

**P4 – P25 Biotec  
Sewage Treatment Plant  
Operation, Installation &  
Electrical Guidelines**

**TITAN**  
POLLUTION CONTROL

Titan Pollution Control Limited	
West Portway, Andover, Hampshire. SP10 3LF	
Tel: 01264 353222	Fax: 01264 353122
Website: <a href="http://www.titanpc.co.uk">www.titanpc.co.uk</a>	Email: <a href="mailto:info@titanpc.co.uk">info@titanpc.co.uk</a>

#### HEALTH AND SAFETY

**These warnings are provided in the interest of safety. You must read them carefully before installing or using the equipment.**

It is important that this document is retained with the equipment for future reference. Should the equipment be transferred to a new owner, always ensure that all relevant documents are supplied in order that the new owner can become acquainted with the functioning of the equipment and the relevant warnings.

Installation should only be carried out by a suitably experienced contractor, following the guidelines supplied with the equipment.

We recommend the use of a dust mask and gloves when cutting GRP components.

A qualified electrician should carry out electrical work.

Sewage and sewage effluent can carry micro-organisms harmful to human health. Any person carrying out maintenance on the equipment should wear suitable protective clothing, including gloves. Good hygiene practice should also be observed.

Covers must be kept locked.

Observe all hazard labels and take appropriate action to avoid exposure to the risks indicated.

The correct ongoing maintenance is essential for the proper operation of the equipment. Service contracts are available and recommended. Please contact Titan Pollution Control for details of your local service provider.

Should you wish to inspect the operation of the equipment, please observe all necessary precautions, including those listed below, which apply to maintenance procedures.

Ensure that you are familiar with the safe working areas and accesses.

Ensure that the working area is adequately lit.

The power supply to the equipment should be isolated at the main RCD before lifting the blower cover.

**Take care to maintain correct posture, particularly when lifting. Use appropriate lifting equipment when necessary. Keep proper footing and balance at all times. Avoid any sharp edges.**

Desludging should be carried out by a licensed waste disposal contractor holding the relevant permits to transport and dispose of sewage sludge. The contractor must refer to the desludge instructions contained in these guidelines.



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**Operating Guidelines**  
**Engineering & Process**

Biotec Packaged Sewage Treatment Plants are designed to treat domestic sewage to a final effluent with less than 30 mg/l Suspended Solids, 20mg/l Biochemical Oxygen Demand (BOD) and 20mg/l Ammonia when the incoming flow and biological loads are within the limits for the plant as specified by Titan Pollution Control.

In particular the P4 is restricted to two bedroom properties; three bedroom properties require the model P6. In the event of a third bedroom being added to a two-bedroom property, it may be possible to upgrade the installation by putting a septic tank upstream of the plant.

As a general guide the Model P6 is restricted to 3 – 4 bedroom properties. A P12 can be used for a pair of 3 – 4 bedroom properties. The P18 is designed to treat 12 bedrooms and the P25 16 bedroom properties. The Biotec is based on an improved form of biological filtration which is continuously recycled by airlift with a humus rich mixed sewage liquor. Process takes place in 3 distinct stages.

**Primary Screening & Settlement**

The sewage is screened by a vertical screen retaining items above 10mm in diameter. Material retained by the screen either gradually breaks down sufficiently to pass through the screen, settles, or forms a scum. Recirculation through the screen assists in preventing septicity.



## Biological Treatment

The screened sewage liquid is mixed with treated sewage coming from the biological filter together with any humus from the final settlement tank. The liquor is recycled by airlift pump over the filter media. This method of operation permits the unique feature of no moving parts within the treatment plant.

The biological filter bale consists of a composite plastic media of high specific surface area. The design is such that it promotes internal distribution of sewage liquid through the filter. This provides an evenly wetted surface on which the biomass grows. The biomass consumes the major part of the incoming biological load.

The air lift pump is driven by a blower in a weatherproof housing which should be located in a shaded position above possible flood levels. The supply of air from the blower provides adequate ventilation to the plant. Exhaust air from the plant can be vented by either the soil vent pipe or by a separate vent.

## Final Settlement

The treated sewage transferred from the biological filter bale to the third stage is again settled, allowing humus solids to separate as the clarified liquor is passed through the final up-flow zone. It is then discharged to a watercourse or soakaway.

## Applications

	P4	P6	P12	P18	P25
Typical Dwelling	2 bedrooms	4 bedrooms	8 bedrooms	12 bedrooms	16 bedrooms
Population Equivalent	Up to 4	Up to 6	Up to 12	Up to 18	Up to 25
Total BOD Loading	0.24kg/day	0.36kg/day	0.72 kg./day	1.1 kg/day	1.5 kg/day
Maximum Flow	0.8m <sup>3</sup> /day	1.2m <sup>3</sup> /day	2.4m <sup>3</sup> /day	3.6m <sup>3</sup> /day	5.0m <sup>3</sup> /day

## Cautionary Notes

- All surface water must be excluded from the treatment plant.
- We do not recommend the use of air admittance valves with W.C. systems connected to the Biotec
- Also we do not recommend a pumped feed to a Biotec plant without special reference to Titan Pollution Control.
- Sink waste disposal units should not be used in conjunction with a Biotec plant.
- If the plant is remote from buildings, ventilation of the inlet drain will be required.
- In hard water areas a softener may be required, where one is fitted, the spent regenerant must be routed to a separate small soakaway.

Under the Water Resources Act 1991, amended by the Environment Act of 1985, the Environment Agency have the right every 2 years to review the conditions of discharge consented.

It is therefore, possible that an installation may require upgrading after several years of use.

Titan Pollution Control will be pleased to advise and offer the means to comply on a case by case basis.

## Population Equivalent

Refers to normal family residents, some of whom have daytime occupations or schooling away from the house and includes overnight guests who may stay for periods of more than one night. Contact Titan Pollution Control Ltd., for advice regarding non-standard situations.

## Flow Management

The Biotec range was the first package plant to meaningfully deal with influent surges.

The plant has an inherently large volume of over treated effluent, which provides a large dilution of influent surges, thereby minimizing any shock to treatment. It also has a surge control outlet arrangement.



## General Maintenance

Sewage treatment installations will only perform as well as they are maintained.

The best way to achieve this is to arrange a service agreement with Titan or an approved service engineer (see below). There will always be situations when a little self-help may be sufficient to avoid call out and we describe here some basic checks which may prove useful.

- Firstly, keep children and pets away from the plant and always wear rubber gloves. Never try to climb into the plant.
- If in doubt ask Titan or an approved service engineer for advice. One of the things that will come from routine maintenance is evaluation of the desludging interval.

Having confirmed that the sludge situation is under control, the following basic checks can be made.

- Ensure that the protective mesh layer (Enkamat) on the top of the media bale is not blocked. If it is, then it can be removed, shaken, hosed off and repositioned. Alternatively, the Enkamat can be renewed and the old material disposed of safely.
- Check that the spray is covering the rectangular bale. This can be adjusted by the plastic valve attached to the air hose inside the plant.
- Ensure that the airlift in the centre of the bale is not blocked, as this will also affect the spray pattern.
- Where pumped outlets are included check that the inlet connection to the plant is not flooded.

## Desludging

### Emptying and Desludging

All biological treatment plants produce a surplus of humus solids, which from time to time have to be removed as sludge in order to maintain process efficiency. Applications on purely domestic feed may only require desludging 6-12 months, whereas more heavily loaded installations may require desludging at least 6-9 months. Sites where commercial food preparation is carried out will also require grease traps to be emptied on a regular basis.

Desludging must be carried out by a reputable company who may be located by reference to Yellow Pages, your District Council or from your local Water Authority. Titan Pollution Control may be able to help you with suggesting an emptying contractor. When ordering a tanker for desludging you will have to state the capacity of the unit to enable the correct size tanker to be scheduled. In this connection your attention is drawn to the table of plant capacities provided at the end of this procedure.

