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ISTRUZIONI PER L'INSTALLAZIONE E LA MANUTENZIONE (IT)  
INSTRUCTIONS FOR INSTALLATION AND MAINTENANCE (GB)  
INSTRUCTIONS POUR L'INSTALLATION ET LA MAINTENANCE (FR)  
INSTALLATIONSANWEISUNG UND WARTUNG (DE)  
INSTRUCTIES VOOR INSTALLATIE EN ONDERHOUD (NL)  
INSTRUCCIONES PARA LA INSTALACIÓN Y EL MANTENIMIENTO (ES)  
INSTALLATIONS - OCH UNDERHÅLLSANVISNING (SE)  
ΟΔΗΓΙΕΣ ΓΙΑ ΤΗΝ ΕΓΚΑΤΑΣΤΑΣΗ ΚΑΙ ΤΗ ΣΥΝΤΗΡΗΣΗ (GR)  
KURMA VE BAKIM BİLGİLERİ (TR)  
ИНСТРУКЦИИ ПО МОНТАЖУ И ТЕХОБСЛУЖИВАНИЮ (RU)  
INSTRUCȚIUNI PENTRU INSTALARE ȘI ÎNTREȚINERE (RO)  
INSTRUÇÕES PARA A INSTALAÇÃO (PT)  
INSTRUKCJA MONTAŻU I KONSERWACJI (PL)  
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ASENNUS- JA HUOLTO-OHJEET (FI)  
INSTALLÁCIÓS ÉS KARBANTARTÁSI KÉZIKÖNYV (HU)  
ИНСТРУКЦИЯ ЗА ИНСТАЛИРАНЕ И ОБСЛУЖВАНЕ (BG)  
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ІНСТРУКЦІЇ З МОЖНТАЖУ ТА ТЕХНІЧНОГО ОБСЛУГОВУВАННЯ (UA)

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**KEY**

The following symbols have been used in the discussion:



**SITUATION OF GENERAL DANGER.**

Failure to respect the following instructions may cause damage to persons and property.



**SITUATION OF RISK OF ELECTRIC SHOCK.**

Failure to respect the following instructions may cause a situation of serious danger for personal safety.

**1. GENERAL**



For safety information and warnings, please refer to the **SAFETY INSTRUCTIONS BOOKLET EN-60335-1**



Read this documentation carefully before installation.

**2. PRODUCT DESCRIPTION AND USE**

**4" ELECTRIC PUMP**

Consisting of a vertical multistage pump and an immersion squirrel-cage motor, connected directly to the pump and located underneath it. The pump and motor are equipped with shafts that run on plain bearings. The well water is used to lubricate the pump bearings and to cool the motor. Therefore, it is absolutely necessary that the pump is only put into operation when it is completely submerged in water, avoiding any dry running of the pump. The engine is fitted with a special seal fitted on the shaft to protect the internal components from pollutants or abrasive substances. Cable connections below the water level must have a vulcanized joint to ensure tightness.

**USE**

Submersible electric pump for application dedicated to pressure boosting, drawing water from underground and distribution in civil and commercial water systems. Supply of autoclaves and tanks, washing systems, hobby use and irrigation systems, gardening.

### ELECTRONIC EQUIPMENT

All single-phase electric pumps must be connected to the electrical control panel which includes a thermal overload protection with manual reset and capacitor (the electrical control panel can be ordered separately or is supplied as standard with the pump in the kit versions).

For the three-phase versions, the protection is to be provided by the user.

### HYDRAULIC EQUIPMENT

The electric pumps are equipped with a check valve located in the upper support. On all submersible electric pumps it is recommended to install an additional check valve on the delivery line.

## 3. MANAGEMENT

### Supply and storage

All pumps leave the factory only after they have been subjected to a careful series of checks. However, the material must be inspected immediately after delivery in order to be able to check for any damage caused during transport.

If the pump is not to be used immediately, it must be stored in a cool and not excessively dry place, tightly closed in its original packaging.

### Transport

The electric pump unit must be handled with care using suitable lifting equipment and slings that comply with safety regulations.

Do not apply bending stress to the unit.

Never use power or earth cables to move the pump.

### Weight

The adhesive plate on the packaging indicates the total weight of the pump.

