

LYNEHAM AND BRADENSTOKE PARISH COUNCIL

Application for Grant for Clubs/Organisations Local Government Act 1972, Section 137

Lyneham and Bradenstoke Parish Council is empowered to give grants to local clubs and organisations under S137 of the Local Government Act 1972.

There are a number of limitations placed on the Council's power the most notable of which is that any grant must demonstrate benefit to some or all of its community. The size of the grant must also relate to the benefit achieved. You are therefore, encouraged to demonstrate in your application the number of people that will benefit in Lyneham and Bradenstoke from the grant aid requested.

Please note that this application will not be considered unless it is accompanied by a copy of the latest set of annual accounts showing the organisations income, expenditure and level of balances. If the organisation does not prepare annual accounts, copies of the bank statements covering the previous six months must be enclosed.

1.	Name of Organisation	Bradenstoke Village Hall and Rec Centre
2.	Name, Address and Status of Contact	Shirley Smith 6,Curch Park, Bradenstoke, Wiltshire, SN15 4ER Chairperson of the Trustees
3.	Telephone Number of Contact	01249 890964 077695947
4.	Email address of Contact	shirley.js@btinternet.com
5.	Is the Organisation a Registered Charity? If so please give your Charity Registration No.	Yes 305.543/1
6.	Amount of grant requested (Quotes and detailed breakdown of how the money is to be spent must accompany the application)	£9875.32 Quote no 2 LM Contractors Attached. £19,750.64 inclusive of Vat. The Village Hall being liable for half the cost due to it having been a shared system since 1873
7.	For what purpose or project is the grant requested?	To replace the Septic Tank which is shared with the house next door (The School House) due to new Environmental Legislation Law, being too small for the amount of usage from the 2 buildings.
8.	What will be the total cost of the above project?	£19,750.84p

9.	If the total cost of the project is more than the grant, how will the residue be financed?	By money from our savings account
10.	What monies is the organisation/club contributing to the project?	Any short fall from the Grant Application
11.	Have you applied for grant for the same project to another organisation? If so, which organisation and how much?	No
12.	Who will benefit from the project?	The whole Village and surrounding areas, our hall is used a great deal and when not in a Pandemic is in use every day. It is the hub of the village for all to use, without its sewerage and waste water system the hall would have to close, and a great deal of money raised to have the garden and car park dug up for pipes to be laid to the main sewer, and because of the orientation of the building this would have to be a pumped system to the front of the building from the rear.
13.	Approximately how many of those who will benefit are residents?	All
14.	What financial information have you included?	2020 End of year Accounts

You may use a separate sheet of paper to submit any other information which you feel will support this application.

Signed: Shirley Smith (Sent from my computer)

Date: 5th February 2021

Position: Chairperson of the Trustees

Contact details Tel: 01249 890964

Address: 6, Church Park, Bradenstoke, Chippenham Wiltshire SN15 4ER

If you are successful and a grant is awarded, following the event/purchase you will be required to submit receipted invoice/s for the total amount of the award granted. If monies are not spent as specified in the application, they will need to be returned to the Parish Council.

Please return the completed application form together with your statement of accounts to:

Clerk to Lyneham and Bradenstoke Parish Council
Elizabeth Martin
Ivy House
72 The Green
Poulshot
Devizes

OFFICE USE ONLY	
Date considered	
Grant Award YES/NO	
Amount Granted.	

Supporting Notes for Grant Application

Context

Bradenstoke Village Hall Accounts to the 31st December 2020

Survey and Quote From UKDP. No1

Quote from LM Contractors No2

(Awaiting Quote No 3)

Financial information

Income	Annual	Expenditure	Annual

Shortfall £

Home Buyer Drainage Survey Standard Report Prepared For:

Oscar Knowles

The Old School House, Bradenstoke, Chippenham, Wiltshire, SN15 4ES.

Date of Survey: 12/01/2021

Engineer: Phill Baker



Drainage Survey Standard Home Buyer

What type of survey are we attending? Home Buyer

Weather conditions on the day of the survey: Heavy rain

Type of property surveyed: Semi detached

Property construction type: House

View of the front of the property:



What is the year of build of the property: Unknown

Number of bedrooms: 4

Is the drainage system shared? Yes, shared with the Village Hall

Type of drainage tank at the property: Septic tank with clinker/filter bed chamber

Is the system emptied/serviced regularly? Annually and emptied approximately 6 months ago

Photograph of the tank before the system was emptied:



chamber 1 on arrival

Tank pre-empty photograph 2:



chamber 2 on arrival

Photograph of manhole 1:



MH1 on arrival with dye from the rainwater/waste gully cross connection

Photograph of the tank before the system was emptied::



chamber 1 empty

Tank empty photograph 2:



chamber 2 empty

Number of zones in the existing tank:	2
Start of the drainage system:	The rear of the property
Location of tank:	The rear of the property
Age of the tank (if known):	Unknown
Maximum potential occupancy for the property:	12 for both properties
Dimensions of the tank:	Chamber 1 is 1400mm deep X 800mm long X 1200mm wide. Chamber 2 is 1400mm deep X 800mm long X 1200mm wide. The clinker bed is 1400mm long X 1200mm wide the depth is unknown. The effluent level in the clinker bed is 610mm with an inlet at 500mm
Depth (below ground level) of the inlet pipe into the tank:	The inlet into chamber 1 is 380mm. The inlet into chamber 2 is 440mm.
Depth (below ground level) of the outlet pipe from the tank (if applicable):	The outlet in chamber 1 is 440mm. The outlet in chamber 2 is 470mm
Capacity of the tank (below the inlet pipe):	The septic tank has a capacity of 1958 litres below the inlet in chamber 1.
Based on our calculations, is the tank adequately sized for the maximum potential occupancy of the property?	No
Guidance on undersized septic tanks:	The 'Building Regulations 2010' document part H dictates that septic tanks for domestic dwellings should be designed for the maximum potential number of occupants. The method of calculating whether a septic tank is correctly sized is as follows:

The first two bedrooms of a property can have a maximum of 2 people each. One

person should then be added for every bedroom thereafter, (number of bedrooms + 2 = maximum occupancy).

Septic tanks are usually sized in litres with the minimum size allowed being 2,700 litre capacity below the inlet pipe of tank for the first two bedrooms (4 people), then an additional 180 litres should be added for every bedroom (1 person) after this.

e.g.

A 4-bedroom property can have a max. occupancy of 6 people which works out at 2,700 litres for the first 4 people (2 bedrooms) plus 2 additional people (2 additional bedrooms) at 180 litres each person = 2700 + 2 x 180 litres = A minimum capacity of 3060 litres below the inlet pipe of the tank.

When a tank is undersized for a property, the settlement and separation processes within the tank won't have time to function efficiently. If a tank is slightly undersized for a property and is used at the maximum occupancy for a prolonged period, then the solid waste will build up in the tank faster than usual. This means that the quality of the effluent leaving the tank can be compromised, and there will potentially be a requirement to empty the system more frequently.

The 'General Binding Rules for small sewage discharges to ground' state that your treatment system must be large enough to handle the maximum amount of sewage it will need to treat, If the amount of sewage the system needs to treat increases (for example, because you've extended your property or connected an additional property), you must make recalculate to sure the treatment system is still big enough.

The calculations above are based on the maximum potential occupancy of a property. If the tank is only slightly undersized, in our experience this would not usually affect the performance of the system unless it is used at the maximum occupancy for an extended period.

