

INSTALATION AND MAINTENANCE MANUAL (Instructions based on Spanish)

Before carrying out installation, carefully read this manual, which contains basic instructions providing information on the pump and allowing us to get the best out of its possibilities of use. If the indications are fully complied with, the parts of the pump will have a long, danger-free life. Keep this manual at all times available alongside the pump.

Both installation and working will comply with the safety standards in the country where the product is set up. The whole installation must be carried out with the utmost care and only by qualified personnel fulfilling the requirements demanded by current regulations. Failure to comply with safety standards, as well as putting at risk personal safety and causing damage to apparatuses, will cause the loss of any right acquired under guarantee.

1. WARNING FOR THE SAFETY OF PEOPLE AND OBJECTS

The following symbols, together with the words "Danger" and "Warning" indicate the possibility of danger as a result of failure to comply with the corresponding indications:



DANGER risk of electrocution (Failure to make this warning gives rise to a risk of electrocution)



DANGER (Failure to make this warning gives rise to a risk of harm to people or objects)



WARNING (Failure to make this warning gives rise to a risk of damage to the pump or installation)

- The device is not designed for use by persons (including children) with physical, sensory or mental capabilities, or lack of experience and knowledge, unless they are supervised and instructed by a person responsible for their safety.
- Children should be supervised to ensure they do not play with the appliance.

2. APPLICATIONS

Swimming pool pump models

Large flow centrifugal pumps with 1,450 rpm and 2,850 rpm. motors in cast iron and polypropylene versions, and 2,850 rpm. in Marine bronze (for sea water), including pre-filtering in the uptake, making them the ideal pumps for large filtering units for swimming pools.

Centrifugal pumps types

Pumps especially suitable for large volumes, drip irrigation, etc... at relatively low pressures. Marine bronze pumps and polypropylene pumps, is designed specially for sea water movement.

Our pumps have been developed to work continuously and the materials used in their manufacture have been submitted to strict controls and checked with extreme rigour.

3. PUMPED FLUID

The machine is designed and manufactured for pumping clean, pure and slightly aggressive liquids as long as the compatibility of the manufacturing materials is checked and it is made sure that the power of the motor is right for the specific weight and viscosity of the fluid.

4. TECHNICAL DATA AND LIMITATIONS ON USE

Supply voltage:	3 x 230-400 V	Triple phase	50/60 Hz up to and including 4 kW
	3 x 400-690 V	Triple phase	50/60 Hz over 4 kW
	See data plate		

5. CHARACTERISTICS OF THE MOTOR

Motor insulation:	"IP 55"
Insulation type:	Class F

6. MAXIMUM SURROUNDING TEMPERATURE

MAXIMUM: +40 °C

7. TEMPERATURE OF PUMPED LIQUID



-10°C - +95°C



-10°C - +140°C



-10°C - +40°C

8. STORAGE

! Pumps must be stored in a covered place that is dry and, if possible, with constant humidity, free from vibrations and dust. They are sold in original packing and must remain in this packing until they are installed, with the intake and supply mouths covered with the adhesive disk provided. After a long period in storage or should the pump be stored after a certain time working, preserve the parts manufactured in light alloy with preservatives available at any store, such as GG-25, GGG-40 cast materials, which have been in contact with the pumped fluid.

9. TRANSPORT

! Make sure that apparatuses do not suffer unnecessary knocks or shocks. Use hoists and the original palette to raise and move the unit, always with suitable ropes in vegetable or synthetic fibre, as long as the pump can be slung easily. The eyebolt located on the motor must not be used to raise the whole unit.

10. INSTALLATION

! The electro-pump must be installed in a well-ventilated place with a surrounding temperature not exceeding 40°C. Installation will be undertaken as close as possible to sea level and horizontally in order to minimise the uptake distance and prevent losses in loading.

There should be enough space to be able to remove the pre-filter basket for cleaning and refitting and also to remove the whole pump motor support and turbine.

