

# The Bio-Pure

Simple solution sewage systems

## INSTALLATION Bio-Pure Pumped

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**BRITISH WATER**  
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# Installation of a Pumped Unit

## (Standard Installation excluding high water table areas)

- 1) **Bio-Pure 1 & 2** Excavate a hole 2.1m round x 2.25m deep tapering the last 1.2m, ensuring the soil at the base of the hole is firm and undisturbed. If not possible, compact sand or pea gravel into base until desired level is obtained. **Bio-Pure 3** Excavate a hole 2.4m round x 2.3m deep tapering the last 1.5m. **Bio-Pure 4 & 5** Excavate a hole 2.4m round x 2.7m deep tapering the last 1.5m. **Bio-Pure 6** Excavate a hole 2.8m x 2.95 m, tapering the last 1.5m.  
**(NB. Try to follow shape of unit as much as possible)**
- 2) Remove the service hatch from the compressor box housing section of the unit by means of cutting the cable ties (note - care should be taken not to damage this) and retain in safe place.
- 3) Lift the unit by means of strapping through the eye bolts, ensure that unit is empty of water before fitting.
- 4) Lower the unit into the hole checking that the inlet and outlet connections on the unit will align with the corresponding connections.
- 5) If you are using an anchoring kit, remove unit and install now.
- 6) Level the unit in the hole using the pump box housing to level from. Begin backfill around the base of the unit to a depth of approximately 700mm (you have the option at this stage of circulating the wedges with a concrete ring to ensure no lifting if the ground is subject to moderate waterlog). Fill the unit with a corresponding amount of water to help stabilise the unit.  
**Note – backfill material must be 20mm to dust scalplings to ensure no damage is caused to unit.**
- 7) Continue backfill around the unit whilst simultaneously filling the unit with water until the unit is full.
- 8) Connect inlet and outlet connections to sewer pipes.
- 9) Remove the pump box housing and attach the blower pipe to the blower tube by means of the jubilee clip supplied and pass the other end into the pump box housing.
- 10) Continue backfill up to ground level.
- 11) Lay 2.5 mm armoured cable from proposed electrical connection to the unit passing it into the unit via the electrical gland already in place. Leave a ½ m loop inside the body of the treatment plant and pass the cable through the 2nd electrical gland in the air pump box. Securely fix a double IP rated socket (you may need two of these for a pumped unit). **If you do not fix your electrical connection securely to the box, it will rattle and make a noise as the pumps constantly vibrate.**
- 12) Securely fix one end of the blue T section to the blower pipe and then secure the other end to the compressor.
- 13) Fix blower box back into place.
- 14) Install the alarm – the small clear hose attaches to the blue T-Section.

**IF IN DOUBT, PLEASE ASK.**

# Installation of Integral Pump

## *Install unit as per fitting instructions*

- 1) Remove lid and air box.
- 2) Remove down pipe from pumping station by opening cam locks.
- 3) Screw pipe into submersible pump supplied.
- 4) Lower pump into pump station ensuring pump sits to the left of down pipe. Ensure it does not foul sides.
- 5) Connect cam locks.
- 6) Temporarily plug pump in and fill pump station to ensure pump is working correctly.
- 7) Connect high water level float switch, passing the cable through gland installed in pump station ensuring float cannot foul. Tighten gland.
- 8) Connect outlet by way of a one way valve to ensure no back-flow of water after pump has been turned off.
- 9) Pass electrical cord from submersible pump through gland in air box, ensuring enough flex is left in unit so that air box can be removed for servicing (i.e min 1/2m).
- 10) Please now fit alarm as per alarm instructions.

***IF IN DOUBT, PLEASE ASK.***

# Installation of Alarm

Thank you for purchasing the Alarm Unit. Please follow the instructions below to ensure correct installation and retain these instructions for future reference. The unit has two alarm inputs and is designed to provide an audible and visual warning for any failure of a Bio-Pure treatment plant. The unit is mains powered and is fitted with a backup battery that will provide 48 hours of operation without power. All inputs are delayed for 15 seconds to avoid nuisance alarms.

## Installation

### 1. Loosely put alarm into air box

The enclosure should be positioned inside the air box. Remove the front cover by means of the 4 screws.

### 2. Connect the pressure switch

Using the adaptor provided connect the plastic tube to the outlet of the air blower. Check there are no air leaks.

### 3. Fit the float switch

Pass the float switch cable from the gland in the pump station through to the gland in the air box ensuring enough flex is left in the unit so that the air box can be removed and put to one side during servicing (i.e. Leave a minimum of 1/2 m). Connect in the wires from the float switch to the Com and the I/P 2 terminal. The float switch must provide a closed contact for high level and be carefully positioned so that it will fully tilt when the level is high.

### 4. Fit the beacon light

Fit the beacon light by means of passing cable through gland in the alarm box and making connection with terminals.

