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PD0136 Issue 7 July 2001

OWNERS HANDBOOK

MANAGED FLOW BIODISC®

BD, BE, BF, BG
ND, NE, NF, NG

Klargester Environmental Ltd.
College Road, Aston Clinton
Aylesbury, Bucks
HP22 5EW
Tel: 01296 633000
Fax: 01296 633001
http://www.klargester.co.uk
uksales@klargester.co.uk

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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 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 Klargester 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 chains. 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. We recommend the unit is commissioned by an approved engineer.

DECLARATION OF CONFORMITY	
Description of Machine Model	B Range BioDisc Sewage Treatment Plant
Serial Number (see cover label)	.....
Year of Manufacture	.....
Name of Manufacturer	Klargester Environmental Ltd., College Road, Aston Clinton, Aylesbury, Bucks, HP22 5EW.
EUROPEAN DIRECTIVES:	Machinery Directive 89/392/EEC Low Voltage Directive 73/23/EEC Electromagnetic Compatible Directive 89/336/EEC
We declare that the equipment covered in this manual conforms with the essential Health and Safety requirements.	
Alison Anderson PRODUCT MANAGER WASTE WATER 1 JUNE 1997	

CE

LLOYD'S REGISTER QUALITY ASSURANCE · ISO9002

SPECIALISTS IN WATER POLLUTION CONTROL

Klargester

CONTENTS

The following wiring diagrams are supplied within the panel housing Further copies available on request.

510009 BD & BE Single phase Alarm Control Panel
510030 BD, BE & BF Three phase
510003 BD, BE & BF Three phase alarm control panel
510017 BF Single phase Alarm Control Panel
510012 ND, NE, NF, NG & BG Single phase
510013 ND, NE, NF, NG & BG Single phase Alarm Control Panel
510006 ND, NE, NF, NG & BG Three phase
510007 ND, NE, NF, NG & BG Three phase Alarm Control Panel
510018 Independent Remote Alarm

INTRODUCTION

Thank you for choosing a Klargester product. This manual will help you to keep it operating efficiently over a long service life. Please read this manual thoroughly, preferably before installation.

This manual should be referred to by :

a) The installer
b) The electrician
c) The commissioning engineer
d) The maintenance engineer
e) The desludge contractor
e) The owner/user

Klargester offer various maintenance packages and extended warranty contracts offering peace of mind for the long term operation of the equipment. Details on request. We recommend that the unit is commissioned by an approved engineer before use.

SECTION 1

TECHNICAL DATA

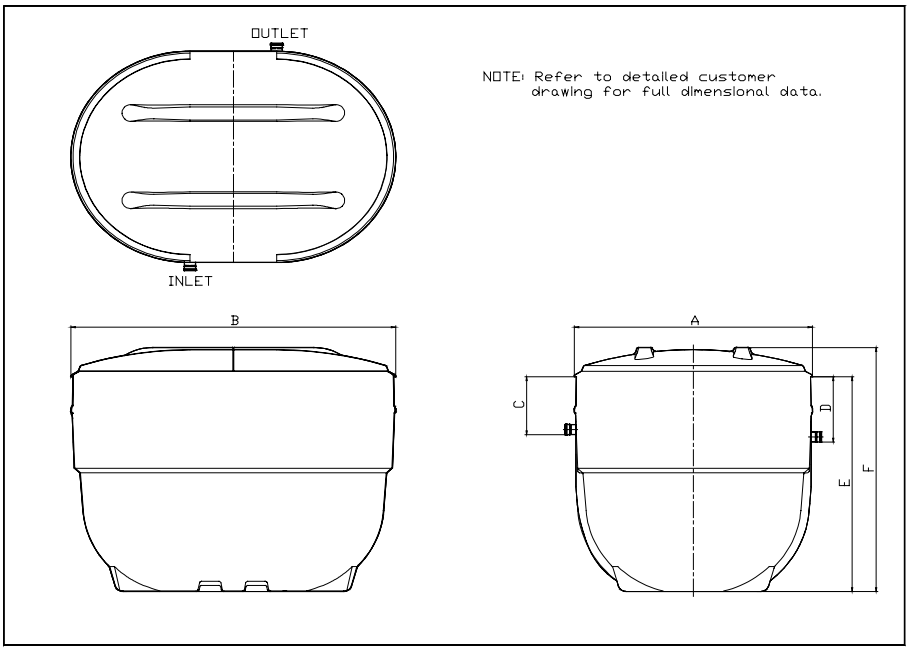


Fig. 1

UNIT		BD/BE/ND/NE		BF/NF	BG/NG
Width	A mm	2450		2450	2450
Length	B mm	3340		4345	5235
Inlet Invert depth	C mm	600	1100	600	600
Outlet Invert Depth	D mm	685	1185	700	700
Depth Below Ground	E mm	2425	2925	2420	2420
O/A Height	F mm	2830	3330	2825	2825