## 4. PUMPED LIQUIDS

The machines have been designed and made for pumping water, free from explosive substances and solid particles or fibres, with a density of 1000 Kg/m<sup>3</sup>, a kinematic viscosity of 1mm<sup>2</sup>/s and non chemically aggressive liquids. The pump is not suitable for pumping flammable or dangerous liquids.

## 5. TECHNICAL DATA

Storage temperature	-10°C + 40°C
Liquid temperature	from 0°C to +40°C
Installation	Vertical or horizontal
Operating range	See pump data plate
Max sand content	150 gr/m <sup>3</sup>

## 6. COUPLING OF THE PUMP TO THE SUBMERSIBLE MOTOR

### For 4" disassembled pumps

The pump is suitable for coupling with a 4" submersible motor in accordance with NEMA standards.

For correct coupling proceed as follows (Fig.1):

- Remove the cable guard (1) by unscrewing the fixing screws (2) and unhooking it from the external casing of the pump (7).
- Make sure that the shaft, joint and coupling surfaces are clean.
- Position the motor (3) vertically.
- Couple the pump to the motor, making sure to align the "cable gland" opening of the lower support with the cable outlet of the motor.
- After coupling, screw the nuts (4) onto the tie rods (5) securing the pump to the motor, tightening them in sequence according to the diagonals and with a tightening torque of 18 N/m ± 1.
- Lay the motor cable (6) along the pump (7) and cover it with the cable guard (1).
- Attach the cable guard to the casing and secure it with the screws (2).

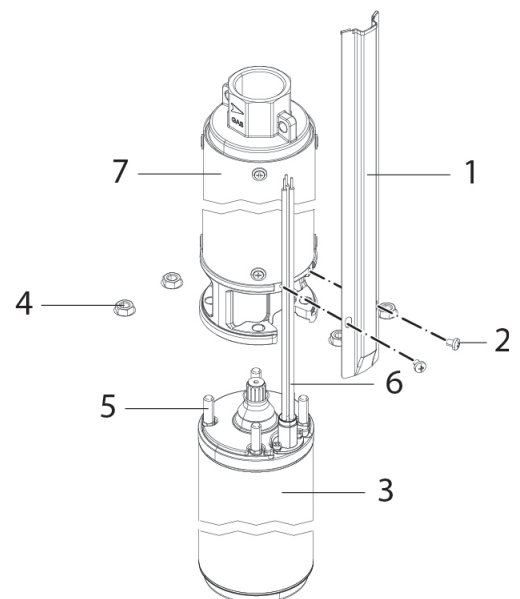


Fig. 1 Pump-motor coupling

## 7. INSTALLATION

Installation must be carried out by competent, skilled personnel in possession of the technical qualifications required by the specific legislation in force. The term skilled personnel means persons whose training, experience and instruction, as well as their knowledge of the respective standards and requirements for accident prevention and working conditions, have been approved by the person in charge of plant safety, authorizing them to perform all the necessary activities, during which they are able to recognize and avoid all dangers. (Definition for technical personnel IEC 364)



The appliance may not be used by children under 8 years old or by persons with reduced physical, sensory or mental capacities, or who lack experience or knowledge, unless they are under supervision or after they have received instructions concerning the safe use of the appliance and the understanding of the dangers involved. Children must not play with the appliance.



First of all, the power supply cable must be examined carefully, to exclude with absolute certainty the presence of any damage. In particular, it must be checked that the cable has not been twisted, bent or crushed. Never use the power cable to carry the pump or to lower it into the well. Lower the pump into the well using a suspension cable. The end of the power cable must be protected from moisture. The installation depth of the pump must be studied according to the dimensions indicated on the well drawing.

1. The pump can be lowered into wells with diameter 4" or more.

The diameter of the well must remain constant to allow a total descent without excessive pressure.

It is possible to install the pumps in tanks and cisterns as long as the pump is always in a vertical position and immersed in water. In case of horizontal installation, consider the use of a cooling jacket.