### 5. Test the system

Connect the battery backup by means of pushing terminal block onto connection. The unit will give 3 beeps and the red LED on the PCB should start to flash every 10 seconds.

Re-fit front cover and switch on mains supply.

### 6. Test the alarms

Switch off the mains supply to the unit and the beacon should start to flash 15 seconds later.

Test the air pressure switch by turning off the blower and allowing pressure to decrease.

Test the high level alarm by means of turning off submersible pump and filling unit with water ensuring high level alarm is activated. Adjust if necessary.

The alarm type is indicated by beeps at around 15 second intervals.

**One beep = mains fail, two = low air pressure, three = high sump level**

## Fault Finding

### If the unit does not sound alarm then:

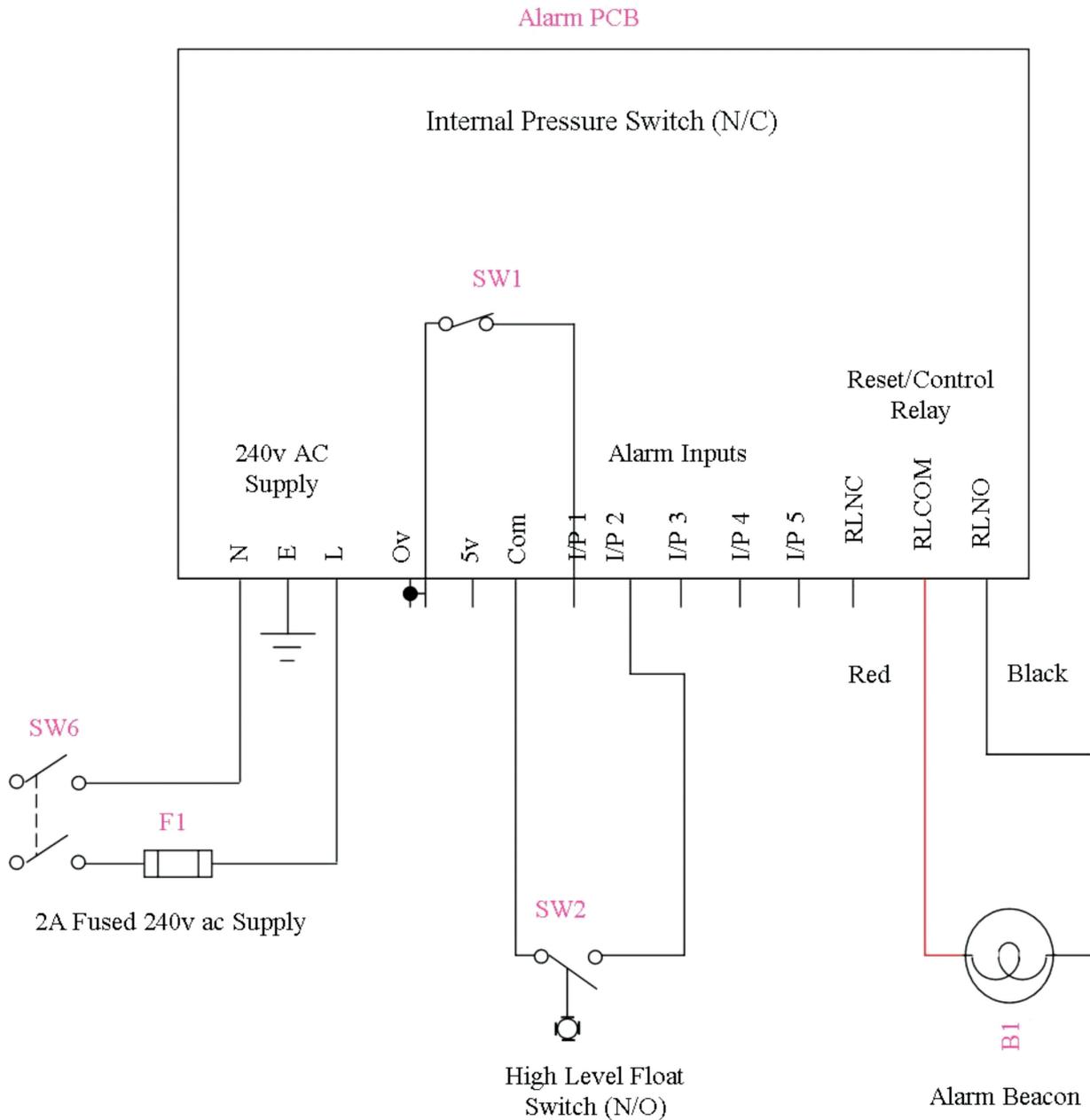
- Check the Red LED on the PCB is flashing. Check battery is connected
- If LED not flashing then isolate unit from mains and check mains fuse. Check battery voltage – should be between 6 and 6.5 volts DC.