Is there a manhole chamber upstream of the tank?	Yes
Depth below ground level of the next upstream manhole chamber from the tank:	MH1 is 380mm deep below the cover and is located at chamber 1 of the septic tank
Overall condition of the tank:	Poor, three of the t-pipe baffles have become detached and the tank is undersized.
On arrival was the effluent level within the tank at the expected operating level?	Yes
Was there any damage observed to the tank during the inspection?	Yes
Details of damage found to the tank:	Dip/T-pipe damage

Photograph of tank damage:



Chamber 1 inlet and outlet T-pipes have broken off

Photograph of tank damage 2:



Chamber 2 inlet T-pipe has broken off

Was the outlet pipework accessible from the tank in order to conduct a CCTV survey?

No

What was the reason why we could not access the outlet pipe:

Other/see below

The reason we could not access the outlet pipe - please specify:

The outlet from chamber 2 of the septic tank discharges into the clinker bed, the outlet from the clinker bed to the soakaway is in the base of the tank underneath the clinker meaning there was no access to allow for a CCTV inspection of the outlet pipe.

Were we able to confirm that the system discharges to the ground?

See below

Explanation on discharge destination - please specify: No access to the outlet pipe from the clinker bed. there are no watercourses or ditches within the vicinity of the property so the discharge is most likely to ground.

Have we confirmed the type and construction of the soakaway? No

Additional information on discharge investigations: During an off mains drainage investigation, we endeavour to determine the type and construction of the discharge from the tank in order to assess its compliance with current regulations. Generally, a septic tank or sewage treatment plant will either discharge to ground via a drainage field or any other type of soakaway arrangement, or it will discharge straight to a watercourse. In order to understand the nature of the discharge whilst carrying out an investigation we:

- Assess the type of tank in place at the property to gain a general understanding of the drainage system in place.
- Search the surrounding areas for any watercourse or ditches that the tank could possibly be discharging into.
- Carry out a dye test of the outlet of the tank, to determine where wastewater leaving the tank might run to.
- Carry out a CCTV survey of the pipework that runs from the outlet of the tank, where access permits, in order to determine whether the system discharges to ground.
- Where restricted access prevents a CCTV survey being undertaken, we may rely on a visual inspection above ground of the system in place to determine whether the system likely discharges to ground.

There are a number of limitations when carrying out discharge investigations, which often mean that it is not possible to definitively confirm the nature of a discharge. For example, even if access permits a CCTV survey to be carried out, it is not always possible to gain a clear image on the camera due to a build up of debris and water retention within the pipework. This means that, although we may be able to conclude that the outlet discharges to ground, it may not be possible to ascertain the exact type and construction of the soakaway system.

The 'General Binding Rules for Small Sewage Discharges to Ground', released in January 2015, states that 'you cannot use a soakaway (designed for draining rainwater), well or borehole for discharging effluent to ground. Instead you must either upgrade to a drainage field or apply for a permit so that the Environment Agency can assess the risk of using this sort of system in your location'.

If the construction of a discharge to ground cannot be confirmed, but it is observed to be functioning correctly then we would not typically recommend any repairs or upgrades as we can neither prove nor disprove compliance with the General Binding Rules.

If the investigation of the outlet pipework from the tank to confirm the destination was limited (e.g. due to access restrictions or surcharged pipework) then our conclusions can only be based on the information available to us at the time of our visit as outlined above.

Is the existing discharge functioning correctly? Yes, this is based on the effluent level within the septic tank being at the correct operating level at the time of our visit.

Photograph of the general area of the tank:



MH1, septic tank and clinker bed location to the house

Are all parts of the drainage system within the boundary of the property? Yes

Are there any wells at the property? No

Are there any boreholes at the property? No

Are there any watercourses or seasonal drainage ditches within the boundary of the property? No

Are there any watercourses or seasonal drainage ditches in the local area? No

Was a dye test carried out to the accessible upstream rainwater pipes? Yes

Were there any cross connections found between the rainwater system and the foul system? Yes

Where were the cross connections? The rainwater cross connection is a rainwater/waste gully (RWWG) located close to the soil vent pipe (SVP) on the rear of the house

Guidance on cross connections from rainwater system to the foul drainage: Cross connections from a rainwater system to a foul drainage system are not considered best practice and can hydraulically overload the system during periods of persistent or heavy rain fall. This can be a problem as it can raise the operating level

within the tank, affecting the waste separation process which can ultimately lead to solid waste passing into the soakaway system. This can potentially cause it to fail prematurely.

Photograph of dye test undertaken



Does the discharge in place comply with the General Binding Rules for small sewage discharges?

Unable to confirm the discharge due to restricted access.

Explanation on non-compliance with the General Binding Rules or Building Regulations:

There was no access to the outlet pipework to confirm the final destination, however septic tanks with filter beds are no longer allowed to discharge to surface water and the outlet pipework is too deep for a compliant drainage field to be installed to British Standard BS 6297 2007 (codes of practice for the design and installation of drainage fields).

Recommendations: Due to the septic tank being severely undersized for the property and the discharge not being compliant for septic tanks, we would recommend to replace the septic tank with a new 12 person sewage treatment plant (STP). As the discharge is still functional we would recommend to discharge into the existing outlet pipework subject to a successful application to the Environment Agency for consent to discharge.

If the application the Environment Agency for consent to continue with the current discharge is unsuccessful, then a new bespoke soakaway chamber would be required at an additional cost above the report price of approximately £5,000 + VAT.

Divert the outlet pipe from MH1 - 5m to the new STP, expose the outlet pipework and install a sample chamber

Connect the new STP to the new sample chamber 5m.

Re-route the rainwater down pipe to its own soakaway a minimum distance of 5m from the property.

Due to the depth of the outlet apply for a permit to discharge from the Environment Agency.

**Guide price only for the
above recommendations:**

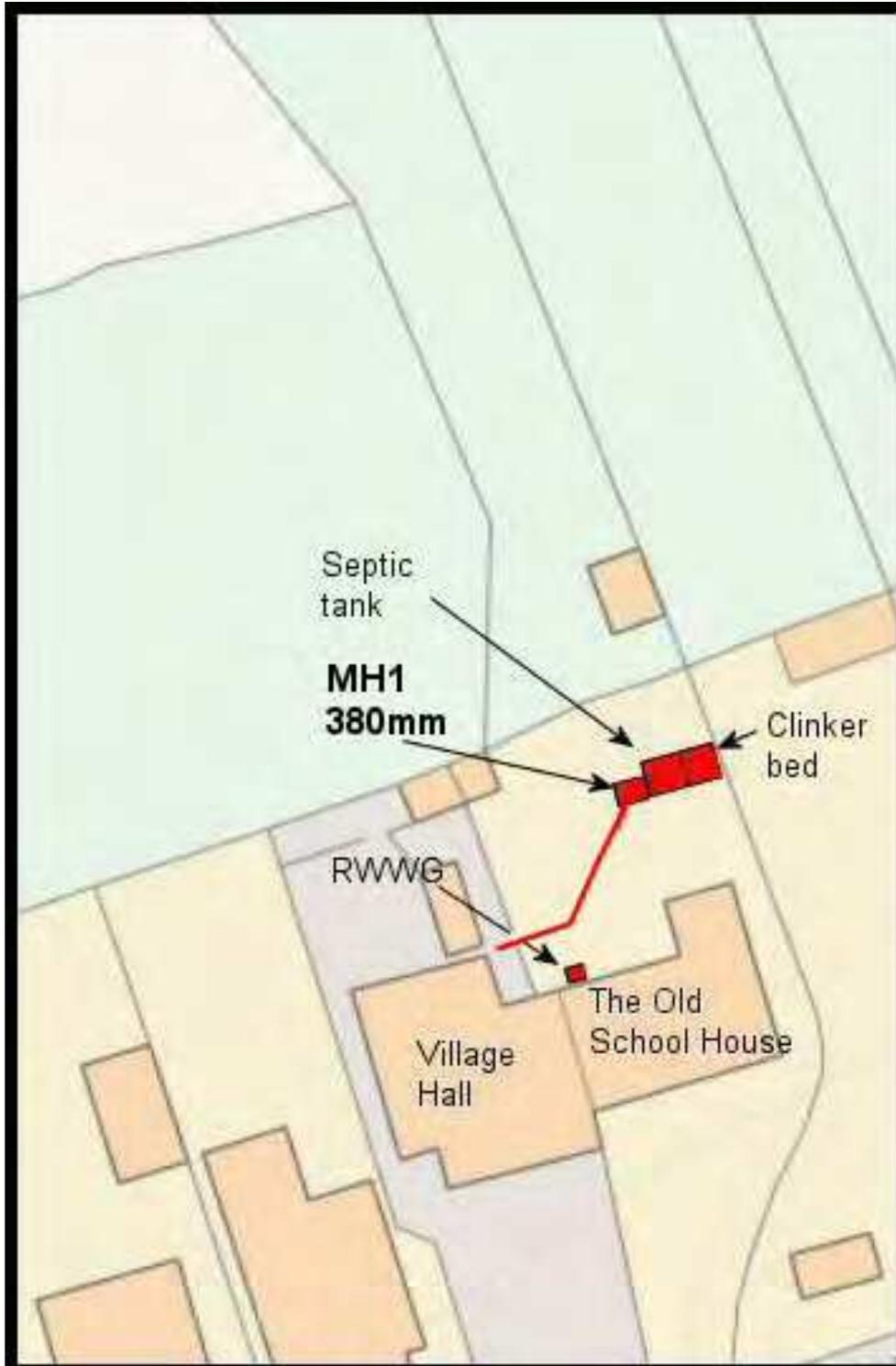
Total cost £18,140 + VAT Cost per property £9,070 + VAT