### Procedure

To ensure that the plant is emptied correctly, the following procedure may be used by the Tanker Company.

1. Turn off the blower. Always empty the primary or inlet end of the tank first and ensure that the hose is placed on the inlet side of the screen. Also make sure that the hose and end fitting are, as far as practical, kept away from the screen mesh whilst raising and lowering. The hose and end fitting must be positioned to draw from the very bottom to collect accumulated settled sludges.

Whilst pumping out, check the other compartments to make sure that the water level drops at the same rate. As far as is practical, remove traces of sludge accumulation on the walls and bottom of the chamber.

2. Take care when lifting the hose from one compartment to another one, or indeed to remove it from the plant not to blow back the wastewater into the treatment plant. If a clean water hose is available, hose down any residual solids from the interior of the tank. Do not hose off the biomass from the media unless it is blocked.
3. Check for the presence of any residual solids in the bottom of the final settlement zone, i.e. the last tank compartment, and if there are any present, remove them.
4. The tank should be refilled as speedily as is practical using mains supply water. Refilling the tank evenly from both sides of the screen, therefore establishing a constant equilibrium. It is advisable to leave the air blowers off until normal water level has been achieved.



**Liquid Volumes**  
**Standard Rate Treatment Plants**

Model No.	Litres	Gallons
P4	1,730	380
P6	2,300	506
P12	3,200	700
P18	5,200	1150
P25	5,200	1150

### Installation Guidelines

These guideline instructions apply to the small Biotec and should be read in conjunction with the section on Electrical Guidelines.

Before beginning the installation, the whole of these instructions must be read and complied with. Also, the following points must be noted:

- Adherence to good Working Practices and the Health & Safety at Work Act on site should be observed.
- Prior to installation, check the tank for damage and always handle with care, avoiding heavy impact or contact with sharp objects.
- On no account should the specified maximum drain invert depth be exceeded.
- Never fill a freestanding tank with water or back fill an empty tank. Always fill the tank with water at the same time as the back fill material is placed. This avoids the risk of flotation and minimizes the applied loads to the tank.
- These instructions assume no more than pedestrian duty loadings will be applied to the final installation. Traffic or other heavy superimposed loads must not be transferred through the walls of the tank.
- Select the unit location in accordance with building regulations, required distances from buildings, water supplies and irrigation systems

### Site Planning

The following points should be considered before installation of the equipment:

The discharge must have the permission of the relevant Environmental Regulator and the complete installation, including the specified irrigation system should have Planning and Building Control approval.

In most cases, the effluent discharge is to an irrigation system. A porosity test should be carried out in accordance with the EPA Wastewater Treatment manual, "Treatment Systems for single houses" or pr EN 12566 Part 2, whichever is most recent. BS 6297 also provides design criteria.

There must be at least 1 metre of clear, level ground all around the unit to allow for routine servicing.

Wherever practicable, the unit should be installed as far as possible from any habitable building. Many Local Authorities will insist on a minimum distance of 15m (UK) or 7 metres. (Eire) Other distance criteria are provided in the EPA manual, 10m from a watercourse, 10m from a well, 50m from a lake, 3m from site boundary, 4m from a road and slope breaks.

Care should be taken not to place the unit in close proximity to any openings within the building.

Adequate access must be provided for routine de-sludging and maintenance. Usually the unit should be sited within 30 metres of a hard standing area suitable for a vacuum tanker. Vehicles should not be permitted within a distance equal to the depth of the unit, unless suitable structural protection is provided to the installation.



Biotec units must be installed at a level which will allow connection to the incoming drain and a free discharge at the system outlet (excepting units with an integral discharge pump). Effluent pumping stations are available to lift the discharge to a higher level and/or pump to remote discharge points.

If the unit has to be recessed, measures must be taken to ensure that it cannot be flooded by surface water run-off.

Where necessary the Biotec should be fenced off or otherwise protected. Maintenance access must be maintained as above.

The drainage system connecting to the Biotec must be adequately vented in accordance with the Building Regulations. The head of the drainage system should be connected to a stack pipe, open at high level, so as to draw foul air from the system and sited with consideration to prevailing wind direction. Tile vents & Air admittance valves should not be used as the sole drainage ventilation facility, but if this cannot be avoided, the Biotec should be independently ventilated. All inspection points within the drain system should be sealed so as to enable ventilation at high level.

The Concrete Specification is not a site specific installation design.

CONCRETE SPECIFICATION SK296 IN ACCORDANCE WITH BS 5328 PARTS 1,2,3 AND 4		
TYPE OF MIX		DESIGN
PERMITTED TYPE OF CEMENT		BS 12 (OPC): BS 12 (RHPC): BS 4027 (SRPC)
PERMITTED TYPE OF AGGREGATE (coarse & fine)		BS 882
NOMINAL MAXIMUM SIZE OF AGGREGATE		20 mm
GRADES:  C30 (30 N/mm <sup>2</sup> ) C20 (20 N/mm <sup>2</sup> )		REINFORCED & ABOVE GROUND WITH HOLDING DOWN BOLTS REINFORCED (EG. FOR HIGH WATER TABLE) UNREINFORCED (NORMAL CONDITIONS)
MINIMUM CEMENT CONTENT	C30 C20	270 - 280 Kg/M <sup>3</sup> 220 - 230 Kg/M <sup>3</sup>
SLUMP (NOT IN ACCORDANCE WITH BS 5328)		25mm
RATE OF SAMPLING		READY MIX CONCRETE SHOULD BE SUPPLIED COMPLETE WITH APPROPRIATE DELIVERY TICKET IN ACCORDANCE WITH BS 5328 PART 3
NOTE: STANDARD MIXES SHOULD NOT BE USED WHERE SULPHATES OR OTHER AGGRESSIVE CHEMICALS EXIST IN GROUND WATER		



## Wet Site

A wet site is defined as one where the water table can rise above the bottom of the tank or where the sub soil is of a poorly draining nature and therefore susceptible to holding surface water (including Clay).

Having excavated, if the base is excessively wet or unstable, lay 200mm of hard-core and line with polythene, prior to laying the 150mm level base of concrete. If necessary, make a sump hole to one corner of the excavation to accommodate a suction hose from a site pump, thereby keeping the excavation as dry as possible.

Lower the tank on to the levelled concrete, ensuring the top of the tank is completely level and that all connections line up. With the tank in position commence filling with water and at the same time back fill with concrete to just below the inlet/outlet levels. It is important that these two operations are carried out simultaneously to avoid the risk of flotation. When back filling with concrete it is essential that the underside of the tank is evenly supported without voids.

We do not recommend the use of vibrating lances. Make the inlet/outlet and air duct connection. Continue back filling to 300mm above the inlet pipework with concrete and then complete the installation back filling to ground level with free flowing soil.

When plants are concrete back filled, care should be taken not to concrete in cover fixings. Soil can be placed on the green curved top, but not on the access panel.

## Options

These plants are available with integral sample points or treated effluent pump chambers.

The installation procedure is the same, but the pumped outlet is suitable for MDPE pipework at a shallower invert.

Where installations involve deep inverts on wet sites, concrete back fill in excess of that required for standard depth, should be applied in gentle pours with the tank fully ballasted. This operation should only be completed when the main backfill has set.

In the course of making the air duct connection, it will be necessary to run 110mm diameter ducting from the connection at the outlet end of the plant. This ducting must connect up through an independent base for blower housing location. The duct must be laid with long radius bends to enable the hose to be threaded through.

The blower housing base slab should be located 3 to 13 metres from the outlet end of the plant such that the 15 metres of hose provided is sufficient. The concrete base should be 150mm thick and must be large enough to accommodate the blower enclosure.