## Declaration

We Build It Ltd hereby declare that this alarm unit is in compliance with the essential requirements and other relevant provisions of the Low Voltage Directive 73/23/EEC and EMC Directive 89/336/EEC.

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# Bio-Pure Alarm Unit Wiring Details



## Notes:

- Inputs must be from isolated volt free contacts.
- Alarm Unit must be earthed.
- Zener barrier must be fitted between float and alarm unit if sump is Zone 0.

## High Water Table Supplement

**If the Bio-Pure is installed in WET GROUND, the top and bottom parts of the unit should be sealed by means of a water tight mastic sealant and the unit should be anchored by means of concrete or anchorage pins.**

### **Anchorage by Concrete**

The Bio-Pure has 4 anti-floatation wedges positioned on the sides. For moderately wet ground these can be covered in a lean mix of concrete to act as an anti-floatation ring.

**IN SEVERE WET GROUND THE ENTIRE UNIT SHOULD BE BURIED IN CONCRETE UP TO THE INLET AND OUTLETS OR THE ANCHORAGE PIN METHOD SHOULD BE USED.**

**NB. When using concrete the unit should be filled with water at the same rate as concrete is poured.**

### **High Water Table Anchorage – Dry Pin Method**

- 1) Insert the steel anchorage pins by hammering them horizontally (90 degrees) to the walls of the excavation into the undisturbed ground at a depth of 1200 mm (from the top). The pins need to be inserted leaving 300 mm protruding into the excavated area.
- 2) Connect a length of galvanised chain into the hole in the end of each pin using a shackle. Take the loose end to the top of the excavation and secure temporarily.
- 3) Continue to install tank as per fitting instructions.
- 4) When Bio-pure is fully installed insert eye bolts into the down position ie. Eye bolt at the bottom, nut at the top. Attach the loose end of the chain into the eye bolts by means of shackle, adjust and tighten each eye bolt to take up any slack in chain – do not leave any slack in chains as tank may move.
- 5) Continue to back fill to desired level.

### **High water table anchorage**

- 4 x 1200mm galvanised steel angle irons (50mm x 50mm x 6mm) each with a point at one end and a 13mm hole at the other.
- 8 x galvanised steel 'D' shackles.
- 4 x 1200mm long, 6mm diameter welded link galvanised steel chain.

## Electrical Installation

It is not feasible to state a specific installation method due to the variance of sites. It is important therefore that an electrical installation be performed in accordance with the 17th or later edition of the Institute of Electrical Engineers Regulations with appropriate current protection devices for site configuration.

The supply to the air pump housing should have a dedicated circuit incorporating isolation and protection devices. An earth leakage circuit breaker is recommended. A device with a 30mA maximum trip current is recommended.

### **A typical example of the electrical installation is the following:-**

- 1) A fuse spur is installed at a suitable accessible position
- 2) A 2.5 mm armoured cable is laid from the fuse spur to the Bio-Pure, it is then passed through the first electrical gland installed in the shell of the treatment plant and ½ m loop is then left in the body. It is then passed through the 2nd electrical gland
- 3) A double IP rated socket is securely fixed to the wall of the Air Box and the 2.5 mm armoured cable is connected.

## Installation of Air Blower

It is recommended that the air blower pump be installed in the pump housing, with an appropriate single phase 13 amp supply. Care must be taken to ensure the unit is not subject to water ingress, free from dust and dirt that could clog the air filters. Access to the air blower unit will be required for maintenance. Ensure unit is well ventilated.

**Note – The air blower unit can be fitted in a outbuilding within 10m of the unit.**

**Ensure unit is well ventilated and not subject to air temperatures exceeding 37 degrees centigrade.**

We recommend that only a qualified electrician is employed to undertake the electrical installation of the air blower pump. The air blower pipe is secured to the pump and the blower tube by means of the jubilee clips supplied.

**It is very important that the electrical connection is securely fixed to the box. This will avoid it vibrating and making excessive noise.**

## Commissioning Checklist prior to switching on power supply

Prior to use of unit and before any sewage enters please check the following:-

- Ensure air diffuser is secure on the end of the blower tube and blower tube is secure to its mounting
- Ensure the blower pipe is not kinked or damaged in any way (make sure it has been cut to the correct size)
- Remove any construction debris from areas surrounding unit

## Commissioning Checklist after turning on power supply

- Ensure the air blower is working (it should hum and vibrate slightly)
- Listen for any air leaks (tighten joints if required)
- Standing above the unit with the service hatch removed, check for water turbulence (the water should bubble vigorously)
- Run some taps in the house and observe the flow into the unit (any construction debris brought in by the flow should be removed)
- Allow water to enter the unit until full, observing the displacement around the outlet weir
- Securely replace pump housing and service hatch, secure with cable ties supplied

