

GL0005P
P40- P55 Biotec
Installation & Operation Guidelines



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Enclosed Documents

		P40	P55
DS0676P	P40 – P55 Biotec	●	●
DS0686P	P40 – P55 Biotec Installation	●	●
DS0732P	P40 – P55 Biotec Desludging	●	●
500194P	Isolator Assembly Wiring Diagram	●	●
500193P	Isolator Assembly & PPFDS Wiring Diagram	●	●
500192P	PPFDS wiring Diagram	●	●

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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 us 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 for 40 & 55 population equivalent are designed to treat domestic sewage to final effluent quality of better than 30mg/l suspended solids, 20mg/l biochemical oxygen demand (BOD), 20mg/l Ammonia for the standard plant, and 10mg/l Ammonia for the high rate plant. They will achieve the above when loaded in accordance with the design limits for the plant. It is a requirement that treatment plants are operated and maintained in accordance with our instructions.

Biotec treatment plants can be used for non-domestic applications like Restaurants and Public Houses and indeed for higher percentage nitrification applications. We will be pleased to advice on special applications on a case by case basis.

The process used is two stage extended biological filtration which is a highly aerobic treatment employing continuously recycled screened effluent lifted with air lift pumps and distributed over special high specific surface area suspended media.

Three main areas of treatment are used in the process, the biological section can be considered as further subdivided into two stages.

Primary Settlement

Incoming domestic sewage enters a primary zone, which permits primary settlement and surplus sludge storage.

The sewage is settled on the discharge of the primary zone by a large vertical baffle, which retains extraneous material allowing it to gradually break down and subsequently to migrate into the next stage. Overspray from the first media bales provides dilution to the primary zone and reduces septicity.

Biological Treatment

Biological treatment is arranged in two successive stages along the flow path of the plant. The first section is dedicated to the reduction and substantial removal of carbonaceous BOD. This is achieved by picking up the screened liquor by air lift pumps and distributing it over the media on which a biological culture develops naturally, Neither seeding nor feeding normally being required.

Inherent in the design is a multiple pass recycle which makes maximum use of both the available media and the dilution potential of the liquor zone to minimize the effect of shock load influent situations.

The hydraulic basin of the first biological stage of treatment allows the level to fluctuate within a given range thereby providing capacity for surge management. This avoids shock loading on treatment and downstream upsets in the final settlement stage.

The second half of the biological treatment is fed by a separate air lift pump from the first stage compartment at a controlled rate. Conditions in the second stage have been engineered to be optimal for nitrification and to a lesser extent polishing for Biochemical Oxygen Demand reduction. Air lift pumps lift in a similar way to the first stage.

The airlift pumps throughout the plant are driven by a low-pressure air blower who is remotely located above ground.

Final Settlement

The treated sewage is collected from the under side of the last sections of media and introduced to the final settlement tank in such a way so as to minimize disturbance of settlement, allowing clear water to rise to the surface of the tank and be decanted at the outlet. The outlet weir also incorporates a scum retaining baffle to further protect the outlet and facilitate sampling.

All biological sewage treatment systems can be affected by unusual loading situations, weather, chemicals and antibiotics and excess grease. When operating an individual treatment plant, users should be aware of the sensitivity of a small plant and avoid putting potentially harmful materials through the plant.

More about Nitrification

In process terms the first stage reduces the BOD to a level sufficient to allow the second stage to Nitrify.

Nitrification can be further divided into two. These are the conversion to Nitrite and then to Nitrate.

Provided the residual BOD is low enough and sufficiently dissolved oxygen is available, Nitrification will be achieved in the second biological stage.

The percentage removal being related to the ammonia loading on the biological media.

Some Nitrification will normally have taken place in the first stage but any significant BOD pollution of the second stage, will detrimentally affect the Nitrification performance.

Accordingly plants are unlikely to Nitrify, if overloaded.

Cautionary Notes

- We do not recommend the use of air admittance valves with W.C. systems connected to the Biotec.
- Also we do not recommend pumped feed to Biotec plant without special reference to our technical sales team.
- Sink waste disposal units should not be used in conjunction with the Biotec plant.
- Where installations serve any form of commercial kitchen. A Grease trap must be installed in the dedicated kitchen outlet drain.
- In hard water areas a softener may be required, where one is fitted, the spent regenerant must be routed to a separate small soakaway.

Applications

	P40	P40/90	P55
Total BOD Loading	2.4kg/day	2.4 kg/day	3.3 kg./day
NH3 Loading	0.32kg/day	0.32kg/day	0.44kg/day
Maximum Flow	8m ³ /day	8m ³ /day	11m ³ /day
Peak Flow Rate (For ½ hour in any 2 hour period)	1.0 m ³ /hr	1.0m ³ /hr	1.38 m ³ /hr

General Maintenance

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

The best way to achieve this is to arrange a contract with our approved Service providers.