Preferably the location for siting the blower should be shaded. Once the air hose is installed in the annulus around the hose at the top of the duct should be sealed with spray foam.

Where pumped outlets are included, sufficient electric cable is provided with the pump to reach the isolator in the blower housing, via the airline duct.

Electrical installation from the supply should be made by a competent electrician in accordance with the appropriate regulations.

It is essential that this treatment plant is commissioned correctly. This may be completed by the installer, however, it is recommended that commissioning be completed by Titan or their approved service engineers. This may be undertaken for a modest fee.

It is essential that all surface water be segregated and excluded from entry to the plant.



## Dimensions

Model No.	Diameter mm	Depth mm
P4		
P6	1900	1980
P12	1900	2200
P18	1900	2700
P25	2700	2600
	2700	2600

## Surface Water

It is essential that all surface water be segregated and excluded from entry to the plant. Where installations involve deep inverts on set sites, concrete back fill in excess of that required for standard depth, should be applied in gentle pours with the tank fully ballasted. This operation should only be completed when the main back fill has set.

## Self Help

In order to minimize the need for dealing with emergency situations we recommend that Biotec units are commissioned and serviced by Titan or their Approved Service Engineers. Provided that your plant is installed, operated correctly and serviced, you should not need to get into much – if any – self help.

However, some of the most likely question and answer situations are listed below. Firstly, any sewage treatment plant, if abused, can become a health hazard. If in any doubt ask Titan or an Approved Service Engineer.

- **Blower Stopped:**  
Check isolator is switched on, the incoming power supply circuit and fuse.
- **Blower works but no water distribution inside the plant:**  
Check hose connections  
If the air lift pipes are suspected to be blocked, call for service  
Check regulating valve is not closed
- **Plant Odour:**  
Check blower working  
If blower working, plant probably needs desludging.  
Check vent circuit is clear.  
Check that the air duct entering the blower housing has been sealed with foam.
- **Plant Flooding**  
Check for blocked outlet system.  
If pumped outlet, check for pump operation, check pump isolator and power supply.

## Do's and Don'ts

- Don't pump feed the plant without reference to Titan.
- If you must have a waste disposal unit, DON'T use it as a garbage bin.
- Don't throw any medicines down the toilet.
- Don't empty large quantities of bleach or similar cleaning reagents into the system.
- Don't empty cooking oil or similar down the sink.
- Don't cover the plant with soil material or prevent access for service and desludging.
- Don't apply a hose or jet wash to the biological filter unless specifically advised to.
- Don't try to enter the plant
- Don't put sanitary towels, incontinence pads, nappies or tampons down the toilet.
- Do take out a service agreement and let the experts look after your plant.
- Do contact Titan for advice if you have any cause for concern.



## Blocked air lifts

Occasionally air lifts block. Usually this is as a result of non biodegradable products entering the unit, such as sanitary items, rags, J clothes, plastic bags, etc. These items should not be allowed to enter the unit as they will adversely affect the liquid distribution, the build up of biomass, overall performance and effectiveness of the unit.

Sometimes blockages occur as a result of formation of calcium carbonate solids within the air lift pipe. Calcium carbonate is a gritty white to brown solid. The solid that forms within the pipe varies in colour and consistency depending on the nature of the sewage.

This type of blockage usually occurs because there is too much calcium present within the unit, the solid forms when the water chemistry is altered by the air bubbled through the pipe. This is a very unusual occurrence.

To prevent reoccurrence, you should

- ☐ ensure that no ground or surface water is allowed to enter the unit .
- ☐ check that where a softener is connected to the water supply of the property, that the regenerant chemicals, (which are high in calcium and magnesium salts) are not being fed into the unit.
- ☐ consider a softener to reduce the background level of calcium in the main feed supply.

When these blockages occur, the calcium carbonate formed is insoluble, and heavy. Within the pipe it is also sticky with other sewage solids. When wet the solids are not easily cleared from the pipe.

Should you have a recurring problem, please contact us and we will provide a spare air lift pipe.

## Commissioning

We recommend that our Engineers or approved service provider should commission the equipment. However, in situations where expediency is required for owner/installer to commission, the following basic instructions may prove useful.

Check blower housing has been securely positioned and has been correctly wired to a suitable electrical supply, protected by an earth leakage circuit breaker, ensuring the equipment is correctly earthed. (refer to Installation Instructions). The electrical equipment must be inspected by a qualified Electrician and installed to the local Electricity Authority regulations.

Ensure the air hose has been securely connected to the hose adapter in the blower housing and the other end is connected to the manifold within the plant, ensuring that there are no sharp bends or kinks causing airflow restrictions.

Make sure construction debris is removed from within the plant.

**It is essential that the Biotec is filled with clean water to the outlet level. Before switching on the blower, ensure the air filter is correctly fitted and that the air intake is completely free of any obstructions. Switch on the blower. The airflow will activate the air lift pumps distributing the water over the biological filter. Check the centralisation of the distribution cones and adjust if necessary to provide an even covering of the biological filters. Adjust the spray of distributions using the individual stopcock(s) on the airline(s) inside the top of the plant.**

Allow sewage to enter the plant as necessary and ensure that the blower is left running continuously. Biomass will build-up naturally over 4 -8 weeks and the plant should then treat sewage naturally.

To ensure the plant is functioning correctly and the final discharge is to the required standard, contact your service provider to arrange a post commission inspection stating the original commissioning date.

In order to get the best from your plant, we recommend that either Titan Pollution Control or one of their approved Service providers both commission and service the plant. This reduces the risk of non-compliance and prosecution. It also avoids unnecessary desludging, and minimizes the cost of emergency call out visits.



## Electrical Guidelines

### General Notes on Outside Electrical Installation

Only qualified and competent persons should carry out any electrical installation. Outside electrical installations can present dangers that are not usually encountered in internal electrical wiring. External equipment is subjected to the elements and particular attention must be made to the suitability of the cable, glands, connection units etc. for outside use. The possibility of attack by vermin should also be considered and adequate precautions taken.

*These notes are not intended to replace the latest I.E.E. Wiring Regulations.*

#### Health & Safety at Work, etc. ACT 1974

To ensure that the equipment described is safe both for personnel and property it should be installed, commissioned and maintained by or under the supervision of qualified persons. Regard should be taken of IEE Wiring Regulations, Codes of Practice, Statutory Requirements and any specific instructions issued by the supplier of these details.

*Earthing - All equipment must be earth bonded in accordance with the latest IEE Wiring Regulations. For clarity this has not been shown.*

*Titan Pollution Control Ltd. reserves the right to alter these details without prior notice.*

#### Electrical Supply

The electrical feed should be dedicated to the equipment and not used for any other purpose. The supply should be via a suitable RCD unit backed up by either a motor rated fuse, or preferably a motor rated MCB of suitable rating.

The RCD must be of the two-pole variety rated at 40A/30mA. (If nuisance tripping is experienced then a sensitivity of 100mA should be used, but this does reduce the personnel protection capability).

#### Cable Installation

The type and size of cable depends upon site conditions and distance. If conduit/ducting is possible then providing mechanical and vermin attack protection is provided, single cables of adequate size can be used. However, the preferable method would be to use steel wire armoured (SWA) cable. This should be buried in the ground at a depth of 600mm laid on sand with warning tapes on the cable and an additional tape at a depth of 150mm. External type SWA glands should be used on all make offs.

For loads up to 0.75kW and runs of less than 100 metres, 2.5mm<sup>2</sup> 3 core SWA is adequate. For loads up to 1.55kW and runs of less than 100 metres, 4.0mm<sup>2</sup> 3 core SWA should be used. It is a requirement to use the unused core in the cable for the earth conductor and this should be sleeved with earth sleeving at both connection points.



## **Power & Pressure Failure Detection System (Optional)**

These notes should be read in conjunction with General Notes on outside Electrical Installation.