Foundations

We must try to preserve the pump from any possible flooding. It is the purchaser's responsibility to prepare the foundations; if foundations are metal, they must be painted to prevent corrosion, well-levelled and sufficiently rigid to withstand stress. They must be sized in such a way so as to avoid vibration caused by resonance. If the foundations are concrete, they must have set properly and be entirely dry before the unit is put in place, and the support surface must be perfectly flat and horizontal. After placing the pump on the foundations, use a level to make sure it is totally horizontal, if not, fit supplements between the base and the foundations close to the anchoring bolts.

Fitting the pipes

Stop valves must be fitted to the inlet and outlet of the pump to avoid the need to empty the installation to carry out maintenance on the pump.

It is best to use an uptake pipe with a wider diameter than that of the inlet of the electro-pump and as regards the drive pipe, it should also be the same as that of the pump drive pipe or wider. Uneven passage between pipes of different diameters significantly increases losses in load. Passage from a small diameter pipe to a larger one must be gradual.

Carefully make sure that the joints between pipes are fully sealed. Make sure the joints between the clamps and counterpieces are properly centred in order to prevent flow resistance in the pipe. To prevent bubbles from forming in the uptake pipe, create a slight difference in the positive inclination of the uptake pipe to the electro-pump.

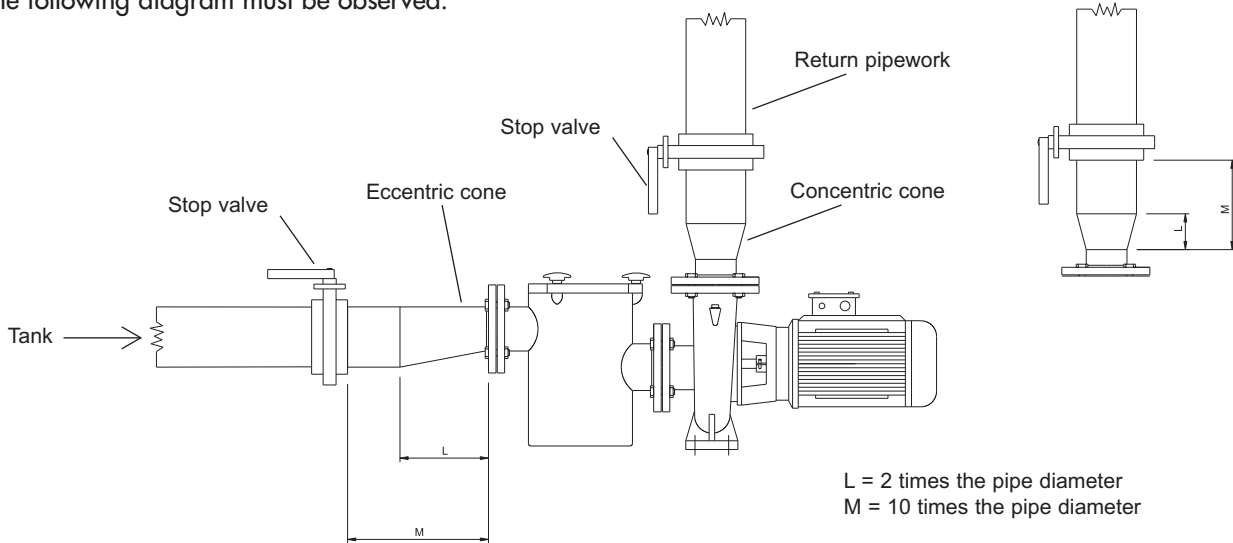
If more than one pump is installed, each pump must have its own uptake pipe. Make sure that each pump works for a single uptake pipe, except for the reserve pump (if there is one), which will only start to work if the main pump breaks down.

It is very important for the uptake and drive pipes to have independent brackets and be well fixed so that the pump does not have to take their weight or withstand the vibrations caused by the water flowing through them.

If installing a broader pipe than that used for the pump input and output (highly recommendable), we must do so as follows:

Eccentric reduction cone for pump uptake.
 Concentric reduction cone for pump drive.