UNIT	BD	ND	BE	NE	BF	NF	BG	NG
Standard Power Supply	1 phase							
Optional Power Supply	3 phase							
Drive Motor Rating 1ph/3ph watts	55		75		110		180	
Sludge Return Pump Rating watts	N/A	480	N/A	480	N/A	480		
Maximum Daily BOD(1) kg	1.5	1.2	2.1	1.62	3.0	2.4	4.2	3.72
Maximum Daily Flow m^3	5	4.0	7	5.4	10	8.0	14	12.4
Peak Flow Rate (2) m^3/hr	0.63	0.5	0.88	0.68	1.25	1.0	1.75	1.56

(1) Domestic housing applications only. Consult Klargester for other applications.

(2) For ½ hour max. in any 2 hour period.

All surface water must be excluded. Units are individually assessed with regard to sewage load and composition. E.g. Proportion of laundry waste water from commercial premises. Please contact Klargester if you plan any changes that might affect your sewage output.

SECTION 2

DESCRIPTION AND PROCESS

(1) INTRODUCTION

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. BioDiscs in the range BD to BF and ND to NG are self contained single piece units.

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.

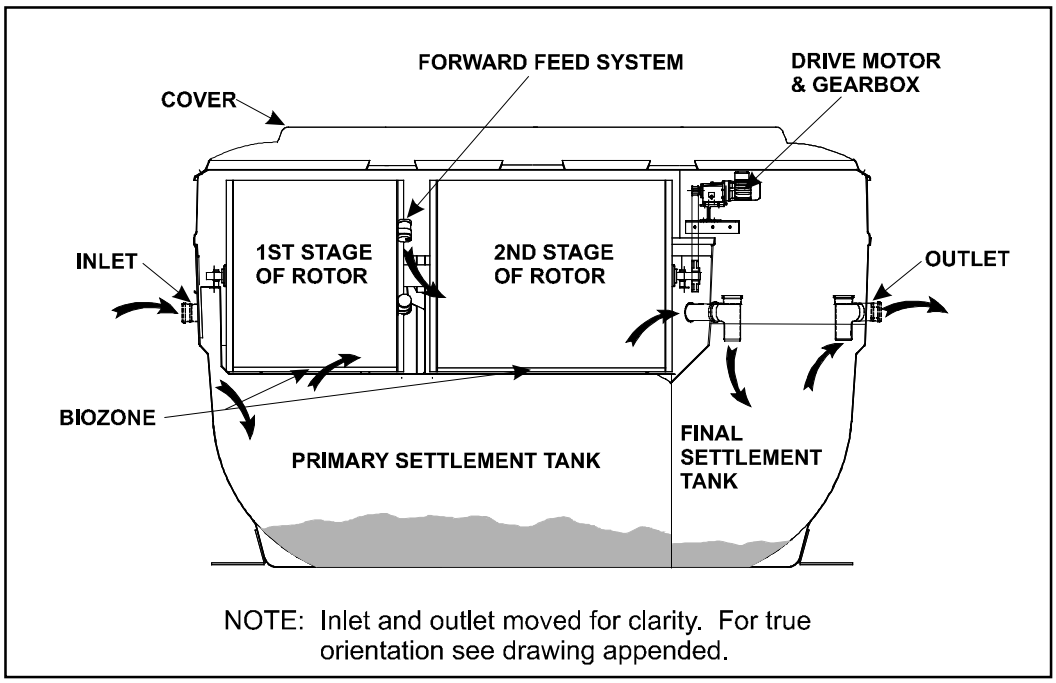


Fig. 2 - General Arrangement of BioDisc System

(2) PRIMARY SETTLEMENT TANK

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.