### **Description**

The controls are housed within an IP56 grey polycarbonate enclosure, the approximate dimensions of which are 300 x 220 x 120 mm. A single test push button is mounted on the side of the unit.

### **Operation**

The panel is designed to be used in conjunction with the Beacon unit to provide warning of either loss of power or air pressure failure. A relay SR monitors the presence of power being available to the Biotec MK.2 equipment. In the event of power not being present then the relay is de-energized and the alarm supply to the beacon is enabled. A relay PR is held on by a differential pressure switch. The presence of a small pressure differential within the blower housing indicates that the blower is operating correctly and the relay is energized. Should this pressure differential not be present then the relay is de-energized and the alarm supply to the beacon is enabled. A test push button is provided for occasional use in order to confirm correct operation of the unit.

The alarm supply to the beacon is provided by a maintenance free 12V sealed lead acid battery, the capacity of which will provide up to 16 hours of beacon operation.

The unit is supplied with the battery disconnected from the unit. With the supply switched off carefully push the 'faston' connectors onto the battery terminals. Orange to the positive terminal (+), purple to the negative terminal (-). It may be necessary to charge the battery, refer to the charging notes.

A constant voltage charger automatically recharges the battery with trickle (float) charge facility.

## **Beacon Units**

### **Applications**

These Beacons are used with optional high level alarms for single pump installations. They are also included in the scope of a twin pump panel and the Power and pressure Failure Detection System (PPFDS).

### **Description**

These notes should be read in conjunction with General notes on outside installation.

This unit provides an external visual indication of failure and takes the form of a high intensity Xenon beacon. In the case of the twin pump panel it indicates a high level situation. When used in conjunction with the PPFDS unit, the beacon provides indication of power or air pressure failure. It operates at 12V. on all systems.

As supplied the unit is fully weatherproof to IP65 and is supplied ready to mount on a suitable surface. A 3-metre length of cable for connection to the panel terminals is provided. This cable is of the flexible armoured type and should not be substituted for any other type. The armour is intended to provide mechanical protection only and should not be used as a conductor.

The brown core should be connected to the positive terminal and the blue core connected to the negative terminal.

### **Important**

This unit is designed to be simple to install and safe in operation. Any modification may adversely affect its weather resistance in operation. If in any doubt, please consult Titan for advice.

This is a sealed unit and not serviceable.



Blower Isolator Electrical Details

Ensure that the blower housing is protected by a suitable RCD to BS 4293 and a MCB to BS 3871. Cable installation below ground should be SWA to BS 6346, unless otherwise stipulated. The blower isolator housing provided includes an overload trip. This overload trip will be pre-set to 1.1 times the blower full load current.

Before switching on the blower, ensure the air filter is correctly fitted and that the air intake is completely free of obstruction.

<u>Blower</u>	<u>Power Rating</u> W	<u>Plant</u>	<u>Fuse Size</u>
LP-60 H	69	P4	2A
LP-60 H	69	P6	2A
LP-60 H	69	P12	2A
LP-150H	144-160	P18	2A
LP-150H	144-160	P25	2A

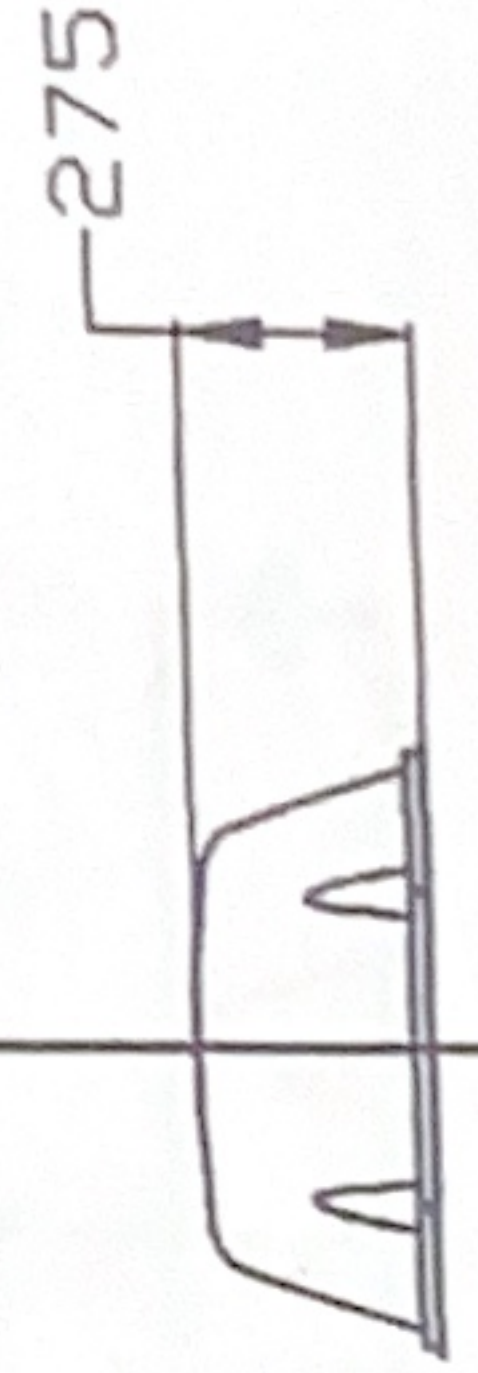
Plants incorporating an integral pump system (IPS) have an additional isolator for the pump protected by a 10A fuse.



Biotec	P4	P6	P12	P18	P25
Inlet Invert	1000	1000	1000	1000	1000
Inlet to base	1000	1200	1680	1600	1600
Outlet Invert	1100	1100	1100	1150	1150
Outlet to base	900	1100	1580	1450	1450
Plant height	2000	2200	2700	2600	2600
Plant diameter	1900	1900	1900	2700	2700
Cover length	1775	1775	1775	2445	2445
Cover width	500	500	500	695	695
Media Bale width	825	825	1375	1100	1650
Media Bale length	1200	1200	1200	2400	2400
Air-lift Length	1620	1795	2280	2080	2080
Air-lift Diameter	1 1/4"	1 1/4"	1 1/4"	2"	2"
Screen Height	990	1190	1690	1580	1580

**NOTE:**

For inverts of 1.5m increase the excavation depth by 500mm.