Additional notes: Access to the rear is through the farm land at the rear

Cost breakdown:

Schedule of Repairs	Diameter (mm)	Length (m)/m2/m3	Quantity	Rate (£)	Total/Repair Cost
Reduce the level and form the excavation for the STP using a suitable trench support system dictated by ground conditions,			1	2500	£2,500.00
Take delivery of a new 12 person sewage treatment plant (STP), lower onto base and backfill with C30 ready-mix concrete to inlet/outlet level, all in accordance with the manufacturer's wet site specifications, connect to the power supply at the property and install underground a 2.5mm 3 core SWA cable underground to the blower kiosk, connect and commission, (all works to NIC EIC Part P),			1	7500	£7,500.00
From MH 1, trench and lay new 100mm diameter drainage on a bed and surround of 10mm shingle (approximately 5m) to discharge into new STP,	100	5	1	84	£420.00
Backfill and compaction per 250mm depth,			10	25	£250.00
Expose the existing outlet pipe from the clinker bed, install a new sample chamber,			1	450	£450.00
From STP outlet, trench and lay new 100mm diameter drainage on a bed and surround of 10mm shingle (approximately 5m) to discharge into new sample chamber,	100	5	1	84	£420.00
Backfill and compaction per 250mm depth,			10	25	£250.00
Plant hire, excavator & delivery to site,			1	900	£900.00
Disposal of contaminated waste and spoil from site inc skip hire,			2	250	£500.00
Clean out and backfill the septic tank and clinker bed with the surplus spoil from the new installation (including tanker),			1	950	£950.00
Ground protection / matting for equipment,			1	600	£600.00
Reinstate area with topsoil – seed - turf	m2		10	35	£350.00
Re-route rain water down pipe to new SA	100		1	1950	£1,950.00
Environmental agency application to consent to discharge,			1	550	£550.00
Building control,			1	550	£550.00
Clear away plant equipment and leave the site tidy with the system commissioned and in full working order.			1	0	£0.00
<i>All costs are exclusive of VAT</i>				Total	£18,140.00

Site Plan:



2

QUOTE



Quotation Date
Quote Prepared by
Quote Reference Number
Version Number
Client

28th January 2021
Lawrence Marchington

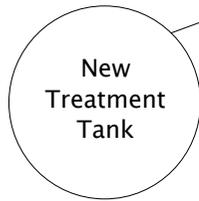
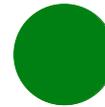
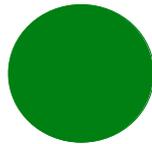
V1
John Macpherson, The Old School House, SN15 4ES
07702 388847

Item	Qty	Unit Cost	Total Cost
To Supply:			
1 x Inspection chamber			
4 x Junction fittings			
3 x 45 degree Bend			
15 Meters of 110mm drainage pipe			
8 Meters of 110mm pipe			
48 Meters perforated pipe			
2 x 40T Soakaway Box Crate			
3 Meters x 2 Meters Geotextile			
68 meters x 320mm Terram Membrane			
15 Tonnes 10mm Pea Shingle			
4 Tonnes Gravel & 32 Bags Cement			
Run 1.5mm 3 core armoured from house			
All transport for Materials/ Digger/ Dumper Hire etc			
All Materials, Digger hire, Labour			
1 x Klargester BC 600mm Inlet			
Including control panel and alarm beacon			
Delivery to site and lift into hole			
Tank Commsson with statement of declaration			
Dig & locate inlet pipe. Set levels. Dig 3.5 meter deep hole for new Klargester			
Set level and install concrete base for tank.			
Lift tank into place, back fill, fill with water.			
Concrete in top of tank			
Dig trench for power cable and lay cable			
Dig and Install new soakaway as per plan			
Connect tank and commisson			
Excess Soil Remove from site		£	650.00
New Klargester installation		£	11,830.25
New Soakaway		£	3,978.62
NET		£	16,458.87
VAT		£	3,291.77
TOTAL		£	19,750.64
Total Inc VAT			£ 19,750.64

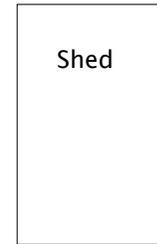
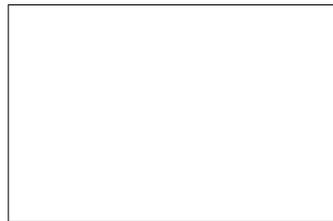
Fence

12m Perforated Pipe

12m Perforated Pipe



Steps



Shed



Existing Tank



NOTE: ALL DESIGN AND MEASUREMENTS ARE SUBJECT TO CONFIRMATION AT FINAL SITE MEASURE

013103
OWNERS HANDBOOK
BA-BC BioDisc

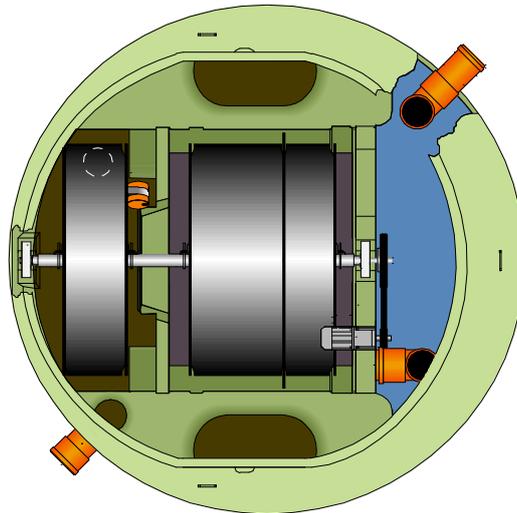


Kingspan Environmental Service Contact Numbers:

GB: 0844 846 0500

NI: 028 3025 4077

IRL: 048 3025 4077



**MANAGED FLOW
BIODISC®
BA BAX BB BC NB NC**

Issue	Description	Date
02	CC1088	September 2012

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 be 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 Kingspan 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.

