INSTRUCTION MANUAL

BOSS SUBMERSIBLE PUMPS

MODELS: **BOSS 84 VOX**
BOSS 104 -110 Volt
BOSS 104 -230 Volt
BOSS 101 -400 Volt

Pipeline & Heating Solutions

Models:

BOSS 84 VOX
BOSS 104 -110 Volt
BOSS 104 -240 Volt
BOSS 104 -415 Volt

CE DECLARATION OF CONFORMITY

We, The BSS Group Limited Fleet House, Lee Circle, Leicester LE1 3QQ
Declare under our responsibility that the products to which this
Declaration refers are in conformity with the following directives:

- 2006/95/CE (Low Voltage Directive)
- 2004/108/ CE (Electromagnetic Compatibility Directive)

And with the following standards:

- EN 60335-1 : 08 (Household and similar Electrical Appliances Safety)
- EN 60335-2-41 : 05 (Particular Requirements for Pumps)

The BSS Group Limited, 1st January 2012

L.S. Wright

Signature Category Director

Pipeline & Heating Solutions

INSTRUCTIONS FOR INSTALLATION AND MAINTENANCE

Installation and functioning must comply with the safety regulations in force in the country in which the product is installed. The entire operation must be carried out in a workmanlike manner.
Failure to comply with the safety regulations not only causes risk to personal safety and damage to the equipment, but invalidates every right to assistance under guarantee.

APPLICATIONS

The **BOSS 84 VOX & 104** pumps are a submersible centrifugal pump made of stainless steel with a vortex back impeller, designed and built for use with dirty water from septic tanks and dirty water in general containing solid bodies with maximum diameter 50 mm, but only for non-aggressive water.
Thanks to the radial delivery aperture (2" female) it may be easily fitted on lifting devices (type DSD2).

The float, where fitted, allows fixed installation and guarantees automatic pumping operation.

These pumps cannot be used in swimming pools, ponds or tanks in which people or present, or for pumping hydrocarbons (petrol, diesel fuel, fuel oils, solvents, etc.) in accordance with the accident-prevention regulations in force.

N.B. The liquid inside the pump, to lubricate the seal device, is not toxic but it may alter the characteristics of the water (if it is pure water) if there is a leak in the seal device.

TECHNICAL DATA AND LIMITS ON USE

- **Supply voltage**: 1 X 110V 50Hz
  1 X 240V 50Hz
  3 X 400V 50Hz

- **Degree of motor protection:** see electric data plate
- **Protection class:** see electric data plate
- **Absorbed power:** see electric data plate
- **Liquid temperature range:**
  - from 0°C to +35°C for domestic use (safety standards EN 60335-2-41)
  - from 0°C to +50°C for other uses
- **Maximum immersion:** 10 metres
- **Storage temperature:** -10°C to +40°C
- **Noise level:** Falls within the limits envisaged by EC Directive 89/392/EEC and subsequent modifications.

WARNINGS

1. Use is allowed only if the electric system is in possession of safety precautions in accordance with the regulations in force.
2. The pump is provided with a carrying handle which may also be used to lower it into wells or deep holes with a rope or cable.

The pumps must never be carried, lifted or made to operate hanging from their power cable.

3. If the power cable is damaged in any way it must be **replaced** and **not repaired** (use cable type H07RN-F diam. 9 – 9.5 mm. with minimum length 10 metres for the portable version, with a UNEL 47166-68 plug for the SINGLE-PHASE version and with an EEC plug for the THREE-PHASE version).
   This must be done by skilled personnel, in possession of the qualifications required by the regulations in force.
4. Qualified personnel must also be employed for all electrical repairs which, if badly carried out, could cause damage and accidents.
5. The pump must **never** be allowed to run dry.
6. The Manufacturer does not vouch for correct operation of the pump if it is tampered with or modified.