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) BIOZONE

The Biozone contains the Rotor, which consists of corrugated polyethylene discs mounted on a horizontal shaft, supported by a bearing at each end. The bearings are either plastic, requiring no lubrication or roller bearings continuously lubricated by pressurised grease cartridges. The Rotor is slowly rotated by an electric motor and reduction gearbox with a chain or belt drive. Chain drives are continuously lubricated by a pressurised grease cartridge and brush assembly.

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.

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

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.

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.

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

(4) FINAL SETTLEMENT TANK

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.

N Range units include a timer controlled pump return sludge system so as to enable the settled humus to be periodically returned to the PST, for co-settlement. Final treated effluent discharges from the FST through a dip pipe. The FST is covered by a pedestrian duty walkway which allows service access and guards against the possibility of personnel falling into the FST.

(5) COVER

A GRP cover is provided to guard against injury to personnel and to protect the BioDisc from the weather. Please do not walk over the covers: they are not weight bearing. The cover sections are secured by latches, operated by keys supplied with the unit.

(6) CONTROL PANEL

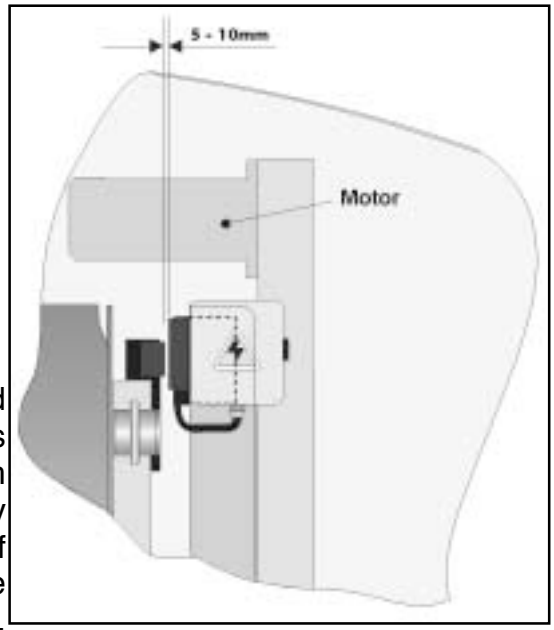
The weatherproof control panel should be mounted adjacent to the BioDisc. There are three panel types that can be fitted, all with current overload protection, power isolation function and automatic re-start following a power failure. (See Section 5, paragraph (3)).

All N range control panels also contain a timer and relay to control the operation of the sludge return pump and current overload protection for the pump motor.

1. Standard Control Panel.
2. Alarm Control Panel. This replaces the Standard Control Panel and includes a Loss of Rotation (LOR) Alarm, which activates after a delay of 2-3 minutes if the rotor stops turning for any reason, other than a failure in the power supply. It has stop and run lights on the door, and an optional alarm beacon on top. An additional remote slave beacon may also be fitted. 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.

Optional Loss of Rotation Alarm

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.



- Alarm Sensor Adjustment
(position may vary)

3. Independent Remote Alarm Panel. This is fitted in addition to the Standard Control Panel, and is suitable for any indoor location, up to a maximum of 100 metres from the BioDisc. It would usually be connected to a power supply independent of the BioDisc, and works in a similar manner to the Alarm Control Panel. It has an audible alarm, with mute button and a warning light.

SECTION 3 INITIAL START UP PROCEDURE

(1) INTRODUCTION

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. If on inspection, you consider that any components require adjustment, please contact Klargester to request a commissioning service.

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 should then be replaced and the chain tensioned by Klargester.

We recommend that the system should be commissioned by Klargester; details on request. Where an immediate start-up is necessary, the following basic procedures should be carried out. Ensure that all Health and Safety precautions are observed.

(2) WATER Check that the BioDisc is full of water to the outlet level.

(3) ELECTRICAL Check that the power supply is connected to the control panel. Check that all electrical components and conductors are earthed.

(4) BIODISC

Check that the BioDisc is in order, with no obvious damage or misalignment of parts. If any possible problems are discovered, contact Klargester.

Check that all electrical components: Drive Motor, Sludge Return Pump and LOR Alarm sensor, (where applicable) are connected to the Control Panel.

Units with FST Sludge Return System only: Check that the Sludge Return Timer in the BioDisc Control Panel is set correctly, as indicated on the wiring diagram.