BioDisc units contain rotating machinery and associated drive belts.

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 must be isolated at the control panel(s) before lifting the covers. Where a specific maintenance procedure requires the equipment to be running with the covers off, all care must be taken to avoid contact with moving parts and electrical components or conductors. Drive guards must be replaced and secured if removed during maintenance.

Once power has been isolated, the control panel must be kept locked shut to avoid accidental re-connection whilst work or inspection is being carried out.

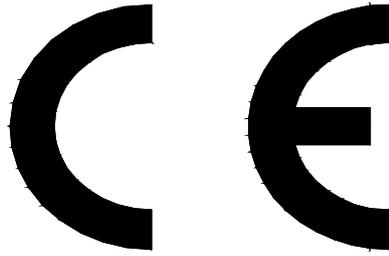
Use only the designated access walkways. Do not walk on the cover or deep well safety mesh(es).

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 in this Handbook, a copy of the instructions are fastened under the covers.

There are separate installation guidelines available to provide full instructions for installations.

In keeping with the Company policy of continuing research and development Kingspan reserve the right to alter specifications and dimensions without notice



**Kingspan Environmental
Aston Clinton
Aylesbury
Buckinghamshire
HP22 5EW
United Kingdom**

07

EN 12566-3

BA - BF BioDisc

Hydraulic daily load:	1.2m³/day - 10m³/day
Material:	GRP Glass Reinforced Plastic
Watertightness (water test):	Pass
Structural Calculation:	Pass
Treatment efficiency:	COD: 89%
	BOD₅: 96%
	SS: 95%
	Total P: 48%
	NH₄: 89%
	Total N: 46%
Electrical consumption:	1.3 kWh/d - 3.1 kWh/d
Sludge production:	0.21 litres per person per day

CONTENTS

	Page
HEALTH AND SAFETY	2
1 INTRODUCTION	4
2 TECHNICAL DATA	5
3 DESCRIPTION AND PROCESS	5
3.1 Introduction	5
3.2 Primary Settlement Tank	6
3.3 Biozone	6
3.4 Final Settlement Tank	7
3.5 Optional Integral Discharge Pump (BA/BB only)	7
3.6 Control Panel	7
4 INITIAL START UP PROCEDURE	7
4.1 Introduction	7
4.2 Water	7
4.3 Electrical	7
4.4 BioDisc	8
4.5 Switch On	8
4.6 Running Checks	8
4.7 Optional Loss of Rotation Alarm	9
4.8 Process Initiation	9
5 OPERATION	9
5.1 Introduction	9
5.2 Do's and Don't's	10
5.3 Desludging and Maintenance	11
6 MAINTENANCE	11
6.1 Introduction	11
6.2 Customer Checks	11
6.3 Failure of Power Supply or of Discharge Pump	11
6.4 IMPORTANT - READ THIS. TAKE IMMEDIATE ACTION IF A PROBLEM ARISES	11
6.5 Sludge Removal from BioDiscs BA, BAx, BB, NB, BC AND NC	12
6.6 Desludge Volumes	12
7 TROUBLE SHOOTING GUIDE FOR BIODISC UNITS BA/BAx/BB/NB/BC/NC	13
8 CONTROL PANEL FAULT CODES & FUSES	14
9 WARRANTY	14

1 INTRODUCTION

- 1.1.1 Thank you for choosing a Kingspan product. This manual will help you to keep it operating efficiently over a long service life. Please read this manual thoroughly, preferably before installation.
- 1.1.2 This manual should be referred to by:
- The installer
 - The electrician
 - The service engineer
 - The maintenance engineer
 - The desludge contractor
 - The owner/user

2 TECHNICAL DATA

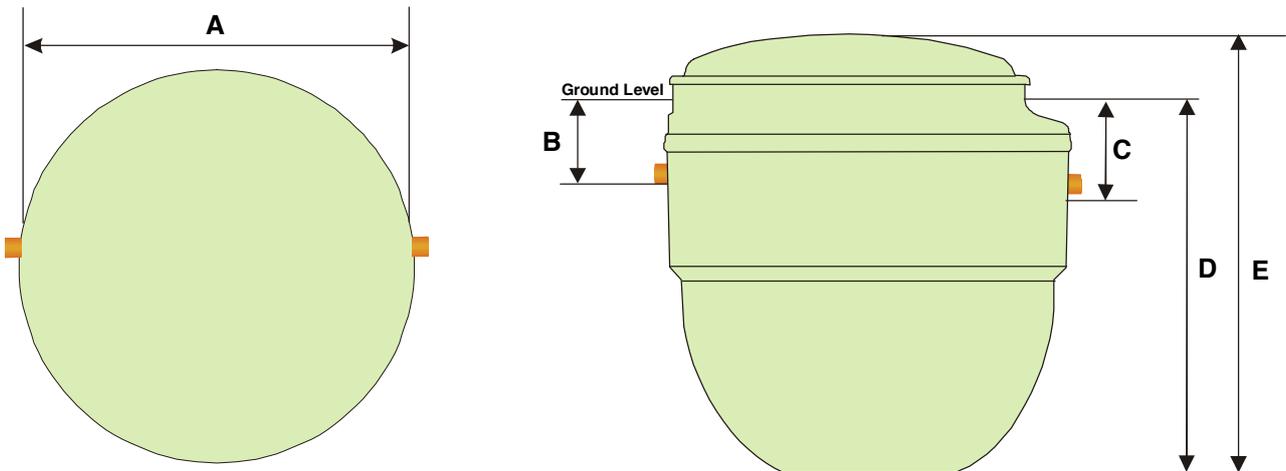


Fig. 1 General Dimensions

UNIT		BA/BAx/BB/NB			BC/NC	
Diameter	A mm	1995			2450	
Inlet Invert depth	B mm	450	750	1250	600	1100
Outlet Invert Depth	Gravity discharge	535	835	1335	685	1185
	Pumped discharge	425	425	425	N/A	N/A
Depth Below Ground	D mm	1850	2150	2650	2420	2920
O/A Height	E mm	2160	2460	2960	2825	3325
Standard Power Supply		1 phase				
Optional Power Supply		3 phase				
Drive Motor Rating	1ph/3ph	60/60 watts			75/60 watts	
Sludge Return Pump Rating	1ph	480 watts (NB only)			480 watts (NC only)	
Integral Discharge Pump*	Rating	480 watts (Not NB)			N/A	

*Optional

UNIT		BA	BAx	BB	BC
Maximum number of properties		1	1	2	Consult Kingspan
Maximum number of bedrooms		4	7	< 4 in each house	
Maximum Daily BOD	kg	0.36	0.54	0.72	1.08
Maximum Daily Flow	m ³	1.2	1.8	2.4	3.6
Peak Flow Rate **	m ³ /hr	0.15	0.22	0.30	0.45

** For ½ hour max. in any 2 hour period

- 2.1.1 All surface water must be excluded. These units should be used exclusively for the treatment of sewage from domestic properties. Contact Kingspan if your sewage results, wholly or partly, from any commercial function.

3 DESCRIPTION AND PROCESS

3.1 Introduction

- 3.1.1 BioDisc systems are designed to accept crude domestic sewage and produce an effluent of suitable quality for discharge to a watercourse or soakaway system, subject to the approval of the appropriate regulatory authority. These BioDisc's are self-contained single piece units.

