 1,7 | 4 x 1,5 |
| | | | 400 | | 3,1 | 16,1 | | | | | | | | | |
| 4WM-T200 | 2 | 1,5 | 230 | 3 | 6,7 | 35,5 | 2845 | 0,73 | 76 | - | 3000 | 351 | 10,5 | 1,7 | 4 x 1,5 |
| | | | 400 | | 3,9 | 20,9 | | | | | | | | | |
| 4WM-T300 | 3 | 2,2 | 230 | 3 | 9,2 | 50,8 | 2840 | 0,78 | 76 | - | 3000 | 386 | 11,6 | 1,7 | 4 x 1,5 |
| | | | 400 | | 5,4 | 29,9 | | | | | | | | | |
| 4WM-T400 | 4 | 3 | 230 | 3 | 13 | 70,5 | 2855 | 0,77 | 76 | - | 3000 | 441 | 19,8 | 1,7 | 4 x 1,5 |
| | | | | | | | | | | | 6500 | 484 | 20,5 | 2,7 | 4 X 2 |
| | | | 400 | | 7,6 | 41,5 | | | | | 3000 | 441 | 19,8 | 1,7 | 4 x 1,5 |
| | | | | | | | | | | | 6500 | 484 | 20,5 | 2,7 | 4 X 2 |
| 4WM-T550 | 5,5 | 4 | 230 | 3 | 16,9 | 96 | 2840 | 0,82 | 77 | - | 6500 | 544 | 23,2 | 2,7 | 4 x 2 |
| | | | 400 | | 9,9 | 56,8 | | | | | | | | | |
| 4WM-T750 | 7,5 | 5,5 | 230 | 3 | 21,6 | 132 | 2835 | 0,85 | 78 | - | 6500 | 654 | 27,8 | 2,7 | 4 x 2 |
| | | | 400 | | 12,7 | 77,3 | | | | | | | | | |
| 4WM-T1000 | 10 | 7,5 | 400 | 3 | 17,2 | 99 | 2840 | 0,86 | 79 | - | 6500 | 764 | 32,5 | 2,7 | 4 x 2 |

## ELECTRICAL DATA 4WM - 60Hz

| Type | $P_2$ [Hp] | $P_2$ [kW] | Voltage [V] | S.F. | Ph | FULL LOAD AMPS $I_n$ [A] | FULL S.F. AMPS $I_{MAX}$ [A] | rpm | cos φ | η [%] | Capacitor [µF] $C_{run}$ | Capacitor [µF] $C_{start}$ | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Single-phase 3-wire CSIR** | | | | | | | | | | | | | | | | | |
| 4WM-S050 | 0,5 | 0,37 | 115 | 1,6 | 1 | 9,3 | 12,4 | 3450 | 0,68 | 54 | - | 250-300 | 2000 | 280 | 8,4 | 1,7 | 4 x 1,5 |
| 4WM-S050 | 0,5 | 0,37 | 230 | 1,6 | 1 | 4,8 | 6,2 | 3450 | 0,68 | 54 | - | 59-71 | 2000 | 280 | 8,4 | 1,7 | 4 x 1,5 |
| 4WM-S075 | 0,75 | 0,55 | 115 | 1,5 | 1 | 12,2 | 15,8 | 3450 | 0,68 | 60 | - | 250-300 | 2000 | 306 | 9,2 | 1,7 | 4 x 1,5 |
| 4WM-S075 | 0,75 | 0,55 | 230 | 1,5 | 1 | 6,1 | 7,9 | 3450 | 0,68 | 60 | - | 86-103 | 2000 | 306 | 9,2 | 1,7 | 4 x 1,5 |
| 4WM-S100 | 1 | 0,75 | 230 | 1,4 | 1 | 8,2 | 10,1 | 3450 | 0,69 | 61 | - | 105-126 | 3000 | 326 | 9,8 | 1,7 | 4 x 1,5 |
| **Single-phase 3-wire CSCR** | | | | | | | | | | | | | | | | | |
| 4WM-S150 | 1,5 | 1,1 | 230 | 1,3 | 1 | 9,8 | 11,1 | 3450 | 0,72 | 67 | 16 | 105-126 | 3000 | 371 | 11,1 | 1,7 | 4 x 1,5 |
| 4WM-S200 | 2 | 1,5 | 230 | 1,25 | 1 | 10,4 | 12,6 | 3450 | 0,8 | 68 | 20 | 105-126 | 3000 | 386 | 11,6 | 1,7 | 4 x 1,5 |
| 4WM-S300 | 3 | 2,2 | 230 | 1,15 | 1 | 14,1 | 15,9 | 3450 | 0,91 | 69 | 45 | 208-250 | 3000 | 441 | 13,3 | 1,7 | 4 x 1,5 |
| 4WM-S500 | 5 | 3,7 | 230 | 1,15 | 1 | 24,1 | 26,8 | 3450 | 0,87 | 72 | 80 | 270-324 | 6500 | 654 | 27,8 | 2,7 | 4 x 2 |
| **Three-phase 3-wire** | | | | | | | | | | | | | | | | | |
| 4WM-T050 | 0,5 | 0,37 | 230 | 1,6 | 3 | 2,8 | 3,5 | 3450 | 0,5 | 61 | - | - | 2000 | 260 | 7,8 | 1,7 | 4 x 1,5 |
| 4WM-T050 | 0,5 | 0,37 | 380 | 1,6 | 3 | 1,5 | 1,9 | 3450 | 0,5 | 61 | - | - | 2000 | 260 | 7,8 | 1,7 | 4 x 1,5 |
| 4WM-T050 | 0,5 | 0,37 | 460 | 1,6 | 3 | 1,4 | 1,7 | 3450 | 0,5 | 61 | - | - | 2000 | 260 | 7,8 | 1,7 | 4 x 1,5 |
| 4WM-T075 | 0,75 | 0,55 | 230 | 1,5 | 3 | 3,6 | 4,2 | 3450 | 0,55 | 68 | - | - | 2000 | 280 | 8,4 | 1,7 | 4 x 1,5 |
| 4WM-T075 | 0,75 | 0,55 | 380 | 1,5 | 3 | 2 | 2,4 | 3450 | 0,55 | 68 | - | - | 2000 | 280 | 8,4 | 1,7 | 4 x 1,5 |
| 4WM-T075 | 0,75 | 0,55 | 460 | 1,5 | 3 | 1,6 | 2,2 | 3450 | 0,55 | 68 | - | - | 2000 | 280 | 8,4 | 1,7 | 4 x 1,5 |
| 4WM-T100 | 1 | 0,75 | 230 | 1,4 | 3 | 4,8 | 5,6 | 3450 | 0,56 | 71 | - | - | 3000 | 306 | 9,2 | 1,7 | 4 x 1,5 |
| 4WM-T100 | 1 | 0,75 | 380 | 1,4 | 3 | 2,8 | 3,2 | 3450 | 0,56 | 71 | - | - | 3000 | 306 | 9,2 | 1,7 | 4 x 1,5 |
| 4WM-T100 | 1 | 0,75 | 460 | 1,4 | 3 | 2,2 | 2,6 | 3450 | 0,56 | 71 | - | - | 3000 | 306 | 9,2 | 1,7 | 4 x 1,5 |
| 4WM-T150 | 1,5 | 1,1 | 230 | 1,3 | 3 | 5,4 | 6,8 | 3450 | 0,68 | 78 | - | - | 3000 | 326 | 9,8 | 1,7 | 4 x 1,5 |
| 4WM-T150 | 1,5 | 1,1 | 380 | 1,3 | 3 | 3,2 | 3,8 | 3450 | 0,68 | 78 | - | - | 3000 | 326 | 9,8 | 1,7 | 4 x 1,5 |
| 4WM-T150 | 1,5 | 1,1 | 460 | 1,3 | 3 | 3,1 | 3,7 | 3450 | 0,68 | 78 | - | - | 3000 | 326 | 9,8 | 1,7 | 4 x 1,5 |
| 4WM-T200 | 2 | 1,5 | 230 | 1,25 | 3 | 6,9 | 7,9 | 3450 | 0,73 | 78 | - | - | 3000 | 351 | 10,5 | 1,7 | 4 x 1,5 |
| 4WM-T200 | 2 | 1,5 | 380 | 1,25 | 3 | 3,9 | 4,4 | 3450 | 0,73 | 78 | - | - | 3000 | 351 | 10,5 | 1,7 | 4 x 1,5 |
| 4WM-T200 | 2 | 1,5 | 460 | 1,25 | 3 | 3,6 | 4,1 | 3450 | 0,73 | 78 | - | - | 3000 | 351 | 10,5 | 1,7 | 4 x 1,5 |
| 4WM-T300 | 3 | 2,2 | 230 | 1,15 | 3 | 9,8 | 11,2 | 3450 | 0,82 | 82 | - | - | 3000 | 386 | 11,6 | 1,7 | 4 x 1,5 |
| 4WM-T300 | 3 | 2,2 | 380 | 1,15 | 3 | 5,6 | 6 | 3450 | 0,82 | 82 | - | - | 3000 | 386 | 11,6 | 1,7 | 4 x 1,5 |
| 4WM-T300 | 3 | 2,2 | 460 | 1,15 | 3 | 5,2 | 5,8 | 3450 | 0,82 | 82 | - | - | 3000 | 386 | 11,6 | 1,7 | 4 x 1,5 |
| 4WM-T500 | 5 | 3,7 | 230 | 1,15 | 3 | 17,1 | 19,1 | 3450 | 0,82 | 76 | - | - | 6500 | 544 | 23,2 | 2,7 | 4 x 2 |
| 4WM-T500 | 5 | 3,7 | 380 | 1,15 | 3 | 9,8 | 10,4 | 3450 | 0,82 | 76 | - | - | 6500 | 544 | 23,2 | 2,7 | 4 x 2 |
| 4WM-T500 | 5 | 3,7 | 460 | 1,15 | 3 | 8,6 | 9,4 | 3450 | 0,82 | 76 | - | - | 6500 | 544 | 23,2 | 2,7 | 4 x 2 |
| 4WM-T550 | 5,5 | 4 | 230 | 1,15 | 3 | 17,4 | 19,3 | 3450 | 0,8 | 78 | - | - | 6500 | 544 | 23,2 | 2,7 | 4 x 2 |
| 4WM-T550 | 5,5 | 4 | 380 | 1,15 | 3 | 10,1 | 10,6 | 3450 | 0,8 | 78 | - | - | 6500 | 544 | 23,2 | 2,7 | 4 x 2 |
| 4WM-T550 | 5,5 | 4 | 460 | 1,15 | 3 | 9,1 | 9,7 | 3450 | 0,8 | 78 | - | - | 6500 | 544 | 23,2 | 2,7 | 4 x 2 |
| 4WM-T750 | 7,5 | 5,5 | 230 | 1,15 | 3 | 24,8 | 25,7 | 3450 | 0,78 | 79 | - | - | 6500 | 654 | 27,8 | 2,7 | 4 x 2 |
| 4WM-T750 | 7,5 | 5,5 | 380 | 1,15 | 3 | 13,4 | 14,9 | 3450 | 0,78 | 79 | - | - | 6500 | 654 | 27,8 | 2,7 | 4 x 2 |
| 4WM-T750 | 7,5 | 5,5 | 460 | 1,15 | 3 | 12,2 | 13,4 | 3450 | 0,78 | 79 | - | - | 6500 | 654 | 27,8 | 2,7 | 4 x 2 |
| 4WM-T1000 | 10 | 7,5 | 380 | 1,15 | 3 | 17,2 | 17,7 | 3450 | 0,77 | 80 | - | - | 6500 | 764 | 32,5 | 2,7 | 4 x 2 |
| 4WM-T1000 | 10 | 7,5 | 460 | 1,15 | 3 | 16,1 | 16,9 | 3450 | 0,77 | 80 | - | - | 6500 | 764 | 32,5 | 2,7 | 4 x 2 |



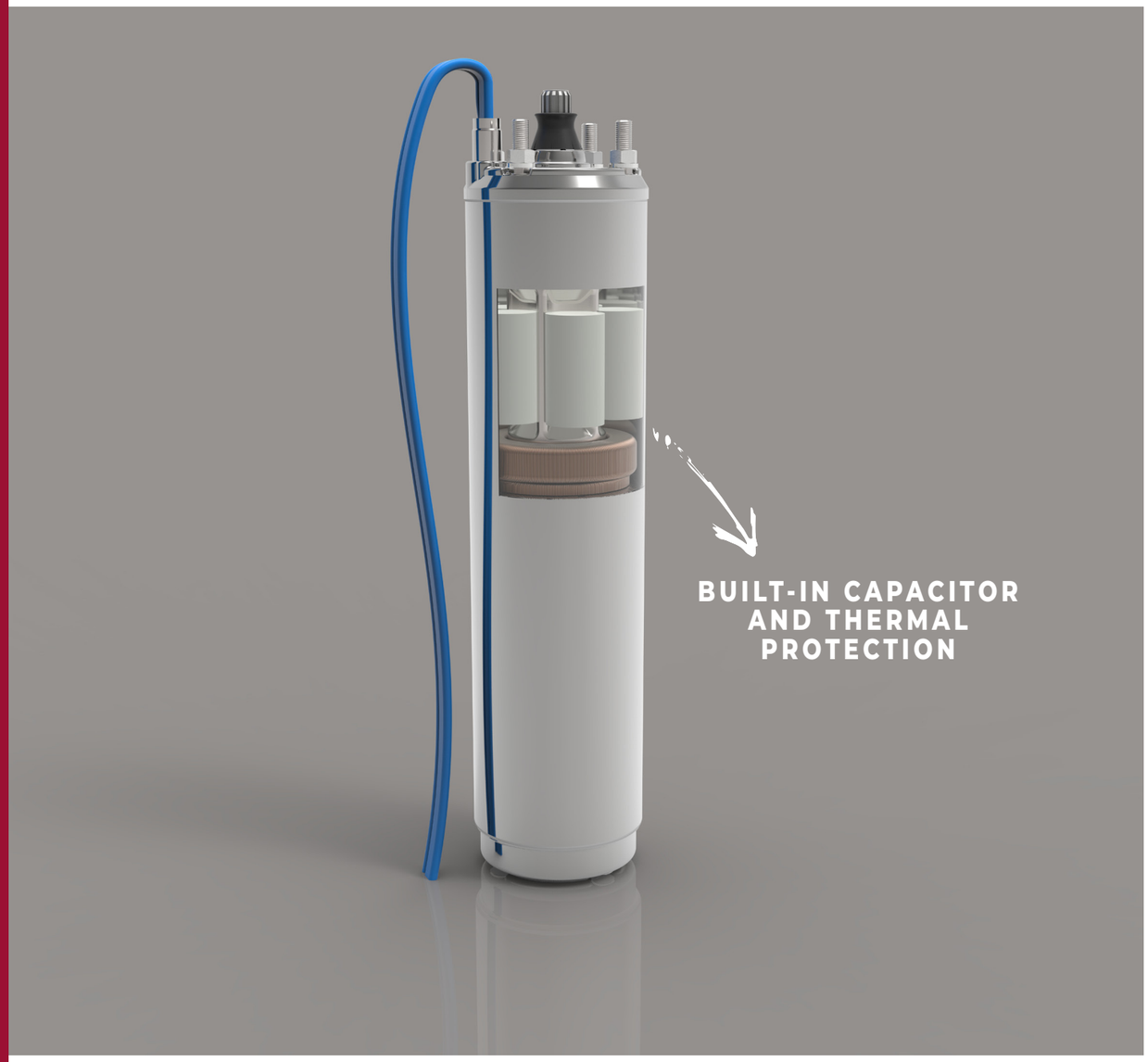




english

# 4WM2W

## 50 Hz - 60 Hz




## 4" SINGLE-PHASE 2-WIRE WATER COOLED SUBMERSIBLE MOTORS, CANNED TYPE



## TECHNICAL SPECIFICATIONS

**MOTORS WITH AIRTIGHT SEALED AND RESIN ENCAPSULATED STATOR**

**MOTOR/PUMP FLANGE**
4" NEMA STANDARD

**POWERS**
Single-phase: from 0,5 to 1,5 Hp

**VOLTAGE**
Single-phase:
2-wire PSC type 230 V / 50 Hz
2-wire PSC type 115;230 V / 60 Hz

**THRUST LOAD**
50 Hz from 0,5 to 1 Hp: 2000 N
1,5 Hp: 3000 N
60 Hz from 0,5 to 0,75 Hp: 2000 N
from 1 to 1,5 Hp: 3000 N

## CONSTRUCTION FEATURES

**BUILT-IN CAPACITOR AND THERMAL PROTECTION**, which allow an immediate use of the motor without needing to install an electrical control panel of protection.

*For further features refer to 4WM series (page 104).*

## OPERATING LIMITS

**DEGREE OF PROTECTION**
IP 68

**INSULATION CLASS**
F

**VOLTAGE TOLERANCE**
-10% / +10%

**PUMPED LIQUID TEMPERATURE**
0°C – 35°C

**MIN. COOLING FLOW**
0,1 m/s

**MAX. STARTS / HOUR**
30

**MOUNTING**
Vertical and/or horizontal

**MAX. IMMERSION DEPTH**
300 m

**SINGLE-PHASE VERSION**
2-wire PSC type from 0,5 to 1,5 Hp

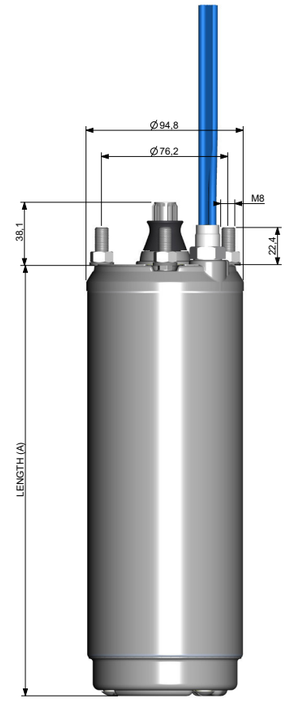
## VERSIONS UPON REQUEST

Different voltage

## ACCESSORIES *refer to page 153*

Cable lengths: 20 m or 30 m

## DIMENSIONS




## ELECTRICAL DATA 4WM2W - 50Hz

| Type | $P_2$ [Hp] | $P_2$ [kW] | Voltage [V] | Ph | $I_n$ [A] | $I_{RVV}$ [A] | rpm | cos φ | η [%] | Capacitor [µF] | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Single-phase 2-wire PSC | | | | | | | | | | | | | | | |
| 4WM2W-S050 | 0,5 | 0,37 | 230 | 1 | 3,2 | 13,4 | 2855 | 0,95 | 55 | 20 | 2000 | 337 | 10,1 | 1,5 | 3 x 1,5 |
| 4WM2W-S075 | 0,75 | 0,55 | 230 | 1 | 4,2 | 17,4 | 2850 | 0,96 | 60 | 20 | 2000 | 357 | 10,7 | 1,5 | 3 x 1,5 |
| 4WM2W-S100 | 1 | 0,75 | 230 | 1 | 5,8 | 23,3 | 2850 | 0,93 | 59 | 35 | 2000 | 377 | 11,3 | 1,5 | 3 x 1,5 |
| 4WM2W-S150 | 1,5 | 1,1 | 230 | 1 | 7,8 | 32,7 | 2845 | 0,97 | 67 | 35 | 3000 | 422 | 12,7 | 1,5 | 3 x 1,5 |

## ELECTRICAL DATA 4WM2W - 60Hz

| Type | $P_2$ [Hp] | $P_2$ [kW] | Voltage [V] | S.F. | Ph | FULL LOAD AMPS $I_n$ [A] | FULL S.F. AMPS $I_{MAX}$ [A] | rpm | cos φ | η [%] | Capacitor [µF] | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Single-phase 2-wire PSC | | | | | | | | | | | | | | | | |
| 4WM2W-S050 | 0,5 | 0,37 | 115 | 1,6 | 1 | 8,4 | 10,5 | 3450 | 0,99 | 52 | 36 | 2000 | 357 | 10,7 | 1,5 | 3 x 1,5 |
| 4WM2W-S050 | 0,5 | 0,37 | 230 | 1,6 | 1 | 4 | 4,8 | 3450 | 0,99 | 54 | 27 | 2000 | 357 | 10,7 | 1,5 | 3 x 1,5 |
| 4WM2W-S075 | 0,75 | 0,55 | 115 | 1,5 | 1 | 9,8 | 10,4 | 3450 | 0,96 | 61 | 36 | 2000 | 377 | 11,3 | 1,5 | 3 x 1,5 |
| 4WM2W-S075 | 0,75 | 0,55 | 230 | 1,5 | 1 | 4,8 | 6 | 3450 | 0,96 | 61 | 27 | 2000 | 377 | 11,3 | 1,5 | 3 x 1,5 |
| 4WM2W-S100 | 1 | 0,75 | 230 | 1,4 | 1 | 6,2 | 7,6 | 3450 | 0,98 | 61 | 36 | 3000 | 397 | 11,9 | 1,5 | 3 x 1,5 |
| 4WM2W-S150 | 1.5 | 1,1 | 230 | 1,3 | 1 | 8,1 | 9,6 | 3450 | 0,98 | 62 | 36 | 3000 | 422 | 12,7 | 1,5 | 3 x 1,5 |







english

# 4WMU

## 60 Hz



## 4” WATER COOLED SUBMERSIBLE MOTORS, CANNED TYPE



## TECHNICAL SPECIFICATIONS

**MOTORS WITH AIRTIGHT SEALED AND RESIN ENCAPSULATED STATOR**

**MOTOR/PUMP FLANGE**
4” NEMA STANDARD

**POWERS**
Single-phase: from 1/2 to 5 Hp
Three-phase: from 1/2 to 10 Hp

**VOLTAGE**
Single-phase: 3-wire 115;230 V / 60 Hz
Three-phase: 3-wire 230;460 V / 60 Hz

**THRUST LOAD**
From 1/2 to 3/4 Hp: 2000 N - 450 lbf
From 1 to 3 Hp: 3000 N - 700 lbf
From 5 to 10 Hp: 6500 N - 1500 lbf

## CONSTRUCTION FEATURES

**PARTS IN CONTACT WITH WATER** all made in AISI 304 stainless steel which ensures resistance to corrosion even in the most extreme conditions of use. External sleeve made in AISI 304L (Low Carbon) for even greater resistance to corrosion.

**STATOR** with 24 slots, specifically developed to achieve maximum electrical performance. Airtight sealed and resin encapsulated. A solution which ensures excellent heat exchange and extremely high mechanical resistance with high pressure, something typical of very deep immersions.

**REMOVABLE POWER CABLE-CONNECTOR** to ensure a perfect sealing, also in the most critical conditions, and to aid maintenance operations.