AUTOMATIC GREASE CARTRIDGES

Where pressurised grease cartridges are fitted (to chain drives and/or roller bearings)

these must be activated before the unit is started.

a) Turn the control knob and its linked dial until the figure 6 is against the arrow on the casing, as in Figure 3 (this should give a lubrication period of 12 months at the temperature in the BioDisc).

b) Depress the red button. This secures the setting and releases the control knob from dial.

Rotate the knob clockwise to activate the unit.

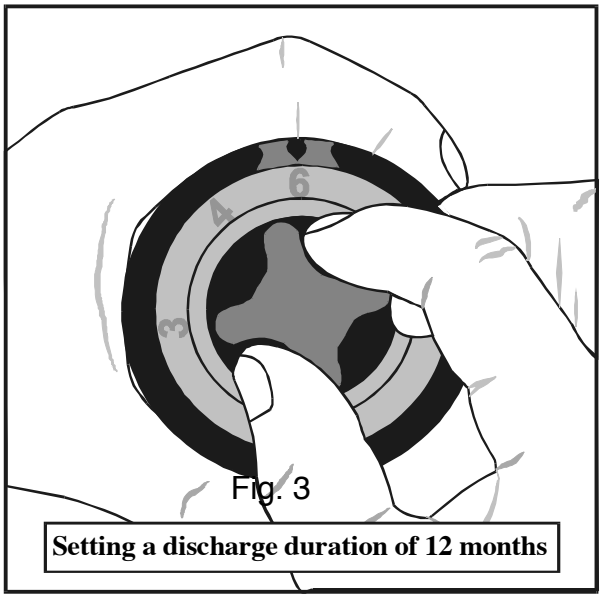


Fig. 3

Setting a discharge duration of 12 months

6) SWITCH ON

Open the Panel. Put the isolating switch and/or circuit breaker(s) into the “on” position. Close the panel and lock it, if applicable. Note: If the unit is fitted with a the sludge return pump, this should start and run for the set time when the unit is switched on.

(7) RUNNING CHECKS

Check that the rotor is running smoothly in the correct direction of rotation and is not contacting any part of the fixed structure.

Check that the forward feed buckets are discharging correctly from the first to second stage Biozone.

(8) OPTIONAL LOSS OF ROTATION ALARM

Where fitted, check operation of the Loss of Rotation (LOR) Alarm as follows:

a) Open the Control Panel and isolate the drive motor whilst maintaining power supply to the alarm circuit. For units with a combined Alarm Control Panel this can be done either by removing the motor fuse or by operating the motor overload trip (refer to wiring diagram). Where a remote independent alarm is fitted, simply isolate power supply at the BioDisc control panel. After a delay of 2-3 minutes the alarm should activate.
b) Push the reset button on the front of the Panel. The alarm beacon or sounder should cease and the red indicator light on the panel front should remain illuminated.
c) Re-connect power to the drive motor and close the Control Panel. The alarm should cease after approximately one minute.
d) Depress and release the “Beacon Off” button to reset it.

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.

(9) PROCESS INITIATION

During installation, the unit will have been filled with water to prevent flotation in the concrete surround. Allow sewage to enter the unit, this will gradually displace the clean water used during installation.

The colonisation by micro-organisms will commence naturally and a operating biomass will establish itself on the discs in 3-6 weeks, depending on individual site circumstances. This will continue to develop, but note the development is chemical and temperature sensitive.

SECTION 4

OPERATION

(1) INTRODUCTION

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:

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.

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 a few houses could be a lethal dose for the biomass.

If the biomass is damaged, it will usually recover in time. But in the meanwhile one of the more obvious symptoms is an unpleasant smell, so it is in the operators interest to avoid this.

Generally speaking all common household cleaning fluids are acceptable, provided they are used in accordance with the makers 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."

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.

(2) DO’S AND DON’TS

Washing machine and dishwasher detergents, washing up liquids:

These are generally all right to use in the normal concentrations and usage found in domestic housing applications. BioDisc incorporates a unique flow management system which enhances its ability to handle shock loads of detergent waste, but problems can sometimes occur due to high laundry usage in commercial establishments such as hotels and nursing homes. Each BioDisc is supplied on the basis of an individual assessment of the sewage load, including laundry usage. Please contact Klargester before making any changes that might increase sewage output or the proportion of laundry waste water. Excessive use of Biological and enzyme containing detergents may affect the biomass.

Floor cleaners, disinfectants and bleaches:

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.

Nappy disinfectants and bottle sterilising fluids E.g. Milton:
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.