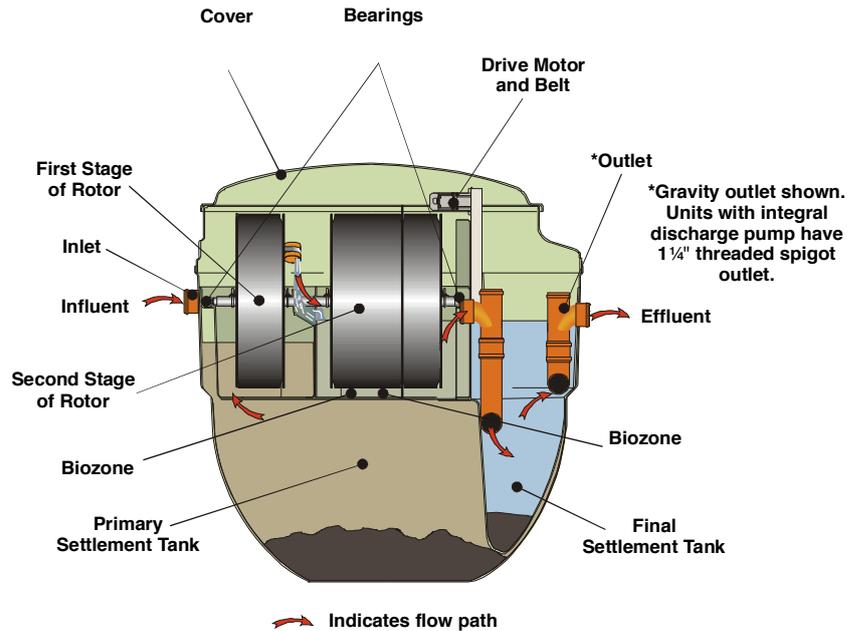


Fig. 2 - General Arrangement of BioDisc System

3.1.2 The main casing and cover of the BioDisc are constructed of Glass Reinforced Plastic (GRP). All steel parts are stainless, galvanised or surface coated to protect against corrosion. The discs are vacuum formed polyethylene.

3.2 Primary Settlement Tank

3.2.1 Crude sewage enters the Primary Settlement Tank (PST), through an inlet pipe in the side of the BioDisc. Solids are settled out and retained for periodic desludging.

3.2.2 The PST is designed to have sufficient capacity to accept high flows over a short period and the patented Managed Flow System allows the liquid level to fluctuate to accommodate such surges.

3.3 Biozone

3.3.1 The Biozone contains the Rotor, which consists of corrugated polyethylene discs mounted on a horizontal shaft, supported by a bearing at each end. The rotor is slowly rotated by an electric motor and reduction gearbox with a belt drive.

3.3.2 A flat GRP walkway along either side of the Biozone contains a number of ports which give desludge access to the Primary Settlement Tank.

3.3.3 The surface of the discs becomes colonised by naturally occurring micro-organisms, which form a visible coating known as the Biomass. As the discs rotate, the Biomass is alternately submerged in the settled sewage and aerated by exposure to the atmosphere. Under these conditions the Biomass can efficiently break down the pollutants in the sewage.

3.3.4 The Biozone and discs are divided into two stages, separated by a fixed baffle. Settled sewage enters the first stage of the Biozone through a submerged transfer slot. The liquid level in this stage will fluctuate in the same way as in the PST and the bacteria are exposed both to the fluctuating liquid level and to fluctuations in sewage strength and concentration of domestic chemicals such as washing powders. One of the functions of this stage is to minimise the effect of such shock loads, which could otherwise inhibit the process.

3.3.5 The second stage of the Biozone is hydraulically sealed from the first stage and maintains a constant liquid level. Liquid is transferred from the first to the second stage, at a steady rate, by a series of buckets attached to the rotor. This controlled flow of effluent is at the heart of the patented Managed Flow System, which promotes healthy and balanced growth of the micro-organisms essential for efficient treatment.

3.3.6 Excess Biomass (also referred to as humus) sloughs off the surface of the discs and passes with the flow, to the Final Settlement Tank.

3.4 Final Settlement Tank

- 3.4.1 The Final Settlement Tank (FST) is situated under the drive motor and receives a steady flow of treated effluent from the Biozone. The humus settles out and is retained for periodic desludging.
- 3.4.2 In NB and NC units the settled humus is periodically returned to the Primary Settlement Tank, for co-settlement, by a timer controlled pump system.
- 3.4.3 Final treated effluent discharges from the FST through a dip pipe (excepting units with an Integral Discharge Pump).

3.5 Optional Integral Discharge Pump (BA/BB only)

- 3.5.1 The discharge pump sits within a moulded chamber, positioned in the Final Settlement Tank. Treated effluent flows into the chamber, by gravity from the FST. When the liquid in the chamber reaches a pre-determined level, a float switches on the pump which then pumps effluent out of the chamber. The same float also switches off the pump when the liquid level has been sufficiently lowered, thus protecting the pump from running dry. We do recommend when this option is purchased, that a high level alarm is also fitted to warn against pump mal-operation or failure.

3.6 Control Panel

- 3.6.1 The weatherproof control panel need not be mounted next to the plant. It can be wall mounted or fixed to the mounting frame (available separately). Panel options are :
 - 3.6.1.a Standard Control Panel: (and all panels) include a 3 amp fuse which protects the motor should there be an electrical problem within the BioDisc.
 - 3.6.1.b Loss of Rotation Alarm Control Panel: This replaces the Standard Control Panel and also includes a Loss of Rotation (LOR) Alarm, which will activate if the rotor stops turning after a delay of 2-3 minutes (other than a failure in the power supply). An additional remote slave beacon may also be fitted. The loss of rotation of the rotor is sensed by a reed switch mounted near the BioDisc motor in conjunction with a magnet attached to the rotor.
 - 3.6.1.c Integral Discharge Pump Panel also includes a current overload protected supply for the discharge pump.
 - 3.6.1.d Nitrification Unit Panels contain a timer to control the operation of the sludge return pump and current overload protection for the pump motor.
- 3.6.2 All units will restart following a power cut, unless there has been a power surge greater than the pre-set limit of 3 amps.

4 INITIAL START UP PROCEDURE

4.1 Introduction

- 4.1.1 Every care is taken to ensure that all mechanical components are correctly fitted, adjusted and lubricated prior to leaving the factory. However, subsequent handling during transportation and installation may result in the movement of components and a subsequent need to re-adjust prior to starting the unit. Your installing contractor should have thoroughly checked the unit but if, on inspection, you consider that any components require adjustment, please contact Kingspan. We do recommend you purchase a Pre-service Agreement Inspection from an approved engineer.
- 4.1.2 Once the unit has been installed it should be left filled with water. Please switch on the motor, following the procedure below and leave the unit running, even if there is no sewage being fed into the plant. **If the unit has been installed with no operational power supply, then remove the motor/gearbox unit and store it in a dry or heated environment until such time as the unit is ready for permanent operation. The motor gearbox unit and drive belt should then be replaced and tensioned by Kingspan or an experienced contractor.**
- 4.1.3 We recommend that the system should be inspected. Please contact Kingspan. Where an immediate start-up is necessary, the following basic procedures should be carried out. Ensure that all Health and Safety precautions are observed.

4.2 Water

- 4.2.1 Check that the BioDisc is full of water to the outlet level.

4.3 Electrical

- 4.3.1 Check that the power supply is connected to the control panel. Check that all electrical components and conductors are earthed.

4.4 BioDisc

- 4.4.1 Check that the BioDisc is in order, with no obvious damage or misalignment of parts. If any problems are discovered, contact Kingspan.
- 4.4.2 Check that all electrical components: Drive Motor, Sludge Return Pump and LOR Alarm sensor, (where applicable) are connected to the Control Panel.
- 4.4.3 NB/NC units only: Check that the Sludge Return Timer in the BioDisc Control Panel is set correctly, as described in the installation instruction.