**FILLING LIQUID** composed of a mixture of water and propylene glycol (special antifreeze liquid) to ensure adequate lubrication of the thrust bearing system together with the ability to lower the freezing point when stored in very cold places.

**RESTORE LIQUID VALVE** which allows water in to restore internal level.

**SHAFT** made in carbon-steel alloys in the rotor area, to foster electrical features. AISI 304 stainless steel projection. DUPLEX, a special type of stainless steel, replaces AISI 304 in motors bigger than 3 Hp. This steel combines excellent resistance to corrosion and high mechanical resistance, which is necessary where static torque becomes really important.



**THRUST BEARING SYSTEM** Kingsbury-type with stainless steel thrust bearing runners oscillating on a self-aligning system.
A specific runner lapping process makes this system extremely reliable and efficient.

**100% TESTED**, all motors are tested at the end of the line. Seal and electrical checks are carried out on all motors.

## VERSIONS UPON REQUEST

Different thrust load
Different voltage

## OPERATING LIMITS

**DEGREE OF PROTECTION**
IP 68

**INSULATION CLASS**
F

**VOLTAGE TOLERANCE**
-10% / +10%

**PUMPED LIQUID TEMPERATURE**
0°C – 35°C / 32°F – 95°F

**MIN. COOLING FLOW**
0,1 m/s - 0.33 ft/sec

**MAX. STARTS / HOUR**
30

**MOUNTING**
Vertical and/or horizontal

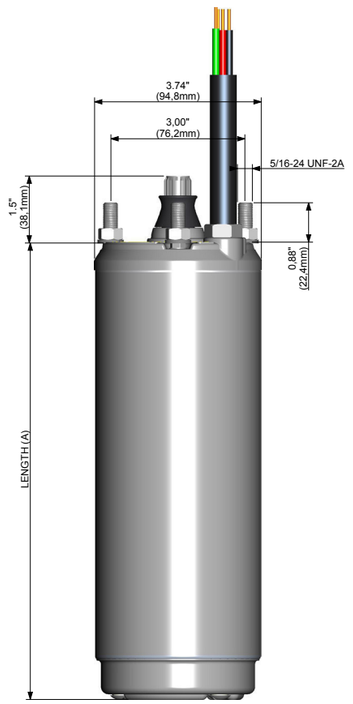
**MAX. IMMERSION DEPTH**
300 m - 984.25 ft

**SINGLE-PHASE VERSION**
3-wire CSIR from 1/2 to 1 Hp
3-wire CSCR from 1.5 to 5 Hp

## ACCESSORIES *refer to page 149 - 152*

Different cable lengths
Capacitors
Control panels CU-BOX
Lightning arrestor

## DIMENSIONS




c US
303139
Drinking Water
NSF/ANSI/CAN 372
ONLY

# ELECTRICAL DATA 4WMU - 60Hz

| Type | $P_2$ [Hp] | $P_2$ [kW] | Voltage [V] | S.F. | Ph | FULL LOAD AMPS $I_n$ [A] | FULL S.F. AMPS $I_{MAX}$ [A] | rpm | η [%] | Capacitor [µF] $C_{run}$ | Capacitor [µF] $C_{start}$ | Thrust Load [lbf] | Thrust Load [N] | Length A [mm] | Length A [in] | Weight [kg] | Weight [lb] | Cable Length [m] | Cable Length [ft] | Cable Section [AWG] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Single-phase 3-wire CSIR** | | | | | | | | | | | | | | | | | | | | |
| 4WMU-S050 | 1/2 | 0.37 | 115 | 1.6 | 1 | 9.3 | 12.4 | 3450 | 54 | - | 250-300 | 450 | 2000 | 280 | 11.0 | 8.4 | 18.5 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-S050 | 1/2 | 0.37 | 230 | 1.6 | 1 | 4.8 | 6.2 | 3450 | 54 | - | 59-71 | 450 | 2000 | 280 | 11.0 | 8.4 | 18.5 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-S075 | 3/4 | 0.55 | 115 | 1.5 | 1 | 12.2 | 15.8 | 3450 | 60 | - | 250-300 | 450 | 2000 | 306 | 12.0 | 9.2 | 20.3 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-S075 | 3/4 | 0.55 | 230 | 1.5 | 1 | 6.1 | 7.9 | 3450 | 60 | - | 86-103 | 450 | 2000 | 306 | 12.0 | 9.2 | 20.3 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-S100 | 1 | 0.75 | 230 | 1.4 | 1 | 8.2 | 10.1 | 3450 | 61 | - | 105-126 | 700 | 3000 | 326 | 12.8 | 9.8 | 21.6 | 1.7 | 5 1/2 | 4 x 14 |
| **Single-phase 3-wire CSCR** | | | | | | | | | | | | | | | | | | | | |
| 4WMU-S150 | 1.5 | 1.1 | 230 | 1.3 | 1 | 9.8 | 11.1 | 3450 | 67 | 16 | 105-126 | 700 | 3000 | 371 | 14.6 | 11.1 | 24.5 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-S200 | 2 | 1.5 | 230 | 1.25 | 1 | 10.4 | 12.6 | 3450 | 68 | 20 | 105-126 | 700 | 3000 | 386 | 15.2 | 11.6 | 25.6 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-S300 | 3 | 2.2 | 230 | 1.15 | 1 | 14.1 | 15.9 | 3450 | 69 | 45 | 208-250 | 700 | 3000 | 441 | 17.4 | 13.3 | 29.3 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-S500 | 5 | 3.7 | 230 | 1.15 | 1 | 24.1 | 26.8 | 3450 | 72 | 80 | 270-324 | 1500 | 6500 | 654 | 25.7 | 27.8 | 61.3 | 2.7 | 8 3/4 | 4 x 14 |
| **Three-phase 3-wire** | | | | | | | | | | | | | | | | | | | | |
| 4WMU-T050 | 1/2 | 0.37 | 230 | 1.6 | 3 | 2.8 | 3.5 | 3450 | 61 | - | - | 450 | 2000 | 260 | 10.2 | 7.8 | 17.2 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-T050 | 1/2 | 0.37 | 460 | 1.6 | 3 | 1.4 | 1.7 | 3450 | 61 | - | - | 450 | 2000 | 260 | 10.2 | 7.8 | 17.2 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-T075 | 3/4 | 0.55 | 230 | 1.5 | 3 | 3.6 | 4.2 | 3450 | 68 | - | - | 450 | 2000 | 280 | 11.0 | 8.4 | 18.5 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-T075 | 3/4 | 0.55 | 460 | 1.5 | 3 | 1.6 | 2.2 | 3450 | 68 | - | - | 450 | 2000 | 280 | 11.0 | 8.4 | 18.5 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-T100 | 1 | 0.75 | 230 | 1.4 | 3 | 4.8 | 5.6 | 3450 | 71 | - | - | 700 | 3000 | 306 | 12.0 | 9.2 | 20.3 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-T100 | 1 | 0.75 | 460 | 1.4 | 3 | 2.2 | 2.6 | 3450 | 71 | - | - | 700 | 3000 | 306 | 12.0 | 9.2 | 20.3 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-T150 | 1.5 | 1.1 | 230 | 1.3 | 3 | 5.4 | 6.8 | 3450 | 78 | - | - | 700 | 3000 | 326 | 12.8 | 9.8 | 21.6 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-T150 | 1.5 | 1.1 | 460 | 1.3 | 3 | 3.1 | 3.7 | 3450 | 78 | - | - | 700 | 3000 | 326 | 12.8 | 9.8 | 21.6 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-T200 | 2 | 1.5 | 230 | 1.25 | 3 | 6.9 | 7.9 | 3450 | 78 | - | - | 700 | 3000 | 351 | 13.8 | 10.5 | 23.1 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-T200 | 2 | 1.5 | 460 | 1.25 | 3 | 3.6 | 4.1 | 3450 | 78 | - | - | 700 | 3000 | 351 | 13.8 | 10.5 | 23.1 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-T300 | 3 | 2.2 | 230 | 1.15 | 3 | 9.8 | 11.2 | 3450 | 82 | - | - | 700 | 3000 | 386 | 15.2 | 11.6 | 25.6 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-T300 | 3 | 2.2 | 460 | 1.15 | 3 | 5.2 | 5.8 | 3450 | 82 | - | - | 700 | 3000 | 386 | 15.2 | 11.6 | 25.6 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU-T500 | 5 | 3.7 | 230 | 1.15 | 3 | 17.1 | 19.1 | 3450 | 76 | - | - | 1500 | 6500 | 544 | 21.4 | 23.2 | 51.1 | 2.7 | 8 3/4 | 4 x 14 |
| 4WMU-T500 | 5 | 3.7 | 460 | 1.15 | 3 | 8.6 | 9.4 | 3450 | 76 | - | - | 1500 | 6500 | 544 | 21.4 | 23.2 | 51.1 | 2.7 | 8 3/4 | 4 x 14 |
| 4WMU-T550 | 5.5 | 4 | 230 | 1.15 | 3 | 17.4 | 19.3 | 3450 | 78 | - | - | 1500 | 6500 | 544 | 21.4 | 23.2 | 51.1 | 2.7 | 8 3/4 | 4 x 14 |
| 4WMU-T550 | 5.5 | 4 | 460 | 1.15 | 3 | 9.1 | 9.7 | 3450 | 78 | - | - | 1500 | 6500 | 544 | 21.4 | 23.2 | 51.1 | 2.7 | 8 3/4 | 4 x 14 |
| 4WMU-T750 | 7.5 | 5.5 | 230 | 1.15 | 3 | 24.8 | 25.7 | 3450 | 79 | - | - | 1500 | 6500 | 654 | 25.7 | 27.8 | 61.3 | 2.7 | 8 3/4 | 4 x 14 |
| 4WMU-T750 | 7.5 | 5.5 | 460 | 1.15 | 3 | 12.2 | 13.4 | 3450 | 79 | - | - | 1500 | 6500 | 654 | 25.7 | 27.8 | 61.3 | 2.7 | 8 3/4 | 4 x 14 |
| 4WMU-T1000 | 10 | 7.5 | 460 | 1.15 | 3 | 16.1 | 16.9 | 3450 | 80 | - | - | 1500 | 6500 | 764 | 30.1 | 32.5 | 71.6 | 2.7 | 8 3/4 | 4 x 14 |



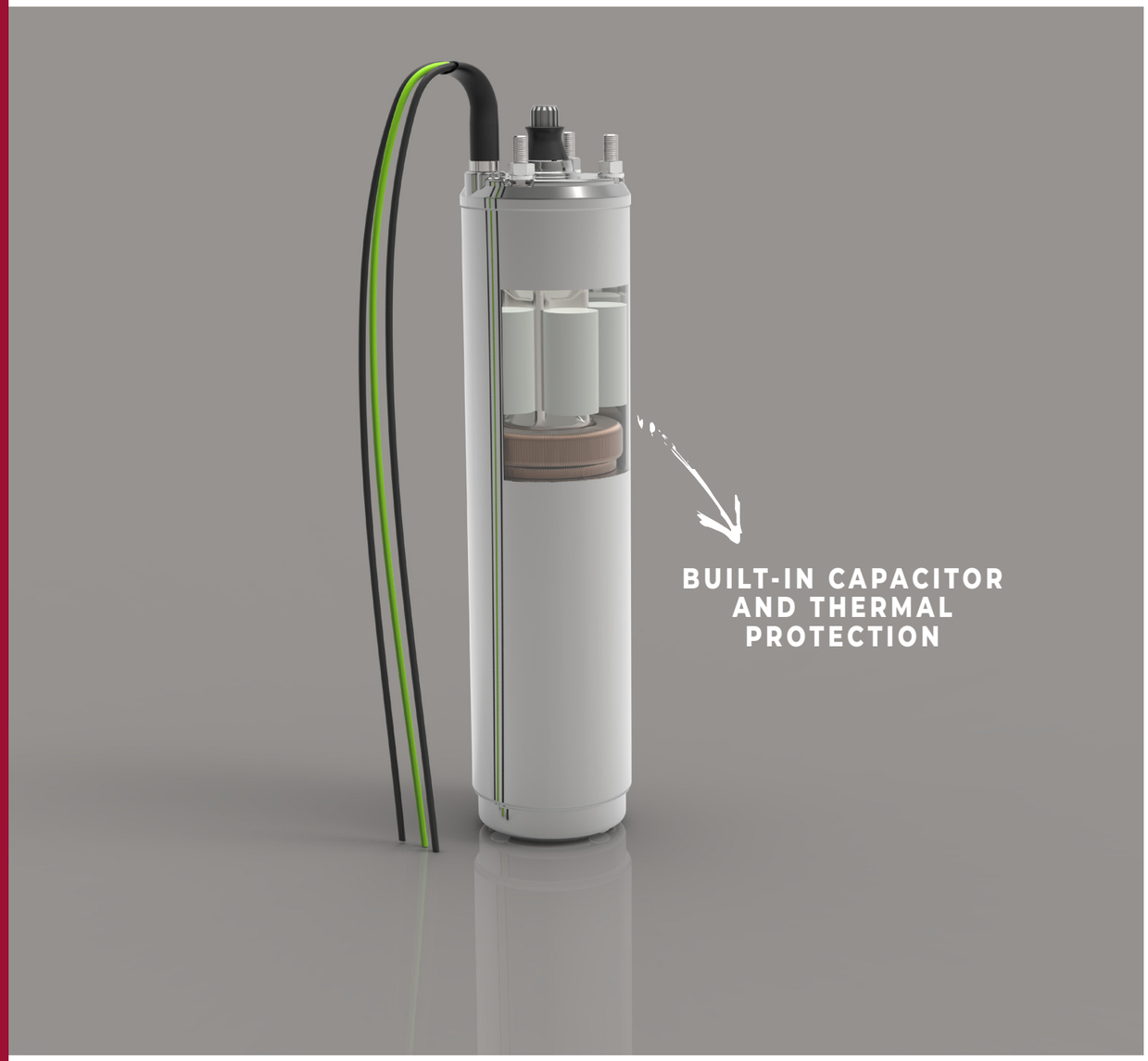




english

# 4WMU2W

60 Hz




## 4” SINGLE-PHASE 2-WIRE WATER COOLED SUBMERSIBLE MOTORS, CANNED TYPE



## TECHNICAL SPECIFICATIONS

**MOTORS WITH AIRTIGHT SEALED AND RESIN ENCAPSULATED STATOR**

**MOTOR/PUMP FLANGE**
4” NEMA STANDARD

**POWERS**
Single-phase: from 1/2 to 1.5 Hp

**VOLTAGE**
Single-phase: 2-wire PSC type 115;230 V / 60 Hz

**THRUST LOAD**
From 1/2 to 3/4 Hp: 2000 N - 450 lbf
From 1 to 1.5 Hp: 3000 N - 700 lbf

## CONSTRUCTION FEATURES

**BUILT-IN CAPACITOR AND THERMAL PROTECTION**, which allow an immediate use of the motor without needing to install an electrical control panel of protection.

*For further features refer to 4WMU series (page 109).*

## OPERATING LIMITS

**DEGREE OF PROTECTION**
IP 68

**INSULATION CLASS**
F

**VOLTAGE TOLERANCE**
-10% / +10%

**PUMPED LIQUID TEMPERATURE**
0°C – 35°C / 32°F – 95°F

**MIN. COOLING FLOW**
0,1 m/s - 0.33 ft/sec

**MAX. STARTS / HOUR**
30

**MOUNTING**
Vertical and/or horizontal

**MAX. IMMERSION DEPTH**
300 m - 984.25 ft

**SINGLE-PHASE VERSION**
2-wire PSC type from 1/2 to 1.5 Hp

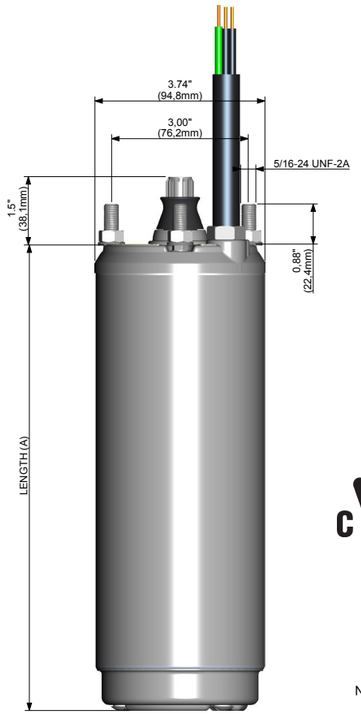
## VERSIONS UPON REQUEST

Different voltage

## ACCESSORIES

Different cable lengths
Lightning arrestor

## DIMENSIONS



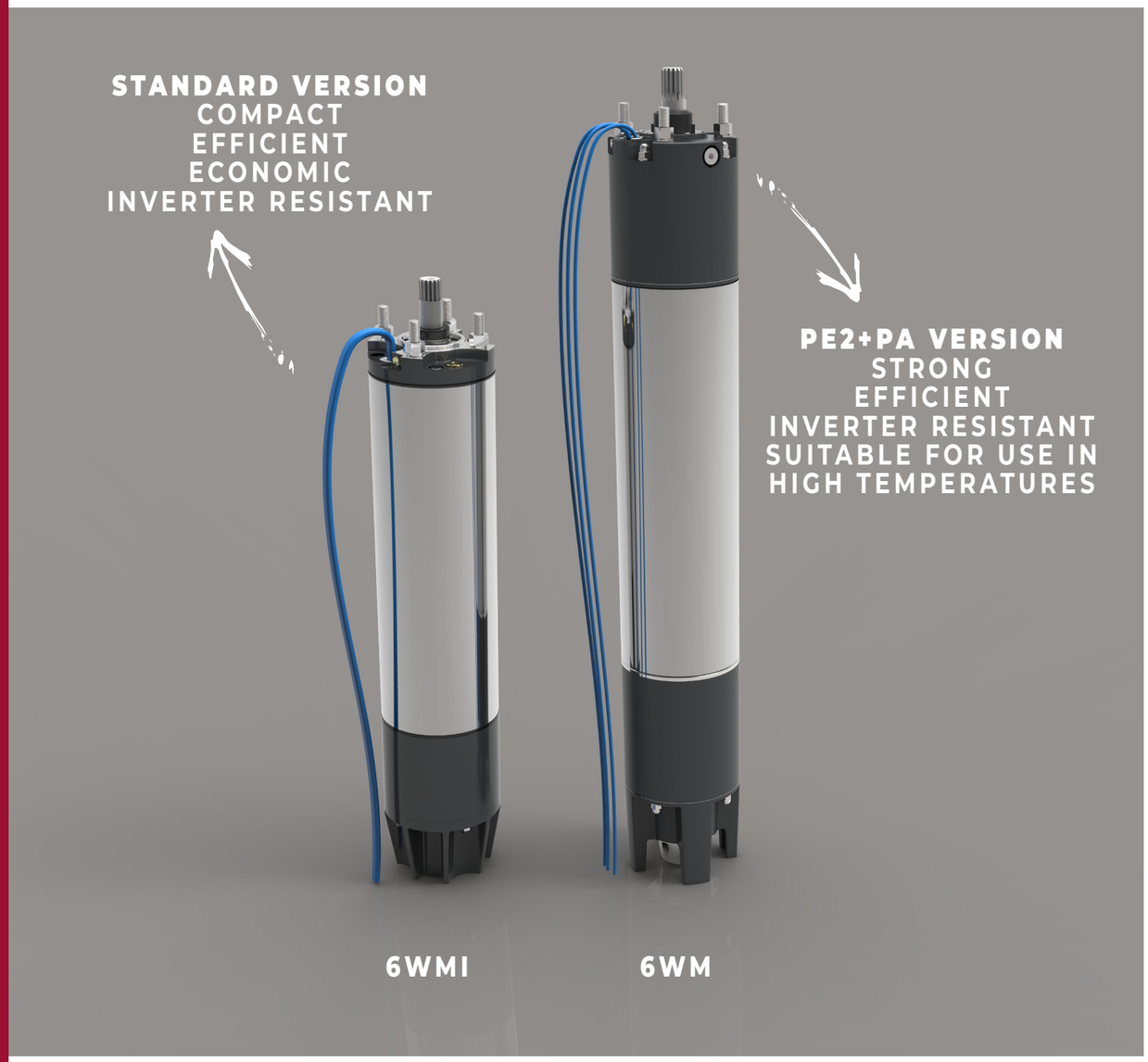

303139
Drinking Water
NSF/ANSI/CAN 372
ONLY

## ELECTRICAL DATA 4WMU2W - 60Hz

| Type | $P_2$ [Hp] | $P_2$ [kW] | Voltage [V] | S.F. | Ph | FULL LOAD AMPS $I_n$ [A] | FULL S.F. AMPS $I_{MAX}$ [A] | rpm | η [%] | Capacitor [µF] | Thrust Load [lbf] | Thrust Load [N] | Length A [mm] | Length A [in] | Weight [kg] | Weight [lb] | Cable Length [m] | Cable Length [ft] | Cable Section [AWG] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Single-phase 2-wire PSC | | | | | | | | | | | | | | | | | | | |
| 4WMU2W-S050 | 1/2 | 0.37 | 115 | 1.6 | 1 | 8.4 | 10.5 | 3450 | 52 | 36 | 450 | 2000 | 357 | 14.1 | 10.7 | 23.6 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU2W-S050 | 1/2 | 0.37 | 230 | 1.6 | 1 | 4 | 4.8 | 3450 | 54 | 27 | 450 | 2000 | 357 | 14.1 | 10.7 | 23.6 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU2W-S075 | 3/4 | 0.55 | 115 | 1.5 | 1 | 9.8 | 10.4 | 3450 | 61 | 36 | 450 | 2000 | 377 | 14.8 | 11.3 | 24.9 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU2W-S075 | 3/4 | 0.55 | 230 | 1.5 | 1 | 4.8 | 6 | 3450 | 61 | 27 | 450 | 2000 | 377 | 14.8 | 11.3 | 24.9 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU2W-S100 | 1 | 0.75 | 230 | 1.4 | 1 | 6.2 | 7.6 | 3450 | 61 | 36 | 700 | 3000 | 397 | 15.6 | 11.9 | 26.2 | 1.7 | 5 1/2 | 4 x 14 |
| 4WMU2W-S150 | 1.5 | 1.1 | 230 | 1.3 | 1 | 8.1 | 9.6 | 3450 | 62 | 36 | 700 | 3000 | 422 | 16.6 | 12.7 | 28.0 | 1.7 | 5 1/2 | 4 x 14 |

# 6WMI/6WM

50 Hz - 60 Hz




## 6" REWINDABLE WATER FILLED SUBMERSIBLE MOTORS



## TECHNICAL SPECIFICATIONS

**REWINDABLE MOTORS**
DESIGNED TO BE EASILY REPAIRABLE

**MOTOR/PUMP FLANGE**
6" NEMA STANDARD

**POWERS**
Three-phase: from 5,5 to 60 Hp

**VOLTAGE**
Three-phase: 230;400 V / 50 Hz - 220;380;460 V / 60Hz

**THRUST LOAD**
Refer to electrical data charts (page 116 - 117)

**COLLEGAMENTO**
D.O.L.
Y/Δ

## CONSTRUCTION FEATURES

**STATOR** specifically developed to achieve maximum electrical yield. Covered by an AISI 304 stainless steel sleeve. Windings are asynchronous-type and are made of cooper wire with PPC (6WMI) insulation, or PE2+PA (6WM) insulation suggested for high temperatures and voltage surges. Both versions are suitable for use with inverter.

