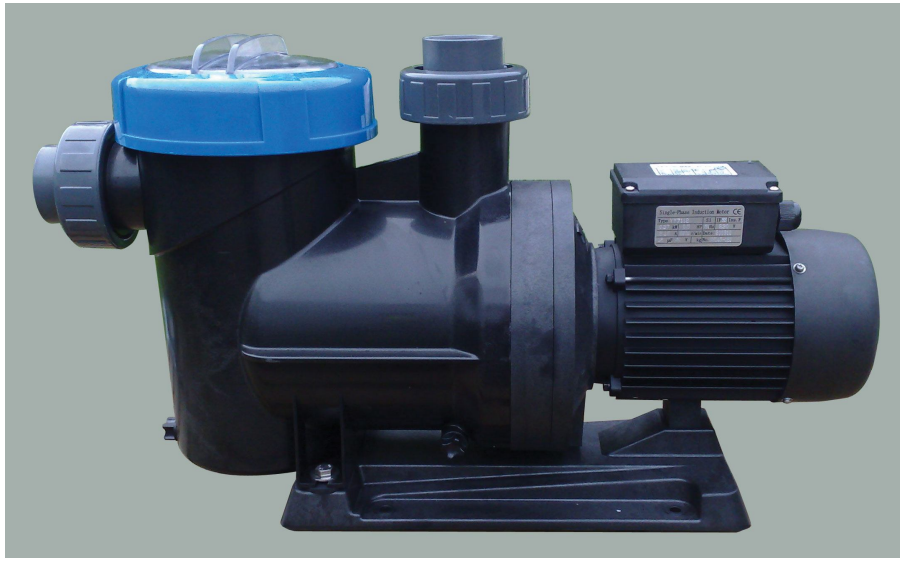
ENDURANCE PUMP



INSTRUCTION MANUAL

ENDURANCE PUMP

IMPORTANT: The manual you are reading contains fundamental information regarding the safety measures to be adopted when installing and starting up. It is therefore of utmost importance that both the installer and the user read the instructions before assembling and starting up.

1. GENERAL SAFETY INSTRUCTIONS

These symbols () represent the possibility of danger as a result of not following the corresponding instructions.

DANGER. Electrocution risk.
Non-compliance with this instruction involves a risk of electrocution.

DANGER.
Non-compliance with this instruction involves a risk of danger to people or things.

ATTENTION.
Non-compliance with this instruction involves a risk of damaging the pump or the unit.

2. GENERAL SAFETY RULES

GENERAL OBSERVATIONS

- The pumps mentioned in this manual are especially designed to carry out the circulation of water in swimming pools.

- They are designed to work with clean water at a temperature that does not exceed 35 ºC.
- Installation must be carried out in strictly in accordance with this manual.
- The regulations in force for the prevention of accidents should be heeded.
- Any modification that may be made to the pump requires the previous authorisation of the manufacturer. The original manufacturer-authorised spares and accessories guarantee greater safety. The pump manufacturer is exempt from all responsibility for damage caused by the use of unauthorised spares or accessories.

- During operation the electrical parts of the pump are live. Work can only be carried out on each pump or on connected-equipment after having disconnected them from the electrical supply network and having disconnected the starting mechanisms.
- The user must make sure that assembly and maintenance work is carried out by qualified and authorised people who have previously carefully read the installation and service instructions.
- The operating safety of the pump is only guaranteed with the compliance and respect for that mentioned in the installation and service instructions.
- The value limits stated in the table of technical specifications must under no circumstances be exceeded.

- In the case of defective operation or breakdown, contact your pump supplier.

INSTALLATION AND ASSEMBLY WORK WARNINGS

- While connecting electrical cables to the machine¡s motor, take care of the mechanism inside the connection box, check that no pieces of cable remain inside after closure and that the earth contact is correctly connected. Connect the motor using the electrical diagram attached to the pump.
- Check that the electrical cable connections to the pump¡s terminal box are well set and firmly attached to the connection terminals.
- The pump electrical installation should have an RCD which is not greater than 30mA.
- Check that the terminal box joint is sealed correctly, thus preventing water from entering the terminal box of the electric motor. Likewise, check that the packing gland has been placed and pressed correctly inside the joint.