Fig. 3 - Pump Position

Units with optional discharge pump: Check that the pump float and associated pipework are positioned as shown and that the float can move freely.

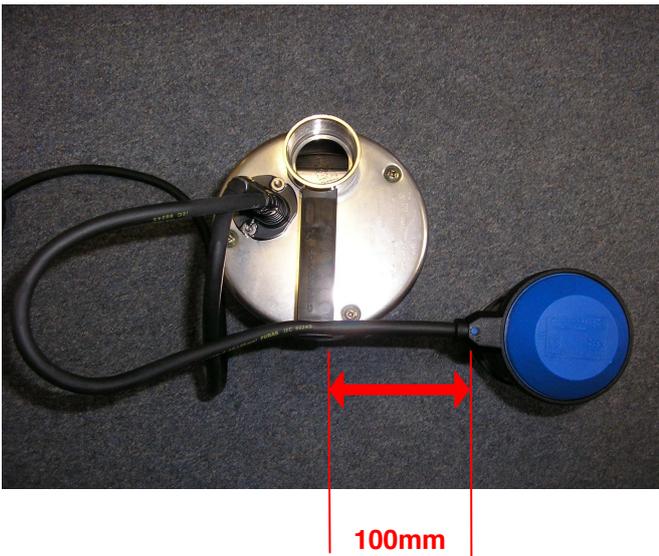


Fig. 4 - Float Setting

The float cable length is pre-set during assembly to a dimension of 100mm. Check that this dimension has not been altered. If for any reason the cable becomes disconnected from the retaining clip it should be replaced so that there is 100mm of cable between the clip and the float. Note: Setting less free cable will cause the pump to operate more frequently and may shorten its working life.

Important: With the pump chamber empty of water the float must hang clear of the chamber floor. The correct float position and distance is essential. The float must not be able to either trap or tangle, as this will prevent its correct operation. The float must not jam.

4.5 Switch On

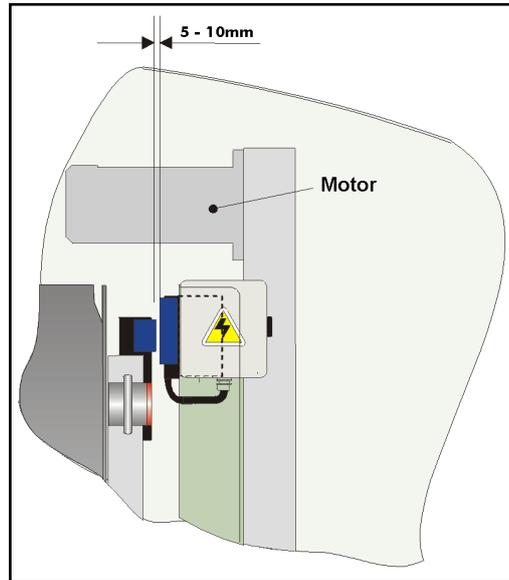
- 4.5.1 Open the Panel. Put the isolating switch into the “on” position. Close the panel. Note: If the unit is fitted with a sludge return pump, this will start immediately and will run for the pre-set period.

4.6 Running Checks

- 4.6.1 Check that the rotor is running smoothly in the correct direction of rotation and is not contacting any part of the fixed structure.
- 4.6.2 Check that the forward feed buckets are discharging correctly from the first to the second stage of the Biozone.
- 4.6.3 Units with optional Discharge pump: Once the rotor is turning, a flow through the FST and into the pump chamber will be generated. Check that the pump switches on at high level and off at low level.
- 4.6.4 **Note:** The pump switch-on level must be below the pump chamber inlet.

4.7 Optional Loss of Rotation Alarm

- 4.7.1 The alarm sensor (reed switch) is mounted adjacent to the motor/gearbox assembly. The sensor may be supplied out of position, to allow for possible minor rotor movement during transport. Check the sensor position and if necessary adjust to provide a gap of 5 - 10 mm between the sensor and the actuator magnet.



Check operation of the Loss of Rotation (LOR) Alarm as follows:

- 4.7.1.a Remove the main cover and switch off the Control Panel.
 - 4.7.1.b Remove the safety cover. At this point the display will read "F1".
 - 4.7.1.c Disconnect the cable to the motor.
 - 4.7.1.d Replace the safety cover.
 - 4.7.1.e Switch the control panel on.
 - 4.7.1.f After no more than a couple of minutes the display will read "F8".
 - 4.7.1.g Switch the panel off and remove the safety cover.
 - 4.7.1.h Reconnect the cable to the motor.
 - 4.7.1.i Replace the safety cover.
 - 4.7.1.j Switch the control panel on. The display will read "- -".
 - 4.7.1.k Press the orange reset button. The display will return to normal running mode.
 - 4.7.1.l Replace the main cover on the control panel.
- 4.7.2 Malfunctioning of the LOR Alarm does not prevent operation of the BioDisc System, but it should be reported to your maintenance engineer for early rectification.

4.8 Process Initiation

- 4.8.1 During installation, the unit will have been filled with water. Allow sewage to enter the unit, this will gradually displace the clean water used during installation.
- 4.8.2 Colonisation by micro-organisms will commence naturally and an operating biomass will develop on the discs after approx. 3-6 weeks, depending on individual site conditions and season.

5 OPERATION

5.1 Introduction

- 5.1.1 The biological treatment process of your BioDisc is self regulating and it requires no specialised operational knowledge, but it is important that you are aware of the following:
- 5.1.2 Your BioDisc system uses colonies of live natural micro-organisms (biomass), to break down the pollutants in the sewage. Many chemicals used in households and commercial establishments can inhibit or kill these micro-organisms; particularly if used in excessive amounts.
- 5.1.3 Bear in mind that treatment plants serving small populations do not have the benefit of dilution that occurs at a large sewage works. A bottle of bleach tipped down the toilet in Birmingham would be virtually lost amongst the millions of gallons of sewage arriving at the city's treatment works; a bottle of bleach in a plant serving one or two houses could be a lethal dose for the biomass.

- 5.1.4 If the biomass is damaged, it will usually recover in time. But in the meanwhile one of the more obvious symptoms may be an unpleasant smell, so it is in the operators interest to avoid this.
- 5.1.5 Generally speaking all common household cleaning fluids are acceptable, provided they are used in accordance with the manufacturers instructions and stipulated concentrations. The following "Do's and Don'ts" includes the most common household chemicals, but it is not an exhaustive list and the golden rule is "If in doubt - leave it out."
- 5.1.6 Bear in mind too that it isn't only the toilet that is connected to the treatment plant; anything that goes down the sink, bath etc., also ends up there.
- 5.1.7 During normal operation the control panel displays a single flashing red light between the two digits. During battery recharge a second red light will flash on the right of the display.

5.2 Do's and Don't's

5.2.1 Washing machine and dishwasher detergents, washing up liquids:

- 5.2.2 These are generally all right to use in the normal concentrations and usage found in domestic housing applications. Problems can occur if, for instance, you are washing the jerseys of the local rugby club's five teams!
- 5.2.3 BioDisc incorporates a unique flow management system which enhances its ability to handle shock loads of detergent waste, but there are limits even to this, so if you have to do unusual amounts of clothes washing it would be a good idea to spread it over a few days.
- 5.2.4 Excessive use of Biological washing powders can cause degradation of the biomass. Non-biological detergents, without enzymes, may be substituted.

5.2.5 Floor cleaners, disinfectants and bleaches:

- 5.2.6 These are safe to use in accordance with the makers recommendations and in the minimum necessary concentration. Do not pour neat disinfectant or bleach down sinks or outside gullies. If these are smelly it usually indicates a build up of decaying material or a plumbing problem and should be dealt with accordingly.