**POWER CABLE**, ensures perfect sealing in the most critical conditions. Of type:
- PVC (6WMI);
- EPR (6WM), which complies with all major standards on the use in drinking water (KTW, ACS, WRAS).

**FILLING LIQUID** composed of a mixture of water and propylene glycol to ensure adequate lubrication of the thrust bearing system together with the ability to lower the freezing point when stored in very cold places.

**UPPER AND LOWER BRACKET** made in GS400 spheroidal cast iron with cataphoresis treatment, which gives great resistance to water impacts and corrosion. 6WM version fully made in 316 stainless steel available upon request.

**MECHANICAL SEAL** made in SIC-SIC, silicon-silicon carbide.

**SHAFT** completely made in AISI 431 stainless steel, without welding. It is ground along the entire axis thus giving the rotor such a concentricity to ensure perfect linearity. A shaft free from vibration is obtained thanks to balancing. Led by wear-resistant graphite bushing bearings. The 6WM version fully made in 316 stainless steel is equipped with shaft projection made in DUPLEX.

**THRUST BEARING SYSTEM** bidirectional Michell-type, with pads in treated steel and supported by a disk in resin compound fibres and self-lubricating additives, totally ecological.

**100% TESTED**, all motors are tested at the end of the line.

## VERSIONS UPON REQUEST

Different thrust load
Different voltage
PT100 temperature sensor
Motor fully made in 316 stainless steel (only for 6WM version)

## OPERTATING LIMITS

**DEGREE OF PROTECTION**
IP 68

**INSULATION CLASS**
PPC (6WMI): Y
PE2 + PA (6WM): A

**VOLTAGE TOLERANCE**
-10% / +10%

**PUMPED LIQUID TEMPERATURE**
PPC (6WMI): 0°C – 35°C
PE2 + PA (6WM): 0°C – 60°C

**MIN. COOLING FLOW**
0,1 m/s

**MAX. STARTS / HOUR**
10

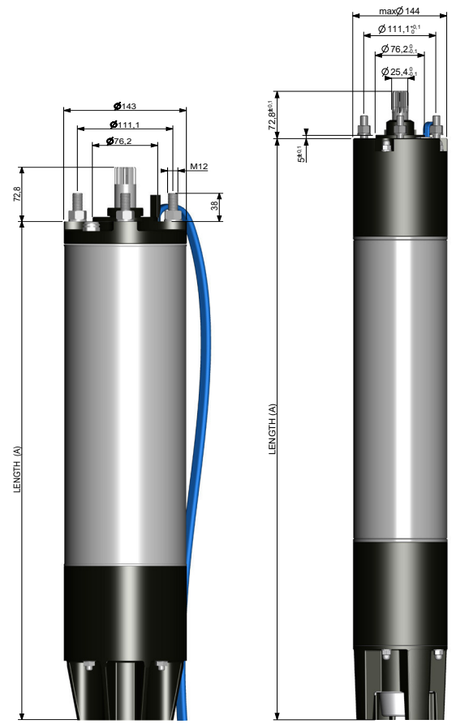
**MOUNTING**
Vertical (Horizontal up to 20 Hp)

**MAX. IMMERSION DEPTH**
350 m

## ACCESSORIES *refer to page 147*

Different cable lengths
Control panels *E.S.P.* (up to 15 Hp)
PT100 temperature sensor

## DIMENSIONS



# 6WMI: STANDARD VERSION

## ELECTRICAL DATA 6WMI - 50Hz

| Type | Voltage [V] | $P_2$ [Hp] | $P_2$ [kW] | Ph | $I_n$ [A] | $I_{avv}$ [A] | rpm | cos φ | η [%] | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6WMI-T0550 | 230 | 5,5 | 4 | 3 | 17,6 | 61,6 | 2885 | 0,80 | 74,7 | 18.000 | 690 | 42 | 3,5 | 2,5 x3 |
| | 380 | | | | 10,2 | 35,7 | | | | | | | | |
| | 400 | | | | 10,3 | 36,05 | 2895 | 0,75 | 74,8 | | | | | |
| 6WMI-T0750 | 230 | 7,5 | 5,5 | 3 | 23,5 | 94 | 2880 | 0,73 | 77,5 | | 735 | 46,2 | | |
| | 380 | | | | 13,6 | 54,4 | | | | | | | | |
| | 400 | | | | 13,7 | 54,8 | 2890 | 0,75 | 77,2 | | | | | |
| 6WMI-T1000 | 230 | 10 | 7,5 | 3 | 30,6 | 156,06 | 2875 | 0,82 | 78,6 | | 780 | 51,2 | | |
| | 380 | | | | 17,7 | 90,27 | | | | | | | | |
| | 400 | | | | 17,9 | 91,29 | 2890 | 0,77 | 78,4 | | | | | |
| 6WMI-T1250 | 230 | 12,5 | 9,2 | 3 | 37,0 | 185 | 2875 | 0,82 | 79,8 | 25.000 | 810 | 54,6 | | |
| | 380 | | | | 21,4 | 107 | | | | | | | | |
| | 400 | | | | 21,5 | 105,35 | 2890 | 0,77 | 80,2 | | | | | |
| 6WMI-T1500 | 230 | 15 | 11 | 3 | 43,7 | 235,98 | 2870 | 0,82 | 80,7 | | 840 | 56,8 | | 4 x 3 |
| | 380 | | | | 25,3 | 136,62 | | | | | | | | |
| | 400 | | | | 25,6 | 138,24 | 2890 | 0,77 | | | | | | |
| 6WMI-T2000 | 230 | 20 | 15 | 3 | 59,6 | 298 | 2870 | 0,83 | 80,1 | | 930 | 67,2 | | |
| | 380 | | | | 34,5 | 172,5 | | | | | | | | |
| | 400 | | | | 34,9 | 174,5 | 2890 | 0,78 | | | | | | |
| 6WMI-T2500 | 230 | 25 | 18,5 | 3 | 73,6 | 345,92 | 2870 | 0,81 | 81,8 | | 1015 | 76 | | |
| | 380 | | | | 42,6 | 200,22 | | | | | | | | |
| | 400 | | | | 43,5 | 204,45 | 2885 | 0,75 | 81,9 | | | | | |
| 6WMI-T3000 | 230 | 30 | 22 | 3 | 86,4 | 432 | 2860 | 0,82 | 81,4 | 28.000 | 1060 | 80,9 | | 6 x 3 |
| | 380 | | | | 50,0 | 250 | | | | | | | | |
| | 400 | | | | 50,3 | 251,5 | 2880 | 0,77 | 81,9 | | | | | |
| 6WMI-T3500 | 380 | 35 | 26 | 3 | 58,6 | 281,28 | 2860 | 0,81 | 83,2 | | 1165 | 91,6 | | |
| | 400 | | | | 59,2 | 284,16 | 2880 | 0,76 | 83,4 | | | | | |
| 6WMI-T4000 | 380 | 40 | 30 | 3 | 68,8 | 392,16 | 2870 | 0,80 | 83,3 | | 1275 | 103 | 4,5 | 10 x 3 |
| | 400 | | | | 69,7 | 397,29 | 2885 | 0,75 | | | | | | |
| 6WMI-T5000 | 380 | 50 | 37 | 3 | 84,5 | 507 | 2860 | 0,81 | 82,1 | | 1365 | 113 | | |
| | 400 | | | | 85,2 | 511,2 | 2875 | 0,76 | 82,4 | | | | | |

## ELECTRICAL DATA 6WMI - 60Hz

| Type | Voltage [V] | $P_2$ [Hp] | $P_2$ [kW] | Ph | S.F. | $I_n$ [A] | $I_{max}$ [A] | $I_{avv}$ [A] | rpm | cos φ | η [%] | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6WMI-T0550 | 220 | 5,5 | 4 | 3 | 1,15 | 18,9 | 20,7 | 75,6 | 3495 | 0,76 | 73,9 | 18.000 | 690 | 42 | 3,5 | 2,5 x 3 |
| | 380 | | | | | 10,9 | 12 | 43,6 | | | | | | | | |
| | 460 | | | | | 9 | 9,9 | 36 | | | | | | | | |
| 6WMI-T0750 | 220 | 7,5 | 5,5 | 3 | 1,15 | 24,7 | 27,6 | 113,62 | 3490 | 0,75 | 78 | | 735 | 46,2 | | |
| | 380 | | | | | 14,3 | 16 | 65,78 | | | | | | | | |
| | 460 | | | | | 11,8 | 13,2 | 54,28 | | | | | | | | |
| 6WMI-T1000 | 220 | 10 | 7,5 | 3 | 1,15 | 32,2 | 35,6 | 164,22 | 3490 | 0,77 | 79,4 | | 780 | 51,2 | | |
| | 380 | | | | | 18,7 | 20,6 | 95,37 | | | | | | | | |
| | 460 | | | | | 15,4 | 17 | 78,54 | | | | | | | | |
| 6WMI-T1250 | 220 | 12,5 | 9,2 | 3 | 1,15 | 38,5 | 43,1 | 221,38 | 3480 | 0,79 | 80,5 | 25.000 | 810 | 54,6 | | |
| | 380 | | | | | 22,3 | 25 | 128,23 | | | | | | | | |
| | 460 | | | | | 18,4 | 20,6 | 105,8 | | | | | | | | |
| 6WMI-T1500 | 220 | 15 | 11 | 3 | 1,15 | 45,2 | 51,5 | 280,24 | 3480 | 0,79 | 81,4 | | 840 | 56,8 | | 4 x 3 |
| | 380 | | | | | 26,2 | 29,8 | 162,44 | | | | | | | | |
| | 460 | | | | | 21,6 | 24,6 | 133,92 | | | | | | | | |
| 6WMI-T2000 | 220 | 20 | 15 | 3 | 1,15 | 61,9 | 69,9 | 355,93 | 3480 | 0,79 | 80,5 | | 930 | 67,2 | | |
| | 380 | | | | | 35,9 | 40,5 | 206,43 | | | | | | | | |
| | 460 | | | | | 29,6 | 33,4 | 170,2 | | | | | | | | |
| 6WMI-T2500 | 220 | 25 | 18,5 | 3 | 1,15 | 77,4 | 86,8 | 417,96 | 3475 | 0,76 | 82,6 | | 1015 | 76 | | |
| | 380 | | | | | 44,8 | 50,3 | 241,92 | | | | | | | | |
| | 460 | | | | | 37 | 41,5 | 199,8 | | | | | | | | |
| 6WMI-T3000 | 220 | 30 | 22 | 3 | 1,15 | 90,4 | 100,8 | 519,8 | 3470 | 0,79 | 81,4 | 28.000 | 1060 | 80,9 | | 6 x 3 |
| | 380 | | | | | 52,3 | 58,4 | 300,73 | | | | | | | | |
| | 460 | | | | | 43,2 | 48,2 | 248,4 | | | | | | | | |
| 6WMI-T4000 | 380 | 40 | 30 | 3 | 1,15 | 72,2 | 80,3 | 472,91 | 3475 | 0,76 | 83,7 | | 1275 | 113 | 4,5 | 10 x 3 |
| | 460 | | | | | 59,6 | 66,3 | 390,38 | | | | | | | | |
| 6WMI-T5000 | 380 | 50 | 37 | 3 | 1,15 | 88,5 | 99,4 | 610,65 | 3465 | 0,77 | 82,5 | | 1365 | 113 | | |
| | 460 | | | | | 73,1 | 82,1 | 504,39 | | | | | | | | |



# 6WM: PE2+PA VERSION

## ELECTRICAL DATA 6WM - 50Hz

| Type | Voltage [V] | $P_2$ [Hp] | $P_2$ [kW] | Ph | $I_n$ [A] | $I_{avv}$ [A] | rpm | cos φ | η [%] | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6WM-T0550 | 230 | 5,5 | 4 | 3 | 16,8 | 59 | 2852 | 0,8 | 74,8 | 25.000 | 597 | 44 | 3,5 | 4 x 3 |
| | 380 | | | | 10 | 35 | 2839 | 0,81 | 74,4 | | | | | |
| | 400 | | | | 9,9 | 35 | 2852 | 0,8 | 74,8 | | | | | |
| 6WM-T0750 | 230 | 7,5 | 5,5 | 3 | 23 | 81 | 2839 | 0,8 | 76,7 | | 627 | 46 | | 4 x 3 |
| | 380 | | | | 13,2 | 47 | 2857 | 0,82 | 75,9 | | | | | |
| | 400 | | | | 13 | 46 | 2839 | 0,8 | 76,7 | | | | | |
| 6WM-T1000 | 230 | 10 | 7,5 | 3 | 30 | 105 | 2837 | 0,81 | 78,4 | | 667 | 50 | | 4 x 3 |
| | 380 | | | | 17,4 | 61 | 2817 | 0,83 | 78 | | | | | |
| | 400 | | | | 17 | 60 | 2837 | 0,81 | 78,4 | | | | | |
| 6WM-T1250 | 230 | 12,5 | 9,2 | 3 | 36 | 126 | 2862 | 0,82 | 79,1 | | 697 | 54 | | 4 x 3 |
| | 380 | | | | 21 | 74 | 2846 | 0,84 | 78,8 | | | | | |
| | 400 | | | | 20 | 74 | 2862 | 0,82 | 79,1 | | | | | |
| 6WM-T1500 | 230 | 15 | 11 | 3 | 41 | 144 | 2841 | 0,84 | 80,8 | | 767 | 61 | | 6 x 3 |
| | 380 | | | | 25 | 88 | 2826 | 0,85 | 79,3 | | | | | 4 x 3 |
| | 400 | | | | 24 | 84 | 2841 | 0,84 | 80,8 | | | | | |
| 6WM-T2000 | 230 | 20 | 15 | 3 | 56 | 196 | 2836 | 0,83 | 81,6 | | 827 | 68 | | 10 x 3 |
| | 380 | | | | 34 | 116 | 2814 | 0,84 | 80,7 | | | | | 4 x 3 |
| | 400 | | | | 33 | 116 | 2836 | 0,83 | 81,6 | | | | | |
| 6WM-T2500 | 230 | 25 | 18,5 | 3 | 69 | 242 | 2853 | 0,83 | 81,9 | 35.000 | 897 | 75 | | 10 x 3 |
| | 380 | | | | 41 | 147 | 2840 | 0,84 | 81,3 | | | | | 6 x 3 |
| | 400 | | | | 40 | 140 | 2853 | 0,83 | 81,9 | | | | | |
| 6WM-T3000 | 230 | 30 | 22 | 3 | 81 | 284 | 2868 | 0,82 | 83,5 | | 967 | 82 | | 10 x 3 |
| | 380 | | | | 48 | 168 | 2846 | 0,84 | 82 | | | | | 6 x 3 |
| | 400 | | | | 47 | 165 | 2868 | 0,82 | 83,5 | | | | | |
| 6WM-T3500 | 380 | 35 | 26 | 3 | 56 | 196 | 2840 | 0,85 | 83 | | 1027 | 89 | | 6 x 3 |
| | 400 | | | | 54 | 189 | 2864 | 0,82 | 84,5 | | | | | |
| 6WM-T4000 | 380 | 40 | 30 | 3 | 64 | 224 | 2847 | 0,84 | 84,2 | 45.000 | 1167 | 103 | 4,5 | 10 x 3 |
| | 400 | | | | 62 | 217 | 2860 | 0,82 | 85 | | | | | |
| 6WM-T5000 | 380 | 50 | 37 | 3 | 80 | 280 | 2844 | 0,83 | 82,9 | | 1297 | 116 | | 10 x 3 |
| | 400 | | | | 79 | 277 | 2856 | 0,81 | 83,5 | | | | | |
| 6WM-T6000 | 380 | 60 | 45 | 3 | 100 | 350 | 2804 | 0,85 | 80,2 | | 1400 | 121 | | 10 x 3 |
| | 400 | | | | 98 | 343 | 2827 | 0,83 | 80,5 | | | | | |

## ELECTRICAL DATA 6WM - 60Hz

| Type | Voltage [V] | $P_2$ [Hp] | $P_2$ [kW] | Ph | S.F. | $I_n$ [A] | $I_{max}$ [A] | $I_{avv}$ [A] | rpm | cos φ | η [%] | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6WM-T0550 | 220 | 5,5 | 4 | 3 | 1,15 | 17,5 | 19,3 | 62 | 3452 | 0,8 | 74,8 | 25.000 | 597 | 44 | 3,5 | 4 x 3 |
| | 380 | | | | | 10,2 | 11,2 | 36 | 3452 | 0,8 | 74,8 | | | | | |
| | 460 | | | | | 8,9 | 9,8 | 32 | 3468 | 0,78 | 74,5 | | | | | |
| 6WM-T0750 | 220 | 7,5 | 5,5 | 3 | 1,15 | 24 | 26,4 | 84 | 3439 | 0,8 | 76,7 | | 627 | 46 | | 4 x 3 |
| | 380 | | | | | 13,6 | 15 | 48 | 3439 | 0,8 | 76,7 | | | | | |
| | 460 | | | | | 12,2 | 13,4 | 43 | 3477 | 0,79 | 75,8 | | | | | |
| 6WM-T1000 | 220 | 10 | 7,5 | 3 | 1,15 | 31 | 34,1 | 109 | 3437 | 0,76 | 78,4 | | 667 | 50 | | 4 x 3 |
| | 380 | | | | | 17,9 | 19,7 | 63 | 3437 | 0,76 | 78,4 | | | | | |
| | 460 | | | | | 14,8 | 16,3 | 52 | 3437 | 0,76 | 78,4 | | | | | |
| 6WM-T1250 | 220 | 12,5 | 9,2 | 3 | 1,15 | 38 | 41,8 | 133 | 3462 | 0,77 | 79,1 | | 697 | 54 | | 4 x 3 |
| | 380 | | | | | 22 | 24,2 | 77 | 3462 | 0,77 | 79,1 | | | | | |
| | 460 | | | | | 17,8 | 19,6 | 63 | 3462 | 0,77 | 79,1 | | | | | |
| 6WM-T1500 | 220 | 15 | 11 | 3 | 1,15 | 43 | 47,3 | 151 | 3441 | 0,8 | 80,8 | | 767 | 61 | | 6 x 3 |
| | 380 | | | | | 25 | 27,5 | 88 | 3441 | 0,8 | 80,8 | | | | | 4 x 3 |
| | 460 | | | | | 21 | 23,1 | 74 | 3441 | 0,8 | 80,8 | | | | | |
| 6WM-T2000 | 220 | 20 | 15 | 3 | 1,15 | 59 | 64,9 | 207 | 3436 | 0,77 | 81,6 | | 827 | 68 | | 10 x 3 |
| | 380 | | | | | 34 | 37,4 | 119 | 3436 | 0,77 | 81,6 | | | | | 4 x 3 |
| | 460 | | | | | 28 | 30,8 | 98 | 3436 | 0,77 | 81,6 | | | | | |
| 6WM-T2500 | 220 | 25 | 18,5 | 3 | 1,15 | 72 | 79,2 | 252 | 3453 | 0,78 | 81,9 | 35.000 | 897 | 75 | | 10 x 3 |
| | 380 | | | | | 42 | 46,2 | 147 | 3453 | 0,78 | 81,9 | | | | | 6 x 3 |
| | 460 | | | | | 25 | 27,5 | 88 | 3453 | 0,78 | 81,9 | | | | | |
| 6WM-T3000 | 220 | 30 | 22 | 3 | 1,15 | 85 | 93,5 | 298 | 3468 | 0,75 | 83,5 | | 967 | 82 | | 10 x 3 |
| | 380 | | | | | 49 | 53,9 | 172 | 3468 | 0,75 | 83,5 | | | | | 6 x 3 |
| | 460 | | | | | 41 | 45,1 | 144 | 3468 | 0,75 | 83,5 | | | | | |
| 6WM-T4000 | 380 | 40 | 30 | 3 | 1,15 | 66 | 72,6 | 231 | 3460 | 0,77 | 85 | | 1167 | 103 | | 10 x 3 |
| | 460 | | | | | 54 | 59,4 | 189 | 3460 | 0,77 | 85 | | | | | |
| 6WM-T5000 | 380 | 50 | 37 | 3 | 1,15 | 84 | 92,4 | 294 | 3456 | 0,75 | 83,5 | 45.000 | 1297 | 116 | 4,5 | 10 x 3 |
| | 460 | | | | | 69 | 75,9 | 242 | 3456 | 0,75 | 83,5 | | | | | |
| 6WM-T6000 | 380 | 60 | 45 | 3 | 1,15 | 103 | 113,3 | 361 | 3427 | 0,76 | 80,5 | | 1400 | 121 | | 10 x 3 |
| | 460 | | | | | 85 | 93,5 | 298 | 3427 | 0,76 | 80,5 | | | | | |