Waste disposal units:

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.

Home beer and wine making.

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.

THE FOLLOWING MUST NOT BE DISCHARGED INTO THE DRAINS

Motor oil, grease, anti-freeze, brake fluid etc.

Cooking oil and fat.

Weed-killers, insecticides, fungicides and other gardening chemicals.

Paint, thinners, white spirit, turpentine, creosote etc.

Medicines

Take unused medicines to a pharmacist for safe disposal.

Chemical toilet waste.

Photographic developing fluids.

Nappies, sanitary towels, rags, soft toys, tennis balls etc.

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.

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.

(3) DE-SLUDGING AND MAINTENANCE

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.

Mechanical and electrical maintenance must be performed by properly trained engineers, with reference to the appropriate maintenance guidelines. Klargester offer a range of maintenance packages, details on request.

SECTION 5 MAINTENANCE

(1) INTRODUCTION

Klargester BioDiscs 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.

Klargester offers planned contract maintenance and can be contacted on Aylesbury (01296) 633000 by telephone or by fax on (01296) 633001.

(2) CUSTOMER MAINTENANCE CHECKS

The following periodic checks may be carried out at approximately monthly Intervals.

- Visually check the general condition of the plant and listen for any unusual noises. Report any aspects of concern to your maintenance engineer.
- Check the appearance of the Biomass. It should be light grey to brown at the first bank, and may gradually changing to 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.
- Visually check that all fixings are secure.
- Clear any debris from inlet and outlet pipes.
- Check dosing buckets and transfer baffle for any build up of debris. Clean, if required, using a stiff bristled brush.
- Check the Loss of Rotation Warning Device for correct operation (see Initial Start Up Section). If the alarm does not operate properly, contact your maintenance engineer.

Your attention is specifically drawn to the Health and Safety section of this manual.

(3) AUTOMATIC RE-START AFTER POWER FAILURE

BioDiscs are designed to re-start automatically when power is resumed, but the re-start may not succeed in some circumstances, such as extended power cuts.

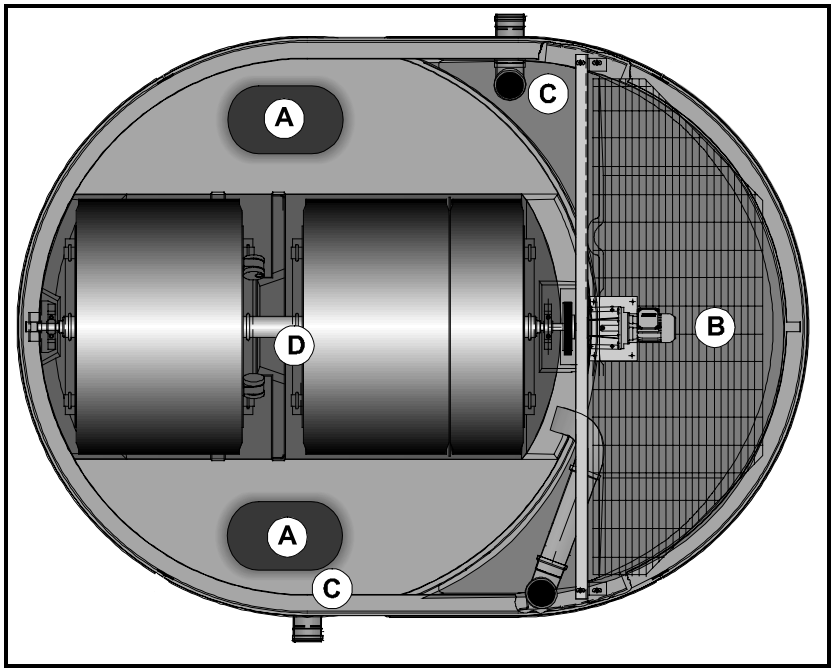
When power is re-established, check that the rotor is turning correctly (see Section 3.0 paragraphs (6) and (7). In the event of any difficulties, contact Klargester.

(4) SLUDGE REMOVAL DESLUDGE VOLUMES

The volumes shown in the table are those anticipated when the plant is fully loaded. If the system is not loaded to full capacity, the desludge period and volumes removed may be adjusted, but it is essential that sludge is not allowed to accumulate to the detriment of the process and that all settled sludge and floating matter are removed at each desludge visit.

