

# **APPENDIX 8**

## **Details of Proposed Treatment Plant**

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# BioDisc® SEWAGE TREATMENT PLANTS UNITS BA - BG



## INTRODUCTION

BioDisc systems offer a cost effective and flexible solution to a wide range of domestic sewage treatment applications. The range employs Klargester's patented Managed Flow Technology to enhance the effectiveness and consistency of the treatment system. At the core of the BioDisc lies the Rotating Biological Contactor (RBC) Technology, which Klargester has developed and refined over a period of 25 years.

BioDisc units are designed and engineered to offer the highest level of reliability combined with the lowest possible running costs.

## APPLICATIONS

Single Dwellings	Public Houses
Housing Estates	Offices
Golf Clubs	Industrial Estates
Schools	Leisure Developments
Hotels	Nursing Homes
Caravan Parks	

## DISCHARGES

BioDisc is designed to conform to the British Standard Code of Practice BS6297 relating to the design of small sewage treatment works.

Treated effluent from BioDisc units may be discharged directly to a watercourse where a consent has been obtained from the relevant authority; EA (England & Wales), SEPA (Scotland) Local Authority Public Health Department (N Ireland & Eire).

The units are configured to produce a final effluent quality of 20 mg/l BOD<sub>5</sub> (ATU), Biochemical Oxygen Demand, 30 mg/l Suspended Solids, if a more stringent quality effluent is required, or if an Ammoniacal Nitrogen level is specified, the BioDisc may be reconfigured to meet the required specification. Details on application.

## DESCRIPTION

The BioDisc unit utilises a series of connected reactors and chambers.

BioDisc units BA-BG are self contained, single piece units:

BioDisc units BA-BE are available with varying inlet depths to suit site levels (see the table overleaf).

The main structure of the BioDisc unit is constructed from Glass Reinforced Plastic (GRP).

Biological treatment occurs on the Rotating Biological Contactor, or Rotor, in the BioDisc. The Rotor comprises banks of polypropylene discs (media) attached to a horizontal, zinc coated, steel shaft and is slowly rotated by an electric motor and gearbox.

The BioDisc has a low profile GRP cover, arranged in sections to facilitate access.

A free-standing, weatherproof, local Control Panel is supplied with the BioDisc.

## PROCESS

**1. Primary Settlement Tank** - Incoming sewage is received in the PST where settleable solids are separated and retained for periodic removal. The liquid level in the PST is allowed to fluctuate, to absorb incoming flow surges.

**2. First Stage Biozone** - The settled liquor passes from the PST into the first stage Biozone where it comes into close contact with natural micro-organisms (biomass) which colonise the surface of the media.

This first stage of the biological treatment acts as a roughing stage, absorbing fluctuations in the Biochemical Oxygen Demand (BOD<sub>5</sub>) and detergent levels which would otherwise inhibit biological action in the second stage.

The patented managed flow system transfers the liquor to the second stage Biozone at a steady rate.

**3. Second Stage Biozone** - Treatment conditions in this stage are optimised, as the liquid level is constant. The media is partially submerged and, as it rotates, the biomass is alternately immersed in the liquor for adsorption and digestion of waste matter and exposed to the atmosphere for oxygenation.

**4. Final Settlement Tank (FST)** - Liquor containing excess biomass as fine settleable solids (humus) enters the FST through a submerged transfer pipe. Humus is settled out and retained for periodic removal at the same time as the sludge in the PST. Model BG incorporates a pump assisted hydrostatic system which periodically transfers settled sludge from the FST to the PST. The final discharge from the FST is by a dip-pipe (excepting units with integral discharge pump - see below).

## DISCHARGE PUMPING

Effluent pumping stations are available (single or twin pump) for applications where the discharge has to be lifted to a higher level or pumped to remote discharge point. Details on request.

BA and BB BioDisc units can be supplied with an optional integral discharge pump.

## ALARMS

Alarms are available to signal loss of rotation and failure of the discharge pump (where applicable). Details on request.

## UNIT SIZE SELECTION

Maximum daily hydraulic and organic loads shown overleaf are for general guidance only. Please consult Klargester for site specific selection.

All applications are individually assessed, considering a number of factors, including the expected hydraulic flow, organic load, ammonia levels and treatability.

## DELIVERY & INSTALLATION

Units are normally delivered by flat bed vehicle and the installer should provide lifting facilities for off-loading. BioDisc units are installed on a concrete base and surrounded with concrete. BA & BB units can be surrounded in pea shingle if ground conditions allow. Installation Guidelines are supplied with each unit.

## MAINTENANCE

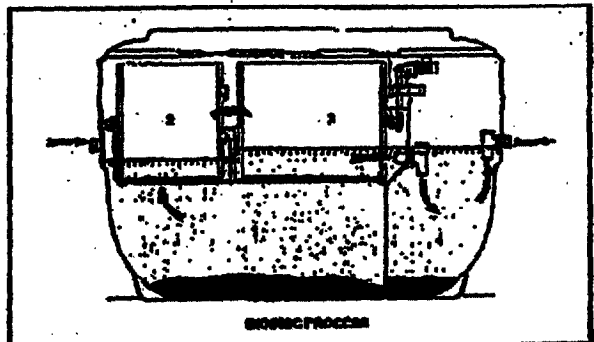
BioDisc units should be de-sludged as required (see table overleaf). Mechanical maintenance is minimal, but should not be neglected. Klargester offers a range of maintenance packages to support a long and trouble free service life. The end user is invited to register for a free service during the first year.