The following diagram must be observed:



Never start the pump with the stop valves closed, as this would increase the temperature of the liquid and steam bubbles would form in the pump, causing mechanical damage. If possible, install a by-pass or discharge circuit linked to a liquid recovery tank.

11. ELECTRICAL CONNECTION

Warning: Always observe safety regulations!

Rigorously respect all circuit diagrams appearing inside the junction box and those appearing in this manual. Electrical connections must be performed by an expert electrician with the necessary requirements established by current regulations

Rigorous compliance must be made with the indications of the electricity supply Company.

THE CURRENT MUST BE TURNED OFF before entering the junction box to start the pump.

The system must be protected by a differential switch (Ifn=30ma).

In the case of triple phase motors with star-triangle starters, we must ensure that the time of commutation between the start and the triangle be as short as possible (for Powers to 40 HP ≤ 3 sec)

Check the mains voltage before making any connection. If the voltage corresponds to the voltage that appears on the plate, connect the cables to the junction box with priority for ground.

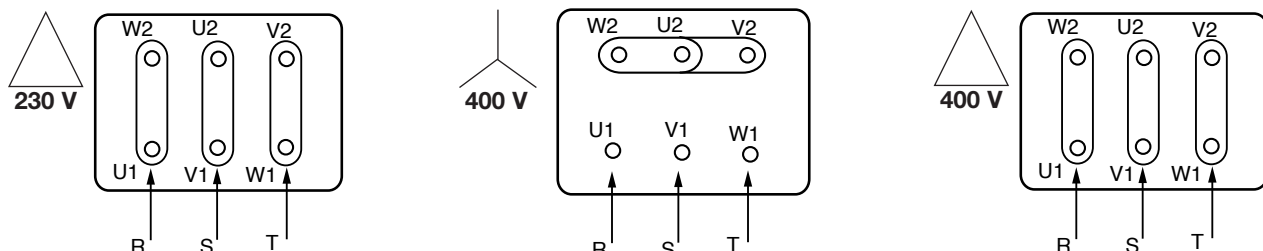
MAKE SURE THAT THE GROUND INSTALLATION IS EFFECTIVE AND THAT SUITABLE CONNECTION MAY BE UNDERTAKEN.

Pumps must always be connected to an external switch.

Motors must be protected with suitable motor protection, carefully calibrated with respect to the current appearing on the plate.

Should the protection fuse of a triple phase motor be activated, it is recommendable to change the other two fuses alongside the one that has blown.

Connection diagram



12. CHECKS PREVIOUS TO STARTING

Before starting the electro-pump, make sure that:



- The pump is properly stoked (that the pump body and pre-filter are completely full). The reason for this is that the pump should immediately begin to work correctly and the sealing mechanism (mechanical) should be well lubricated. Dry working causes irreparable damage to the mechanical closure.
- Make sure that the mains voltage and frequency correspond to those indicated on the characteristics plate of the pump.
- It is a good rule to make sure that the pump and/or motor shaft move freely. To do this, move the couplings that join the motor shafts by hand, once the cover is removed. Once this check is complete, replace the covers in their original positions.

Other checks

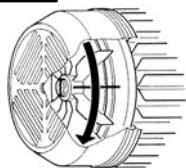


- The auxiliary circuits are properly connected.
- The electrical connection has been carried out as indicated previously.
- The alignment between the pump and the motor has been performed correctly.
- Before starting new installations, all valves, pipes, tanks and connections must be carefully cleaned.

13. STARTING



Open the pump uptake and drive flood valves completely.



Make sure that the motor is turning in the right direction (looking from the rear of the motor, the fan must turn, **CLOCKWISE**). If it turns in the wrong direction, two phases of the protection circuit supply must be inverted. After isolating the pump from the electricity supply.

When the hydraulic circuit is completely full of liquid, progressively open the drive flood valve until it is fully open. It is necessary to check the power consumption of the motor in the ideal working place and compare it with the figure on the characteristics plate, and suitably adjust the protection thermal relay.