Volumes in litres (gallons in brackets)

UNIT	Desludge Period	Primary Settlement Tank		Final Settlement Tank	
		Min	Max.	Min	Max
BD/ND	6 months	4,000 (880)	5,230 (1,150)	1,500 (330)	2,260 (500)
BE/NE	4 months	3,350 (740)	5,050 (1,110)	1,500 (330)	2,260 (500)
BF/NF	4 months	5,650 (1,245)	8,150 (1,800)	2,000 (440)	2,950 (650)
BG/NG	3 months	7,100 (1,565)	10,610 (2,340)	1,000 (220)	2,260 (500)



a) Isolate power to the BioDisc at the Control Panel.

b) Undo the BioDisc cover latches and fold back the hinged cover sections as required to gain access. Alternatively the covers can be completely removed. Hinged sections should be folded back before lifting off.

c) Remove surface scum from the Primary Settlement Tank through the desludge ports [A] on either side of the rotor.

d) Lower the sewage level by approximately 500mm. Use the ports alternately

e) Lift off the walkway covering the Final Settlement Tank [B], and remove settled sludge and any floating matter. Replace the walkway. Some units have a sludge return pump located in this chamber - if the pump is exposed during de-sludging it is important to refill the chamber with water, sufficient to cover the pump, before switching on the unit.

f) Lower the hose into the bottom of the Primary Settlement Tank and remove settled sludge. Use each port sequentially and cover all ports not in use. It may be necessary to empty the tank completely to ensure full sludge removal. Replace all port covers.

g) **DO NOT** attempt to remove any liquid from the Rotor Section.

h) **DO NOT** attempt to clean off the gelatinous growth on the rotor.

i) Ensure that the BioDisc inlet and outlet pipes [C] and the Forward Feed Buckets [D] are free of debris.

j) Ensure that the walkway and all desludge port covers are replaced, then close and lock the BioDisc covers.

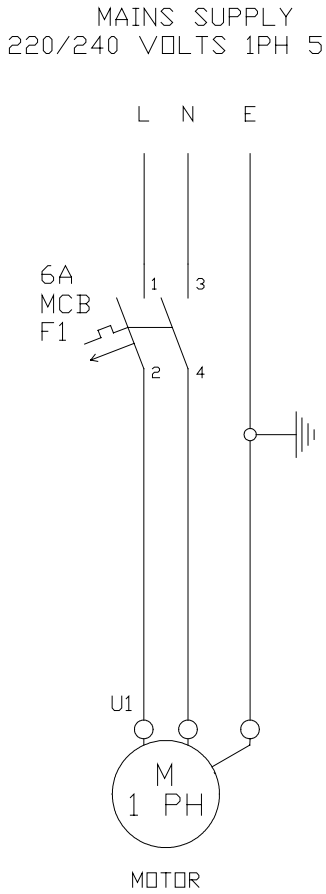
k) Re-connect the power supply. Ensure that the Control Panel door is locked shut.

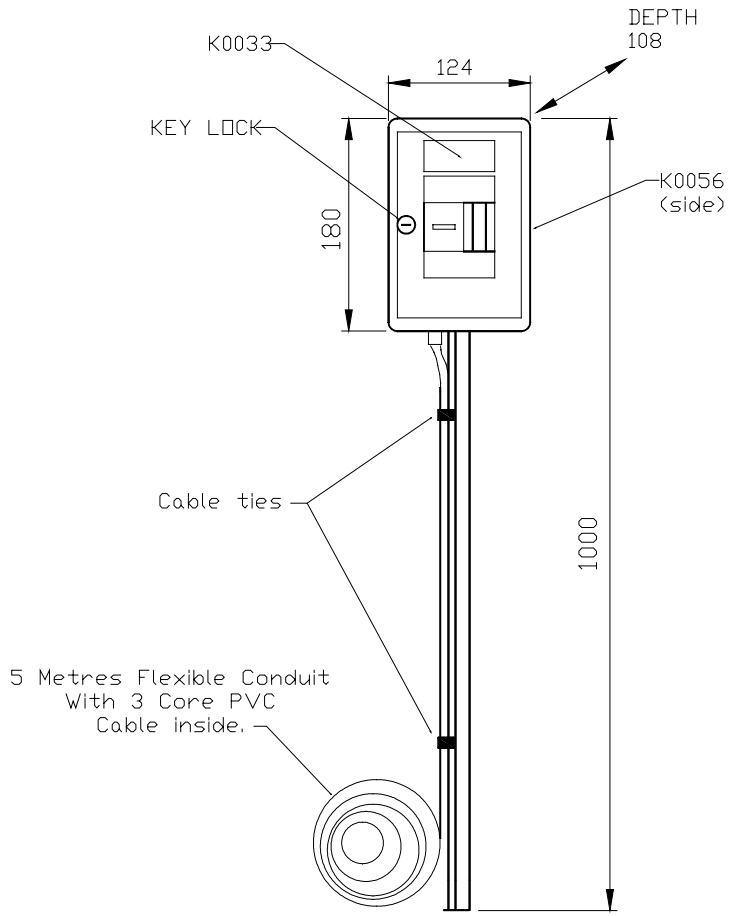
l) Units with Loss of Rotation Alarms only: Wait for two minutes. If the alarm on the control Panel does not activate, this indicates that the Rotor has successfully re-started. If the alarm activates, switch off the power at the Control Panel and immediately switch on again. If the alarm continues to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