5.2.7 Nappy disinfectants and bottle sterilising fluids e.g. Milton

- 5.2.8 When disposing of the used fluid, ensure that it is well diluted with water. The easiest way of doing this is usually to flush it away down the toilet.

5.2.9 Waste disposal units:

- 5.2.10 These do not inhibit the biomass, but, depending on use, they can present the treatment plant with considerable extra load. This can result in the treatment process becoming unbalanced, leading to problems. Much better to compost your vegetable peelings etc - it's cheaper and environmentally friendly.

5.2.11 Home beer and wine making.

- 5.2.12 This presents a similar problem to waste disposal units. The BioDisc has to work as hard to treat one pint of beer tipped down the drain as it does to treat all the normal waste produced by one person in 24 hours. See also the notes above regarding sterilising fluids.

5.2.13 THE FOLLOWING MUST NOT BE DISCHARGED INTO THE DRAINS

- 5.2.13.a Motor oil, grease, anti-freeze, brake fluid etc.
- 5.2.13.b Cooking oil and fat.
- 5.2.13.c Weed-killers, insecticides, fungicides and other gardening chemicals.
- 5.2.13.d Paint, thinners, white spirit, turpentine, creosote etc.
- 5.2.13.e Chemical drain cleaners.
- 5.2.13.f Acid based brick/stone floor cleaners.
- 5.2.13.g Medicines
Take unused medicines to a pharmacist for safe disposal.
- 5.2.13.h Photographic developing fluids.
- 5.2.13.i Nappies, sanitary towels, rags, soft toys, tennis balls etc.
- 5.2.14 This may seem obvious, but it is amazing what gets flushed down the loo from time to time. Although such items are not directly damaging to the biomass they can cause problems, not the least of which is simple blockage of the drains.
- 5.2.15 Even so-called disposable nappies and sanitary towels often do not degrade fully in the treatment plant and can lead to malfunction, so it is best to dispose of them by other means.

5.3 Desludging and Maintenance

- 5.3.1 These are vital to the plant's ongoing operation and should be carried out in accordance with the guidelines in the maintenance section of this manual.
- 5.3.2 Maintenance contracts are available. Please contact Kingspan for your local service provider.

6 MAINTENANCE

6.1 Introduction

- 6.1.1 Kingspan BioDisc units are designed and engineered for the minimum possible maintenance requirements, consistent with proper performance. Nevertheless, it is important that routine preventive electro/mechanical maintenance and de-sludging are carried out at the appropriate intervals by suitably qualified persons.
- 6.1.2 Please contact Kingspan for your local service provider.

6.2 Customer Checks

- 6.2.1 As a back-up to routine servicing and to assist trouble-free operation, we recommend that you familiarise yourself with the operation of your BioDisc and make the following checks from time to time: (Refer to Fig. 6 for positions of parts mentioned.)
- 6.2.2 Your attention is specifically drawn to the Health and Safety section of this manual.
 - 6.2.2.a Review the appearance of the Biomass. It may be light grey to grey at the first bank, gradually changing to brown in the second stage and dark brown at the drive end of the rotor. If the growth is excessively thick and the colour predominantly grey throughout, an overload condition is indicated.
 - 6.2.2.b Visually check the general condition of the BioDisc.
 - 6.2.2.c Check that the inlet and outlet pipes (C) are clear. Remove any debris if necessary.
 - 6.2.2.d Check that the dosing bucket(s) (D) are transferring liquid consistently from the first to second biozone section.
 - 6.2.2.e Check that the buckets are clear of gross accumulations of biomass, simply clean with a water jet from a hose pipe.
 - 6.2.2.f Units with an Integral Discharge Pump: Check that the pump float can move freely and switches the pump on and off as the level in the pump chamber rises and falls. If a high level alarm is fitted check that the alarm float can move freely.
 - 6.2.2.g Familiarise yourself with the normal operating sound of your BioDisc. Report any unusual noises to your maintenance engineer.
- 6.2.3 If any malfunction is discovered, contact your maintenance engineer.

6.3 Failure of Power Supply or of Discharge Pump

- 6.3.1 BioDiscs with gravity discharge: In the event of a power failure, the control panel will show fault code "F1". Flow through the BioDisc will continue by gravity, although the quality of the discharge will gradually deteriorate. When power is re-established, check that the rotor has re-started and is turning correctly (see Section 3.0 paragraphs (5) and (6)). If the BioDisc has not been working for some time, the rotor may become unbalanced. This can cause the rotor to turn unevenly or prevent the unit restarting. In the event of any difficulties, contact your local service provider.
- 6.3.2 **Low Voltage Power Supply**
- 6.3.3 Motors may burn out if this condition is experienced. Consult electrician.

6.4 IMPORTANT - READ THIS. TAKE IMMEDIATE ACTION IF A PROBLEM ARISES

- 6.4.1 BioDiscs with pumped discharge (Integral or external pumps): During power cuts, or in the event of pump failure (indicated by fault code "F5" on the control panel), the level of sewage in the BioDisc will rise and if unchecked will lead to overflowing and/or possible damage to the motor/gearbox. At normal flow rates, sewage will reach the level of the motor in about 40 hours (6 people) or 20 hours (12 people). If pump operation cannot be re-established within this time the sewage level in the BioDisc must be carefully monitored and incoming flow restricted. If necessary the BioDisc should be emptied by a licensed waste contractor to avoid sewage overflowing the internal baffles or damaging the motor. **Do not allow the motor/gearbox to come into contact with sewage.**
- 6.4.2 *We advise that a High Level Alarm is fitted on all units with a pumped outlet. Contact Kingspan for more details.*

6.4.3 When normal operation is resumed, check for solids in the Biozone and FST and de-sludge if necessary. Check rotor rotation as above.

6.5 Sludge Removal from BioDiscs BA, BAx, BB, NB, BC AND NC.

6.5.1 Refer to the illustration below for recommended desludge positions.

(Note: Illustration is typical; individual units may vary).

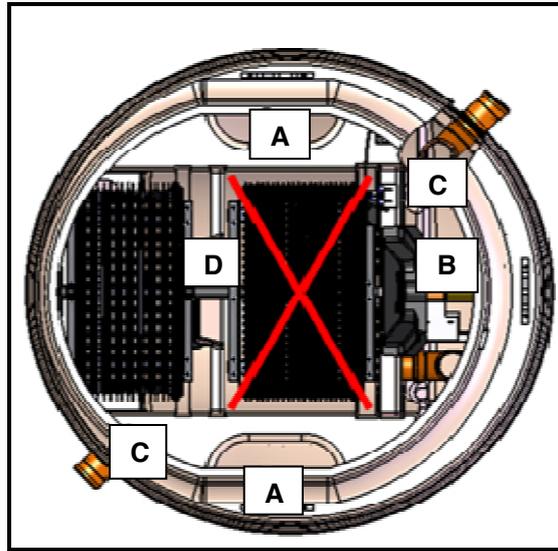


Fig. 6 - Desludge Positions

6.5.2 Isolate power to the BioDisc.

6.5.3 Undo the BioDisc cover latches and remove the cover. Hinged covers should be folded before removal.

6.5.4 Remove surface scum and about half the contents of the Primary Settlement Tank through the desludge ports [A] on either side of the rotor. Use the ports alternately. If port covers are fitted, keep the port not in use covered.

6.5.5 Empty the Final Settlement Tank [B]. **DO NOT** attempt to remove liquid from the discharge pump chamber (if fitted).