- Special attention should be paid to ensure that under no circumstances water gets into the motor and the electric voltage parts.

STARTING-UP WARNINGS

Before starting the pump, check the function of electric motor protection devices and that the protectors against electrical and mechanical contacts are correctly positioned.

ASSEMBLY AND MAINTENANCE WORK WARNINGS

- National installation regulations should be taken into account when assembling and installing the pumps.

- Special attention should be paid to ensure that under no circumstances water gets into the motor and the electric voltage parts.
- Any contact, even accidental, with the pumpís moving parts should be avoided while the pump is operating and/or before it completely stops.

- Wait until the pump has completely stopped in order to carry out any work on it.
- Before undertaking any electrical or mechanical maintenance make sure that the pump has been disconnected from the supply network and starting-up mechanisms are blocked.
- Before working on the pump it is advisable to follow the steps below:
  1. Cut the pump voltage.
  2. Isolate the starting-up mechanisms.
  3. Check there is no voltage in circuits, including auxiliaries and supplementary services.

4. Wait until the fan has stopped completely.

The mentioned list should be considered indicative and not binding, since there may be specific safety rules within specific safety procedures.

- Periodically Maintenance:
  - The mechanical parts are firmly secured and the pump support screws are in good condition.
  - Correct positioning and fixing and the condition of the leading-in wires and isolation components.

- Pump and electric motor temperature. In case of irregularity, stop the pump immediately and proceed with its repair.

Because of the complexity of cases dealt with, the installation, use and maintenance instructions in this manual do not intend to examine and deal with all possible service and maintenance situations. If supplementary instructions are necessary or if specific problems arise, do not hesitate to contact the machine distributor or the manufacturer.

3. INSTALLATION AND ASSEMBLY

GENERAL

- Assembly and installation of our pumps is only permitted in swimming pools or tanks complying with SPATA regulations. In case of doubt please consult a specialist.
- The pumps come with a pre-filter strainer basket to collect large particles since these may damage the interior hydraulic parts of the pump. Therefore installation of the pump assembly must be done in a horizontal position.
- All pumps come with a two-drill foot to allow for them to be fixed in the floor by means of an anchor. (Fig. 1).

PIPEWORK

- The pipework connection must be glued to the connecting pipe that is supplied along with the pump; joints from the connecting pipes with the suction and discharge pipe are of a screw-thread type and come with ¡O¡ rings to avoid water loss. (Fig. 2)
- Discharge pipe installation must be done straight and well-centered with respect to the pipe to be connected to, so as to avoid external pressure being exerted on the pump and pipework. Apart from making assembly more difficult, this pressure could even break them (Fig. 2).
- Suction pipework installation is done at a slight angle of 2% towards the pump, thus avoiding siphoning. (Fig.2).
- To ensure correct operation, you must prime the pump pre-filter until water dips into the suction pipework (Fig.3).

POSITIONING

- The pumps are self-priming even though assembly below the swimming pool or tank water level is advised to improve performance.
- Should it be necessary to install the pump above the water level, the difference in height should not be more than 2 metres (see Fig. 4). Ensure that the suction pipework is as short as possible since long pipe runs reduces pump suction and flow rate.
- It should be ensured that the pump is free from possible flooding and it is given dry ventilation.

ELECTRICAL UNIT

- The electrical unit should have a multiple separation system with contact opening of at least 3mm.
- Connection to the mains can only be done using a rigid cable. In the event that a flexible cable is used this should have terminals to connect it to the pump motor terminals.
- A thermal protector is incorporated into single-phase pumps. In these, switch installation is sufficient as connection diagram.
- In the three-phase motor a motor guard with heat-magnetic protection needs to be used.
- A protection differential of 0.03A is needed for any pump in order to protect from electrical escapes (shown in diagrams).
- Three-phase motors should be protected from overload by a safety switch for the motor.
- The heat relay regulation data for the single-phase motor are merely illustrative since the motor comes with an incorporated protector.