m) Units should be refilled with water.

TROUBLE SHOOTING GUIDE FOR BIODISC UNITS

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. See 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. .
	Unit overloaded (thick/grey biomass[1]) over most of rotor	Check section for the process capability of the unit. If in doubt, contact Klargester.
	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 tile vent or “Durgo” valve).
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 Klargester.
	Wiring fault	Have the wiring to control panel checked by a competent electrician. If the supply wiring is OK contact Klargester.
	Drive chain broken	Contact Klargester.
	Drive motor faulty	Contact Klargester.
	Loose pulleys on rotor or gearbox output shaft	Contact Klargester.
Rotor fails to re-start after a stoppage	Rotor unbalanced	Consider Hosing off excess Biomass on the heavy side of the rotor. Note removal of biomass reduces treatment.
Loss of rotation alarm not operational	Rotor Sensor out of alignment with bracket	Adjust one or both
Rotor turns intermittently	Drive motor overheating	Contact Klargester.
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 (ND/NE/NF/NG only)	Contact Klargester.
Unit flooded	Drain outlet blocked.	Check drain downstream of unit , Check location, ? is unit correctly installed and recessed





SPECIFICATION	PART No.	REF
* ENCLOSURE	80200001	
* KEY LOCK	80200041	
* MCB 3A 2 POLE	32100121	F1
* 5 MTRS 20mm FLEXIBLE CONDUIT	70300001	
* 2 – GLAND FOR FLEXIBLE CONDUIT	70300011	
* 2 – 20mm LOCKNUTS	70300021	
* 2 – 20mm WASHERS	70300031	
* 1 METRE GALVANIZED ANGLE IRON	92200001	
* 5.25 MTRS 4 CORE 1mm FLEX CABLE	72300001	
* VINYL LABEL 'KLARGESTER'	K0033	
* VINYL LABEL 'DO NOT WALK ON COVER'	K0056	
* VINYL LABEL '230 VOLTS WARNING'	K0043	
* 2 – CABLE TIES	70500001	