english

# 6WMI / 6WM

## VERSIONS AVAILABLE



6WMI: D.O.L. VERSION



6WMI: λ/Δ VERSION



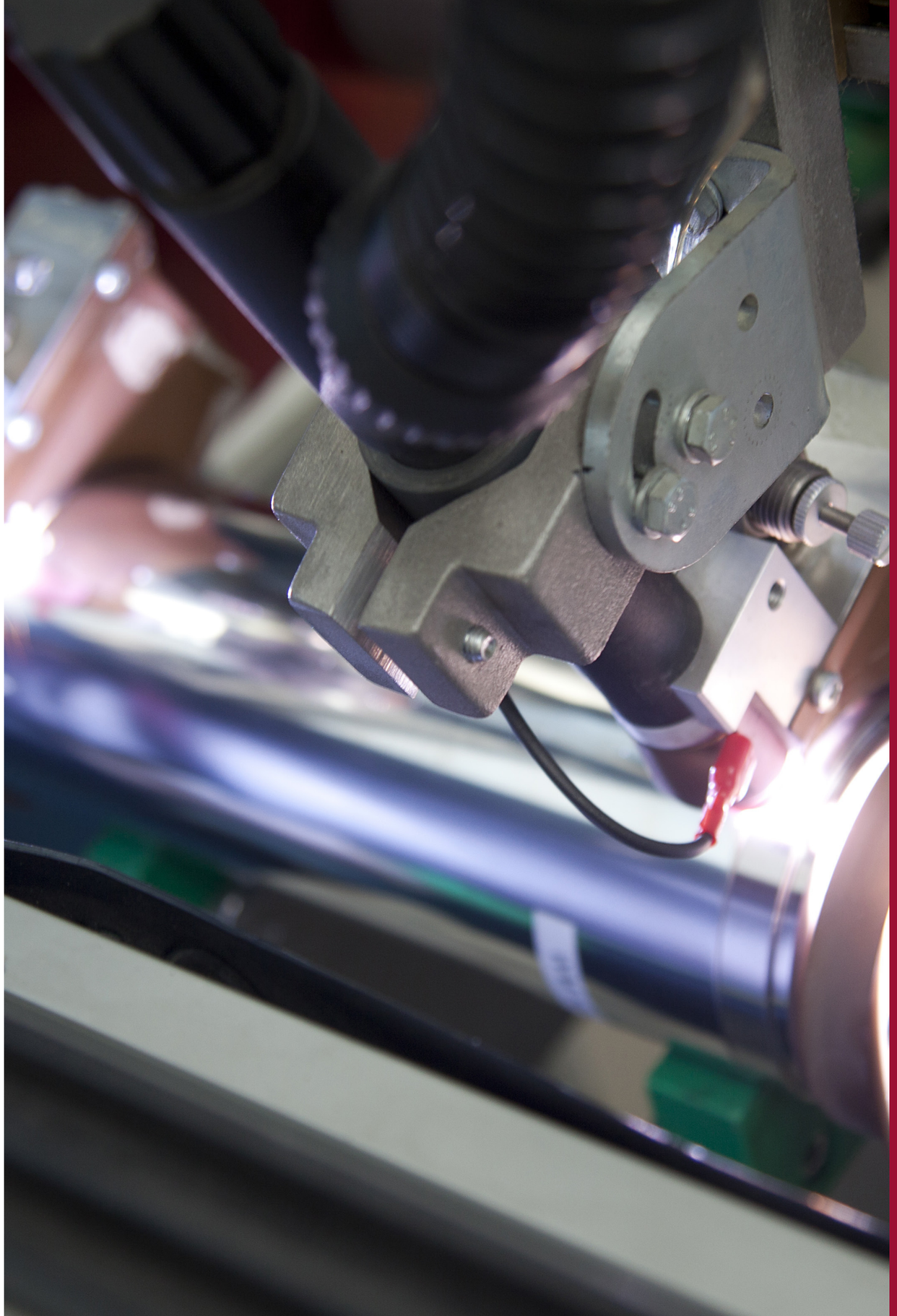
6WM: D.O.L. VERSION



6WM: λ/Δ VERSION



6WM: FULLY MADE IN 316 STAINLESS STEEL







english

# 8WM

## 50 Hz - 60 Hz



## 8” REWINDABLE WATER FILLED SUBMERSIBLE MOTORS



## TECHNICAL SPECIFICATIONS

**REWINDABLE MOTORS**
DESIGNED TO BE EASILY REPAIRABLE

**MOTOR/PUMP FLANGE**
8” NEMA STANDARD

**POWERS**
Three-phase: from 30 to 150 Hp

**VOLTAGE**
Three-phase: 230;380;400;415;500 V / 50 Hz
220;380;440;460;575 v / 60 Hz

**THRUST LOAD**
From 30 to 60 Hp: 50000 N
From 70 to 85 Hp: 60000 N
From 90 to 150 Hp: 70000 N

**COLLEGAMENTO**
D.O.L.
⅄/Δ

## CONSTRUCTION FEATURES

**STATOR** specifically developed to achieve maximum electrical yield. Covered by an AISI 304 stainless steel sleeve. Windings are asynchronous-type and are made of cooper wire with PVC insulation, or copper wire with PE2+PA insulation, which is “inverter resistant” and suggested for high temperatures and voltage surges.

**POWER CABLE EPR-TYPE,** which ensures perfect sealing in the most critical conditions. It complies with all major standards on the use in drinking water (ACS, WRAS).

**FILLING LIQUID** composed of a mixture of water and propylene glycol to ensure adequate lubrication of the thrust bearing system together with the ability to lower the freezing point when stored in very cold places.

**UPPER AND LOWER BRACKET** made in GS400 spheroidal cast iron with cataphoresis treatment, which gives great resistance to water impacts and corrosion. Version fully made in 316 stainless steel available upon request.

**MECHANICAL SEAL** made in SIC-SIC, silicon-silicon carbide.

**SHAFT** completely made in AISI 431 stainless steel, without welding. It is ground along the entire axis thus giving the rotor such a concentricity to ensure perfect linearity. A shaft free from vibration is obtained thanks to balancing. Led by wear-resistant graphite bushing bearings. The 8WM version fully made in 316 stainless steel is equipped with shaft projection made in DUPLEX.

**THRUST BEARING SYSTEM** bidirectional Michell-type, with pads in treated steel and supported by a disk in resin compound fibres and self-lubricating additives, totally ecological.

**100% TESTED**, all motors are tested at the end of the line.

## VERSIONS UPON REQUEST

Different thrust load
Different voltage
PT100 temperature sensor
PVC o PE2 + PA insulation windings
Fully made in 316 stainless steel

## OPERTATING LIMITS

**DEGREE OF PROTECTION**
IP 68

**INSULATION CLASS**
PVC: Y
PE2 + PA: A

**VOLTAGE TOLERANCE**
-10% / +10%

**PUMPED LIQUID TEMPERATURE**
PVC: 0°C – 35°C
PE2 + PA: 0°C – 60°C

**MIN. COOLING FLOW**
0,1 m/s

**MAX. STARTS / HOUR**
10

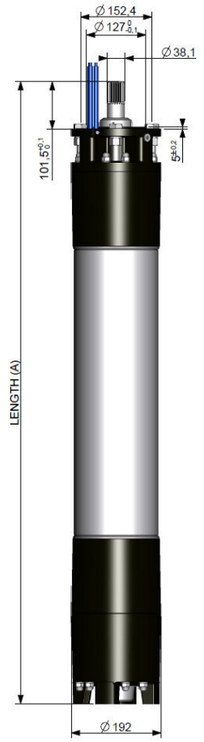
**MOUNTING**
Vertical

**MAX. IMMERSION DEPTH**
350 m

## ACCESSORIES

Different cable lengths
PT100 temperature sensor

## DIMENSIONS



## ELECTRICAL DATA 8WM - 50Hz

| Type | Voltage [V] | $P_2$ [Hp] | $P_2$ [kW] | Ph | $I_n$ [A] | $I_{avv}$ [A] | rpm | cos φ | η [%] | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 230 | | | | 82 | 328 | 2901 | 0,83 | 81,5 | | | | | |
| | 380 | | | | 48 | 192 | 2892 | 0,84 | 81 | | | | | |
| 8WM-T0300 | 400 | 30 | 22 | 3 | 47 | 188 | 2901 | 0,83 | 81,5 | | 978,5 | 132 | | 10 x 3 |
| | 415 | | | | 46 | 184 | 2911 | 0,81 | 81,8 | | | | | |
| | 500 | | | | 38 | 152 | 2892 | 0,84 | 81 | | | | | |
| | 230 | | | | 106 | 424 | 2886 | 0,85 | 83,9 | | | | | 16 x 3 |
| | 380 | | | | 63 | 252 | 2876 | 0,86 | 82,9 | | | | | |
| 8WM-T0400 | 400 | 40 | 30 | 3 | 61 | 244 | 2886 | 0,85 | 83,9 | | 1048,5 | 138 | | 10 x 3 |
| | 415 | | | | 59 | 236 | 2898 | 0,84 | 84,4 | | | | | |
| | 500 | | | | 49 | 196 | 2876 | 0,86 | 82,9 | 50.000 | | | | |
| | 230 | | | | 131 | 524 | 2890 | 0,84 | 84,8 | | | | | 25 x 3 |
| | 380 | | | | 77 | 308 | 2881 | 0,85 | 84,4 | | | | | |
| 8WM-T0500 | 400 | 50 | 37 | 3 | 76 | 304 | 2890 | 0,84 | 84,8 | | 1118,5 | 153 | | 16 x 3 |
| | 415 | | | | 74 | 396 | 2930 | 0,82 | 85,1 | | | | | |
| | 500 | | | | 60 | 240 | 2881 | 0,85 | 84,4 | | | | | |
| | 230 | | | | 157 | 628 | 2900 | 0,84 | 86 | | | | | 25 x 3 |
| | 380 | | | | 93 | 372 | 2888 | 0,85 | 85,1 | | | | | |
| 8WM-T0600 | 400 | 60 | 45 | 3 | 91 | 364 | 2900 | 0,84 | 86 | | 1228,5 | 171 | | 16 x 3 |
| | 415 | | | | 89 | 356 | 2909 | 0,81 | 86,1 | | | | | |
| | 500 | | | | 72 | 288 | 2888 | 0,85 | 85,1 | | | | | |
| | 230 | | | | 178 | 712 | 2879 | 0,85 | 84,9 | | | | | 25 x 3 |
| | 380 | | | | 105 | 420 | 2869 | 0,86 | 84,1 | | | | | |
| 8WM-T0700 | 400 | 70 | 51 | 3 | 103 | 412 | 2879 | 0,85 | 84,9 | | 1228,5 | 172 | 3,5 | 16 x 3 |
| | 415 | | | | 100 | 400 | 2892 | 0,83 | 85,1 | | | | | |
| | 500 | | | | 82 | 328 | 2869 | 0,86 | 84,1 | | | | | |
| | 230 | | | | 188 | 752 | 2890 | 0,85 | 86,7 | | | | | 25 x 3 |
| | 380 | | | | 110 | 440 | 2881 | 0,86 | 86,5 | | | | | |
| 8WM-T0750 | 400 | 75 | 55 | 3 | 107 | 428 | 2890 | 0,85 | 86,7 | | 1348,5 | 184 | | 16 x 3 |
| | 415 | | | | 105 | 420 | 2902 | 0,84 | 87,1 | 60.000 | | | | |
| | 500 | | | | 86 | 344 | 2881 | 0,86 | 86,5 | | | | | |
| | 380 | | | | 120 | 480 | 2888 | 0,85 | 86,2 | | | | | |
| 8WM-T0800 | 400 | 80 | 59 | 3 | 116 | 464 | 2898 | 0,83 | 87,5 | | 1348,5 | 184 | | 16 x 3 |
| | 415 | | | | 115 | 460 | 2909 | 0,81 | 87,4 | | | | | |
| | 500 | | | | 93 | 372 | 2888 | 0,85 | 86,2 | | | | | |
| | 380 | | | | 123 | 492 | 2885 | 0,85 | 87,8 | | | | | |
| 8WM-T0850 | 400 | 85 | 62 | 3 | 120 | 480 | 2892 | 0,84 | 88,6 | | 1348,5 | 184 | | 16 x 3 |
| | 415 | | | | 118 | 472 | 2906 | 0,82 | 88,8 | | | | | |
| | 500 | | | | 96 | 384 | 2885 | 0,85 | 87,8 | | | | | |
| | 380 | | | | 133 | 532 | 2873 | 0,85 | 86,2 | | | | | |
| 8WM-T0900 | 400 | 90 | 66 | 3 | 129 | 516 | 2883 | 0,84 | 87,1 | | 1418,5 | 205 | | 25 x 3 |
| | 415 | | | | 126 | 504 | 2896 | 0,83 | 87,4 | | | | | |
| | 500 | | | | 104 | 416 | 2873 | 0,85 | 86,2 | | | | | |
| | 380 | | | | 151 | 604 | 2882 | 0,82 | 86,4 | | | | | |
| 8WM-T1000 | 400 | 100 | 75 | 3 | 146 | 584 | 2890 | 0,81 | 86,9 | | 1608,5 | 236 | | 25 x 3 |
| | 415 | | | | 142 | 568 | 2903 | 0,8 | 87,4 | | | | | |
| | 500 | | | | 117 | 468 | 2882 | 0,82 | 86,4 | 70.000 | | | | |
| | 380 | | | | 186 | 744 | 2887 | 0,78 | 87,6 | | | | | |
| 8WM-T1250 | 400 | 125 | 92 | 3 | 181 | 724 | 2900 | 0,77 | 88,5 | | 1678,5 | 238 | 4,5 | 25 x 3 |
| | 415 | | | | 180 | 720 | 2907 | 0,75 | 88,4 | | | | | |
| | 500 | | | | 145 | 580 | 2887 | 0,78 | 87,6 | | | | | |
| | 380 | | | | 228 | 912 | 2890 | 0,75 | 86 | | | | | |
| 8WM-T1500 | 400 | 150 | 110 | 3 | 226 | 904 | 2899 | 0,74 | 86,3 | | 1788,5 | 265 | | 25 x 3 |
| | 415 | | | | 227 | 908 | 2911 | 0,7 | 86,3 | | | | | |
| | 500 | | | | 178 | 712 | 2890 | 0,75 | 86 | | | | | |

## ELECTRICAL DATA 8WM -60Hz

| Type | Voltage [V] | $P_2$ [Hp] | $P_2$ [kW] | Ph | $I_n$ [A] | $I_{max}$ [A] | $I_{avv}$ [A] | rpm | cos φ | η [%] | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 220 | | | | 85 | 93,5 | 340 | 3501 | 0,83 | 81,5 | | | | | |
| | 380 | | | | 50 | 55 | 200 | 3501 | 0,83 | 81,5 | | | | | |
| 8WM-T0300 | 440 | 30 | 22 | 3 | 43 | 47,3 | 172 | 3492 | 0,84 | 81 | | 978,5 | 132 | | 10 x 3 |
| | 460 | | | | 41 | 45,1 | 164 | 3501 | 0,83 | 81,5 | | | | | |
| | 575 | | | | 33 | 36,3 | 132 | 3501 | 0,83 | 81,5 | | | | | |
| | 220 | | | | 111 | 122,1 | 444 | 3486 | 0,85 | 83,9 | | | | | 16 x 3 |
| | 380 | | | | 64 | 70,4 | 256 | 3486 | 0,85 | 83,9 | | | | | |
| 8WM-T0400 | 440 | 40 | 30 | 3 | 56 | 61,6 | 224 | 3476 | 0,86 | 82,9 | | 1048,5 | 138 | | 10 x 3 |
| | 460 | | | | 53 | 58,3 | 212 | 3486 | 0,85 | 83,9 | | | | | |
| | 575 | | | | 43 | 47,3 | 172 | 3486 | 0,85 | 83,9 | 50.000 | | | | |
| | 220 | | | | 164 | 180,4 | 656 | 3490 | 0,84 | 84,8 | | | | | 25 x 3 |
| | 380 | | | | 79 | 86,9 | 316 | 3490 | 0,84 | 84,8 | | | | | |
| 8WM-T0500 | 440 | 50 | 37 | 3 | 68 | 74,8 | 272 | 3481 | 0,85 | 84,4 | | 1118,5 | 153 | | 16 x 3 |
| | 460 | | | | 66 | 72,6 | 264 | 3490 | 0,84 | 84,8 | | | | | |
| | 575 | | | | 53 | 58,3 | 212 | 3490 | 0,84 | 84,8 | | | | | |
| | 220 | | | | 164 | 180,4 | 656 | 3500 | 0,84 | 86 | | | | | 25 x 3 |
| | 380 | | | | 95 | 104,5 | 380 | 3500 | 0,84 | 86 | | | | | |
| 8WM-T0600 | 440 | 60 | 45 | 3 | 82 | 90,2 | 328 | 3488 | 0,85 | 85,1 | | 1228,5 | 171 | | 16 x 3 |
| | 460 | | | | 79 | 86,9 | 316 | 3500 | 0,84 | 86 | | | | | |
| | 575 | | | | 63 | 69,3 | 252 | 3500 | 0,84 | 86 | | | | | |
| | 220 | | | | 186 | 204,6 | 744 | 3479 | 0,85 | 84,9 | | | | | 25 x 3 |
| | 380 | | | | 108 | 118,8 | 432 | 3479 | 0,85 | 84,9 | | | | | |
| 8WM-T0700 | 440 | 70 | 51 | 3 | 93 | 102,3 | 372 | 3469 | 0,86 | 84,1 | | 1228,5 | 172 | 3,5 | 16 x 3 |
| | 460 | | | | 89 | 97,9 | 356 | 3479 | 0,85 | 84,9 | | | | | |
| | 575 | | | | 71 | 78,1 | 284 | 3479 | 0,85 | 84,9 | | | | | |
| | 220 | | | | 196 | 215,6 | 784 | 3490 | 0,85 | 86,7 | | | | | 25 x 3 |
| | 380 | | | | 114 | 125,4 | 456 | 3490 | 0,85 | 86,7 | | | | | |
| 8WM-T0750 | 440 | 75 | 55 | 3 | 97 | 106,7 | 388 | 3481 | 0,86 | 86,5 | | 1348,5 | 184 | | 16 x 3 |
| | 460 | | | | 94 | 103,4 | 376 | 3490 | 0,85 | 86,7 | 60.000 | | | | |
| | 575 | | | | 75 | 82,5 | 300 | 3490 | 0,85 | 86,7 | | | | | |
| | 380 | | | | 124 | 136,4 | 496 | 3498 | 0,83 | 87,5 | | | | | |
| 8WM-T0800 | 440 | 80 | 59 | 3 | 106 | 116,6 | 424 | 3488 | 0,85 | 86,2 | | 1348,5 | 184 | | 16 x 3 |
| | 460 | | | | 102 | 112,2 | 408 | 3498 | 0,83 | 87,5 | | | | | |
| | 575 | | | | 82 | 90,2 | 328 | 3498 | 0,83 | 87,5 | | | | | |
| | 380 | | | | 127 | 139,7 | 508 | 3492 | 0,84 | 88,6 | | | | | |
| 8WM-T0850 | 440 | 85 | 62 | 3 | 109 | 119,9 | 436 | 3485 | 0,85 | 87,6 | | 1348,5 | 184 | | 25 x 3 |
| | 460 | | | | 105 | 115,5 | 420 | 3492 | 0,84 | 88,6 | | | | | |
| | 575 | | | | 84 | 92,4 | 336 | 3492 | 0,84 | 88,6 | | | | | |
| | 380 | | | | 138 | 151,8 | 552 | 3483 | 0,84 | 87,1 | | | | | |
| 8WM-T0900 | 440 | 90 | 66 | 3 | 119 | 130,9 | 476 | 3473 | 0,85 | 86,2 | | 1418,5 | 205 | | 25 x 3 |
| | 460 | | | | 114 | 125,4 | 456 | 3483 | 0,84 | 87,1 | | | | | |
| | 575 | | | | 91 | 100,1 | 364 | 3483 | 0,84 | 87,1 | | | | | |
| | 380 | | | | 155 | 170,5 | 620 | 3490 | 0,85 | 86,9 | | | | | |
| 8WM-T1000 | 440 | 100 | 75 | 3 | 133 | 146,3 | 532 | 3482 | 0,86 | 86,4 | | 1608,5 | 236 | | 25 x 3 |
| | 460 | | | | 128 | 140,8 | 512 | 3490 | 0,85 | 86,9 | | | | | |
| | 575 | | | | 102 | 112,2 | 408 | 3490 | 0,85 | 86,9 | 70.000 | | | | |
| | 380 | | | | 191 | 210,1 | 764 | 3500 | 0,83 | 88,5 | | | | | |
| 8WM-T1250 | 440 | 125 | 92 | 3 | 165 | 181,5 | 660 | 3487 | 0,84 | 87,6 | | 1678,5 | 238 | 4,5 | 25 x 3 |
| | 460 | | | | 158 | 173,8 | 632 | 3500 | 0,83 | 88,5 | | | | | |
| | 575 | | | | 126 | 138,6 | 504 | 3500 | 0,83 | 88,5 | | | | | |
| | 380 | | | | 240 | 264 | 960 | 3499 | 0,81 | 86,3 | | | | | |
| 8WM-T1500 | 440 | 150 | 110 | 3 | 203 | 223,3 | 812 | 3490 | 0,83 | 86 | | 1788,5 | 265 | | 25 x 3 |
| | 460 | | | | 198 | 217,8 | 792 | 3499 | 0,81 | 86,3 | | | | | |
| | 575 | | | | 158 | 173,8 | 632 | 3499 | 0,81 | 86,3 | | | | | |







english

# 8WM

## VERSIONS AVAILABLE



D.O.L. VERSION



Y/Δ VERSION



UPPER AND LOWER BRACKET MADE IN GS400 SPHEROIDAL CAST IRON WITH CATAPHORESIS TREATMENT



FULLY MADE IN 316 STAINLESS STEEL





english

# 4OME

50 Hz - 60 Hz



# Submersible motors with built-in inverter electronics

Made in Italy

## 4” VARIABLE SPEED SUBMERSIBLE MOTORS WITH INVERTER ON-BOARD





english

# 4OME

## TECHNICAL SPECIFICATIONS

**MOTORS ENDOWED WITH ELECTRONIC INVERTER INTEGRATED ON-BOARD**

**4” OIL FILLED SUBMERSIBLE MOTORS**

**MOTOR/PUMP FLANGE**
4” NEMA STANDARD

**POWERS**
Max. motor’s power output 1,1 kW at 55 Hz

**VOLTAGE**
Input power line 1 x 230 V  50 / 60 Hz
Three-phase motor

**THRUST LOAD**
3000 N

## CONSTRUCTION FEATURES

**EXTERNAL SLEEVE** made in AISI 304L (Low Carbon) stainless steel.

**UPPER BRACKET** made in cast iron with cataphoresis treatment.

**MECHANICAL SEAL** made in graphite/ceramic in the standard version; SIC/SIC version available upon request.

**BALL BEARING** duly oversized to ensure a long lasting motor.

**SHAFT PROJECTION** made in DUPLEX stainless steel.

**REMOVABLE POWER CABLE-CONNECTOR** to ensure a perfect sealing, also in the most critical conditions, and to aid maintenance operations. Homologated cable KTW, ACS, WRAS.