HEAT PROTECTOR TABLE

Mod.	HP	kW	V.	Intensity relay regulation (A)
1	0,5	0,37	230	3,24
2	0,75	0,61	230	4,5
3	1	0,78	230	5,88
4	1,5	1,10	230	8,16
5	2	1,50	230	9,72
6	3	2,2	230	16,2
7	0,5	0,43	230/400	2,64/1,56
8	0,75	0,60	230/400	3,36/1,92
9	1	0,765	230/400	3,72/2,16
10	1,5	1,10	230/400	5,4/3,12
11	2	1,46	230/400	6,6/3,84
12	3	2,2	230/400	9,36/5,4

- For 230 V single-phase pumps use a H07 RN-F3 1.5 mm-type connection cable.
- Before connecting the motor, check the necessary fuse type.
- For three-phase motors, adjust suitably the heat value according to the heat protector table. For connection Δ (3 x 230 V. Network) set the protector at the highest indicated value. For connection Y (3 x 400 V. Network) set the protector at the lowest value.
- For different voltages from 230V (between 220and 240 V) to 400V (between 380 and 240 V), connect the lowest voltage to Δ and the highest voltage to Y (see star-triangle connection diagram).
- Check the correct arrangement and connection of the earth wire in the equipment installation.
- It is very important to keep to the installation and electrical connections in good condition. Should they not be heeded, the pump manufacturer does not accept any responsibility and considers the guarantee void.
- The motors are subject to EEC regulations with IP-55 protection.
- Special regional installation regulations may exist.
- The main cable can only be connected by qualified person.
- Incorrect mains connection could result in death.

4. START-UP INSTRUCTIONS

- Before starting up the pump, carry out the following operations:
  1. Take off the pre-filter cover, unscrewing the nut that holds it (See Fig.5).
  2. Fill the pump with water through the pre-filter until it reaches the inlet pipe.
  3. If, during these operations the basket should have been taken out, do not forget to replace it inside the pre-filter so as to prevent large particles from entering the inside of the pump and thus blocking it.
  4. Check that voltage and network power correspond to those indicated on the pump specification board.
- Put the cover on the pre-filter and screw it closed, without forgetting to place the ¡O¡ ring in position. (Fig.5)
- Under no circumstances should pumps work without previously having filled the pre-filter with water. If this is not done, the mechanical joint could be damaged thus producing water loss through this.
- In three-phase motors check that the motor rotation direction is correct, by means of the fan located in the rear part of the motor, seen through the peephole in the fan cover. (Fig.6)
- Check that the pump axle turns freely.

START-UP

- Open all valves and start the pump.
- Wait a suitable time for auto-priming to take place.

5. MAINTENANCE

- Clean the pre-filter basket regularly in order to avoid drops in pressure. In order to avoid possible basket breakage it is recommended not to knock it during the cleaning process.
- If the pump stops, check that the motor Amp consumption during operation is the same or less than that indicated on the manufacturer¡s specification plate, if not, contact your pump supplier.
- If the amp rate is higher, consult the manufacturer.
- Empty the pump in cases where it must remain without use for some time, mainly in cold countries where there may be danger of freezing.
- To empty the pump, carefully unscrew and remove the drain plug.
- Each time the pre-filter is opened, clean impurities from the joint seating and the joint itself, to ensure sealing on closure of the cover. (Fig.5).
- The pump components that by their usual work undergo wearing down and/or deterioration must be periodically replaced in order to maintain the good pump performance. On the following table we list the perishable and consumable pump components and the life period estimated for them.

Component description	Life period estimated
O-rings and watertight elements	1 year
Mechanical Seal	1 year
Bearings	1 year

The life period estimated for these components has been established for normal work and installation conditions, it's recommended to follow the installation manual instructions to maintain the pumps life period.

6. DISMANTLING

- The motor unit may be dismantled from the pump body without needing to disconnect the pump's suction and discharge pipework.
- To disconnect the motor unit from the pump body, take out the screws that join them.