Blower	Length	Width
Cover	620	430
Plinth	650	450

**TITAN**

**POLLUTION CONTROL**

West Portway  
Andover  
Hampshire  
SP10 3LF  
Tel: 01264  
.....357666

TITLE:- Small Biotec  
Dimension Detail  
Sales Drawing

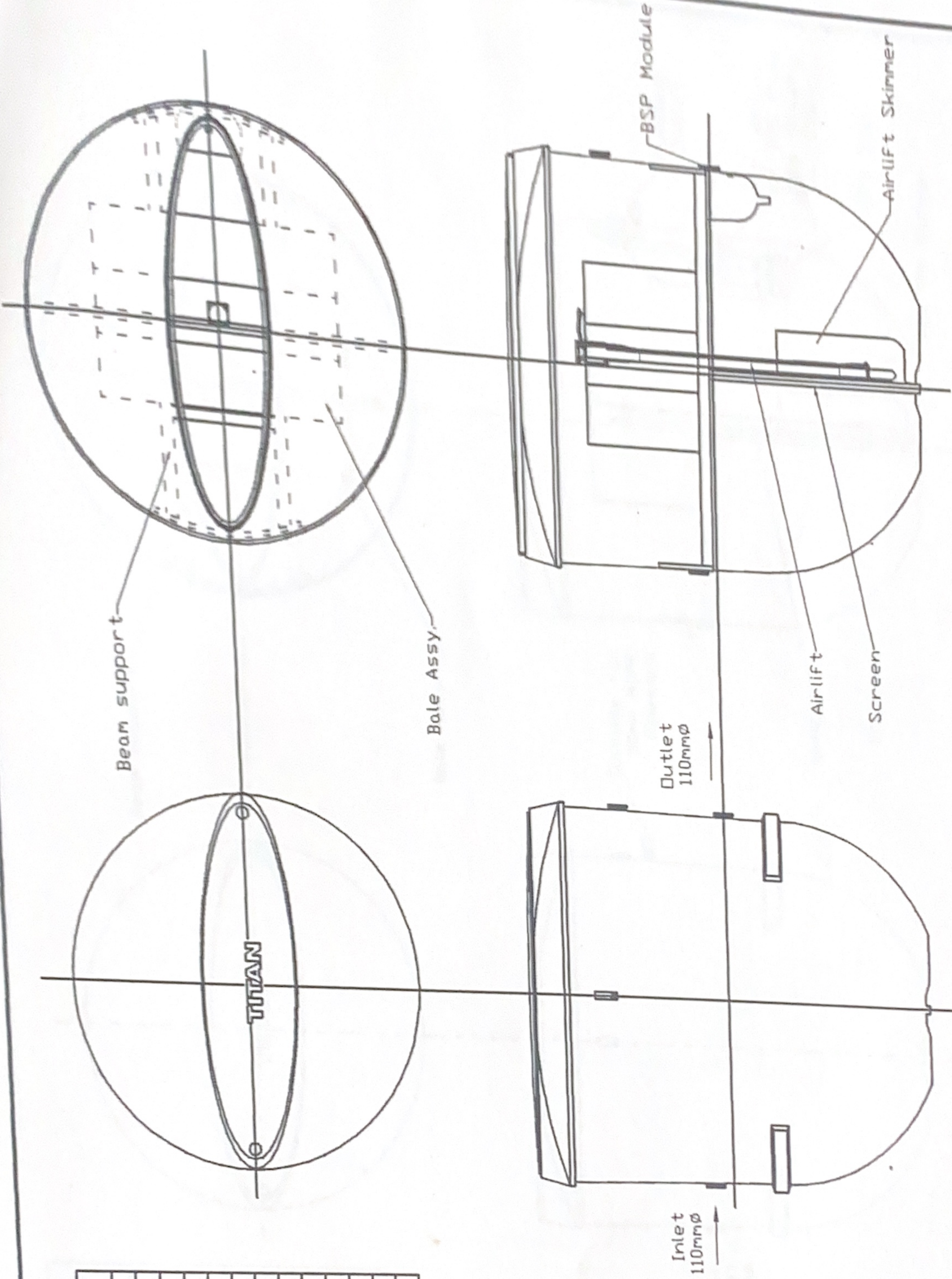
Drawn:- JT  
Date:- 10.09.01  
Issue:- D

DO NOT SCALE  
ALL DIMENSIONS IN mm  
TOLERANCE  $\pm 10$ mm  
Revised:- JT  
Date:- 22.05.02

DRG. No. Etp/284

UNCONTROLLED DRAWING  
PLEASE CHECK WITH TITAN POLLUTION CONTROL LTD  
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PRIOR NOTICE.

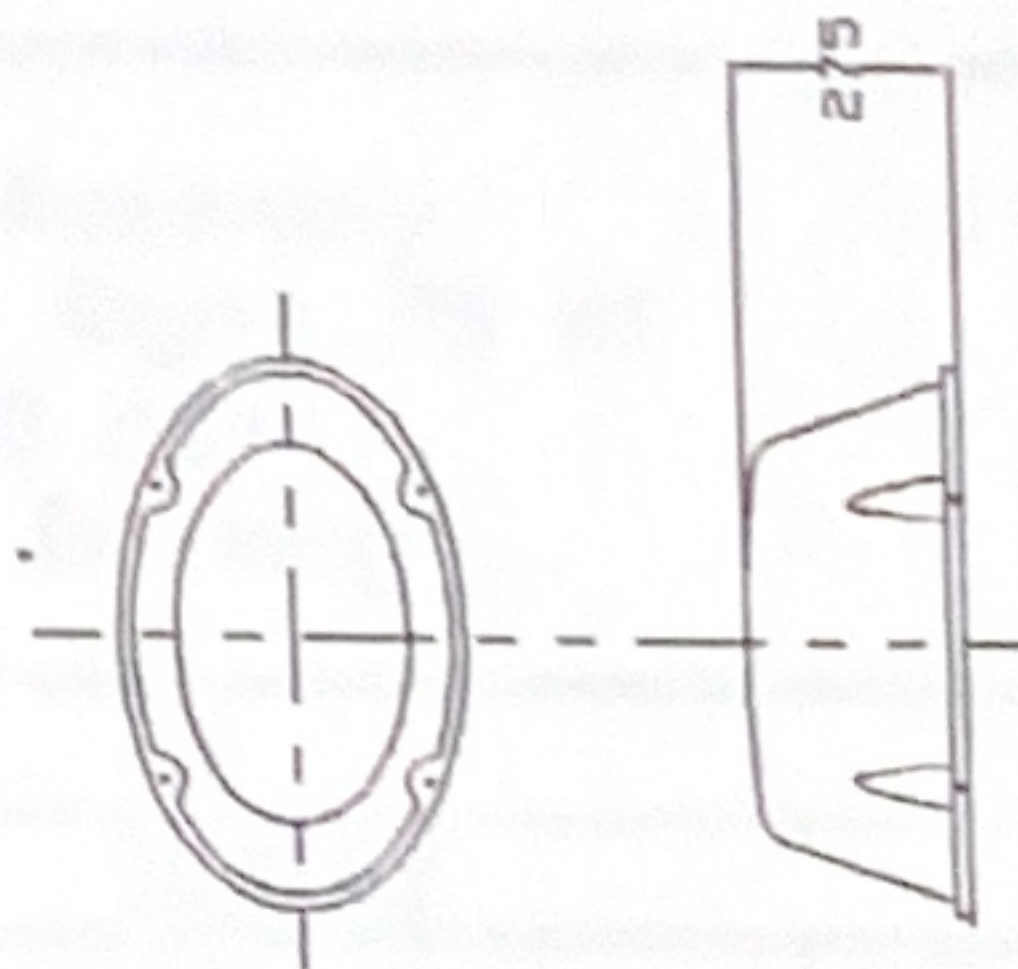




Biotec	P4	P6	P12	P18	P25
Inlet Invert	1000	1000	1000	1000	1000
Inlet to base	1000	1200	1680	1600	1600
Outlet Invert	605	605	605	655	655
Outlet to base	1395	1595	2095	1945	1945
Plant height	2000	2200	2700	2600	2600
Plant diameter	1900	1900	1900	2700	2700
Cover length	1775	1775	1775	2445	2445
Cover width	500	500	500	695	695
Media Bale width	825	825	1375	1100	1650
Media Bale length	1200	1200	1200	2400	2400
Airlift Length	1620	1795	2280	2080	2080
Airlift Diameter	1 1/4"	1 1/4"	1 1/4"	2"	2"
Screen Height	990	1190	1690	1580	1580

NOTE:

For inverts of 1.5m increase the excavation by 500mm.