**INVERTER** placed under the motor and inside the same tube, fully resinate.

**INTERFACE *MESSENGER*.** Control panel endowed with pressure transducer 4-20 mA.

**100% TESTED**, all motors are tested at the end of the line. Seal and electrical checks are carried out on all motors.

## PATENTED MOTOR

Patent N. 0001397548
Patent N. US 9,353,766 B2

## ACCESSORIES *refer to page 152 -153 - 154*

Sacrificial anode
Different cable lengths

## OPERATING LIMITS

**DEGREE OF PROTECTION**
Motor: IP 68
*MESSENGER*: IP 55

**INSULATION CLASS**
F

**VOLTAGE TOLERANCE**
-10% / +10%

**PUMPED LIQUID TEMPERATURE**
0°C – 35°C

**MIN. COOLING FLOW**
0,1 m/s

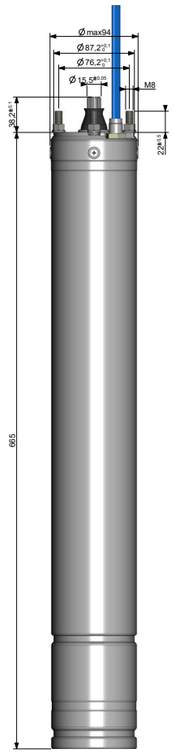
**MAX. STARTS / HOUR**
30

**MOUNTING**
Vertical and/or horizontal

**MAX. IMMERSION DEPTH**
200m

**PRESSURE TRANSDUCER**
4-20 mA 0-16 bar

## DIMENSIONS




## ELECTRICAL DATA 4OME - 50/60Hz

| Type | $P_2$ [Hp] | $P_2$ [kW] | Voltage [V] | Ph | $I_{max}$ [A] | $P_{1\,max}$ [kW] | $rpm_{max}$ | cos φ | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4OME-150 | 1,5 | 1,1 | 230 | 1 | 14,5 | 1,6 | 3100 | 0,80 | 3000 | 665 | 14,1 | 1,5 | 1,5 |

## THE ELECTRONIC REVOLUTION...

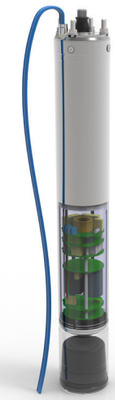
The 4OME submersible motor allows to keep the desired pressure constant in the installation ranging its speed of rotation. This is possible thanks to the electronic inverter integrated on-board and positioned immediately under the motor.

4OME respects NEMA standards and it can be therefore coupled with any kind of pump on the market having equal or inferior power to the maximum power of the motor.

## HOW THE PRODUCT IS COMPOSED:

### 4OME SUBMERSIBLE MOTOR

The submersible motor is three-phase oil filled with rotor made in copper, specifically designed in order to guarantee high efficiency and electric elasticity. The motor, together with the inverter integrated on-board, allows to have an operation range from 15 to 55 Hz by modulating continuously the speed, in order to keep the desired pressure, set by the user through the device *MESSENGER*, constant.



### *MESSENGER*: CONTROL AND MANAGEMENT DEVICE

*MESSENGER* is a panel composed of plastic and aluminium box containing an electronic card, used in surface to control pump by the operator. Through this device, user can set the pressure (automatic operation) or the rotation speed of the motor (manual operation), in addition to manage any alarms.
*MESSENGER* panel, in addition to being connected to the power line and to the motor, is also connected to a pressure gauge, necessary for reading pressure in the system.

*MESSENGER* device and the 4OME submersible motor communicate using the power line technology (**PLC, Power-line communication**). For this reason, it’s not necessary to add any cable to allow communication between the two devices, since the same cables of motor power supply are used for communication.



### PRESSURE TRANSDUCER

0-16 bar 4-20 mA IP 65 included in the package supplied.



## MOTOR’S PROTECTIONS

- Protection against dry running and automatic reset of protection after 10-20-40-80-(120x10 times) minutes
- Electric protection against motor overload
- Phase failure protection
- Overvoltage protection
- Motor temperature protection

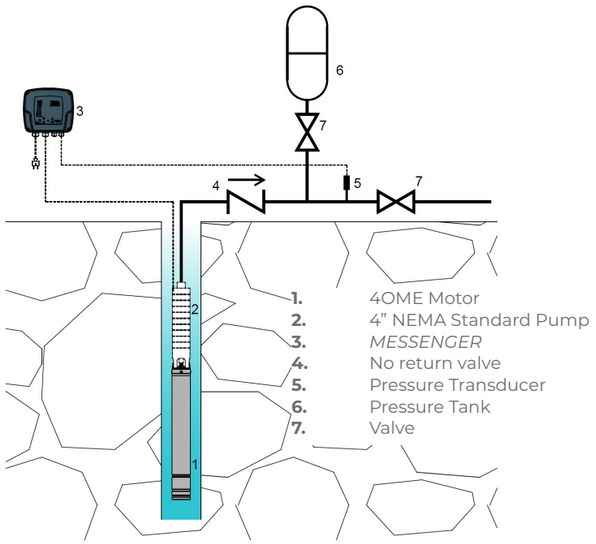






english

## CONNECTION DIAGRAM




1. 4OME Motor
2. 4" NEMA Standard Pump
3. *MESSENGER*
4. No return valve
5. Pressure Transducer
6. Pressure Tank
7. Valve

As you can see in the above connection diagram, hydraulic system is considerably simplified too. Indeed you just need to install a small pressure tank and a no return valve in order to keep the plant full of water.

Pressure tank is used to compensate any load losses and to limit the number of pump starts in case of a limited water demand.

*MESSENGER* panel is the user interface of the product. It's connected to the pressure gauge and to the motor.

## WHY SHOULD YOU USE A SUBMERSIBLE MOTOR WITH INVERTER INTEGRATED ON BOARD AND NOT AN EXTERNAL INVERTER?

- Inverter has been specifically designed to control that specific motor, not any pump, so the control is certainly more precise and efficient.
- External inverter connected with submersible electropumps, when the distance between inverter and electropump is greater than 20 meters, force you to install expensive filters to reduce the voltage peaks that occur.
  Furthermore, even if you install them, in some cases the filters are not sufficient and motor winding is irreparably damaged.

## ADVANTAGES

Inverter electric drive allows:

- to change the engine RPM (15-55 Hz) in order to keep the desired pressure in the system constant;
- to turn the motor on and off autonomously according to water demand;
- to start and stop the motor softly, avoiding water hammers and electrical absorption peaks;
- a great energy saving. Thanks to the variation of speed, it consumes just what exactly is used;
- sizing the system is even more easy;
- to have more pumps in one thanks to the variation of motor RPM. As consequence, it allows a remarkable reduction of the stock for distributors of the sector.

Using 4OME motor, **hydraulic operating curve** will no longer be the one indicated in the catalogue of the pump manufacturer but it **will be the whole area below the curve**.

Talking about a work area and no longer a curve, it allows to consume just what is required in that very moment and so it means an important electricity saving.

## EXAMPLE

Figure 1

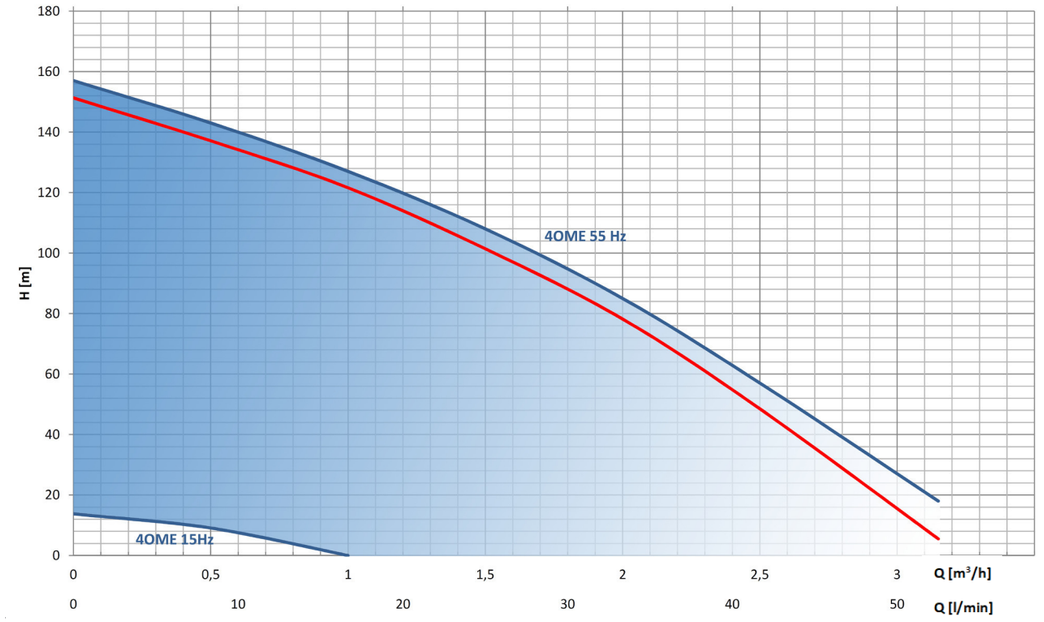
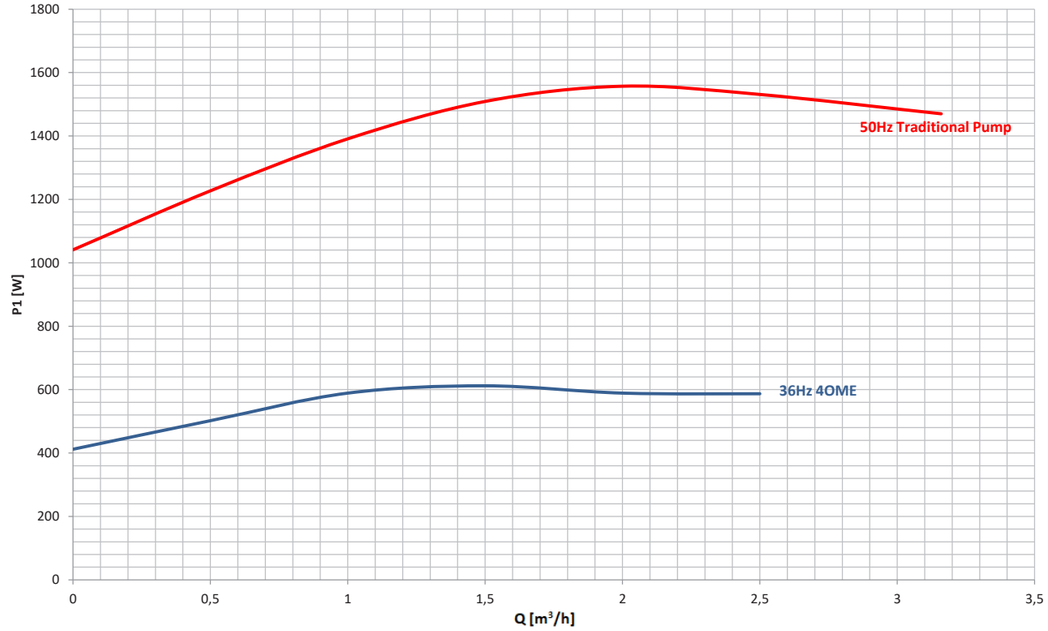


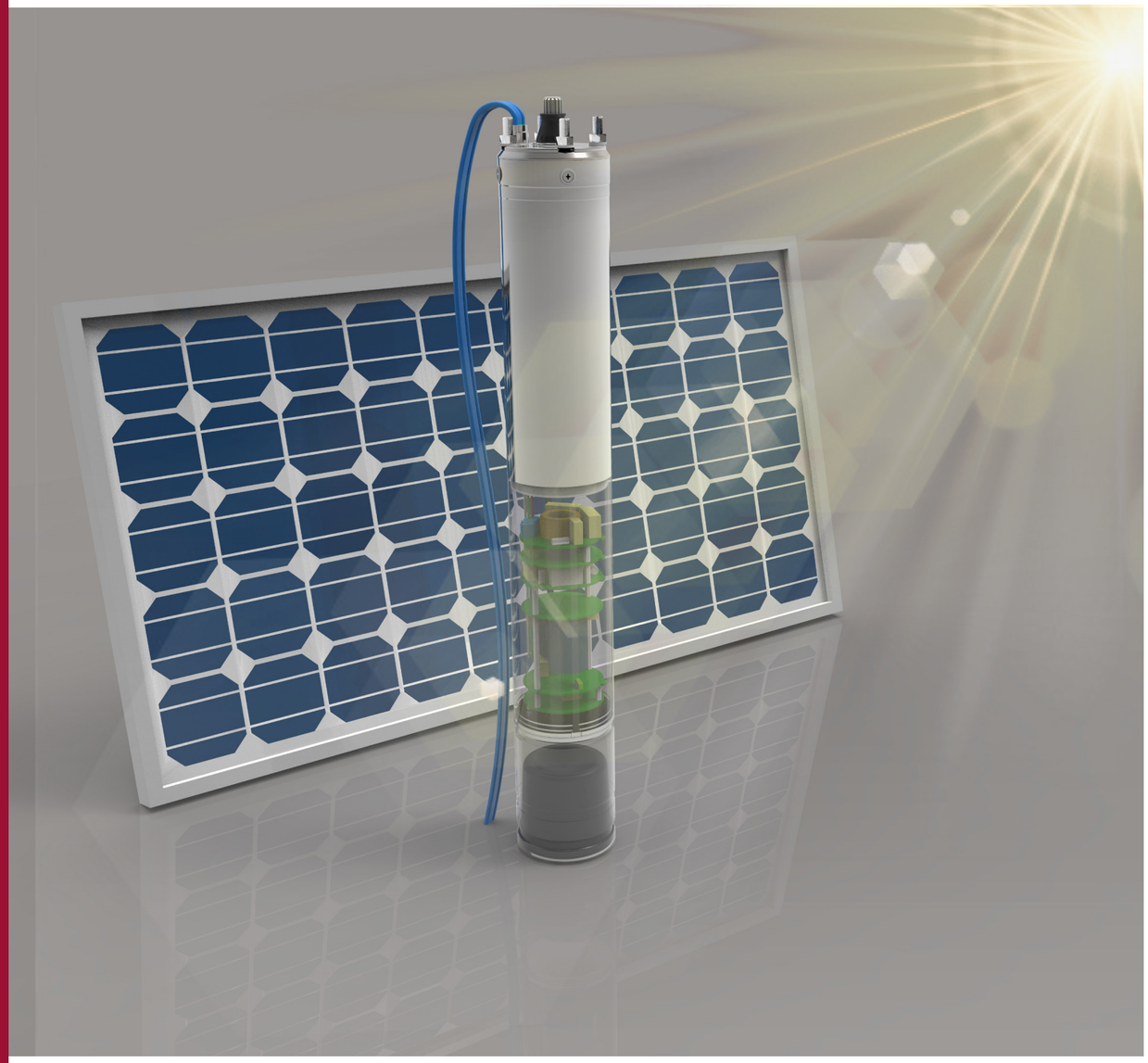

Figure 2




As you can see in the first diagram (Figure 1), the red curve represents a traditional 50Hz pump connected to standard motor without inverter. The blue area is the whole area of use of the same pump connected to the submersible 4OME motor, having 15 - 55Hz as operating range.

In the second diagram (Figure 2), you find an example of the difference of electrical absorption, at the same flow rate, between a pump connected to a traditional submersible motor and a pump connected to 4OME submersible motor.
In this example, it is supposed that the operating point of the pump requires a motor rotation speed of 36Hz.

# 4OME SOLAR



## 4” SOLAR-POWERED SUBMERSIBLE MOTORS WITH INVERTER ON-BOARD



## TECHNICAL SPECIFICATIONS

**MOTORS ENDOWED WITH ELECTRONIC INVERTER INTEGRATED ON-BOARD**

**4” OIL FILLED SUBMERSIBLE MOTORS**

**MOTOR/PUMP FLANGE**
4” NEMA STANDARD

**POWERS**
From 0,75 to 1,5 Hp

**VOLTAGE**
Power supply from panels
Three-phase motor

**THRUST LOAD**
3000 N

## CONSTRUCTION FEATURES

**EXTERNAL SLEEVE** made in AISI 304L (Low Carbon) stainless steel.

**UPPER BRACKET** made in cast iron with cataphoresis treatment.

**MECHANICAL SEAL** made in graphite/ceramic in the standard version; SIC/SIC version available upon request.

**BALL BEARING** duly oversized to ensure a long lasting motor.

**SHAFT PROJECTION** made in DUPLEX stainless steel.

**REMOVABLE POWER CABLE-CONNECTOR** to ensure a perfect sealing, also in the most critical conditions, and to aid maintenance operations. Homologated cable KTW, ACS, WRAS.

**INVERTER** placed under the motor and inside the same tube, fully resinate.

***INTERFACE SOLAR MESSENGER.*** Control panel, acting as the user interface.

**100% TESTED**, all motors are tested at the end of the line. Seal and electrical checks are carried out on all motors.

## PATENTED MOTOR

Patent N. 0001397548
Patent N. US 9,353,766 B2

## ACCESSORIES *refer to page 152 - 153*

Sacrificial anode
Different cable lengths

## OPERATING LIMITS

**DEGREE OF PROTECTION**
Motor: IP 68
*SOLAR MESSENGER*: IP 55

**INSULATION CLASS**
F

**VOLTAGE TOLERANCE**
-10% / +10%

**PUMPED LIQUID TEMPERATURE**
0°C – 35°C

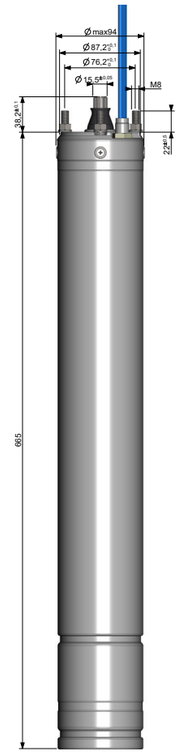
**MIN. COOLING FLOW**
0,1 m/s

**MAX. STARTS / HOUR**
30

**MOUNTING**
Vertical and/or horizontal

**MAX. IMMERSION DEPTH**
200m

## DIMENSIONS










english

# 4OME SOLAR

## WORKING PRINCIPLE

The motor is directly powered by solar energy which is captured by PV modules converting solar radiation into electric power.

The heart of electronics' power, the inverter, is located inside the submersible motors. It manages the entire operation through **MPPT** algorithm, *Maximum Power Point Tracker*. This is a special algorithm to maximize electric power from solar irradiation on photovoltaic panels. This system ensures maximum power available in a certain moment by adjusting the revs of the motor. In fact, as solar irradiation varies, the device change the rotating speed of the motor, increasing or decreasing the flow rate or the hydraulic head of the electropump, thus ensuring the maximum values possible at any time. Therefore the electropump will continue to supply water as long as solar irradiation is sufficient to ensure its operation.

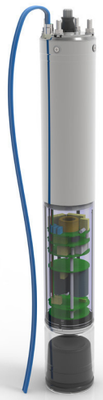
*SOLAR MESSENGER* electrical panel acts as an interface with the user above ground, self-managing the communication of the whole system.

4OME SOLAR respects NEMA standards and it can be therefore coupled with any kind of pump on the market having equal or inferior power to the maximum power of the motor.

## HOW THE PRODUCT IS COMPOSED:

### 4OME SOLAR SUBMERSIBLE MOTOR

The submersible motor is three-phase oil filled with rotor made in copper, specifically designed in order to guarantee high efficiency and electric elasticity. The motor is combined with the inverter integrated on-board.



### *SOLAR MESSENGER*: CONTROL AND MANAGEMENT DEVICE

*SOLAR MESSENGER* is a panel composed of plastic box containing an electronic card, used in surface to control pump by the operator. Through this device, user can switch on and off the system, in addition to display and manage any alarms.
*SOLAR MESSENGER* panel, in addition to being connected to photovoltaic panels and motor, gives the opportunity to connect also a floating level.




## MOTOR'S PROTECTIONS

- Protection against dry running and automatic reset of protection after 10-20-40-80-(120x10 times) minutes
- Electric protection against motor overload
- Phase failure protection
- Overvoltage protection
- Motor temperature protection

## ADVANTAGES

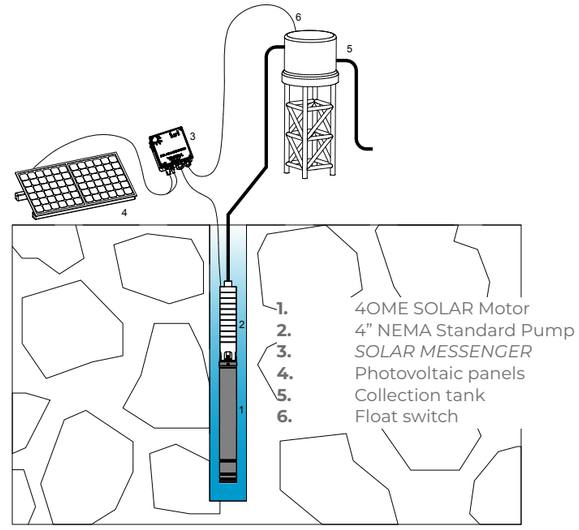
Inverter integrated on-board electric drive allows:

- to change the engine RPM always ensuring the highest level of water;
- to start and stop the motor softly, avoiding water hammers and electrical absorption peaks;
- not to install expensive filters or shielded cables to prevent motor damage, being the inverter integrated.



## CONNECTION DIAGRAM

As you can see in the connection diagram, you just need to install the motor with the desired pump and connect it with the *SOLAR MESSENGER* panel on the surface. *SOLAR MESSENGER* panel, in turn, will be connected with photovoltaic panels.




## ELECTRICAL DATA 4OME SOLAR

| MOTOR DATA | | | | | | | | | | | | | PANELS POWER SUPPLY | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | $P_2$ [Hp] | $P_2$ [kW] | Motor Voltage [$V_{AC}$] | Ph | $I_{max}$ [A] | $P_{1\,max}$ [W] | rpm | Thrust Load [N] | Length A [mm] | Weight [kg] | Cable Length [m] | Cable Section [mm²] | Voltage * [$V_{DC}$] | Minimum Output [$W_p$] | Minimum Current [A] |
| 4OME SOLAR-075 | 0,75 | 0,55 | 100 | 3 | 6,5 | 850 | 2850 | 3000 | 665 | 14,1 | 1,5 | 1,5 | 140-220 | >900 | >7 |
| 4OME SOLAR-100 | 1 | 0,75 | 100 | 3 | 8,5 | 1150 | 2850 | 3000 | 665 | 14,1 | 1,5 | 1,5 | 140-220 | >1300 | >9 |
| 4OME SOLAR-150 | 1,5 | 1,1 | 100 | 3 | 11,5 | 1700 | 2850 | 3000 | 665 | 14,1 | 1,5 | 1,5 | 140-220 | >1800 | >12 |

** The incoming voltage from solar panels must never exceed the specified maximum voltage of 220 $V_{DC}$. Otherwise, the motor could be damaged irreparably.*
*Unlike, a voltage lower than the one indicated (140 $V_{DC}$), doesn't guarantee the full RPM of the motor.*

## EXAMPLE

### INSTALLATION OF 4OME SOLAR-150 MOTOR

**SIZING OF PHOTOVOLTAIC PANELS**
Example of panels:

$W_p$ 240 W (power supplied by the single panel)

$V_p$ 30 $V_{DC}$ (maximum voltage supplied by the single panel)

$V_{OC}$ 37 $V_{DC}$ (open-circuit voltage of the single panel)

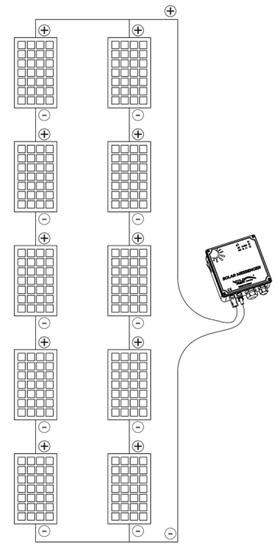
$I_p$ 8 A (minimum current supplied by the single panel)

**How many panels are needed and how should they be connected?**

Based on the electrical data showed in the above chart, 4OME SOLAR-150 model requires, to operate the system at full capacity, of:

- 1800 $W_p$. This means that **1800/240 = 7,5 → 8 panels** are needed
- minimum 140 $V_{DC}$. So, **140/30 = 4,6 → 5 panels serially connected together** must be installed
- current not less than 12 A. Each panels in this example generates 8 A so, in order to guarantee 12 A, **12/8 = 1,5 → 2 panels in parallel** must be installed, obtaining 16 A in case of maximum irradiation.