POSSIBLE BREAKDOWNS, CAUSES AND SOLUTIONS

PROBLEMS	CAUSES	SOLUTIONS
THE PUMP DOES NOT PRIME	Air entry in suction tube	Check pipe fittings and suction tube joints
	Bad filter cover sealing	Clean the pre-filter cover and check the condition of the joint
	Motor turning direction incorrect.(III)	Invert two phases of the feeding line
THE PUMP GIVES LOW FLOW-VOLUME	Blocked pre-filter	Clean the pre-filter
	Air entry in suction tube	Check pipe fittings and suction tube joints
	Motor turning direction incorrect.(III)	Invert two phases of the feeding line
	Load loss in suction	Prevent as much as possible, elements that produce load loss
	Wrong voltage	Check that the network voltage corresponds to that on the motor specification board
THE MOTOR STOPS	Increase in terminal box temperature because of voltage arch effect	Check terminal box connections
	Heat protector blows	Correctly connect cables with terminal box terminals
	Terminal boxes badly-connected	Fasten the cable to the terminal correctly
		Modify size of connection cable to terminal box terminals

7. PUMP SPECIFICATIONS

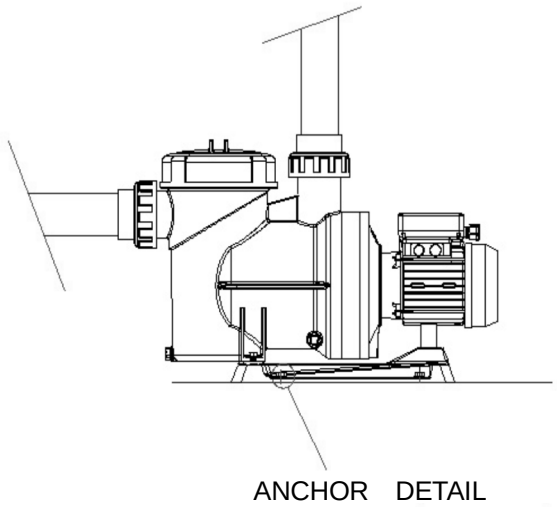
7.1. PRODUCT AND ACCESSORY DESCRIPTION

The pump body is built from state of the art thermoplastics. The pumps are of a self-suction type from $^{1}/_{3}$hp to 1? hp and are provided with single-phase motors. A pre-filter has been incorporated into the pump body to prevent foreign bodies entering and damaging the pump¡s hydraulic parts.

The motors supplied with the pump units are protected to IP-55 and are designed to withstand hot atmospheres and high humidity levels. The motors are also provided with a thermal cut-out that avoids damage to the pump due to excess current.

7.2. COMPONENTS SUPPLIED

- Self-priming pump for water circulation in private swimming pools.
- Pre-filter incorporated in the pump body.
- Pre-filter basket.
- Joints and linking pipe unions for discharge and suction pipework connections.
- Key for pre-filter basket assembly/dismantling.
- Guarantee form.
- Pump installation and maintenance manual.