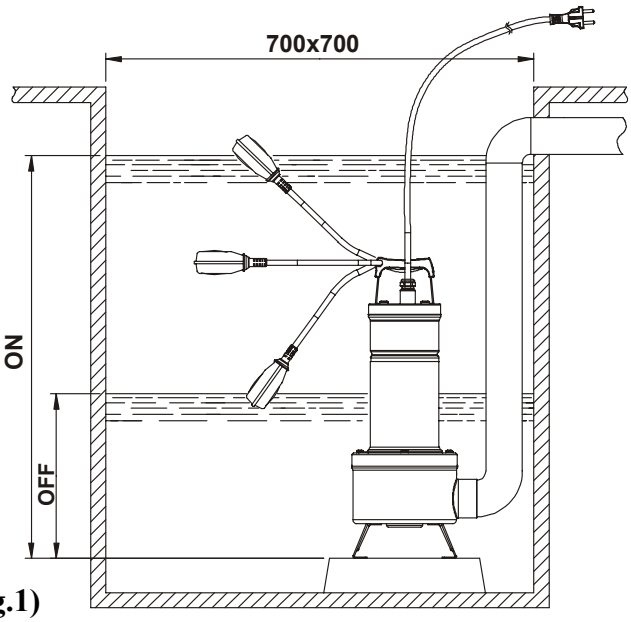
INSTALLATION

1. If the bottom of the well or chamber in which the pump is to operate is particularly dirty, it is advisable to provide a support for the pump to sit on so as to avoid clogging of the intake grid. **(Fig. 1-Fig.3)**.
2. Before putting the pump in position, ensure that the strainer is not totally or partially blocked by mud, sediment or similar substances.
3. It is advisable to use pipes with an internal diameter at least equal to that of the delivery mouth, to avoid falls in pump performance and the possibility of clogging. In cases where the delivery pipe has long horizontal stretches, it is advisable for this pipe to have a larger diameter than that of the delivery mouth.
4.

Totally immerse the pump in the water.

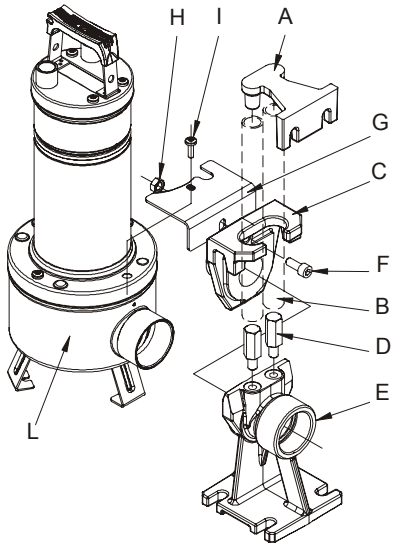
INSTALLATION *BOSS 84 Vox and 104*

1. On the version provided with a float switch, ensure that the float can move freely (SEE THE PARAGRAPH ON ADJUSTING THE FLOAT SWITCH). Ensure that the **minimum dimensions** of the chamber are as in **Fig.1**. The dimensions of the chamber must also be calculated with relation to the quantity of water arriving and to the pump flow rate so as not to subject the motor to excessive starting operations.
2. When the pump is to be in a fixed installation, with a float, a check valve must always be fitted in the delivery pipe. This is also advisable on pumps with manual operation.



(Fig.1)

3. Connect the delivery pipe or hose directly to the pump mouth. If the pump is used in fixed installations it is advisable to connect it to the pipe with a coupling so as to facilitate disassembly and reinstallation. If a hose is used, fit a threaded hosetail on the pump mouth. Wrap the thread with suitable material to ensure an effective seal (teflon tape or similar).
4. For fixed installations we advise the use of the lifting device DSD2 (available on request - **Fig.2**) to facilitate pump maintenance operations. When fitted between the pump delivery aperture and the pipe, it avoids having to remove the delivery pipe during maintenance jobs. The DSD2 device is composed of 8 parts:
    A. Pipe anchoring bracket
    B. 3/4" pipes (not supplied)
    C. Slide
    D. Pipe guide columns
    E. Foot
    F. Screw TCEI M10X25
    G. Base bracket
    H. Nut M10
    I. Pump flange screw
    L. Pump



(Fig.2)

The foot is positioned on the bottom of the tank and fixed with expansion screws of suitable dimensions. The pipe guide bracket must be positioned at the top of well or borehole and inserted in the end of two 3/4” pipes (not supplied), which act as a slide. The two pipes connect the bracket to the foot. Position the base bracket in contact with the pump suction strainer near the delivery aperture, secure everything to the strainer cover with the screws provaided to lock the strainer cover.
Remove the top screw from the flange on the delivery side (I).
Assemble the anti-rotation bracket (G).
Replace the screw (I).
Extract the slide from the coupling foot and connect it to the delivery port of the pump.
Using the screw F and the nut H, fix the slide to the pump as indicated in the figure.
Reposition the slide/pump assembly on the foot (**Fig.2**).