In this case, the ideal photovoltaic system consists of 10 panels in total. Two strings from 5 panels (in series) each and connected in parallel together, as from the connection diagram in figure.






english

# FROG

50 Hz - 60 Hz



# Submersible electropumps

Made in Italy

## 5” SUBMERSIBLE MONOBLOCK ELECTROPUMPS





english

# FROG

## TECHNICAL SPECIFICATIONS

**POWERS**
3 m³/h: from 0,6 Hp to 2 Hp single-phase / three-phase 50 Hz
from 0,8 Hp to 2 Hp single-phase / three-phase 60 Hz
5 m³/h: from 0,8 Hp to 2 Hp single-phase / three-phase 50 Hz
from 1,2 Hp to 2 Hp single-phase / three-phase 60 Hz

**VOLTAGE**
Single-phase: 230 V / 50 Hz - 220 V / 60 Hz
Three-phase: 230;400 V / 50 Hz - 220;380 V / 60 Hz

## CONSTRUCTION FEATURES

**CONNECTION SYSTEM** by means of connector.

**PUMP OUTLET** made in AISI 304 stainless steel.

**ASYNCHRONOUS MOTOR COOLED BY PUMPED LIQUID**

**SLEEVE** made in 304L stainless steel (Low carbon) to avoid possible corrosions of the welding.

**DOUBLE MECHANICAL SEAL** with interposed oil chamber.

**B-CLASS CONDENSER,** meeting long-lasting features (three times a standard condenser).

**IMPELLERS AND DIFFUSERS** made in techno-polymer:

- higher performance;
- higher resistance to sand.

**INTAKE FILTER** made in 304 stainless steel.

**REMOVABLE CABLE CONNECTOR** H07RN-F type.

**AUTOMATIC VERSIONS WITH REMOVABLE FLOAT SWITCH** for applications at great depths (40 m).

**100% TESTED**, all the electropumps are electrically and hydraulically tested at the end of the line.

## OPERATING LIMITS

**PROTECTION**
IP 68

**INSULATION CLASS**
F

**VOLTAGE TOLERANCE**
-10% / +10%

**PUMPED LIQUID TEMPERATURE**
0°C – 35°C

**MAX. STARTS / HOUR**
40

**MAX. AMOUNT OF SAND TOLERATED IN WATER**
50 g/m³

**MAX. IMMERSION DEPTH**
40m

**SINGLE-PHASE VERSION**
Featuring a condenser with overload protection and automatic resetting system.

**3-20S, 5-20S, 3-20S6, 5-20S6 AND THREE-PHASE SERIES**
Not feature overload protection.

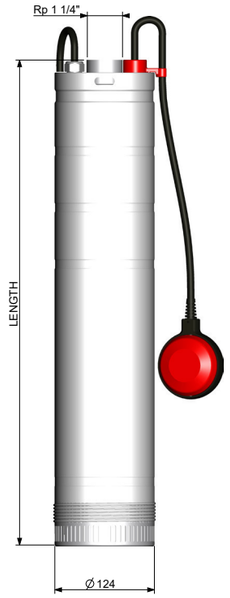
## VERSIONS UPON REQUEST

Different thrust load
Different voltage
Version with KTW, WRAS, ACS type-approved cable
Versions with or without float switch
External capacitor *(minimum quantity required)*

## ACCESSORIES *refer to page 153 - 154*

Cable lengths: 10 m or 20 m
Sacrificial anode
Float switch with removable connector
FROG disassembly kit
Electrical plug of different standards

## DIMENSIONS

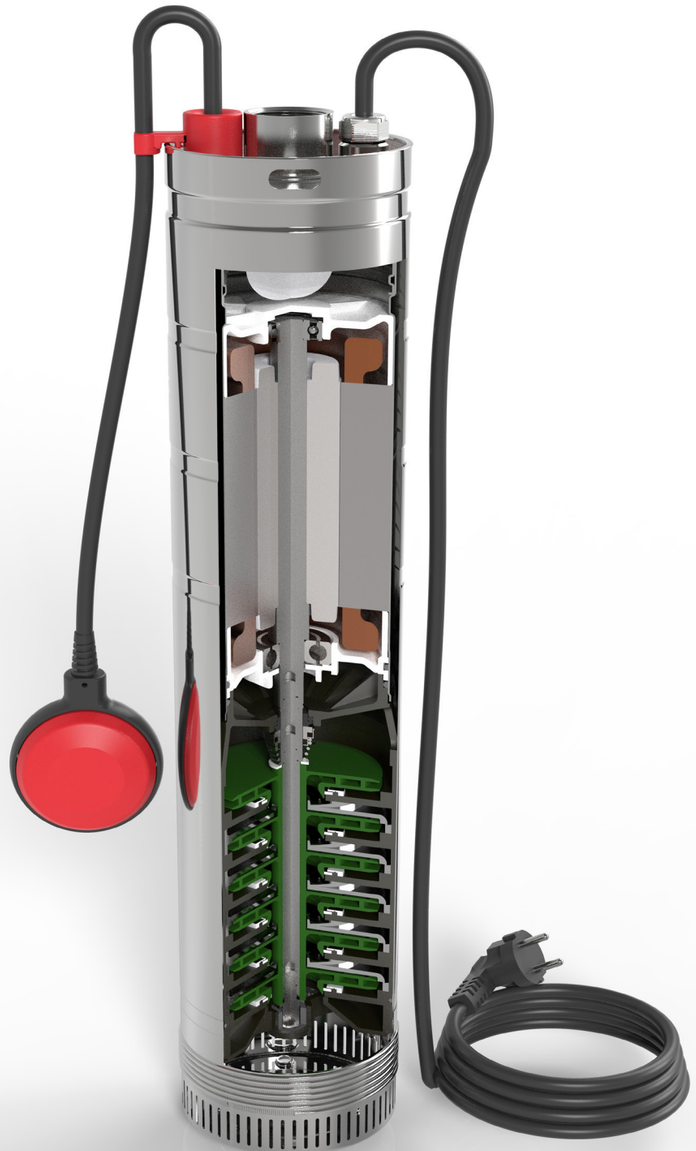



## MODELS

| 50Hz Model | | 60Hz Model | | Dimension | | Cable Length [m] |
|---|---|---|---|---|---|---|
| Single-phase 230 V | Three-phase 230/400 V | Single-phase 220 V | Three-phase 220/380 V | Length [mm] | Weight [kg] | |
| FROG 3 - 06S | FROG 3 - 06T | - | - | 439 | 14 | 10 |
| FROG 3 - 08S | FROG 3 - 08T | FROG 3 - 08S6 | FROG 3 - 08T6 | 495 | 15,5 | |
| FROG 3 - 10S | FROG 3 - 10T | FROG 3 - 10S6 | FROG 3 - 10T6 | 521 | 16,5 | |
| FROG 3 - 12S | FROG 3 - 12T | FROG 3 - 12S6 | FROG 3 - 12T6 | 590 | 19 | |
| FROG 3 - 15S | FROG 3 - 15T | FROG 3 - 15S6 | FROG 3 - 15T6 | 616 | 20 | |
| FROG 3 - 20S | FROG 3 - 20T | FROG 3 - 20S6 | FROG 3 - 20T6 | 698 | 23,5 | |
| FROG 5 - 08S | FROG 5 - 08T | - | - | 469 | 16 | |
| FROG 5 - 12S | FROG 5 - 12T | FROG 5 - 12S6 | FROG 5 - 12T6 | 515 | 17,5 | |
| FROG 5 - 15S | FROG 5 - 15T | FROG 5 - 15S6 | FROG 5 - 15T6 | 541 | 18,5 | |
| FROG 5 - 20S | FROG 5 - 20T | FROG 5 - 20S6 | FROG 5 - 20T6 | 620 | 20,5 | |

## FLOAT SWITCH WITH “PLUG IN & PLUG OUT” SYSTEM

- Guarantees a perfect sealing
- Gives the option of using/selling the electropump with or without float switch just connecting or disconnecting it
- Reduces stock because electropump can be bought with or without float switch
- Allows a fast and safe maintenance cause superior pump side can be completely removed









**SCAN TO**
see how to install the float switch correctly.



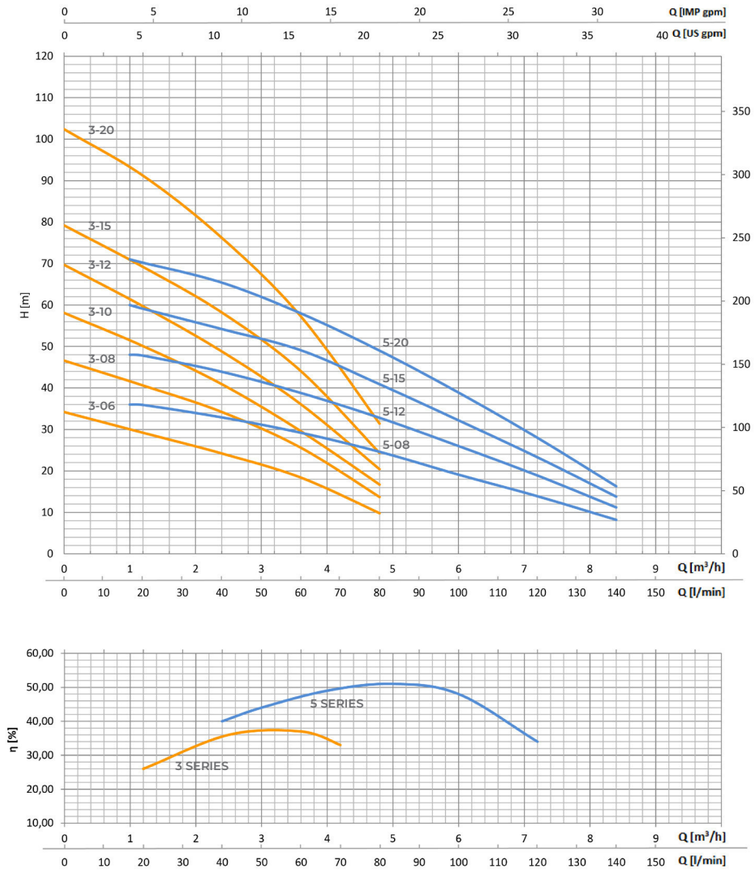




english

# FROG - 50Hz

## OPERATING CURVES FROG - 50Hz




## HYDRAULIC PERFORMANCE TABLE FROG - 50Hz

| Type | | $P_2$ | | N. of Stage | Q (Flow Rate) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Single-phase 230 V | Three-phase 230/400 V | [Hp] | [kW] | | [l/min] 0 | 20 | 40 | 60 | 80 | 100 | 120 | 140 |
| | | | | | [m³/h] 0 | 1,2 | 2,4 | 3,6 | 4,8 | 6 | 7,2 | 8,4 |
| | | | | | H (Total Head) [m] | | | | | | | |
| FROG 3 - 06S | FROG 3 - 06T | 0,6 | 0,45 | 3 | 34,2 | 29,2 | 24,2 | 18,4 | 9,8 | - | - | - |
| FROG 3 - 08S | FROG 3 - 08T | 0,8 | 0,6 | 4 | 46,6 | 40,6 | 34,2 | 25,6 | 13,7 | - | - | - |
| FROG 3 - 10S | FROG 3 - 10T | 1 | 0,75 | 5 | 58,1 | 50,1 | 40,9 | 29,6 | 16,7 | - | - | - |
| FROG 3 - 12S | FROG 3 - 12T | 1,2 | 0,9 | 6 | 69,7 | 59,7 | 48,8 | 36,1 | 20,4 | - | - | - |
| FROG 3 - 15S | FROG 3 - 15T | 1,5 | 1,1 | 7 | 79,2 | 69,2 | 58,2 | 44,1 | 24,3 | - | - | - |
| FROG 3 - 20S | FROG 3 - 20T | 2 | 1,5 | 9 | 102,4 | 91,2 | 76,2 | 57,3 | 31,4 | - | - | - |
| FROG 5 - 08S | FROG 5 - 08T | 0,8 | 0,6 | 3 | 37,2 | 35,9 | 32,9 | 29,2 | 24,6 | 19,1 | 13,9 | 8,2 |
| FROG 5 - 12S | FROG 5 - 12T | 1,2 | 0,9 | 4 | 49,6 | 47,8 | 43,9 | 38,8 | 32,8 | 26 | 18,9 | 11,2 |
| FROG 5 - 15S | FROG 5 - 15T | 1,5 | 1,1 | 5 | 61,5 | 59,1 | 54,2 | 49,1 | 40,9 | 32,2 | 23,3 | 13,8 |
| FROG 5 - 20S | FROG 5 - 20T | 2 | 1,5 | 6 | 74,4 | 70,2 | 65,4 | 58 | 49 | 38,9 | 28 | 16,3 |

## ELECTRICAL DATA FROG - 50Hz

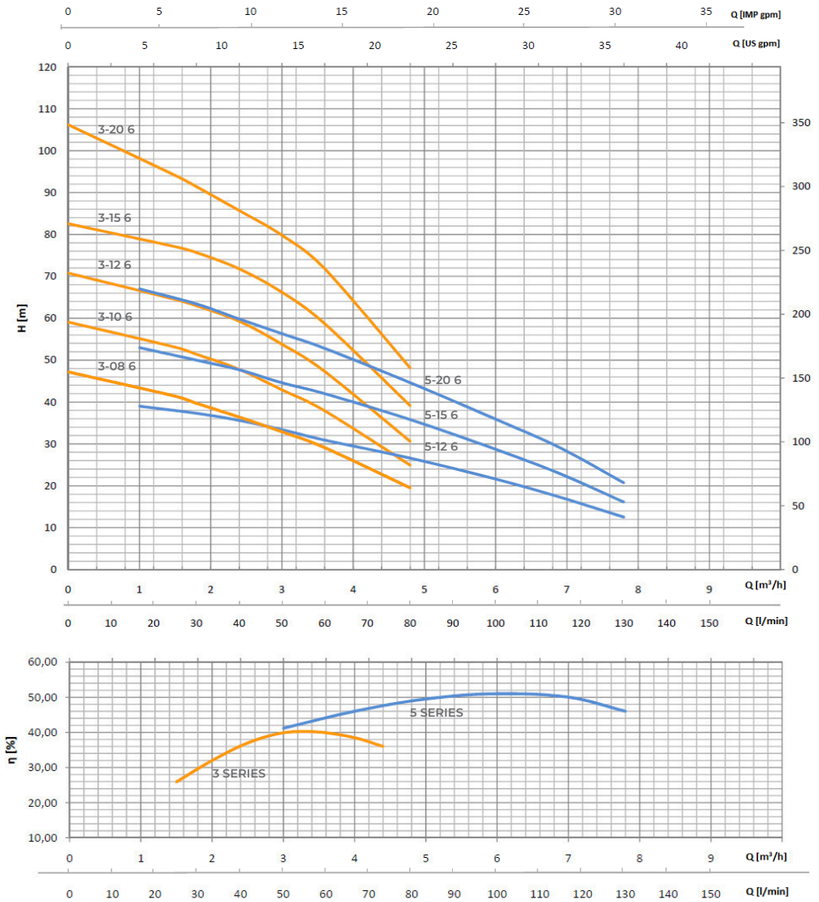
| Type | $P_1$ [kW] (Max Absorbed Power) | I [A] (Max Absorbed Current) | Capacitor 450 V [µF] |
|---|---|---|---|
| Single-phase 230 V | | | |
| FROG 3 - 06S | 0,81 | 3,7 | 20 |
| FROG 3 - 08S | 1 | 5,1 | 25 |
| FROG 3 - 10S | 1,22 | 5,7 | 25 |
| FROG 3 - 12S | 1,4 | 6,5 | 35 |
| FROG 3 - 15S | 1,65 | 7,6 | 35 |
| FROG 3 - 20S | 2,15 | 9,8 | 40 |
| FROG 5 - 08S | 1,1 | 5,2 | 25 |
| FROG 5 - 12S | 1,32 | 6,4 | 35 |
| FROG 5 - 15S | 1,7 | 8 | 35 |
| FROG 5 - 20S | 1,95 | 9,4 | 40 |

| Type | $P_1$ [kW] (Max Absorbed Power) | I [A] (Max Absorbed Current) | |
|---|---|---|---|
| | | 230 V | 400 V |
| Three-phase 230/400 V | | | |
| FROG 3 - 06T | 0,82 | 2,4 | 1,4 |
| FROG 3 - 08T | 1,04 | 2,9 | 1,9 |
| FROG 3 - 10T | 1,3 | 3,8 | 2,2 |
| FROG 3 - 12T | 1,32 | 4,5 | 2,6 |
| FROG 3 - 15T | 1,51 | 4,8 | 2,9 |
| FROG 3 - 20T | 2,05 | 5,7 | 3,5 |
| FROG 5 - 08T | 1,12 | 4 | 2,1 |
| FROG 5 - 12T | 1,29 | 4,4 | 2,5 |
| FROG 5 - 15T | 1,64 | 4,9 | 3 |
| FROG 5 - 20T | 1,92 | 5,7 | 3,7 |



# FROG - 60Hz

## OPERATING CURVES FROG - 60Hz




## HYDRAULIC PERFORMANCE TABLE FROG - 60Hz

| Type | | $P_2$ | | N. of Stage | Q (Flow Rate) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Single-phase 220 V | Three-phase 220/380 V | [Hp] | [kW] | | [l/min] 0 | 25 | 30 | 40 | 50 | 60 | 80 | 100 | 115 | 130 |
| | | | | | [m³/h] 0 | 1,5 | 1,8 | 2,4 | 3 | 3,6 | 4,8 | 6 | 6,9 | 7,8 |
| | | | | | H (Total Head) [m] | | | | | | | | | |
| FROG 3-08S6 | FROG 3-08T6 | 0,8 | 0,6 | 4 | 47,2 | 41,4 | 39,7 | 36,4 | 32,9 | 29,1 | 19,5 | - | - | - |
| FROG 3-10S6 | FROG 3-10T6 | 1 | 0,75 | 5 | 59,1 | 53,1 | 51,4 | 47,8 | 42,9 | 37,9 | 24,9 | - | - | - |
| FROG 3-12S6 | FROG 3-12T6 | 1,2 | 0,9 | 6 | 70,8 | 64,5 | 63 | 59,3 | 53,8 | 47,3 | 30,6 | - | - | - |
| FROG 3-15S6 | FROG 3-15T6 | 1,5 | 1,1 | 7 | 82,6 | 77,1 | 75,1 | 71,8 | 66,2 | 58,7 | 39,1 | - | - | - |
| FROG 3-20S6 | FROG 3-20T6 | 2 | 1,5 | 9 | 106,2 | 94,1 | 91,4 | 85,7 | 79,8 | 71,8 | 48,1 | - | - | - |
| FROG 5 -12S6 | FROG 5-12T6 | 1,2 | 0,9 | 4 | 45,4 | 42,6 | 37,3 | 35,6 | 33,4 | 30,9 | 26,6 | 21,6 | 17,3 | 12,5 |
| FROG 5 -15S6 | FROG 5-15T6 | 1,5 | 1,1 | 5 | 56,7 | 53,8 | 50 | 47,7 | 44,6 | 42 | 35,8 | 28,7 | 22,9 | 16,1 |
| FROG 5 -20S6 | FROG 5-20T6 | 2 | 1,5 | 6 | 68 | 66,2 | 63,4 | 59,8 | 56,3 | 52,8 | 44,6 | 35,9 | 29,1 | 20,7 |

## ELECTRICAL DATA FROG - 60Hz

| Type | $P_1$ [kW] (Max Absorbed Power) | I [A] (Max Absorbed Current) | Capacitor 450 V [µF] |
|---|---|---|---|
| Single-phase 220 V | | | |
| FROG 3-08S6 | 1,05 | 4,8 | 25 |
| FROG 3-10S6 | 1,24 | 5,9 | 25 |
| FROG 3-12S6 | 1,42 | 7,1 | 35 |
| FROG 3-15S6 | 1,67 | 8 | 35 |
| FROG 3-20S6 | 2,16 | 10,1 | 40 |
| FROG 5-12S6 | 1,34 | 6,3 | 35 |
| FROG 5-15S6 | 1,72 | 7,3 | 35 |
| FROG 5-20S6 | 1,91 | 9,7 | 40 |

| Type | $P_1$ [kW] (Max Absorbed Power) | I [A] (Max Absorbed Current) | |
|---|---|---|---|
| | | 220 V | 380 V |
| Three-phase 220/380 V | | | |
| FROG 3-08T6 | 1,06 | 2,9 | 1,7 |
| FROG 3-10T6 | 1,31 | 3,6 | 2,1 |
| FROG 3-12T6 | 1,37 | 3,9 | 2,3 |
| FROG 3-15T6 | 1,56 | 4,4 | 2,6 |
| FROG 3-20T6 | 2,08 | 5,4 | 3,2 |
| FROG 5-12T6 | 1,31 | 3,6 | 2,1 |
| FROG 5-15T6 | 1,67 | 4,4 | 2,6 |
| FROG 5-20T6 | 1,89 | 4,9 | 2,9 |




english

# Control panels and accessories

Made in Italy

english

# *E.S.P.* - 50/60 Hz




## ELECTRONIC SYSTEM PROTECTION

*E.S.P.* is a control board for the protection and control of electro-pumps.

The main feature of this device is the protection of the motor pump from dry running by checking the motor cosphi.

Cosphi and current motor parameters can be manually set by the operator (**MANUAL FUNCTION**), by inserting a minimum Cosphi threshold value and a maximum current value. If these values are exceeded, the device will activate to protect the motor pump.
In addition to manual operation, the *E.S.P.* has an automatic mode (**AUTOMATIC FUNCTION**) with which it can automatically set necessary cosphi and current value to protect the motor pump.