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 us or the approved service organisation for advice. One of the things that will come from routine maintenance is evaluation of the need to desludge or not.

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 regulating valve attached to the air hose inside the plant.
- Ensure that the airlift in the centre of bale is not blocked, as this will also affect the spray pattern.
- If in any doubt whatsoever please contact your service provider
- Your plant will require desludging periodically. This is because biological sewage treatment produces surplus sludge, the eventual accumulation of which will encroach on the space in the plant needed for treatment. The frequency of desludging required will depend on loading but as a guide you should inspect and consider desludging approx. every 3 months. The duration alters depending on loading and individual applications.

As a part of a service contract you will be advised on your plants expected desludging frequency requirement.

Desludging can be included in the scope of service contracts, if required.

It is important that desludging contractors desludge properly, in particular that they begin from the inlet side of the screen.

Incorrect desludging can lead to damaged screens and poor plant performance.

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. More lightly loaded applications on purely domestic feed may only require desludging once or twice a year, whereas more heavily loaded installations like Public Houses and Restaurants will require desludging at least 4 times a year. 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. We 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.

Please read in conjunction with the Desludging Drawing provided.

1. Turn off the blower in the local housing.
2. Remove both of the circular access covers.
3. Ensure equilibrium of levels while emptying. Always empty the primary or inlet end of the tank first.
4. Ensure that the hose and end fittings are positioned to draw from the very bottom of the tank to collect accumulated settled sludges.
5. Reduce the level by 300mm in the primary end then place the hose the other side of the baffle, reducing this level by 300mm.
6. Take care when moving the hose to the next compartment not to interfere with the airlift positions.
7. Repeat this procedure (points 3 to 6) until these compartments are completely empty.
8. Flow from the Nitrification zone into the second compartment, will be via the ball valve.
9. Take care when lifting the hose from one compartment to another, or when removing from the plant not to blow back the wastewater into the treatment
10. If a water hose is available, hose down any residual solids from the interior of the tank. DO NOT hose off any biomass from the media, unless the media is blocked.
11. 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.
12. The tank should be refilled as speedily as is practical using mains water supply.
13. It is advisable to leave the air blower off until normal water level has been achieved.

Treatment Plants: Liquid Volumes

Model No.	Litres	Gallons
P40 / P40H / P55	10,300	2,250

Installation Guidelines

These guideline instructions apply to Biotec models 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 that the discharge from the wastewater treatment plant should be sited at least 10m away from watercourses and any other buildings. The EPA Manual for Southern Ireland states the recommended minimum distances from a treatment plant to a development/dwelling as: System size 10-40Pe a distance of 28m, for a system size of 41-60Pe a distance of 31m. 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. Further information can be obtained through your Local Authority and in the Building Regulations in the UK and through the EPA in Eire.

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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.

Acceptable tolerance for installation of the Biotec is +/- 20mm for correct plant operation.

The Concrete Specification is not a site specific installation design.

GENERAL CONCRETE SPECIFICATION IN ACCORDANCE WITH BS EN 206-1 (BS 8500-1)	
TYPE OF MIX	(DC) 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: C25 /30 C25 /30 C16 /20	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 ³ 220 - 230 Kg/M ³
SLUMP CLASS	S1 (25mm)
RATE OF SAMPLING	READY MIX CONCRETE SHOULD BE SUPPLIED COMPLETE WITH APPROPRIATE DELIVERY TICKET IN ACCORDANCE WITH BS EN 12350-1
NOTE: STANDARD MIXES SHOULD NOT BE USED WHERE SULPHATES OR OTHER AGGRESSIVE CHEMICALS EXIST IN GROUND WATER	

Installation

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 200mm 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.

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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 outlet/inlet levels. Ensure that the water level inside the tank is maintained within 0.2m of the concrete level.

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 and there are no voids, especially on the underside between the ribs.

Concrete backfill must be manually compacted, however we do not recommend the use of vibrating lances. Make the inlet, outlet and air duct connections. Continue back filling with concrete to just below the cover flange, completing the installation to ground level with free flowing soil.

Care should be taken not to concrete in cover fixings.

No soil or material to be placed upon the top of the access cover.

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.

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

Blower Housing

In the course of making the air duct connection, it will be necessary to run 110mmØ ducting from the connection at the outlet end of the plant.

This ducting should be laid with long radius bends to enable the air hose to be threaded through and must connect up through an independent concrete slab for the blower housing. The slab should be 150mm thick and large enough to accommodate the 1 sq. metre enclosure base, located between 3 to 13 metres of the plant such that the hose length supplied is sufficient.

The location should take into account noise sensitivity and preferably be in a shaded position. The cavity beneath the enclosure base should be filled by drilling a hole and filling with sand or foam. Also, once the air hose is installed the annulus around the hose at the top of the duct should be sealed with spray foam.