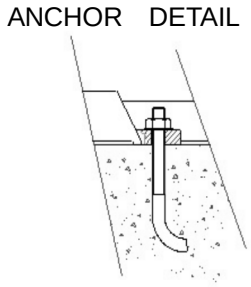


Fig.1

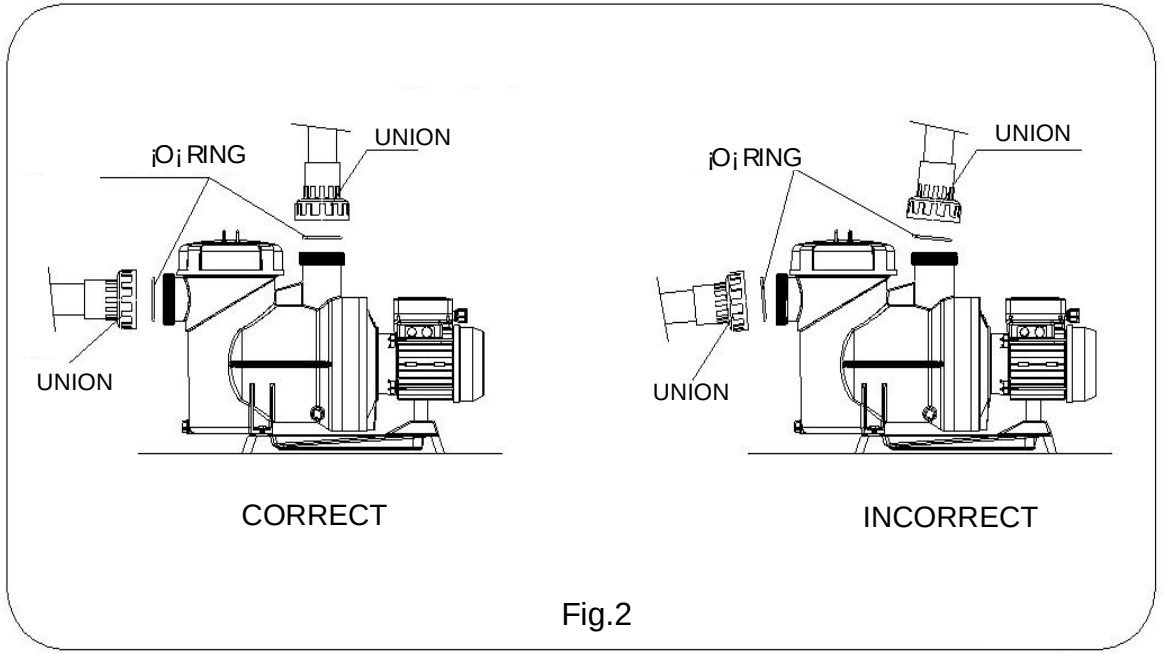


Fig.2

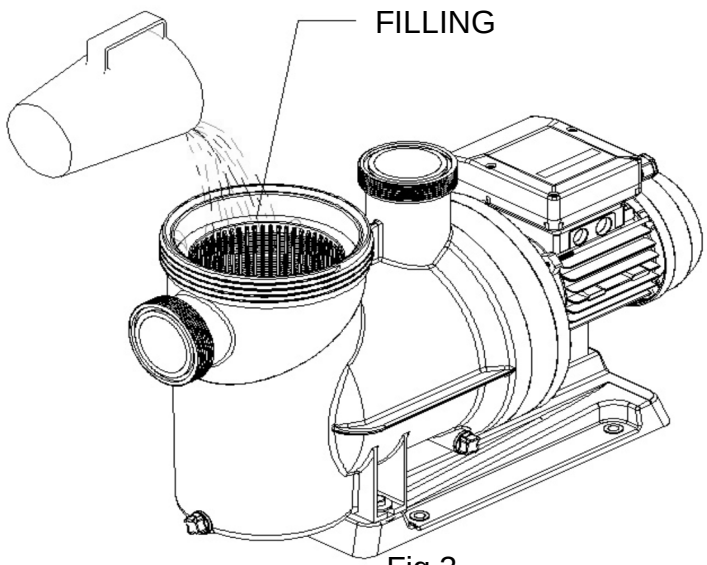


Fig.3

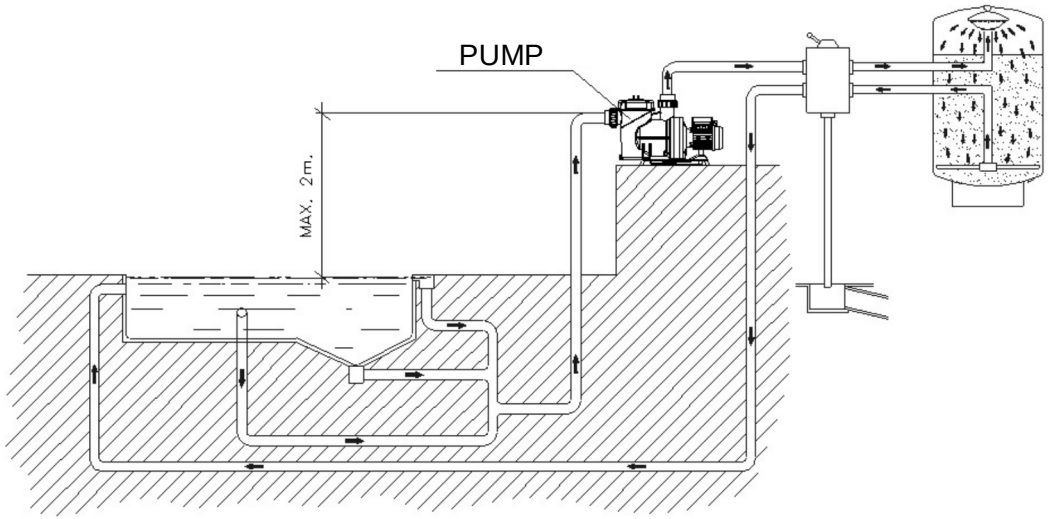


Fig.4