2. The pump must be lowered into the well by means of a nylon or steel suspension cable. No traction of any kind must be exerted on the electric cable of the motor. The electrical cable must be secured with plastic clamps every two or three metres along the delivery pipe. In the case of flanged delivery pipes, the flanges themselves must be provided with recesses with well-rounded edges to accommodate the cable.
3. If the delivery line consists of pipe sections screwed together, make sure that they are safely tightened to prevent the pipe becoming unscrewed by the torque force due to motor kickback when starting.
4. Install the pump at a distance of at least 30 cm from the bottom of the well in order to prevent sand getting into the motor and the suction of impurities.

The pump must be completely submerged when operating. If the water level is susceptible to frequent changes, the system should be equipped with a water shortage protection system to avoid the risk of dry running. When the pump is installed in a borehole with a diameter slightly larger than its own, make sure that the descent is not prevented by obstructions.

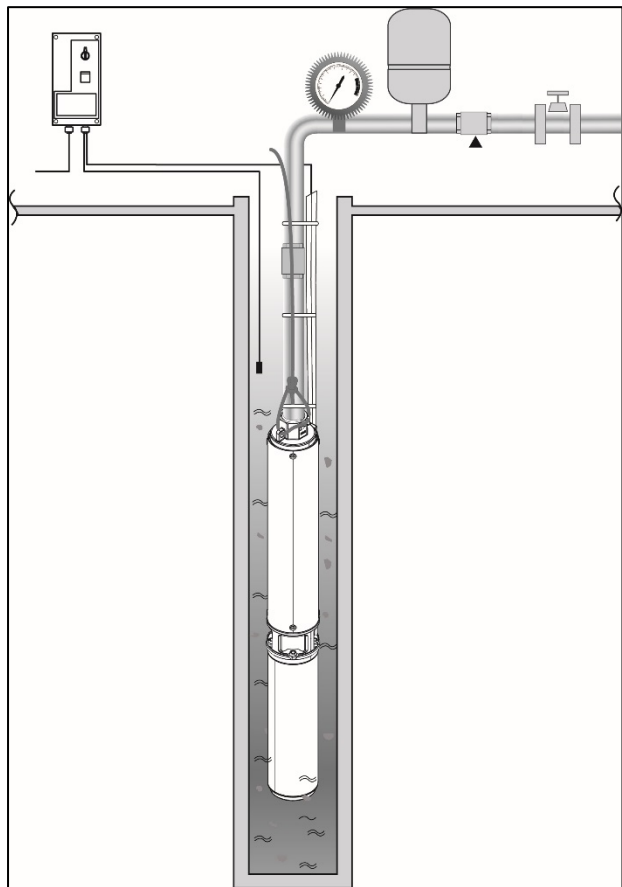


Fig.2 Example of installation

## 8. ELECTRICAL CONNECTIONS



For the electrical connections, please refer to the **SAFETY INSTRUCTIONS BOOKLET EN-60335-1**



**The mains voltage must be the same as that on the motor data plate.**

**Connect to the mains with a two-pole switch, with contact opening distance of at least 3 mm.**

**Correctly size the cross section of the power supply cable in relation to the length to avoid voltage losses. Install a high-sensitivity differential switch (0.03A) as additional protection or compatible with the control equipment (e.g. Inverter).**



In fixed installations, International Standards require the use of isolating switches and fuse holder bases.



The electrical connection to any electronic equipment against dry-running must be carried out in compliance with the wiring diagrams given in the use and maintenance manuals of the electronic control units.



Cable connections below the water level must have a vulcanized joint to ensure tightness.



Before starting, the insulation value to earth must be checked.

## 9. START-UP

1. After lowering the pump into the well, start it up at a reduced flow rate, checking the current consumption and the relative pressure. Gradually increase the flow rate to check for changes in the water level and any sand content. In the case of large quantities of sand in the water being transported, the internal parts of the pump will be subject to considerable wear. If the sand content is too high, the pump may become blocked or unprimed. In this case, it is necessary to contact the company that made the well for the necessary assistance. If the flow stops, switch off the pump immediately to avoid dry running or running with the motor blocked.
2. For three-phase motors, check the direction of rotation. The correct direction supplies higher pressure.
3. Check the current consumption, which should drop to the value of the rated current no more than 2 seconds after switching on. If this does not occur, the pump must be stopped immediately and the cause of the fault must be sought. During operation, the current consumption must not, under any circumstances, exceed the rated current.
4. Run the pump for a few hours to verify that the borehole flow rate is sufficient in relation to the pump itself.