PART No. E0181

ALL DIMENSIONS ARE IN MILLIMETRES – DO NOT SCALE

ISSUE	DATE	DRAWN	MODIFICATION
1	1.7.01	M.P.C.	INITIAL ISSUE

THIRD ANGLE PROJECTION

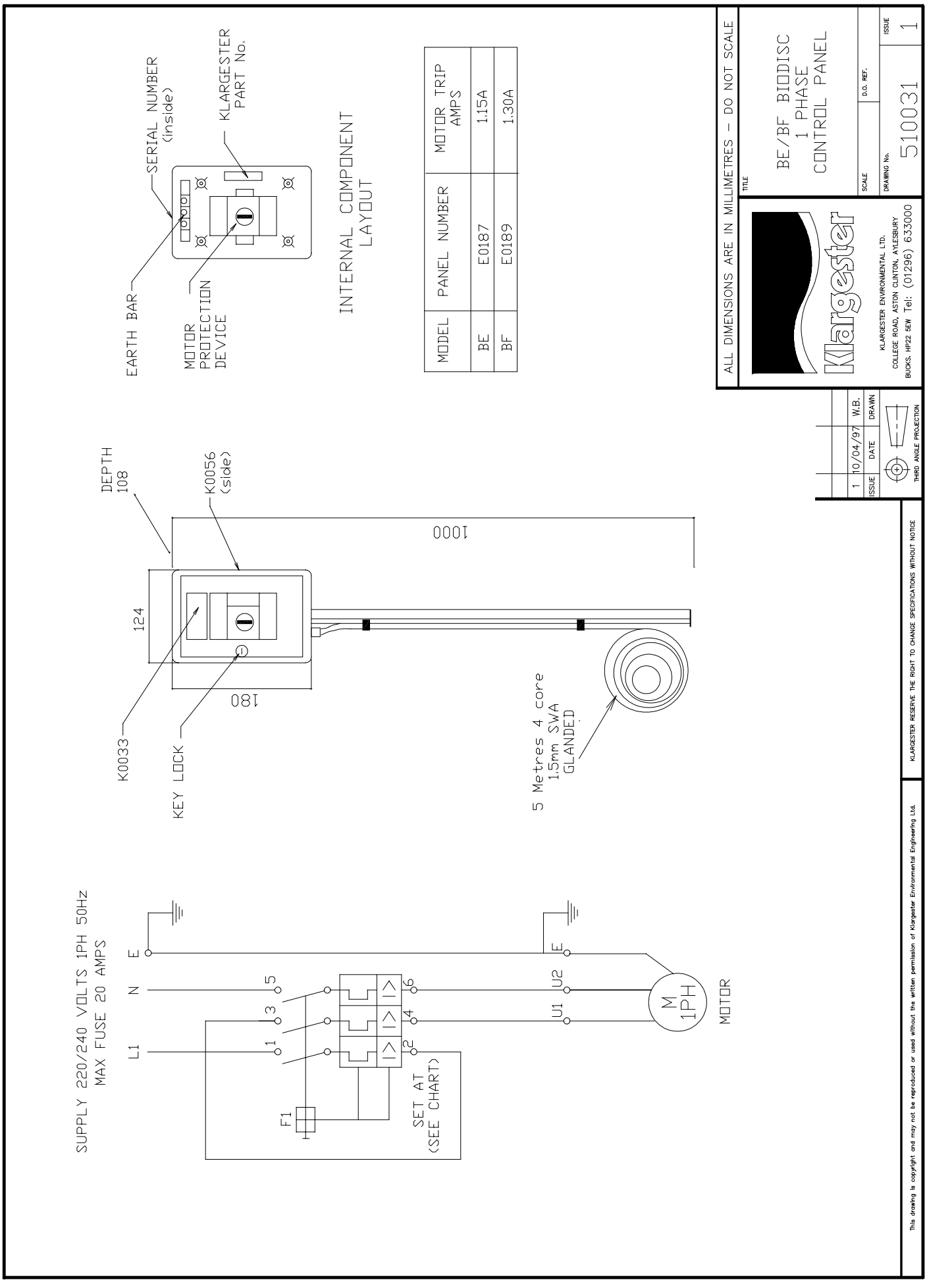
Klargester
Klargester Environmental Ltd.
College Road, Aston Clinton,
Aylesbury, Bucks. HP22 5EW.
Tel:- 01296 633000

TITLE
BC/BD/BE BIODISC
1 PHASE
CONTROL PANEL

SCALE	SHEET SIZE
1:1	A4

DRAWING No.	ISSUE
510101	1

PD0136 Issue 7 JULY 2001


SUPPLY 220/240 VOLTS 1PH 50Hz
MAX FUSE 20 AMPS
L1
N
E
1
3
5
2
4
6
I>
I>
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F1
SET AT
(SEE CHART)
U1
U2
E
M
1PH
MOTOR
5 Metres 4 core
1.5mm SWA
GLANDED
KEY LOCK
K0033
DEPTH
108
K0056
(side)
124
180
1000
EARTH BAR
SERIAL NUMBER
(inside)
MOTOR
PROTECTION
DEVICE
KLARGESTER
PART No.
INTERNAL COMPONENT
LAYOUT
MODEL
PANEL NUMBER
MOTOR TRIP
AMPS
BE
E0187
1.15A
BF
E0189
1.30A
ALL DIMENSIONS ARE IN MILLIMETRES – DO NOT SCALE
TITLE
BE/BF BIODISC
1 PHASE
CONTROL PANEL
SCALE
D.O. REF.
ISSUE
DRAWING No.
510031
1
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