6.5.6 Remove remaining matter from the Primary Settlement tank.

6.5.7 **DO NOT** attempt to remove any liquid from the rotor section.

6.5.8 **DO NOT** attempt to clean off the gelatinous biomass growth on the rotor.

6.5.9 Ensure that the BioDisc inlet and outlet pipes [C] and the forward feed buckets [D] are free of debris. Ensure that the desludge port covers, if fitted, are replaced, then close and lock the BioDisc covers.

6.5.10 Re-connect the power supply. Ensure that the control panel door is locked shut.

6.5.11 Units with Loss of Rotation Alarms only: Wait for two minutes. If the alarm on the control panel does not activate, this indicates that the rotor has successfully re-started. If the alarm activates, switch off the power at the control panel and immediately switch on again. If the alarm continues to activate, isolate the power supply and notify the plant owner so that the problem can be investigated.

6.6 Desludge Volumes

Model	BA	BAx	BB/NB	BC/NC
Primary Settlement Tank	2200 litres (485 galls)	2200 litres (485 galls)	2200 litres (485 galls)	4580 litres (1009 galls)
Final Settlement Tank	400 litres (88 galls)	400 litres (88 galls)	400 litres (88 galls)	850 litres (187 galls)
Desludge Period	12 months Maximum	9 months Maximum	6 months Maximum	7 months Maximum

You should not exceed the maximum desludge periods given above.

7 TROUBLE SHOOTING GUIDE FOR BIODISC UNITS BA/Bax/BB/NB/BC/NC

SYMPTOM	CAUSE	ACTION
Strong odour	Excessive build up of sludge and scum	Desludge the unit.
	Grease (white/cream crust in primary tank and/or thick, smooth biomass ¹)	De-sludge unit. If necessary hose off discs. Avoid excessive use of fats and oils. Please note removal of Biomass will reduce treatment until new Biomass establishes.
	Chemicals in the system (very sparse or no biomass ¹)	In most instances, units will recover naturally from toxic inhibition events. Refer to section 4 of the Owners Handbook for general guidance on use of domestic chemicals.
	Excessive laundry use (thick, stringy whitish biomass ¹ on first section)	Spread out laundry operations. Avoid biological powders where possible and use the minimum possible amounts of detergent. Refer to section 4.
	Unit overloaded (thick/grey biomass ¹) over most of rotor	Check section 1 of the Owners Handbook for the process capability of the unit. If in doubt, contact Kingspan.
	Rotor stopped	See rotor stopped section below.
	Drains inadequately ventilated	Check that there is an open high level vent at the head of the drains (not "Durgo" valve or tile vent).
Rotor stopped	Switched off	Check that the motor switch on the panel is in the "on" position. Re-set if necessary.
	Power failure	Check the fuse/trip at the supply board. Replace/re-set as necessary. If the problem persists, contact Kingspan.
	Wiring fault	Have the wiring to control panel checked by a competent electrician. If the supply wiring is OK contact Kingspan.
	Drive belt broken	Contact Kingspan.
	Drive motor faulty	Contact Kingspan.
	Loose pulleys on rotor or gearbox output shaft	Contact Kingspan.
Rotor fails to re-start after a stoppage	Rotor unbalanced	Hose off excess Biomass on the heavy side of the rotor. Note removal reduces treatment.
Rotor turns intermittently	Drive motor overheating	Contact Kingspan.
Effluent discharge not to required standard	See strong odour and rotor stopped sections.	
	Managed flow system in-operative.	Check that bucket(s) are in place and discharging correctly into the biozone second stage.
	Sludge return pump inoperative (NB/NC only)	Contact Kingspan.
Unit flooded (units with integral discharge pump)	Discharge pump not working.	Check that the pump switch on the panel is in the "on" position. Re-set if necessary. Check that pump control float is clear of obstructions and set at the correct length. If the problem persists consider emptying unit to protect motor and gearbox and contact Kingspan or service provider. (See Section 5).

8 CONTROL PANEL FAULT CODES & FUSES

CODE	FAULT CONDITION	FUSE	Amp
F1	No power to the unit	Customer Fuse box	N/A
F3	The high level alarm has activated (where fitted)	N/A	N/A
F4	The fuse to the motor has failed	F3	3.15
F5	The fuse to the discharge pump (where fitted) has failed	F1	5.0
F6	The fuse to the chemical dosing pump has failed	F4	0.25
F7	The fuse to the recirculation pump has failed	F2	5.0
F8	The loss of rotation alarm has been activated	N/A	N/A
--	The unit has had a fault which has now corrected itself	N/A	N/A

All fuses are Time Lag HBC 20mm type.

9 WARRANTY

Taken from 'Kingspan's Terms & Conditions of Sale'

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.

This warranty is conditional upon:

- (a) the Buyer notifying the Company of any claim within Seven days of the failure becoming discernible.
- (b) the Company being allowed a reasonable opportunity to inspect the goods so as to confirm that they are defective.
- (c) the goods not having been modified, mishandled or misused and being used strictly in accordance with any relevant instructions issued by the Company.

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.

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.

For any further advice, please contact us.

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, describing the necessary maintenance of the plant in use. This should be fixed within the building.

Our service provider: Kingspan Environmental Services: 0844 846 0500

NOTICE:



KINGSPAN BioDisc®

The foul drainage from this property discharges into a package treatment works.

Maintenance is required, the frequency of which depends upon the model installed, its use and its application. Please consult your owners pack.

- * A BA BioDisc requires annual maintenance and desludging.
- * A BB BioDisc requires annual maintenance and desludging at 6 month intervals.
- * Other BioDisc models require more frequent desludging and maintenance (see individual operating manuals)

Maintenance and Desludging should be carried out by the owner in accordance with the Manufactures instructions.

THE OWNER OF THE PROPERTY IS LEGALLY RESPONSIBLE FOR ENSURING THAT THE SYSTEM DOES NOT CAUSE POLLUTION, A HEALTH HAZARD OR A NUISANCE.

We recommend that a separate log is kept of all maintenance and service visits, the log should detail the date and any action taken, e.g. Regular maintenance service, breakdown visit, desludge volume removed, parts replaced.

This notice should be fixed by the owner within the building alerting current and future owners to the maintenance requirement. (Building regulation H2 (1.57))

Please contact Kingspan Environmental Services on +44 (0) 844 846 0500 to arrange a maintenance service or to request replacement operating instructions. It would be helpful if you provide your equipment serial number.

PERFORMANCE RESULTS

Kingspan Environmental Ltd.
College Road North, HP22 5EW, Aylesbury
United Kingdom

EN 12566-3
"Small wastewater treatment system for up to 50 PT"

Small wastewater treatment system BioDisc®
Rotating biological contractor

Nominal organic daily load	0.29	kg BOD ₅ /d	
Nominal hydraulic daily load	1.2	m ³ /d	
Material	glass reinforced plastic (GRP)		
Watertightness (water test)	pass		
Crushing resistance (vertical load test)	pass	(also wet conditions)	
Treatment efficiency (nominal sequences)		Efficiency	Effluent
	COD	89.4 %	59 mg/l
	BOD ₅	95.7 %	10 mg/l
	NH ₄ -N	88.6 %	3.8 mg/l
	SS	94.8 %	15 mg/l
Electrical consumption	1.3	kWh/d	

Performance tested by:

PIA – Prüfinstitut für Abwassertechnik GmbH
(PIA GmbH)
Hergenrather Weg 30
D-52074 Aachen

Certified according to
ISO 9001:2008
Notified Body number: 1739



This document replaces neither the declaration
of conformity nor the CE marking.

Prüfinstitut für Abwassertechnik GmbH



geprüft - tested - teste

Elmar Lancé

May 2013