All settings and displays are done through a keyboard and a display.

*E.S.P.* is available as three-phase and single-phase version: the latter comes with the possibility to insert a capacitor (**not included**).

*E.S.P.* is also supplied with a digital auxiliary input device to start or stop the pump. A float, a pressure switch, ..., may be connected to this input.

## MAIN FEATURES AND PROTECTIONS

- Protection against dry running and automatic reset of protection after 10-20-40-80-(120x10 times) minutes
- Electrical protection against motor overload
- Protection against no-phase (three-phase version)
- Protection against over voltage
- Output with cable glands
- IP 55 protection class

## SPECIFICATIONS *E.S.P.* - 50/60Hz

| Type | Approximate Power [Hp] | Approximate Power [kW] | Phase | Voltage [V] | Max. Current [A] | Weight [Kg] | Dimension [mm] |
|---|---|---|---|---|---|---|---|
| Sline20 | 0,5 - 3 | 0,37 - 2,2 | 1 | 230 | 20 | 1,8 | 240 x 190 x 90 |
| Tline10 | 0,5 - 4 | 0,37 - 3 | 3 | 400 | 10 | 1,8 | 240 x 190 x 90 |
| Tline20 | 5,5 - 10 | 4 - 7,5 | 3 | 400 | 20 | 1,8 | 240 x 190 x 90 |
| Tline30 | 12,5 - 15 | 9,2 - 11 | 3 | 400 | 30 | 2,4 | 240 x 190 x 90 |



english

# C-BOX - 50/60 Hz




## CONTROL BOX

C-BOX series of control panels are designed to protect single-phase electropumps.

Endowed with thermal-amperometric protection and start capacitor, in proportion with motor size.

## MAIN FEATURES AND PROTECTIONS

- Box made of thermoplastic insulating material
- On / Off switch
- Externally resettable thermal protection
- Output with cable glands
- IP 54 protection class
- Upon request, it's possible to supply them with plug for power outlet

## SPECIFICATIONS C-BOX - 50Hz

| Type | Power [Hp] | Power [kW] | Voltage [V] | Protect. [A] | Capacitor [µF] | Weight [Kg] | Dimension [mm] |
|---|---|---|---|---|---|---|---|
| C-BOX20 | 0,5 | 0,37 | 220/230 | 5 | 20 | 0,75 | 170 x 150 x 70 |
| C-BOX20D | 0,5 | 0,37 | | 5 | 20+(36/43) | 1 | 200 x 155 x 80 |
| C-BOX25 | 0,75 | 0,55 | 220/230 | 7 | 25 | 0,75 | 170 x 150 x 70 |
| C-BOX25D | 0,75 | 0,55 | | 7 | 25+(53/64) | 1 | 200 x 155 x 80 |
| C-BOX35 | 1 | 0,75 | 220/230 | 8 | 35 | 0,75 | 170 x 150 x 70 |
| C-BOX35D | 1 | 0,75 | | 8 | 35+(88/106) | 1 | 200 x 155 x 80 |
| C-BOX40 | 1,5 | 1,1 | 220/230 | 11 | 40 | 0,75 | 170 x 150 x 70 |
| C-BOX40D | 1,5 | 1,1 | | 11 | 40+(110/125) | 1 | 200 x 155 x 80 |
| C-BOX60 | 2 | 1,5 | 220/230 | 14 | 60 | 1 | 200 x 155 x 80 |
| C-BOX60D | 2 | 1,5 | | 14 | 60+(125/160) | 1,6 | 255 x 195 x 100 |
| C-BOX70 | 3 WM | 2,2 | 220/230 | 20 | 70 | 1 | 200 x 155 x 80 |
| C-BOX70D | 3 WM | 2,2 | | 20 | 70+(200/250) | 1,6 | 255 x 195 x 100 |
| C-BOX80 | 3 OM | 2,2 | 220/230 | 20 | 80 | 1 | 200 x 155 x 80 |
| C-BOX80D | 3 OM | 2,2 | | 20 | 80+(200/250) | 1,6 | 255 x 195 x 100 |
| C-BOX90 | 4 | 3 | 220/230 | 30 | 90 | 1,6 | 255 x 195 x 100 |
| C-BOX90D | 4 | 3 | | 30 | 90+(250/300) | 2,4 | 310 x 240 x 110 |
| C-BOX100D | 5 | 3,7 | 220/230 | 32 | 100+(250/300) | 2,4 | 310 x 240 x 110 |
| C-BOX120D | 5,5 | 4 | 220/230 | 35 | 120+(250/300) | 2,4 | 310 x 240 x 110 |

## SPECIFICATIONS C-BOX - 60Hz

| Type | Power [Hp] | Power [kW] | Voltage [V] | Protect. [A] | Capacitor [µF] | Weight [Kg] | Dimension [mm] |
|---|---|---|---|---|---|---|---|
| C-BOX20-62 | 0,5 | 0,37 | 220/230 | 6 | 20 | 0,75 | 170 x 150 x 70 |
| C-BOX80-61 | 0,5 | 0,37 | 110/115 | 11 | 80 | 1 | 200 x 155 x 80 |
| C-BOX25-62 | 0,75 | 0,55 | 220/230 | 8 | 25 | 0,75 | 170 x 150 x 70 |
| C-BOX100-61 | 0,75 | 0,55 | 110/115 | 14 | 100 | 1 | 200 x 155 x 80 |
| C-BOX35-62 | 1 | 0,75 | 220/230 | 9 | 35 | 0,75 | 170 x 150 x 70 |
| C-BOX120-61 | 1 | 0,75 | 110/115 | 18 | 120 | 1,6 | 255 x 195 x 100 |
| C-BOX40-62 | 1,5 | 1,1 | 220/230 | 12 | 40 | 0,75 | 170 x 150 x 70 |
| C-BOX40D-62 | 1,5 | 1,1 | | 12 | 40+(110/125) | 1 | 200 x 155 x 80 |
| C-BOX60-62 | 2 | 1,5 | 220/230 | 14 | 60 | 1 | 200 x 155 x 80 |
| C-BOX60D-62 | 2 | 1,5 | | 14 | 60+(125/160) | 1,6 | 255 x 195 x 100 |
| C-BOX80-62 | 3 | 2,2 | 220/230 | 20 | 80 | 1 | 200 x 155 x 80 |
| C-BOX80D-62 | 3 | 2,2 | | 20 | 80+(200/250) | 1,6 | 255 x 195 x 100 |
| C-BOX100D-62 | 5 | 3,7 | 220/230 | 32 | 100+(250/300) | 2,4 | 310 x 240 x 110 |
| C-BOX120D-62 | 5,5 | 4 | 220/230 | 35 | 120+(250/300) | 2,4 | 310 x 240 x 110 |





# CU-BOX - 60 Hz




## CONTROL BOX

CU-BOX series of control panels are designed for the starter of 4" single-phase water cooled submersible motors canned type of 4WMU 60 Hz series.

## MAIN FEATURES

- Painted metal box
- Start capacitor for single-phase motors 3-WIRE CSIR (powers from 1/2 to 1 Hp)
- Start + Run capacitor for single-phase motors CSCR (powers from 1.5 to 5 Hp)
- Volumetric Relay
- External access to thermal protection for single-phase motors 3-WIRE CSCR (powers from 1.5 to 5 Hp)
- Suitable for in and outdoor use

## SPECIFICATIONS CU-BOX - 60Hz

| Type | Power [Hp] | Power [kW] | Voltage [V] | Start Capacitor [mF] | Run Capacitor [mF] | Weight [Kg] | Weight [lb] | Dimension [mm] | Dimension [in] |
|---|---|---|---|---|---|---|---|---|---|
| CU-BOX05-61 | 1/2 | 0.37 | 110/115 | 250-300 (125 V) | - | 1.2 | 2.6 | 130 x 77 x 215 | 5.1 x 3 x 8.5 |
| CU-BOX05-62 | 1/2 | 0.37 | 220/230 | 59-71 (250 V) | - | 1.2 | 2.6 | 130 x 77 x 215 | 5.1 x 3 x 8.5 |
| CU-BOX07-61 | 3/4 | 0.55 | 110/115 | 250-300 (125 V) | - | 1.2 | 2.6 | 130 x 77 x 215 | 5.1 x 3 x 8.5 |
| CU-BOX07-62 | 3/4 | 0.55 | 220/230 | 86-103 (250 V) | - | 1.2 | 2.6 | 130 x 77 x 215 | 5.1 x 3 x 8.5 |
| CU-BOX10-62 | 1 | 0.75 | 220/230 | 105-126 (250 V) | - | 1.2 | 2.6 | 130 x 77 x 215 | 5.1 x 3 x 8.5 |
| CU-BOX15-62 | 1.5 | 1.1 | 220/230 | 105-126 (250 V) | 10 (400 V) | 2.5 | 5.5 | 205 x 240 x 148 | 8.1 x 9.5 x 5.8 |
| CU-BOX20-62 | 2 | 1.5 | 220/230 | 105-126 (250 V) | 20 (400 V) | 2.5 | 5.5 | 205 x 240 x 148 | 8.1 x 9.5 x 5.8 |
| CU-BOX30-62 | 3 | 2.2 | 220/230 | 208-250 (250 V) | 45 (400 V) | 2.5 | 5.5 | 205 x 240 x 148 | 8.1 x 9.5 x 5.8 |
| CU-BOX50-62 | 5 | 3.7 | 220/230 | 270-324(250 V) | 80 (400 V) | 2.5 | 5.5 | 205 x 240 x 148 | 8.1 x 9.5 x 5.8 |

# WHITE - 50/60 Hz




## INVERTER CONTROL BOX

WHITE series of inverter electronic panels are developed for the control of asynchronous electropumps and are suitable for installation both on new systems and on existing ones.

## MAIN FEATURES

- Extremely durable aluminum box, with excellent thermal dissipation
- Cooling fan that activates on demand
- IP55 protection class
- Smartphone interface
- 2 digital inputs configurable via app
- 2 digital outputs configurable via app
- 1 analog input 4-20mA (dedicated to pressure gauge)
- 1 analog input 4-20mA or 0-10V
- RS485 MODBUS RTU
- Bluetooth® SMART 4.0

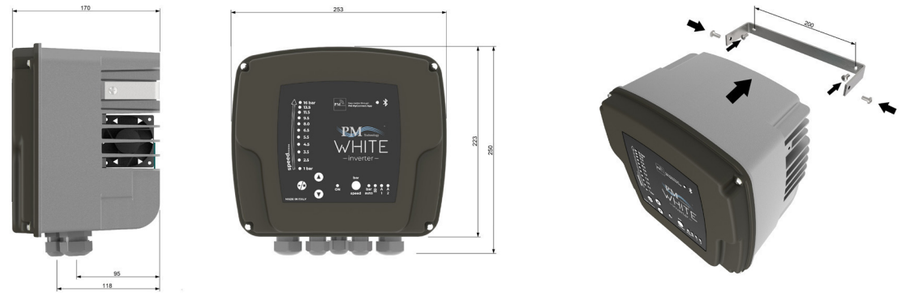
## PROTECTIONS

- Protection against dry running
- Protection against over and under voltage
- Electrical protection against motor overload
- Protection against no-phase
- Protection and control of maximum operating temperature

## APPLICATIONS

- Water supply
- Submersible pumps
- Water distribution
- Pressurization
- Irrigation systems
- Water treatment
- Industrial cooling or heating systems
- Fountains

## DIMENSIONS



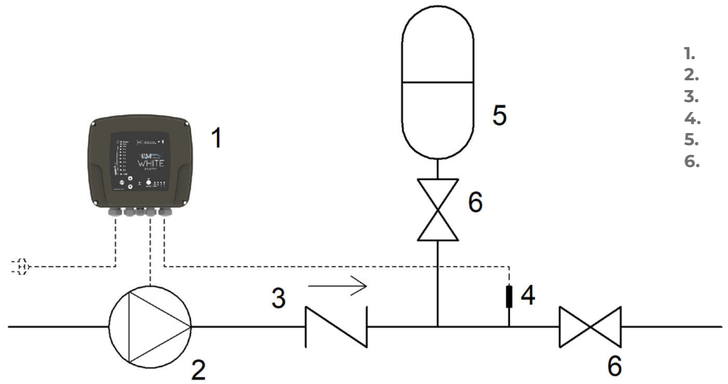

## SPECIFICATIONS WHITE - 50/60Hz

| Type | $V_{in}$ | $V_{out}$ | Motor $I_{max}$ [A] | Motor $P_{2\,max}$ [kW] | Weight [Kg] | Dimension [mm] |
|---|---|---|---|---|---|---|
| WHITE 102 | 1x230 | 3x230 | 7.5 | 1.5 | 4.3 | 253 x 250 x 170 |
| WHITE S 102 | 1x230 | 1x230 | 11 | 1.5 | 4.3 | 253 x 250 x 170 |

## ADVANTAGES

- Device easy to use and intuitive.
- It ensures the protection of the electropump and the system thanks to specific parameters and controls.
- It extends the life of the electropump: working at a lower speed, it allows to stress less the mechanical parts of the same.
- Possibility to work even in wet environments (IP 55 protection class).
- It guarantees energy savings.
  Thanks to WHITE, the electropump can work at variable speed, keeping the pressure constant. The energy consumption will therefore vary according to the real water needs with a consequent economic saving.
- Flexibility: thanks to PM MyConnect app, it's possible to expand the uses and set about 50 parameters in order to adapt the system to the needs of the plant.
- Simplified service procedure: thanks to PM MyConnect app, it's possible to send the current inverter configuration to the PM technicians, in order to analyse any problems or simply to make specific corrections for the system.

## CONNECTION DIAGRAM




1. WHITE control panel
2. Pump
3. No return valve
4. Pressure Transducer
5. Pressure Tank
6. Valve

## CONTROL THROUGH PM MyConnect App

Thanks to PM MyConnect, it's possible to communicate with all WHITE series devices via Bluetooth®.
This app has been specifically developed to:

- Set the nominal sizes of the electropump
- Display the operating parameters
- Program digital inputs and outputs to add functionality to the system
- Receive assistance
- Monitor the electrical consumption and the life hours of the electropump

### PM devices in your hands.




"The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by PM S.r.l. is under license. Other trademarks and trade names are those of their respective owners."

## SACRIFICIAL ANODE

| Model | Code | Description |
|---|---|---|
|  | ANODE4OM | **DESIGNED FOR THE SERIES OF 4" OIL FILLED SUBMERSIBLE MOTORS 4OM, 4OM2W, 4OME, 4OME SOLAR**<br><br>This special anode, made in "cadmium free " zinc-aluminium, protects motor from corrosion caused by stray currents or by usage in particularly aggressive waters.<br><br>It's been designed to be easily applied to the lower end of the motor, allowing a quick installation just in case of need. |
|  | ANODEFROG | **DESIGNED FOR THE SERIES OF ELECTRO-PUMPS 5" FROG**<br><br>This special anode, made in "cadmium free " zinc-aluminium, protects the 5" electropump FROG from corrosion caused by stray currents or by usage in particularly aggressive waters.<br><br>It's been designed to be easily applied to the lower end of the 5" electropump FROG, allowing a quick installation just in case of need. |

## CAPACITORS

| Model | Code | µF | Voltage | Frequency | Description |
|---|---|---|---|---|---|
|  | CAP20 | 20 | 450V C-Class | 50/60 Hz | Capacitors with flexible leads of 100 mm length and watertight end. |
| | CAP25 | 25 | 450V C-Class | 50/60 Hz | |
| | CAP35 | 35 | 450V C-Class | 50/60 Hz | |
| | CAP40 | 40 | 450V C-Class | 50/60 Hz | |
| | CAP60 | 60 | 450V C-Class | 50/60 Hz | |
| | CAP70 | 70 | 450V C-Class | 50/60 Hz | |
| | CAP80 | 80 | 450V C-Class | 50/60 Hz | |





## CABLES FOR SUBMERSIBLE MOTORS AND ELECTROPUMPS

| Model | Code | Length [m] | Section [mm²] | Description |
|---|---|---|---|---|
| | **4OM** / **4WM** | | | |
| | 0703402 / 0704031 | 1,7 | 1,5 | |
| | 0703403 / 0704032 | 2,7 | 2 | |
| | 0703404 / 0704033 | 3,5 | 2 | |
| | 0703405 / 0704034 | 10 | 1,5 | |
| | 0703406 / 0704035 | 20 | 1,5 | |
| | 0703407 / 0704036 | 20 | 2 | |
| | 0703408 / 0704037 | 30 | 1,5 | |
| | 0703409 / 0704038 | 30 | 2 | |
| | 0703411 / 0704039 | 50 | 1,5 | |
| | 0703412 / 0704040 | 50 | 2 | |
|  | **6OM** | | | **CABLE WITH CONNECTOR FOR THE SERIES OF SUBMERSIBLE MOTORS 4OM, 4WM, 4OM2W, 4WM2W, 4OME, 4OME SOLAR AND 6OM**<br><br>Blue flat cable made in cross-linked gum with connector for submersible motor.<br><br>Usable up to about 250 meters depth, even in drinking water.<br><br>All cables are homologated ACS, KTW, WRAS. |
| | 0603401 | 3 | 4 | |
| | 0603403 | 4 | 8 | |
| | 0603414 | 10 | 4 | |
| | 0603415 | 10 | 8 | |
| | 0603408 | 30 | 4 | |
| | 0603409 | 30 | 8 | |
| | 0603410 | 50 | 4 | |
| | 0603411 | 50 | 8 | |
| | 0603416 | 80 | 4 | |
| | 0603417 | 80 | 8 | |
| | **4OM2W** / **4WM2W** | | | |
| | 0703441 / 0704010 | 1,5 | 1,5 | |
| | 0703442 / 0704011 | 20 | 1,5 | |
| | 0703443 / 0704012 | 30 | 1,5 | |
| | **4OME** / **4OME SOLAR** | | | |
| | 0703471 | 1,5 | 1,5 | |
| | 0703473 | 30 | 1,5 | |
|  | **FROG** | | | **CABLE WITH CABLE GLAND CONNECTOR FOR THE SERIES OF ELECTRO-PUMPS 5" FROG**<br><br>H07 RN-F cable with connector for fast and easy connection to electropumps.<br><br>Single-phase versions with Schuko plug end.<br>Different plugs upon request. |
| | 1101710<br>5"FROG cable 1-ph with Shuko plug | 10 | 1 | |
| | 1101711<br>5"FROG cable 1-ph with Shuko plug | 20 | 1 | |
| | 1101720<br>5"FROG cable 3-ph | 10 | 1 | |
| | 1101721<br>5"FROG cable 3-ph | 20 | 1 | |




english

# ACCESSORIES

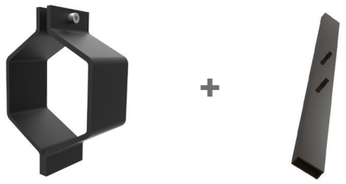
## FLOAT SWITCH FROG

| Model | Code | Description |
|---|---|---|
|  | 1101702 | **FLOAT SWITCH WITH CABLE GLAND CONNECTOR FOR THE SERIES OF ELECTROPUMPS 5” FROG**<br>Float switch with H07RN-F cable and connector for easy connection and removal.<br>**MAX. USAGE DEPTH**<br>40 m |

## PLUG CONNECTOR WITH FERRULE FROG

| Model | Code | Description |
|---|---|---|
|  | 1101703KIT | **PLUG CONNECTOR WITH FERRULE FOR THE SERIES OF ELECTROPUMPS 5” FROG** |

## DISASSEMBLY KIT FROG

| Model | Code | Description |
|---|---|---|
|  | 0103101 | **DISASSEMBLY KIT FOR THE SERIES OF ELECTROPUMPS 5” FROG**<br>This kit helps all installers to repair their FROG 5" submersible electropump. |

## PRESSURE TRANSDUCER 4OME

| Model | Code | Description |
|---|---|---|
|  | 0703001 | **PRESSURE TRANSDUCER FOR THE SERIES OF 4” OIL FILLED SUBMERSIBLE MOTORS 4OME**<br>0-16 bar 4-20 mA IP 65. |







english



# cables sizing charts

## 4" MOTORS CABLES SIZING CHART

| Rated power | | Rated Voltage | Cable section mm² | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 1,5 | 2,5 | 4 | 6 | 10 | 16 | 25 |
| kW | Hp | V | Maximum Length [m] | | | | | | | |
| 0,37 | 0,5 | Single-phase 220-230 V (50/60 Hz) | 63 | 94 | 156 | 250 | - | - | - | - |
| 0,55 | 0,75 | | 45 | 67 | 112 | 179 | 267 | - | - | - |
| 0,75 | 1 | | 39 | 59 | 98 | 156 | 233 | - | - | - |
| 1,1 | 1,5 | | 28 | 42 | 69 | 110 | 165 | 273 | - | - |
| 1,5 | 2 | | 22 | 32 | 54 | 86 | 128 | 213 | 337 | - |
| 2,2 | 3 | | - | 24 | 41 | 65 | 97 | 161 | 256 | - |
| 3,7 | 5 | | - | - | 26 | 42 | 63 | 104 | 166 | 256 |
| 0,37 | 0,5 | Single-phase 110-115 V (60 Hz) | 31,5 | 47 | 78 | 125 | - | - | - | - |
| 0,55 | 0,75 | | 22,5 | 33,5 | 56 | 89,5 | 133,5 | - | - | - |
| 0,75 | 1 | | 19,5 | 29,5 | 49 | 78 | 116,5 | - | - | - |
| 1,1 | 1,5 | | 14 | 21 | 34,5 | 55 | 85,5 | 136,5 | - | - |
| 0,37 | 0,5 | Three-phase 220-230 V (50/60 Hz) | 94 | 140 | 233 | - | - | - | - | - |
| 0,55 | 0,75 | | 67 | 100 | 167 | 266 | - | - | - | - |
| 0,75 | 1 | | 53 | 80 | 134 | 215 | - | - | - | - |
| 1,1 | 1,5 | | 42 | 63 | 104 | 166 | 247 | - | - | - |
| 1,5 | 2 | | 38 | 57 | 98 | 151 | 225 | - | - | - |
| 2,2 | 3 | | 30 | 45 | 75 | 119 | 177 | 292 | - | - |
| 3 | 4 | | 23 | 34 | 56 | 90 | 134 | 220 | 347 | - |
| 4 | 5,5 | | - | 25 | 41 | 66 | 98 | 162 | 256 | - |
| 5,5 | 7,5 | | - | - | 31 | 49 | 73 | 120 | 189 | 290 |
| 0,37 | 0,5 | Three-phase 380-400 V (50/60 Hz) | 270 | 405 | - | - | - | - | - | - |
| 0,55 | 0,75 | | 192 | 288 | - | - | - | - | - | - |
| 0,75 | 1 | | 155 | 234 | - | - | - | - | - | - |
| 1,1 | 1,5 | | 120 | 180 | 298 | - | - | - | - | - |
| 1,5 | 2 | | 109 | 163 | 271 | - | - | - | - | - |
| 2,2 | 3 | | 86 | 129 | 214 | 341 | - | - | - | - |
| 3 | 4 | | 47 | 96 | 160 | 255 | 381 | - | - | - |
| 4 | 5,5 | | 35 | 71 | 118 | 188 | 280 | 463 | - | - |
| 5,5 | 7,5 | | - | 52 | 87 | 139 | 207 | 342 | - | - |
| 7,5 | 10 | | - | 40 | 66 | 105 | 157 | 260 | 411 | - |