Blower	Length	Width
Cover	620	430
Plinth	650	450

# TITAN

POLLUTION CONTROL

West Portway  
Andover  
Hampshire  
SP10 3LF  
Tel: 01264  
.....357668

TITLE:- Small Biotec IPS  
Dimension Detail  
Sales Drawing

Drawn:- JT  
Date:- 14.09.01  
Issue:- F

DO NOT SCALE  
ALL DIMENSIONS IN mm

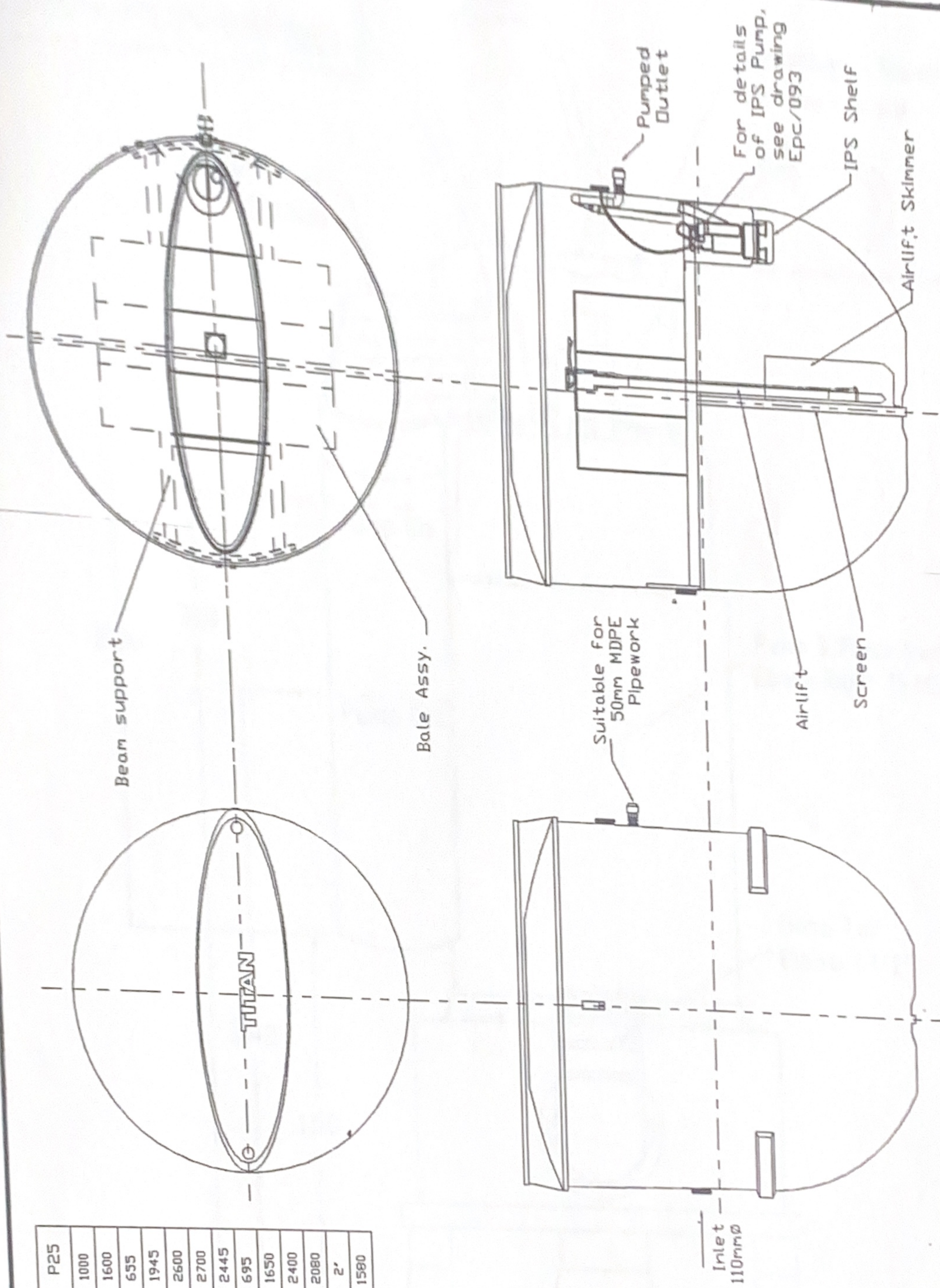
TOLERANCE ±10mm

Revised:- JT  
Date:- 11.10.02

DRG. No. Etp/285

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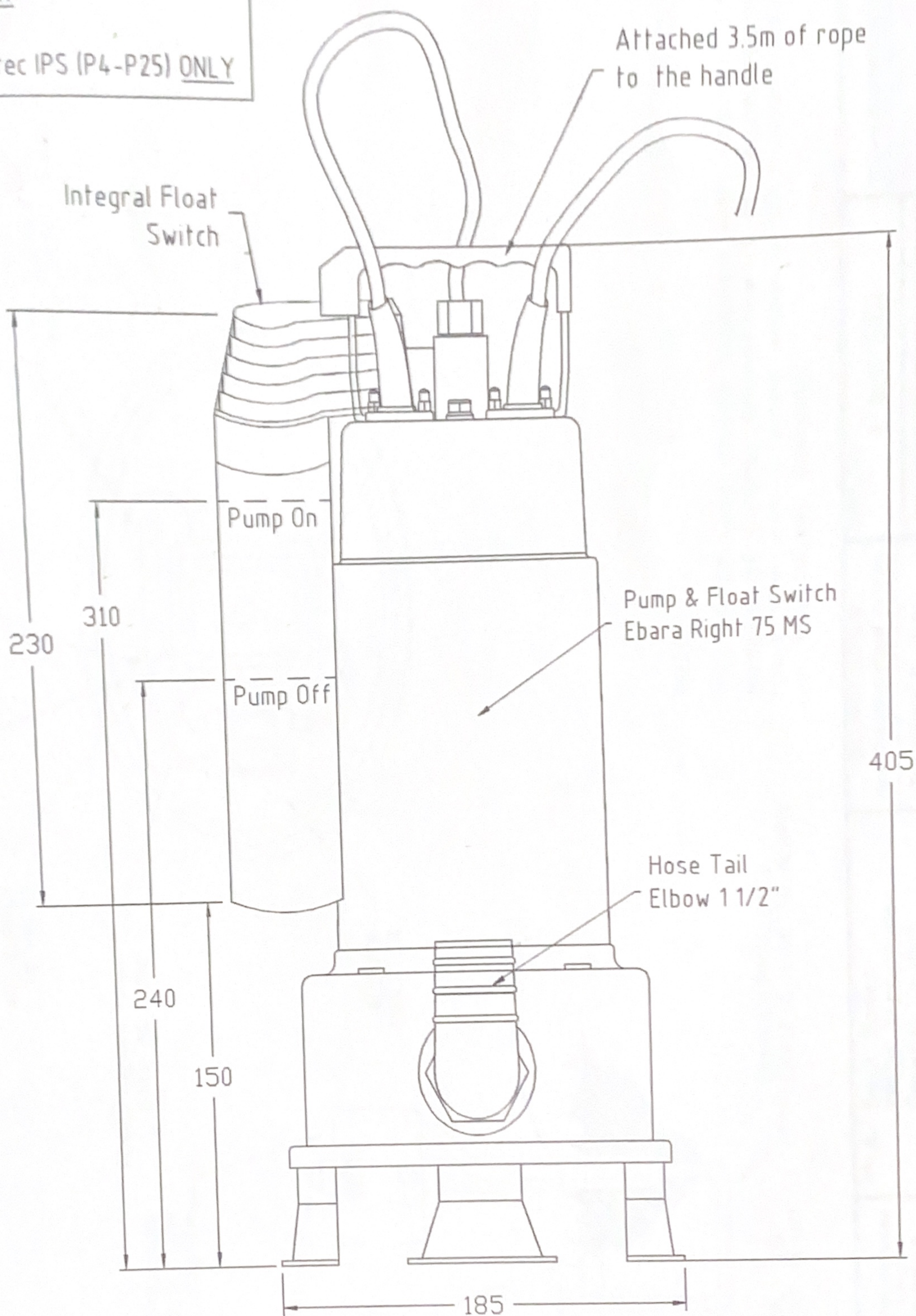
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PRIOR NOTICE.





Application:

Small Biotec IPS (P4-P25) ONLY



**TITAN**

POLLUTION CONTROL

West Portway  
Andover  
Hampshire  
SP10 3LF  
Tel: 01264  
.....357666

TITLE:-

Pump Assembly  
Ebara Right 75 MS  
(bi 380 pa)  
Sales Drawing

DRG. No.