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

The blower housing must not be left outside prior to this connection.

Model No.	Length mm	Overall Width
P40	5110	2930
P40 (High Rate)	5110	2930
P55	5110	2930

Self Help

In order to minimize the need for dealing with emergency situations we recommend that Biotec units have a Pre-service Agreement Inspection, then regularly serviced by Tekserv 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 us 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

Do take out a service agreement and let the experts look after your plant.

Do contact us for advice if you have any cause for concern.

Don't pump feed the plant without reference to Us.

Don't use a waste disposal unit you are adding to the load and the may not be adding to the load and the unit may not be able to cope.

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, tampons or other non biodegradable items' down the toilet.

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.

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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.

Pre-service Agreement Inspection

We recommend that our Engineers or approved service provider should inspect the equipment. However, in situations where expediency is required for owner/installer to inspect, 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. 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 stopcocks on the airlines 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 pre-service agreement inspection stating the original start-up date.

In order to get the best from your plant, we recommend that either we or one of our approved Service providers carry out the pre-service agreement inspection 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.

Warranty

Taken from 'Our Terms & Conditions of Sale'

- (a) The company will replace or, at its option, properly repair without charge any goods which are found to be defective and which cause failure in normal circumstances of use **within a period of twelve months from the date of delivery.**
- (b) This warranty is conditional upon:
 - (i) the Buyer notifying the Company of any claim within Seven days of the failure becoming discernible
 - (ii) the Company being allowed a reasonable opportunity to inspect the goods so as to confirm that they are defective
 - (iii) the goods not having been modified, mishandled or misused and being used strictly in accordance with any relevant instructions issued by the Company.
- (c) The Company's liability under this Clause is limited to the repair or replacement of the defective goods, and does not cover costs of transport, installation or associated site costs, if applicable.
- (d) The Company's liability to replace or repair the goods is in lieu of and excludes all other warranties and conditions, and in particular (but without limitation) the Company shall have no liability of any kind for consequential loss or damage.

A Warranty Form is included in this package, to register your unit for Warranty please complete ALL sections of the Form, and return it at your earliest convenience.

Also within this package is a **Notice**, this should be fixed within the building describing the necessary maintenance of the plant in use.

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, inspected 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.

We 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 type rated at 25A/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, 2.5mm² 3 core SWA is adequate. For loads up to 1.55kW and runs of less than 100 metres, 4.0mm² 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 (Recommend Option)

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, mounted inside the blower housing.

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

They are included in 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. 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.

The unit has an IP65 rated beacon fixed to an IP56 rated enclosure and is supplied ready to mount on a suitable surface. A 2-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 us 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.

For details and specifications of the blower please refer to the Blower Plate on the side of the blower.

Options

Power Pressure Failure Detection System

This is particularly useful in remote locations prone to power supply losses. These units are used in conjunction with prominently mounted flashing beacons enabling the warning to be seen from considerable distance.

The electrical panel is fitted within the blower enclosure, but if required it is suitably rated for outdoor location.

Treated Effluent Pumping

We offers a twin pump auto changeover module for use with Biotec, where the discharge point is elevated with respect to the panel outlet. The chamber is of GRP construction having a 160mm diameter socket inlet connection compatible with the standard drainage line from the plant. A standard manifold is provided within the chamber having two quick release couplings, one for each pump hose. The manifold terminates on the outside of the chamber with a 63mm MPDE water pipe connector.

The system is arranged to operate one pump at a time and alternate use. In the event of pump failure a rise in chamber water level brings the second pump into service and triggers the alarm.

For specific applications please contact us for pump and chamber selection.

Deep Inverts

The units being designed to permit visual acceptability with the top flush with the ground, or up to 200 mm above.

Large Biotecs are available with 0.75m, 1.25m & 1.75m inlet inverts. Outlet inverts of 0.945m, 1.445m & 1.945m respectively.

Grease Traps

Whenever Biotec are used on establishments which include any form of communal or commercial kitchens, a grease trap is essential.

These must be installed in dedicated kitchen outlet drains and be emptied regularly. Failure to comply with this provision will result in odour and performance problems.

Sample Chambers

A recommended option, please request a drawing from our sales office.

It is requirement of Environment Agency discharge consents that a sampling point be provided on the discharge of treatment plants.

Separate GRP chambers are available having 160mm diameter connections consistent with the plant outlet. By necessity there is approximately 250mm fall across the unit.

Lockable pedestrian duty covers are available to complete the installation.

High Rate Plants

This option is available where the application demands Nitrification (Ammonia removal) down to 10mg/l and the influent load is greater than domestic sewage, typically from pubs and restaurants.

The plants operate on the same process as standard rate plants, but the second biological stage is larger enabling reduced loadings and better performance.

For any servicing or contract queries please contact Tekserv on 0845 355 0555 (UK) or 028 302 54024 (Ireland).