## 4OME, 4OME SOLAR MOTORS CABLES SIZING CHART

| Rated Voltage | Cable section mm² | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 1,5 | 2,5 | 4 | 6 | 10 | 16 | 25 |
| V | DISTANCE MESSENGER TO MOTOR OR LINE TO *MESSENGER* [m] | | | | | | | |
| 220-230 V | 22 | 32 | 54 | 86 | 128 | 213 | 337 | - |

## 6" MOTORS CABLES SIZING CHART

| Rated power | | Rated Voltage | Cable section mm² | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 4x2,5 | 4x4 | 4x6 | 4x8 | 4x10 | 4x16 | 4x25 | 4x35 | 4x50 | 4x70 |
| kW | Hp | V | Maximum Length [m] | | | | | | | | | |
| 4.0 | 5.5 | Three-phase 380-400 V (50/60 Hz) Direct DOL | 180 | 290 | 430 | 570 | 710 | - | - | - | - | - |
| 5.5 | 7.5 | | 130 | 210 | 320 | 425 | 530 | 830 | - | - | - | - |
| 7.5 | 10.0 | | 90 | 150 | 230 | 310 | 390 | 610 | 940 | - | - | - |
| 9.2 | 12.5 | | 80 | 130 | 190 | 255 | 320 | 510 | 770 | - | - | - |
| 11.0 | 15.0 | | 60 | 100 | 160 | 215 | 270 | 430 | 650 | 890 | - | - |
| 13.0 | 17.5 | | 40 | 90 | 140 | 185 | 230 | 370 | 530 | 780 | - | - |
| 15.0 | 20.0 | | - | 80 | 120 | 160 | 200 | 320 | 490 | 680 | 920 | - |
| 18.5 | 25.0 | | - | - | 100 | 130 | 160 | 260 | 400 | 540 | 740 | 980 |
| 22.0 | 30.0 | | - | - | - | 100 | 140 | 220 | 340 | 470 | 630 | 840 |
| 26.0 | 35.0 | | - | - | - | - | 80 | 190 | 310 | 420 | 540 | 730 |
| 30.0 | 40.0 | | - | - | - | - | - | 160 | 250 | 340 | 470 | 620 |
| 37.0 | 50.0 | | - | - | - | - | - | 100 | 160 | 210 | 310 | 400 |
| 4.0 | 5.5 | Three-phase 380-400 V (50/60 Hz) Star/Delta | 270 | 430 | 640 | 845 | - | - | - | - | - | - |
| 5.5 | 7.5 | | 190 | 310 | 480 | 635 | 790 | - | - | - | - | - |
| 7.5 | 10.0 | | 130 | 220 | 340 | 460 | 580 | 910 | - | - | - | - |
| 9.2 | 12.5 | | 120 | 190 | 280 | 380 | 480 | 760 | - | - | - | - |
| 11.0 | 15.0 | | 90 | 150 | 240 | 320 | 400 | 640 | 970 | - | - | - |
| 13.0 | 17.5 | | 80 | 140 | 210 | 280 | 350 | 540 | 850 | - | - | - |
| 15.0 | 20.0 | | 70 | 120 | 180 | 240 | 300 | 480 | 730 | 1020 | - | - |
| 18.5 | 25.0 | | 60 | 90 | 150 | 195 | 240 | 390 | 600 | 810 | - | - |
| 22.0 | 30.0 | | - | 70 | 120 | 165 | 210 | 330 | 510 | 700 | 940 | - |
| 26.0 | 35.0 | | - | 50 | 100 | 140 | 180 | 290 | 430 | 610 | 800 | - |
| 30.0 | 40.0 | | - | - | 90 | 120 | 150 | 240 | 370 | 510 | 700 | 930 |
| 37.0 | 50.0 | | - | - | 60 | 75 | 90 | 150 | 230 | 320 | 460 | 720 |
| 4.0 | 5.5 | Three-phase 220-230 V (50/60 Hz) Direct DOL | 31 | 59 | 95 | 134 | 172 | 276 | 427 | - | - | - |
| 5.5 | 7.5 | | 20 | 41 | 69 | 99 | 128 | 207 | 322 | 448 | - | - |
| 7.5 | 10.0 | | - | 27 | 47 | 70 | 92 | 151 | 236 | 331 | 477 | - |
| 9.2 | 12.5 | | - | 10 | 37 | 55 | 73 | 122 | 193 | 270 | 391 | - |
| 11.0 | 15.0 | | - | - | 28 | 44 | 59 | 100 | 160 | 225 | 326 | 450 |
| 13.0 | 17.5 | | - | - | 12 | 30 | 48 | 83 | 134 | 190 | 277 | 383 |
| 15.0 | 20.0 | | - | - | 8 | 25 | 41 | 72 | 117 | 168 | 245 | 341 |
| 18.5 | 25.0 | | - | - | - | - | 22 | 58 | 95 | 136 | 200 | 277 |
| 22.0 | 30.0 | | - | - | - | - | 14 | 46 | 78 | 113 | 167 | 234 |
| 26.0 | 35.0 | | - | - | - | - | - | 26 | 62 | 91 | 136 | 191 |
| 30.0 | 40.0 | | - | - | - | - | - | - | 52 | 78 | 117 | 165 |
| 37.0 | 50.0 | | - | - | - | - | - | - | 30 | 60 | 92 | 132 |



# units conversion charts

## LENGTH

| millimetre mm | centrimetre cm | metre m | inch in | foot ft | yard yd |
|---|---|---|---|---|---|
| 1 | 0,1 | 0,001 | 0,0394 | 0,0033 | 0,0011 |
| 10 | 1 | 0,01 | 0,3937 | 0,0328 | 0,0109 |
| 1000 | 100 | 1 | 393,701 | 3,2808 | 10,936 |
| 25,4 | 2,54 | 0,0254 | 1 | 0,0833 | 0,0278 |
| 304,8 | 30,48 | 0,3048 | 12 | 1 | 0,3333 |
| 914,4 | 91,44 | 0,9144 | 36 | 3 | 1 |

## VOLUME

| cubic metre $m^3$ | litre l | millilitre ml | imp. gallon Imp. gal. | gallon US US gal | cubic foot $ft^3$ |
|---|---|---|---|---|---|
| 1 | 1000 | $1 \times 10^{6}$ | 220 | 264,2 | 35,3147 |
| 0,001 | 1 | 1000 | 0,22 | 0,2642 | 0,0353 |
| $1 \times 10^{-6}$ | 0,001 | 1 | $2,2 \times 10^{-4}$ | $2,642 \times 10^{-4}$ | $3,53 \times 10^{-5}$ |
| 0,00455 | 4,546 | 4546 | 1 | 1,201 | 0,1605 |
| 0,00378 | 3,785 | 3785 | 0,8327 | 1 | 0,1337 |
| 0,0283 | 28,317 | 28317 | 6,2288 | 7,4805 | 1 |

## WEIGHT

| kilogram kg | pound lb | hundredweight cwt | ton t | t long tn | t short sh. tn |
|---|---|---|---|---|---|
| 1 | 2,205 | 0,0197 | 0,001 | $9,84 \times 10^{-4}$ | 0,0011 |
| 0,454 | 1 | 0,0089 | $4,54 \times 10^{-4}$ | $4,46 \times 10^{-4}$ | $5,0 \times 10^{-4}$ |
| 50,802 | 112 | 1 | 0,0508 | 0,05 | 0,056 |
| 1000 | 2204,6 | 19,684 | 1 | 0,9842 | 1,1023 |
| 1016 | 2240 | 20 | 1,0161 | 1 | 1,102 |
| 907,2 | 2000 | 17,857 | 0,9072 | 0,8929 | 1 |

## POWER

| kilowatt Kw | horsepower Hp | watt w |
|---|---|---|
| 1 | 1,34 | 1000 |
| 0,75 | 1 | 750 |
| 0,001 | 0,0013 | 1 |

## VOLUMETRIC FLOW RATE

| litre second l/s | litre minute l/min | cubic metre hour $m^3/h$ | cubic foot hour $ft^3/h$ | cubic foot minute $ft^3/min$ | imp. gal. minute Imp. gal/min | US gal. minute US gal/min | US barrel day (oil) US barrel/g |
|---|---|---|---|---|---|---|---|
| 1 | 60 | 3,6 | 127,133 | 2,1189 | 13,2 | 15,85 | 543,439 |
| 0,017 | 1 | 0,06 | 2,1189 | 0,0353 | 0,22 | 0,264 | 9,057 |
| 0,278 | 16,667 | 1 | 35,3147 | 0,5886 | 3,666 | 4,403 | 150,955 |
| 0,008 | 0,472 | 0,0283 | 1 | 0,0167 | 0,104 | 0,125 | 4,275 |
| 0,472 | 28,317 | 1,6990 | 60 | 1 | 6,229 | 7,480 | 256,475 |
| 0,076 | 4,546 | 0,2728 | 9,6326 | 0,1605 | 1 | 1,201 | 41,175 |
| 0,063 | 3,785 | 0,2271 | 8,0209 | 0,1337 | 0,833 | 1 | 34,286 |
| 0,002 | 0,110 | 0,0066 | 0,2339 | 0,0039 | 0,024 | 0,029 | 1 |

## PRESSURE AND PREVALENCE

| Newton square metre $N/m^2$ (Pa) | kiloPascal kPa | bar bar | kilogram force square centimetre $kgf/cm^2$ | pound force square inch psi | foot of water ft $H_2O$ | metre of water m $H_2O$ | millimetre mercury mm Hg | inch mercury In Hg |
|---|---|---|---|---|---|---|---|---|
| 1 | 0,001 | $1 \times 10^{-5}$ | $1,02 \times 10^{-5}$ | $1,45 \times 10^{-4}$ | $3,35 \times 10^{-4}$ | $1,02 \times 10^{-4}$ | 0,0075 | $2,95 \times 10^{-4}$ |
| 1000 | 1 | 0,01 | $1,02 \times 10^{-2}$ | 0,145 | 0,335 | 0,102 | 7,5 | 0,295 |
| 100000 | 100 | 1 | 1,02 | 14,5 | 33,52 | 10,2 | 750,1 | 29,53 |
| 98067 | 98,07 | 0,981 | 1 | 14,22 | 32,81 | 10 | 735,6 | 28,96 |
| 6895 | 6,895 | 0,069 | 0,0703 | 1 | 2,31 | 0,703 | 51,72 | 2,036 |
| 2984 | 2,984 | 0,03 | 0,0305 | 0,433 | 1 | 0,305 | 22,42 | 0,882 |
| 9783 | 9,789 | 0,098 | 0,1 | 1,42 | 3,28 | 1 | 73,42 | 2,891 |
| 133,3 | 0,133 | 0,0013 | 0,014 | 0,019 | 0,045 | 0,014 | 1 | 0,039 |
| 3386 | 3,386 | 0,338 | 0,345 | 0,491 | 1,133 | 0,345 | 25,4 | 1 |

IT

# condizioni generali di vendita

**1. Ordini** - Gli ordini si intendono definitivi e impegnativi solo se espressamente confermati per iscritto dalla PM S.r.l. ed ulteriormente confermati dal Cliente qualora il Fornitore abbia apportato modifiche all'ordine ricevuto.

**2. Prezzo** - Il prezzo della fornitura è quello risultante dal listino prezzi in vigore al momento dell'invio dell'ordine, oppure quello negoziato dalle parti e risultante nella conferma d'ordine. Se non diversamente stabilito, il prezzo della fornitura si intende per merce imballata secondo gli usi del settore in relazione al mezzo di trasporto pattuito, essendo anche inteso che qualsiasi altra spesa o onere per richieste particolari sarà a carico del Cliente.

**3. Trasporto della merce** - Qualora sia stata convenuta una vendita con trasporto tramite vettore, indipendentemente da colui che incarica il vettore, i rischi passano al Cliente con la consegna della merce al primo Vettore: eventuali reclami per rotture, deterioramenti, manomissioni o mancanze dovranno essere denunciati sempre al Vettore nei termini di legge previsti, dandone comunque opportuna conoscenza alla PM S.r.l..

**4. Termini di consegna** - Salvo differente accordo, i termini di consegna previsti nell'ordine sono puramente indicativi e non essenziali; eventuali ritardi nella consegna per:
- cause di forza maggiore
- ritardi di approvvigionamento delle materie prime
- eventuali variazioni dell'ordine richieste in fase di produzione
- inadempienza ai pagamenti da parte del Committente

sollevano comunque il Fornitore dal rispetto dei termini concordati non potranno dare diritto ad indennizzi e/o risarcimenti di alcun genere.

**5. Pagamenti** - I pagamenti devono essere compiuti esclusivamente al Fornitore alle condizioni convenute o richiamate nell'ordine.
È inteso che eventuali reclami o contestazioni non danno diritto al Cliente di sospendere o comunque ritardare i pagamenti dei prodotti oggetto di contestazione, né, tanto meno, di altre forniture. Più in generale, nessuna azione od eccezione potrà essere svolta od opposta dal Cliente se non dopo l'integrale pagamento dei prodotti per i quali tale contestazione od eccezione si intende svolgere.
Il Cliente non è autorizzato ad effettuare alcuna deduzione dal prezzo pattuito (ad es. in caso di pretesi difetti dei prodotti), se non previamente stabilito per iscritto con il Fornitore.
In caso di ritardato pagamento alle scadenze pattuite verranno addebitati al Cliente, senza preavviso, gli interessi di mora in base alle aliquote previste per legge.

**6. Garanzia prodotti** - I prodotti vengono garantiti dal Fornitore per difetti progettuali, di materiale e di lavorazione, per un periodo di 24 mesi decorrenti dalla data apposta sull'etichetta del prodotto.
Si ricorda che i prodotti devono essere installati da personale tecnico qualificato, pertanto non vengono coperte da garanzia avarie per installazioni con errati collegamenti elettrici, mancata protezione adeguata, montaggi difettosi oltre ai danni causati da installazioni compiute in ambienti non conformi alle specifiche comunicate dal Fornitore, corrosioni e/o abrasioni da parte del liquido pompato, sovraccarichi oltre i limiti di targa e cause di forza maggiore in generale.
La garanzia decade nei casi in cui il cliente sia inadempiente nei pagamenti, siano state apportati manomissioni o interventi al prodotto da parte di terzi non autorizzati, il danno venga comunicato oltre i termini previsti al punto seguente.

**7. Contestazioni** - I prodotti acquistati devono essere verificati e controllati all'arrivo per la loro conformità all'ordine. Discordanze eventuali, riguardanti la quantità, la specie o il tipo dei prodotti forniti nonché eventuali reclami concernenti le caratteristiche esteriori dei prodotti, dovranno essere sempre denunciati per iscritto, nel termine massimo di 8 giorni dal loro ricevimento, citando tutti gli estremi per un immediato controllo. Trascorso tale termine, i prodotti verranno considerati a tutti gli effetti accettati; inoltre, l'avvenuto uso e/o installazione dei prodotti che presentino difetti palesi, esclude la possibilità di contestazioni o reclami riguardanti i difetti stessi.
I difetti o vizi dei prodotti, non accertabili in base a diligente verifica esteriore degli stessi, devono essere denunciati per iscritto al Fornitore, a pena di decadenza, entro 8 giorni dalla loro scoperta, ed in ogni caso non oltre il termine di garanzia sopra previsto. Ogni eventuale reclamo deve specificare con precisione il difetto riscontrato; i prodotti oggetto della contestazione devono essere sempre messi a disposizione degli incaricati del Fornitore per la loro verifica.
Le contestazioni non comporteranno la risoluzione del singolo ordine, bensì, a discrezione del Fornitore, la riparazione o sostituzione gratuita dei prodotti risultati difettosi, salvo diversa decisione dovuta a ragioni obiettive di impossibilità di adottare uno dei rimedi sopra previsti. Fatti salvi i casi di dolo o colpa grave, quanto sopra disposto esclude ogni altra responsabilità del Fornitore comunque originata dai prodotti forniti o dalla loro rivendita. In particolare, non potranno essere pretesi risarcimenti e/o indennizzi per danni, diretti o indiretti, di qualsiasi natura derivanti dal mancato o limitato utilizzo dei prodotti.
Eventuali contestazioni riguardanti una singola consegna non esonerano il Cliente dall'obbligo di ritirare la restante quantità di prodotti prevista dallo specifico ordine, oppure da altri ordini distinti da quello in esame.

**8. Resi di merce** - Il Fornitore non accetta resi di merce se non preliminarmente autorizzati dallo stesso per iscritto. I resi devono comunque essere integri (non smontati), imballati (possibilmente nella confezione originale) e accompagnati da bolla di reso, assumendosene il Cliente tutti i costi e rischi.

**9. Sospensione o annullamento degli ordini** - Qualora il Cliente non rispettasse, anche solo in parte, una delle condizioni generali stabilite per la fornitura, come pure in caso di constatata difficoltà nei pagamenti ovvero venissero a mancare o diminuissero le garanzie di solvibilità o, più in generale, la sua capacità economica, è facoltà del Fornitore di sospendere o annullare gli ordini in corso, ovvero di subordinare la consegna dei prodotti alla prestazione di adeguate garanzie di pagamento.

EN

# general sales conditions

**1. Orders** - Orders are considered definitive and binding only if expressly confirmed in writing by PM S.r.l., and further confirmed by the Customer if Supplier makes changes to the order received.

**2. Price** - The price of supply refers to price list in effect at the time the order is sent, or the price agreed by the parties and printed in the order confirmation. Unless otherwise stated, the price of the supply is understood to be for goods packaged according to sector uses with reference to the agreed means of transport. It's also understood that further expenses or charges for special requests will be at the expense of the Customer.

**3. Transport of goods** - If a sale has been agreed by carrier, regardless the part designating the carrier, risks move to the Customer with the delivery of the goods to the first Carrier: any claims for damages, deterioration, tampering or lacks must always be reported to the Carrier in accordance with the law deadlines and providing, however, appropriate knowledge to PM S.r.l..

**4. Terms of delivery** - Unless otherwise agreed, delivery terms printed in the order are purely indicative and not essential; any delays in delivery for:
- reasons due to force majeure
- delays in raw materials supply
- any changes in the order due to requests during production
- defaulting Customer in payments

relieve Supplier from compliance with the agreed terms and can not give the right to any kind of reimbursement and/or compensation.

**5. Payments** - Payments must be made exclusively to the Supplier according to the terms agreed or printed in the order.
It is understood that any complaints or disputes don't entitle the Customer in any case to suspend or delay payments of the products in question or, not even, of other supplies. More generally, no action or exception can be carried out or opposed by the Customer until the full payment of the products for which this complaint or exception is intended to be carried out.
The Customer is not authorized to make any deductions from the agreed price (for example, in case of supposed product defects), unless previously agreed in writing with the Supplier.
In case of delayed payment at the agreed deadlines, default interests will be debited to the Client on the basis of the established rates by law.

**6. Product warranty** - Products are guaranteed by the Supplier for design, material and processing defects, for a period of 24 months starting from the date printed on product label.
Please remind that products must be installed by qualified technical employees, therefore damages due to installations with wrong electrical connections, missed adequate protection, faulty assembly as well as damages caused by installations carried out in locations not complying with the specifications communicated by the Supplier, corrosion and/or abrasion due to pumped liquid, overloads beyond plate limits and causes of force majeure in general are not covered by warranty. The warranty is void if Customer is defaulting in payments, if unauthorized third parties have tampered with product or made action on it, if damages is communicated beyond the deadlines specified in the following point.

**7. Complaints** - Products purchased must be verified and checked upon arrival about their compliance with the order. Any discrepancies, regarding the quantity, kind or type of products supplied and any complaints concerning the external characteristics of the products, must always be reported in writing, within a maximum of 8 days from receipt, mentioning all the details for an immediate control. After this deadline, products will be considered accepted; in addition, the possibility of claims or complaints regarding defects or damaged is totally excluded in case of use and/or installation of products with obvious defects.
Defects or faults of the products, not assertable even if a diligent external verification have been carried out, must be reported in writing to the Supplier, under penalty of forfeiture, within 8 days after discovery, and in any case not later than the warranty term above . Any complaint must accurately specify the defect found; products object of the complaints have always to be available of the Supplier for their verification.
Protests will not entail in the resolution of the single order, but rather, at Supplier discretion, the reparation or free replacement of the faulty products, unless other decision due to objective reasons of impossibility to implement one of the above remedies. Except for fraud or gross negligence, the foregoing excludes any other responsibility of the Supplier that can be originated from supplied products or their resale. In particular, reimbursement and/or compensation for damages, direct or indirect, of any nature deriving from the non-use or limited use of products can not be claimed.
Any protest regarding a single delivery do not relieve the Customer from the duty to collect the outstanding quantity of products of that order, or from other orders different than one in question.

**8. Returned goods** - Supplier does not accept returns of goods unless previously authorized in writing by Supplier himself. However, returns must be intact (not disassembled), packed (in the original packaging if possibly) and shipped with goods return note, at all Customer charges and risks.

**9. Suspension or cancellation of orders** - If the Customer, in whole or in part, does not comply with one of the general conditions agreed for the supply, as well as in case of difficulty in payments, if guarantees of solvency, or more in general its economic capacity, fails or decreases, Supplier has the right to suspend or cancel underway orders, or to subordinate delivery of products to adequate guarantees of payment.

PM S.r.l.

Via A. Volta, 8
36040 Brendola (VI) - Italy
T. +39 0444 673043
F. +39 0444 677273
info@pmtechnology.eu
www.pmtechnology.eu

© COPYRIGHT PM S.r.l.

Tutti i diritti riservati.
Tutte le informazioni riportate nel presente catalogo sono indicative; PM S.r.l. si riserva il diritto di variare i dati esposti in qualsiasi momento e senza dovere di preavviso.
All rights reserved.
All information shown in this catalogue are purely indicative; PM S.r.l. reserves the right to make any necessary variation without prior notice.

EDIT: CATALOGUE/MAR/2023

www.pmtechnology.eu