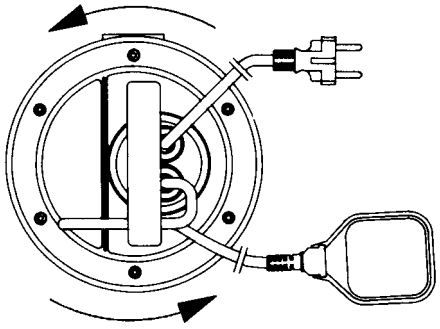
3. When the pump is to be in a fixed installation, with a float, a check valve must always be fitted in the delivery pipe. This is also advisable on pumps with manual operation.

ELECTRIC CONNECTION

CAUTION! ALWAYS FOLLOW THE SAFETY REGULATIONS.

1. Ensure that the mains voltage is the same as the value shown on the motor plate and that there is the possibility of **MAKING A GOOD EARTH CONNECTION.**
2. **Pumping stations must always be provided with an automatic switch with an intervention current of less than 30 mA.**
3. Single-phase motors are provided with built-in thermal overload protection and may be connected directly to the mains. **N.B.** If the motor is overloaded it stops automatically. **Once it has cooled down it starts again automatically without any need for manual intervention.**
4. Three-phase pumps must be protected with motor protectors suitably calibrated according to the values on the data plate of the pump to be installed. The plug on the pump must be connected to an EEC socket complete with isolating switch and fuses.
5. Do not damage or cut the power cable. If this should occur accidentally, have it repaired or replaced by skilled and qualified personnel.

CHECKING THE DIRECTION OF ROTATION (for three-phase motors)



(Fig.4)

The direction of rotation must be checked each time a new installation is made.

Proceed as follows **(Fig.4)**:

1. Place the pump on a flat surface.
2. Start the pump and stop it immediately.
3. Carefully observe the kick-back on starting, looking at the pump from the motor side. The direction of rotation is correct, that is clockwise, if the protection cap moves as in the drawing (anti-clockwise).

If it is not possible to check as described above because the pump is already installed, check as follows:

1. Start the pump and observe the water flow rate.
2. Stop the pump, switch off the power and invert two phases on the supply line.
3. Restart the pump and check the water flow rate again.
4. Stop the pump.

The correct direction of rotation will be the one in which the flow rate and electric absorption are LOWER!

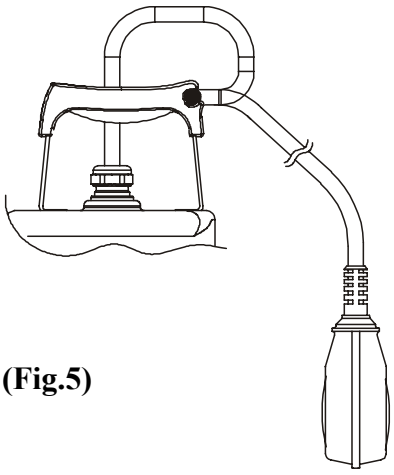
STARTING UP

Models with a float switch start up automatically when the water level rises; models without a float are started by means of a switch located upstream from the socket (not supplied).

ADJUSTING THE FLOAT SWITCH

Lengthening or shortening the cable between the float and the fixed point (slot provided in the handle - **Fig.5**) adjusts the START or STOP level of the pump. Be sure that the float can move freely.

Ensure that the stop level does not uncover the strainer.