While the electro-pump is working, check the supply voltage of the motor junctions, which should not differ by more than +/- 5 % from the nominal value.

14. MAINTENANCE AND CLEANING



The electro-pump may only be dismantled by specialised, qualified personnel in possession of the requirements demanded by the corresponding standards. In any case, all repair and maintenance work will only be undertaken after disconnecting the pump from the mains supply. Make sure that it can not be turned on accidentally.

Only for swimming pools

The main maintenance operation that must be scrupulously watched over is the cleaning of the pre-filter basket, which must be undertaken following every filtering operation and especially after cleaning through the silt cleaner. The steps to be followed are:

Turn off the electricity supply to the pump. Close the pump uptake and drive stop valves. Open the pre-filter cover, take out the basket and clean without knocking. Once clean, refit and before closing, check the state of the pre-filter cover and seal. Clean thoroughly with water only and, if necessary, lubricate lightly with neutral Vaseline. After a long time working, it will be somewhat difficult to dismantle the parts in contact with water. To do so, use any product commercially available and, if necessary, a suitable extractor. Do not force the various parts with unsuitable tools.

Under no circumstances must we place the chlorine tablets in the pump pre-filter basket.

Periodical checks.

In normal working, the electro-pump requires no maintenance. However, it is recommendable to carry out a periodical check of the current absorbed by the pump, of the height of pressure discharge with the mouth closed and the maximum flow, in order to locate problems or wear before it is too late. If possible, have a programmed maintenance plan to achieve trouble-free operation with minimal cost and downtime and without long, expensive repairs.

The mechanical closure normally needs no checking. It is only necessary to make sure there are no leaks. If there are, replace the mechanical closure as follows.

REPLACEMENT OF THE SEALED JOINT.

Preparation for removal.

1. Turn off the electricity supply and make sure that it can not be turned on accidentally.
2. Close the stop valves in the uptake and drive.
3. Empty the pump body by means of the filling stoppers.

Replacing the mechanical closure

Release the bolts holding the pump body to the pump-motor support to be able to remove the body of the pump from the motor unit. Preventing the shaft from turning, or handling this or the ring, unscrew the ring nut. Remove the flat and the elastic washer (if necessary). Remove the ring nut, if necessary using two screwdrivers to press down on the lid of the support, then remove the pin. Recover the spacer/s (depending on the model) and remove the rotating part of the mechanical seal. To make extraction easier, use two screwdrivers to carefully press down on the seal spring, taking care not to damage the seat. NB: lubricate with alcohol to make it easier to remove it by the shaft. Before refitting, make sure that the seat of the mechanical seal is not scratched, and if it is, clean with emery paper. If this is not enough, it will be necessary to replace the fixed part of the seal. Refit in reverse order to that indicated, taking special care to eliminate all waste that lies in the seats of each part and then apply suitable lubricants.

All o-rings must be in a perfect condition, if not, they must be replaced.

If there is a risk of frost or when the pump is to remain inactive for a long time, we must empty the pump by means of the filling stoppers on the base of the body.

Apart from this, our pumps require no further maintenance operation as the rollers are sized and lubricated for life.

FINAL NOTE

BOMBAS SACI S.A. will not respond for the wrong working of the pumps/electro-pumps or for any damage caused by undue handling or modifications and/or if they are used in inadvisable sectors or fail to comply with the other dispositions mentioned herein.

Nor will they be held responsible for any imprecision in this manual due to errors in printing or transcription. All rights are reserved to introduce any alteration in the apparatuses that they might deem necessary or useful and which do not jeopardise the essential characteristics.