Epc/093

Issue:-

A

DO NOT SCALE  
ALL DIMENSIONS IN mm

TOLERANCE  $\pm 10\text{mm}$

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PRIOR NOTICE.

Drawn:- JT

Date:- 10.10.02

Revised:- JT

Date:- 10.10.02

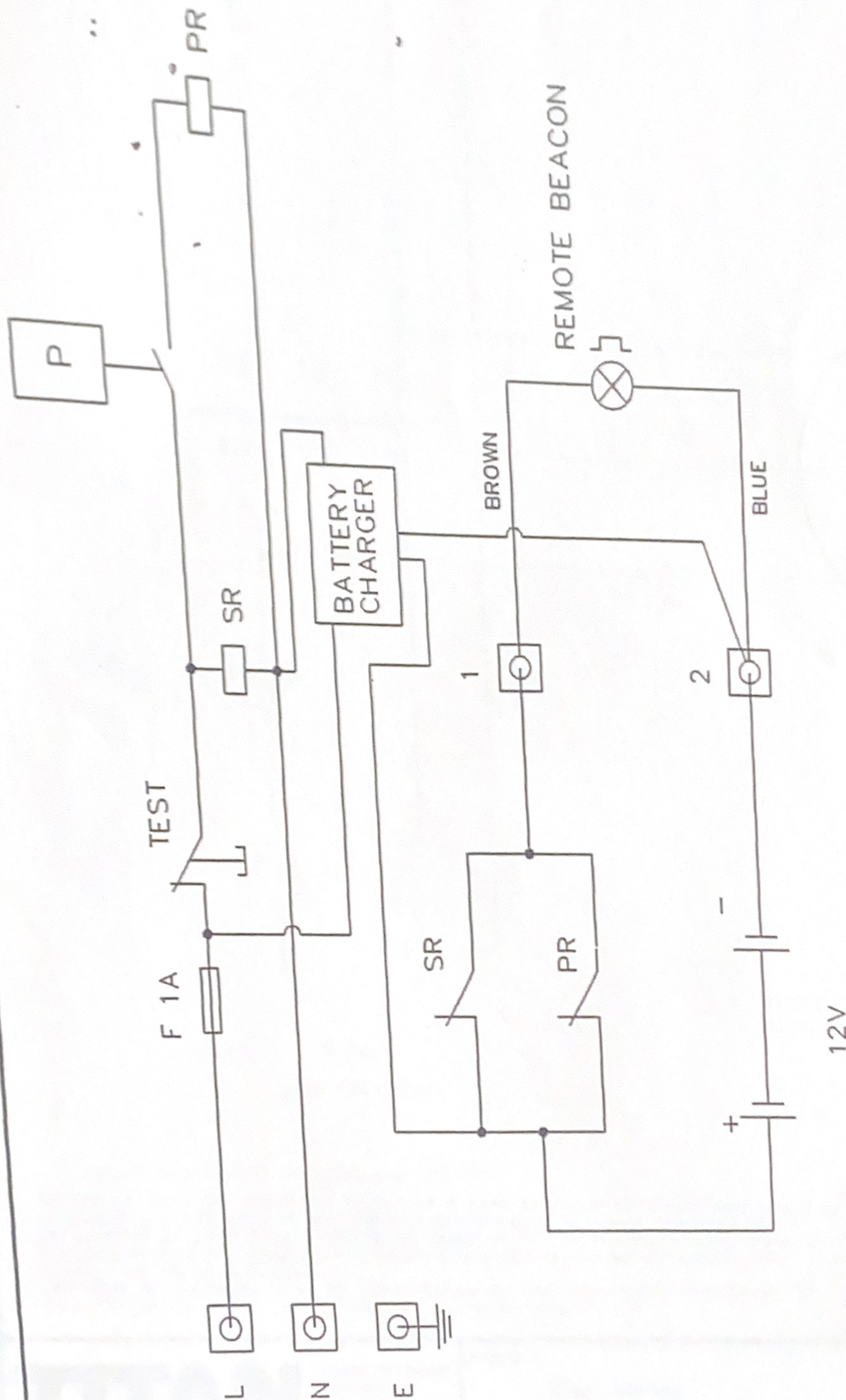
UNCONTROLLED DRAWING  
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# PRESSURE SWITCH



HEALTH AND SAFETY AT WORK, etc., ACT 1974  
 To ensure that the equipment described is safe both for personnel and property it should be installed, commissioned and maintained by or under the supervision of qualified persons. Regard should be taken of IEE Wiring Regulations, Codes of Practice, Statutory Requirements and any specific instructions issued by the supplier of these drawings.  
 EARTHING: All equipment must be earth bonded in accordance with the latest IEE Wiring Regulations. For clarity this has not been shown.

**TITAN**  
 Pollution Control  
 West Portway  
 Andover  
 Hampshire  
 SP10 3LF  
 Tel: 01264  
 .....357000

TITLE:- PPFD S Unit  
 Wiring Diagram

Drawn:- MRH  
 Date:- 07.07.95

Issue:- E

DO NOT SCALE  
 ALL DIMENSIONS IN mm  
 TOLERANCE  $\pm 10$ mm  
 Revised:- JT  
 Date:- 31.08.01

DRG. No. E1/071

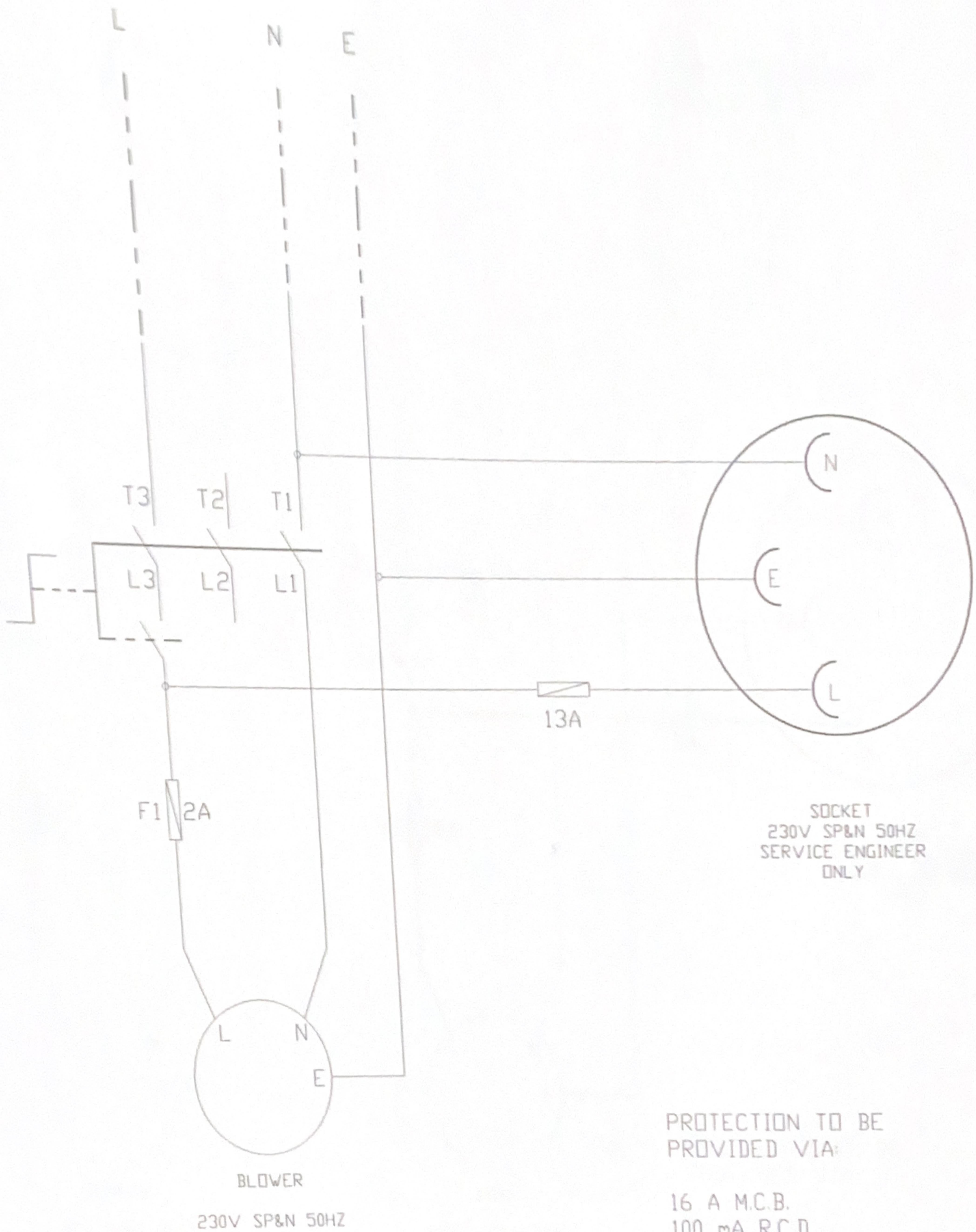
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MAINS SUPPLY  
230V SP&N 50HZ