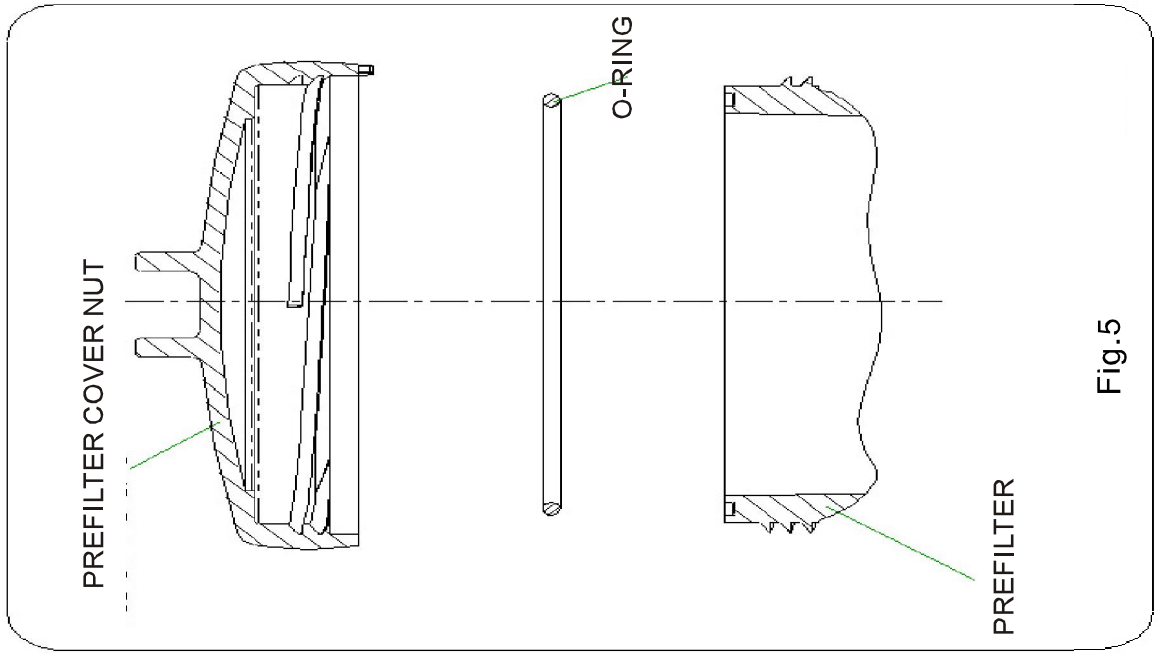
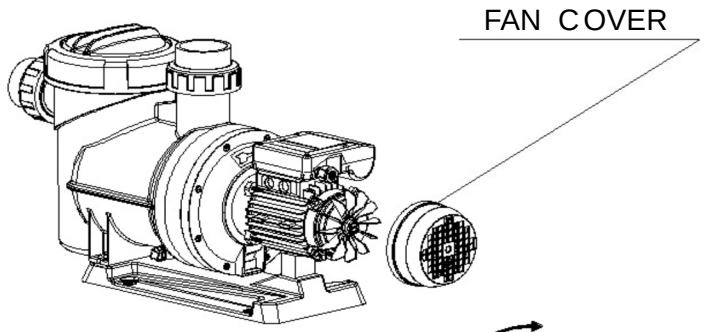
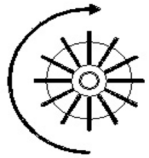
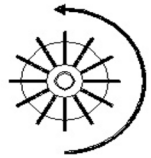


Fig.5





CORRECT



INCORRECT

Fig.6