POSSIBLE BREAKDOWN	CAUSES	SOLUTIONS
1. The motor does not start and does not make a noise	<ul style="list-style-type: none"> A. Check the protection fuses B. Check the electrical connections C. Make sure the motor is receiving power 	<ul style="list-style-type: none"> A. Replace if burnt. ➔ If the problem can not be solved immediately, it means that the motor is short circuiting.
2. The motor does not start, but does make a noise.	<ul style="list-style-type: none"> A. Make sure the supply voltage is that indicate on the place. B. Make sure the connections are made correctly. C. Check for all phases in the junction box. D. The shaft is blocked, Look for possible obstructions in the pump or motor. 	<ul style="list-style-type: none"> B. Correct all possible errors C. If not, reset the phase that is missing. D. Eliminate the obstruction.
3. The motor turns with difficulty	<ul style="list-style-type: none"> A. Check the supply voltage, which might be insufficient. B. Check possible rubbing between the moving and fixed parts. C. Check the state of the bearings 	<ul style="list-style-type: none"> B. Eliminate the cause of the rubbing. C. Replace the worn bearings.
4. The protection (exterior) of the motor comes on immediately after starting.	<ul style="list-style-type: none"> A. Make sure all phases are present in the junction box. B. Check for possible open contacts or dirty contacts in the protection. C. Check for possibly faulty motor insulation by checking the resistance between phases and insulation to ground. D. The pump is working above the working point for which it was gauged. E. The values of protection activation are wrong. F. The viscosity or density of the liquid pumped is different from that used in the project phase. 	<ul style="list-style-type: none"> A. If not, reset the phase that is missing B. Replace or reclean the component. C. Replace the motor housing with stator or reset the ground cables. D. Establish the working point according to the characteristic curves of the pump. E. Check the values set in the motor protection: modify them or replace the component if necessary. F. Reduce the flow with a flood valve on the drive side or install a larger motor.
5. The motor protection comes on too frequently.	<ul style="list-style-type: none"> A. Make sure that the surrounding temperature is not too high B. Check the calibration of the protection. C. Check the state of the bearings D. Check the turning speed of the motor 	<ul style="list-style-type: none"> A. Suitably ventilate the place where the pump is installed. B. Calibrate with a current value adapted to the absorption of the motor at full load. C. Replace worn bearings.
6. The pump gives no flow	<ul style="list-style-type: none"> A. The pump has not been stoked correctly. B. Make sure the triple phase motors are turning in the right direction. C. Excessive uptake difference. D. Uptake pipe with insufficient diameter or extension excessively raised. E. Dirty hair cleaner filter. 	<ul style="list-style-type: none"> A. Fill the pump and uptake pipe with water and stoke. B. Invert two supply cables. C. Consult the point of the instructions on "Installation". D. Replace the uptake pipe with one of a larger diameter. E. Clean the hair cleaner pre-filter
7. The pump does not floor	<ul style="list-style-type: none"> A. The uptake pipe or the pre-filter are taking in air. B. The negative inclination of the uptake pipe enhances the formation of air bubbles 	<ul style="list-style-type: none"> A. Eliminate the phenomenon by carefully checking the uptake pipe, repeat the stoking operations. B. Correct the inclination of the uptake pipe.
8. The pump generates insufficient flow.	<ul style="list-style-type: none"> A. Dirty hair cleaner filter B. Worn or obstructed rotor. C. Insufficient diameter in uptake pipes. D. Make sure it is turning in the right direction. 	<ul style="list-style-type: none"> A. Clean the hair cleaner pre-filter. B. Replace the rotor or eliminate the obstruction. C. Change the pipe for one with a larger diameter. D. Invert two supply cables
9. The pump turns backwards when turned off	<ul style="list-style-type: none"> A. Loss from uptake pipe B. Base or retention valve faulty or blocked half open. 	<ul style="list-style-type: none"> A. Eliminate the problem B. Repair or replace the faulty valve.
10. The pump vibrates and works noisily.	<ul style="list-style-type: none"> A. Make sure that the pump or the pipes are correctly fixed. B. The pump cavitates C. Air in the pump or in the uptake manifold 	<ul style="list-style-type: none"> A. Tighten all loose parts. B. Reduce the uptake height and check for losses in load. Open the uptake valve. C. Purge the uptake and pump pipes.