On site Connection  
Live in @ T3  
Neutral in @ T1



HEALTH AND SAFETY AT WORK, etc, ACT 1974

To ensure that the equipment described is safe both for personnel and property it should be installed, commissioned and maintained by or under the supervision of qualified persons. Regard should be taken of IEE Wiring Regulations, Codes of Practice, Statutory Requirements and any specific instructions issued by the supplier of these drawings.  
[EARTHING] All equipment must be earth bonded in accordance with the latest IEE Wiring Regulations. For clarity this has not been shown.

**TITAN**  
POLLUTION CONTROL

West Portway  
Andover  
Hampshire  
SP10 3LF  
Tel: 01264  
.....357666

TITLE:-

Small Biotec  
Isolator Assembly  
Wiring Diagram.

DRG. No.

EL/079

Issue:-

G

DO NOT SCALE  
ALL DIMENSIONS IN mm

TOLERANCE  $\pm 10\text{mm}$

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PRIOR NOTICE.

Drawn:- SRB

Date:- 08.09.95

Revised:- JT

Date:- 25.03.02

UNCONTROLLED DRAWING  
PLEASE CHECK WITH TITAN POLLUTION CONTROL LTD  
THAT THIS DRAWING IS OF THE LATEST ISSUE



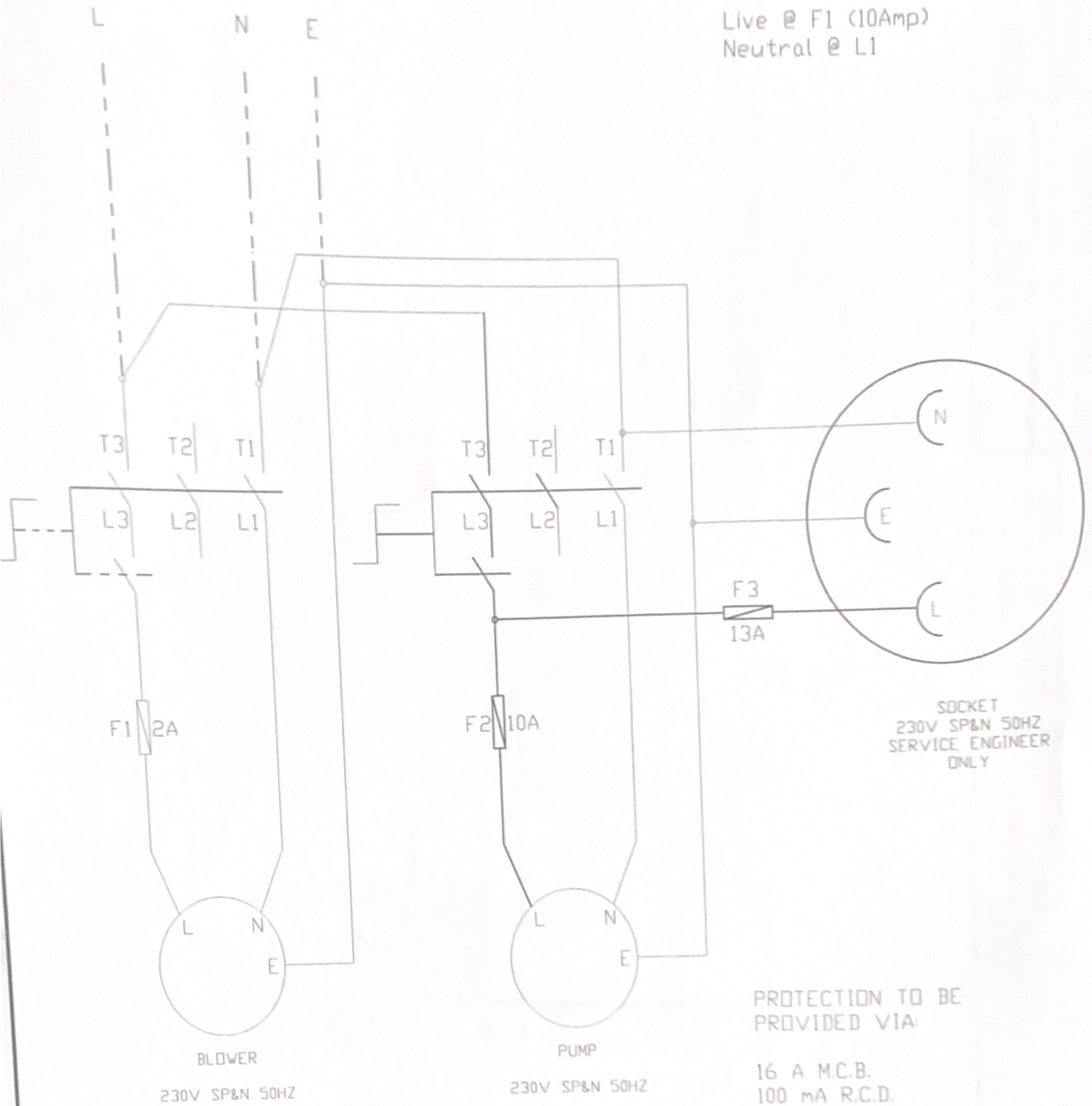
MAINS SUPPLY  
230V SP&N 50HZ

On Site Connections  
Line in @ T3  
Neutral in @ T1

NOTE

PUMP SUPPLIED SEPARATELY

Live @ F1 (10Amp)  
Neutral @ L1



HEALTH AND SAFETY AT WORK, etc. ACT 1974

To ensure that the equipment described is safe both for personnel and property it should be installed, commissioned and maintained by or under the supervision of qualified persons. Regard should be taken of IEE Wiring Regulations, Codes of Practice, Statutory Requirements and any specific instructions issued by the supplier of these drawings.

EARTHING: All equipment must be earth bonded in accordance with the latest IEE Wiring Regulations. For clarity this has not been shown.

**TITAN**  
POLLUTION CONTROL

West Portway  
Andover  
Hampshire  
SP10 3LF  
Tel: 01264  
.....357666

TITLE:- Small Biotech IPS  
Isolator Assembly  
Wiring Diagram.

DRG. No.  
EI/080

Issue:- J

DO NOT SCALE  
ALL DIMENSIONS IN mm

TOLERANCE  $\pm 10\text{mm}$

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PRIOR NOTICE.

Drawn:- SRB  
Date:- 08.09.95  
Revised:- JT  
Date:- 28.03.02

UNCONTROLLED DRAWING  
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