## GREASE SEPARATION

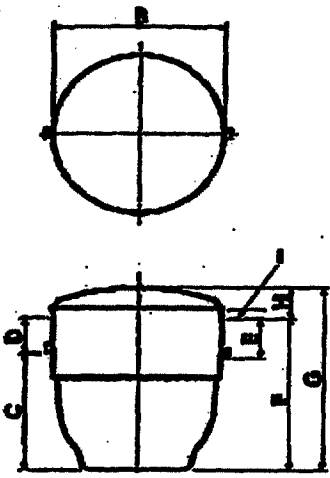
Klargester offer a range of grease traps and separators. These are required on sites with commercial catering facilities, to prevent excessive concentrations of fats, oils and greases interfering with the biological processes within the BioDisc.

## SMALL CHAMBERS

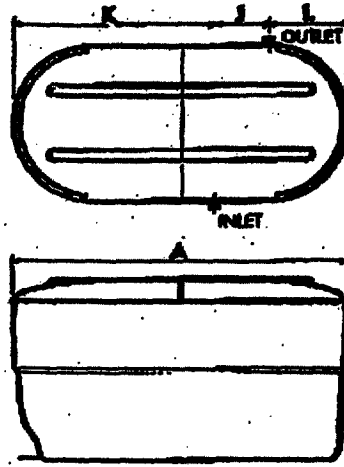
Pre-fabricated sample chambers are available to meet Environment Agency requirements.



BA - BC BIODISCS



BD - BG BIODISCS

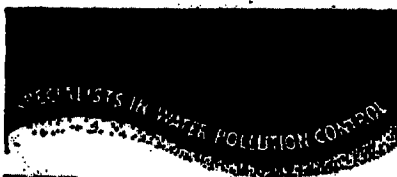


NOTE: Refer to detailed customer drawing for full dimensional data.

**SINGLE-PIECE BIODISC SPECIFICATION BA-BG (Carbonaceous)**

The sizing of Sewage Treatment Plant requires specialised knowledge and experience. Please consult Klargester for an assessment of your application

UNIT SIZE	BA 1 House	BB 2 Houses	BC 3-4 Houses	BD -	BE -	BF -	BG -
Max BOD (kg) per day	0.36	0.72	1.08	1.5	2.1	3.0	4.2
Max NH <sub>4</sub> N (kg) per day	0.048	0.096	0.144	0.2	0.28	0.4	0.56
Design Flow Rate - DWF (m <sup>3</sup> /day)	1.2	2.4	3.6	5	7	10	14
Peak Flow Rate (m <sup>3</sup> /hr) (½ hr/2 hr period)	0.15	0.30	0.45	0.63	0.88	1.25	1.75
A Length mm	-	-	-	3340	3340	4345	5235
B Width mm	1995	1995	2450	2450	2450	2450	2450
C Below Inlet Depth mm	1400	1400	1820	1825	1825	1820	1820
D Inlet Invert Depth -							
Shallow Invert	450	450	-	-	-	-	-
Standard Invert	750	750	600	600	600	600	600
Deep Invert	1250	1250	1100	1100	1100	-	-
E Outlet Invert Depth -							
Shallow Invert	535	535	-	-	-	-	-
Standard Invert	835	835	685	685	685	700	700
Deep Invert	1335	1335	1185	1185	1185	-	-
F Depth Below G.L. -							
Shallow Invert	1850	1850	-	-	-	-	-
Standard Invert	2150	2150	2420	2425	2425	2420	2420
Deep Invert	2650	2650	2920	2925	2925	-	-
G Overall Height -							
Shallow Invert	2160	2160	-	-	-	-	-
Standard Invert	2460	2460	2825	2830	2830	2825	2825
Deep Invert	2960	2960	3325	3330	3330	-	-
H Height Above Ground Level	310	310	405	405	405	405	405
I Ground Clearance	95	95	65	65	65	65	65
J Drain Offset	-	-	-	855	855	1070	890
K Inlet Position	-	-	-	1225	1225	2170	3120
L Outlet Position	-	-	-	1280	1370	1105	1225
Desludge Period (approx)	12 months	6 months	7 months	6 months	4 months	4 months	4 months
Motor Rating 1phase/3phase (Watts)	60	60	75/60	75/60	75/90	120	180
Full load current 1 phase (Amps)	0.51	0.51	1.00	1.00	1.00	1.30	1.57
Full load current 3 phase (Amps)	0.22	0.22	0.34	0.34	0.43	0.46	0.67
Weight (kg) -							
Shallow Invert	310	335	-	-	-	-	-
Standard Invert	325	350	650	1100	1200	1315	1660
Deep Invert	380	405	750	1200	1300	-	-



**Klargester**

**JOHN MOLLOY ENGINEERING**

8, Willowfield Park,  
Goatstown,  
Dublin 14.

Tel: 01 - 298 9188

Fax: 01 - 298 7421

E-mail: molloyeng@eircom.net