(Fig.5)

PRECAUTIONS

1. The intake strainer must always be in place during pump operation.
2. The pump should not be started more than 20 times in one hour so as not to subject the motor to excessive thermal shock.
3. **DANGER OF FROST:** When the pump remains inactive for a long time at temperatures of less than 0°C, it is necessary to ensure that there is no water residue which could freeze and cause cracking of the pump components.
4. If the pump has been used with substances which tend to form a deposit, rinse it after use with a powerful jet of water so as to avoid the formation of deposits or scale which would tend to reduce the yield of the pump.

MAINTENANCE AND CLEANING

In normal operation, the pump does not require any specific maintenance, thanks to its mechanical seal lubricated in an oil chamber and to its sealed-for-life bearings. **The electropump must not be dismantled unless by skilled personnel in possession of the qualifications required by the regulations in force.** In any case, all repairs and maintenance jobs must be carried out only after having disconnected the pump from the power mains.

During disassembly, pay attention to any sharp parts which could cause injury.

MODIFICATIONS AND SPARE PARTS

Any modification not authorized beforehand relieves the manufacturer of all responsibility. All the spare parts used in repairs must be original ones and the accessories must be approved by the manufacturer so as to be able to guarantee maximum safety of the machines and systems in which they may be fitted.

The manufacturer declines all responsibility for possible errors in this booklet, if due to misprints or errors in copying. The company reserves the right to make any modifications to products that it may consider necessary or useful, without affecting the essential characteristics.

TROUBLESHOOTING

FAULT	CHECK (possible cause)	REMEDY
1. The motor does not start and makes no noise.	A. Check that the motor is live. B. Check the protection fuses. C. The float switch does not allow starting.	B. If they are burnt-out, change them. C. -Ensure that the float moves freely. -Ensure that the float is efficient (contact the supplier).
2. The pump does not deliver.	A. The intake grid or the pipes are blocked. B. The impeller is worn or blocked. C. The check valve, if installed on the delivery pipe, is blocked in closed position. D. The level of the liquid is too low. When starting, the level of the liquid must be higher than that of the strainer. E. The required head is higher than the pump characteristics.	A. Remove the blockage. B. Change the impeller or remove the blockage. C. Check that the valve is operating correctly and replace it if necessary. D. Adjust the length of the float switch cable (SEE THE PARAGRAPH ON "ADJUSTING THE FLOAT SWITCH").
3. The pump does not stop.	A. The switch is not disactivated by the float.	A. -Ensure that the float moves freely. -Check float efficiency (the contacts could be damaged - contact the supplier).
4. The flow is insufficient.	A. Ensure that the intake grid is not partly blocked. B. Ensure that the impeller or the delivery pipe are not partly blocked or encrusted. C. Ensure that the impeller is not worn. D. Ensure that the check valve (if fitted) is not partly clogged. E. On three-phase motors, check that the direction of rotation is correct (See the paragraph on "CHECKING THE DIRECTION OF ROTATION").	A. Remove any blockage. B. Remove any blockage. C. Change the impeller. D. Carefully clean the check valve. E. Invert the connection of two supply wires.
5. The thermal overload protection stops the pump.	A. Check that the liquid to be pumped is not too dense as this could cause overheating of the motor. B. Check that the water temperature is not too high. C. The pump is partly blocked by impurities. D. The pump is mechanically blocked.	C. Carefully clean the pump. D. Check whether there is rubbing between the moving and fixed parts; check the wear of the bearings (contact the supplier).

6. GUARANTEE
Any material or manufacturing defects will be corrected during the guarantee period established by current law in the country where the product is purchased. It is up to the manufacturer to decide whether to repair or replace any faulty parts.

The manufacturer's guarantee covers all substantial defects attributable to manufacturing or material defects, providing the product has been used correctly and in compliance with the instructions.

The guarantee becomes null and void in the event of the following:
• unauthorized attempts to repair the appliance;
• unauthorized technical changes to the appliance;
• use of non-original spare parts;
• manhandling;
• inappropriate use, e.g. for industrial purposes.

The guarantee does not cover:
• parts liable to rapid wear and tear.

For any action under guarantee, you must contact your local BSS branch our AMS aftersales.

AMS Aftersales

BSS | Specialists in Pump Aftersales & Spares

For spares and service, please contact AMS Aftersales on 0870 8503886

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