If the water does not come out at the first start even if the motor is running normally and the maximum suction depth has been respected, it is probable that the pump will not be able to expel the air inside the delivery pipe, thus preventing the valve from opening. Fill the delivery pipe completely with water and repeat the start-up operation.

## 10. MAINTENANCE



Cleaning and maintenance activities must not be carried out by children (under 8 years of age) without supervision by a qualified adult. Before starting any work on the system or troubleshooting, it is necessary to interrupt the electrical connection of the pump (remove the plug from the socket) and read the instruction and maintenance manual.



In normal operation the pump does not require any type of maintenance. **The pump may not be disassembled except by qualified and specialised personnel. Any modification made without prior authorisation relieves the manufacturer of all responsibility.**



All repair and maintenance work must be carried out only after having disconnected the pump from the power supply mains.



It is recommended to have the system serviced every 6 months by a qualified technician.  
In case of long periods of inactivity, it is recommended to start the pump 2 or 3 times a month.  
If a join has to be made in the power cable, use a cable with a suitable cross section.



Any modification made without prior authorisation relieves the manufacturer of all responsibility. All the spare parts used in repairs must be authentic and all accessories must be authorised by the manufacturer, in order to ensure maximum safety of the machines and of the systems in which they may be installed.

## 11. DISPOSAL



This product or its parts must be disposed of in an environment-friendly manner and in compliance with the local regulations concerning the environment; use public or private local waste collection systems.

12. TROUBLESHOOTING

FAULTS	CHECKS (possible causes)	REMEDIES
1. The motor does not start	A. Check that the motor is powered and that the voltage corresponds to the value on the data plate B. Check the presence of all phases for three-phase motors C. Dry running	A. Check the fuses B. Restore the missing one C. Lower the pump level or wait for the natural restoration of the level in the well
2. Motor protection is activated shortly after starting	A. Make sure that the supply voltage corresponds to the value on the data plate B. Check the presence of all phases C. Check the setting of the protection and the presence of possible open or dirty contacts D. Check that the liquid temperature is not too high E. Check for excessive torque forces (scraping between rotating and fixed parts, sand in the pump, etc.)	B. Restore the missing phase C. Restore the protections, consulting the data plate or replacing the components concerned E. Eliminate the cause of friction or clean the pump to remove any obstructions
3. The motor protection is tripped after long periods of apparently normal operation	A. Check that the voltage is sufficient and that all the phases are present B. Check for excessive torque forces (scraping between rotating and fixed parts, presence of sand, etc.)	A. Restore the missing phase B. Eliminate the cause of friction or clean the pump to remove any obstructions
4. Motor running but flow rate is not sufficient	A. In the three-phase versions check the direction of rotation B. Check that the pipes are not partially obstructed C. Check that the pump flow rate is lower than that of the well D. Check the state of wear of the pump	A. Invert any two phase leads B. Eliminate the obstructions C. Replace the pump with one with a lower flow rate D. Overhaul the pump
5. Motor running but pump does not deliver	A. Check that there has not been an excessive lowering of the level of the well resulting in possible dry running B. Check that the required head is not higher than that of the pump C. In the three-phase versions check the direction of rotation D. Pump blocked by impurities	A. Wait for the natural level to be restored or lower the level of the well. Install adequate protection against dry running B. Replace the pump with one with suitable characteristics C. Invert two phase leads D. Clean the pump, grid or pipes
6. The pressure is insufficient	A. Check for leaks in the system B. In the three-phase version check the direction of rotation C. Check the state of wear of the pump	A. Take action to eliminate leaks B. Invert two phase leads C. Overhaul the pump
7. Pump starts and stops too frequently	A. Check for leaks in the system B. Check the correct operation of the check valve C. Check the efficiency of the pressure switch, if used D. Check that the tank is of sufficient size E. Check the position of the probes against dry running, if used	A. Take action to eliminate leaks B. Repair or replace the valve C. Repair or replace the pressure switch D. Replace it with one of adequate capacity E. Reposition the probes to have longer running times