

# BioDisc® BH-BL

High Performance Package Sewage Treatment Plants for Residential, Business & Leisure Applications



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**Klargester**

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**BioDisc® utilises proven rotating biological contactor (RBC) technology, a system that Klargester has been using with great success for a number of years.**

**This new range of larger BioDisc® treatment plants now enables Klargester to offer solutions against a much wider range of applications. All Klargester treatment plants are delivered direct to site and ready to install. The process is self establishing, and does not require the addition of cultures or chemicals.**

**Improving environmental standards, more stringent controls, new European guidelines and the introduction of new Building Regulations have placed greater onus upon specifiers and users to ensure they select the correct treatment system for their application. Klargester BioDisc® treatment plants have been designed to provide an engineered package solution to meet a wide range of applications and discharge qualities.**

## Consistent Performance & Effluent Quality

Waste water from residential, business and leisure properties will contain chemical contaminants from cleaning and washing products. The presence of these chemicals inhibits the development of beneficial bacteria and will result in poor effluent quality.

The volume and strength of waste water will also be highly variable. All treatment plants work best when flows and biological loads are consistent. The Klargester BioDisc® includes a patented flow management (KPFM) device which solves these problems.

### Klargester Patented Flow Management:

- provides flow and biological load balancing
- in the event of power failure, KPFM can allow for 6 hours retention of waste water within the plant
- smoothes out biological load variations in waste water by the use of a pre-treating rotor area that improves the waste water quality within the primary tank
- the hydraulic separation of the primary zone from the biozone using the KPFM, ensures all the waste water is fully treated without bypassing, a symptom often associated with systems that rely on pumps or compressors

## Process Design

Klargester BioDisc® uniquely provides four separate and discrete treatment zones within a single vessel.

**Primary Settlement Section ①:** Waste water enters the primary chamber. Solids and heavy particles, including non-biodegradable items, settle and consolidate into a sludge which requires periodic removal. Liquid still containing some solid particles rises upwards into the

**Primary Biozone ②:** Discs in this area, rotating at approximately two revolutions per minute, allow oxygen to be absorbed into the developing biofilm as naturally occurring bacteria attach to the discs.

These discs provide a highly beneficial pre-treatment area in which robust biofilm develops. This biofilm is capable of dealing with the variable strength waste which includes harmful contaminants. The strength of the sewage is thus stabilised as it enters the next zone.

**Flow Management Device ③:** Forward flow is controlled by a baling device attached to the rotor assembly and a pre-determined volume of partially treated waste is transferred across a watertight baffle with each revolution of the disc into the secondary disc zone. Incoming flows in excess of the baling device capacity stay in the primary area and it is this that creates hydraulic balancing within the plant. Zones 1 and 2 (as above) between them have a balancing capacity equal to approximately 25% of the design flow of the plant and it is this feature that can allow the plant to retain six hours flow in the event of a power failure. **This is now a requirement under the latest Building Regulations Part H2.**

**Secondary Disc Zone ④:** Flows entering this zone via the flow management device are exposed to a second and separate bank of discs on which grow a further matrix of bacteria. The effluent, now modified by pretreatment, provides an environment in which more fragile bacteria develop. Protected from flow variation and harmful contaminants, the bacteria efficiently use the nutrients in the effluent as a food source. The disc area is rapidly colonised by as many bacteria as the nutrients will support thus providing full consistent treatment.

The rotation of the discs creates a gentle flow path within both disc zones that moves waste water along the zone and rotation also sloughs ageing or surplus bacteria from the discs creating space for new bacteria to develop.

A key benefit of BioDisc® is that the whole surface area is continually regenerated with new biological growth and that there is constant replenishment as all spent bacteria are flushed into the final settlement zone.

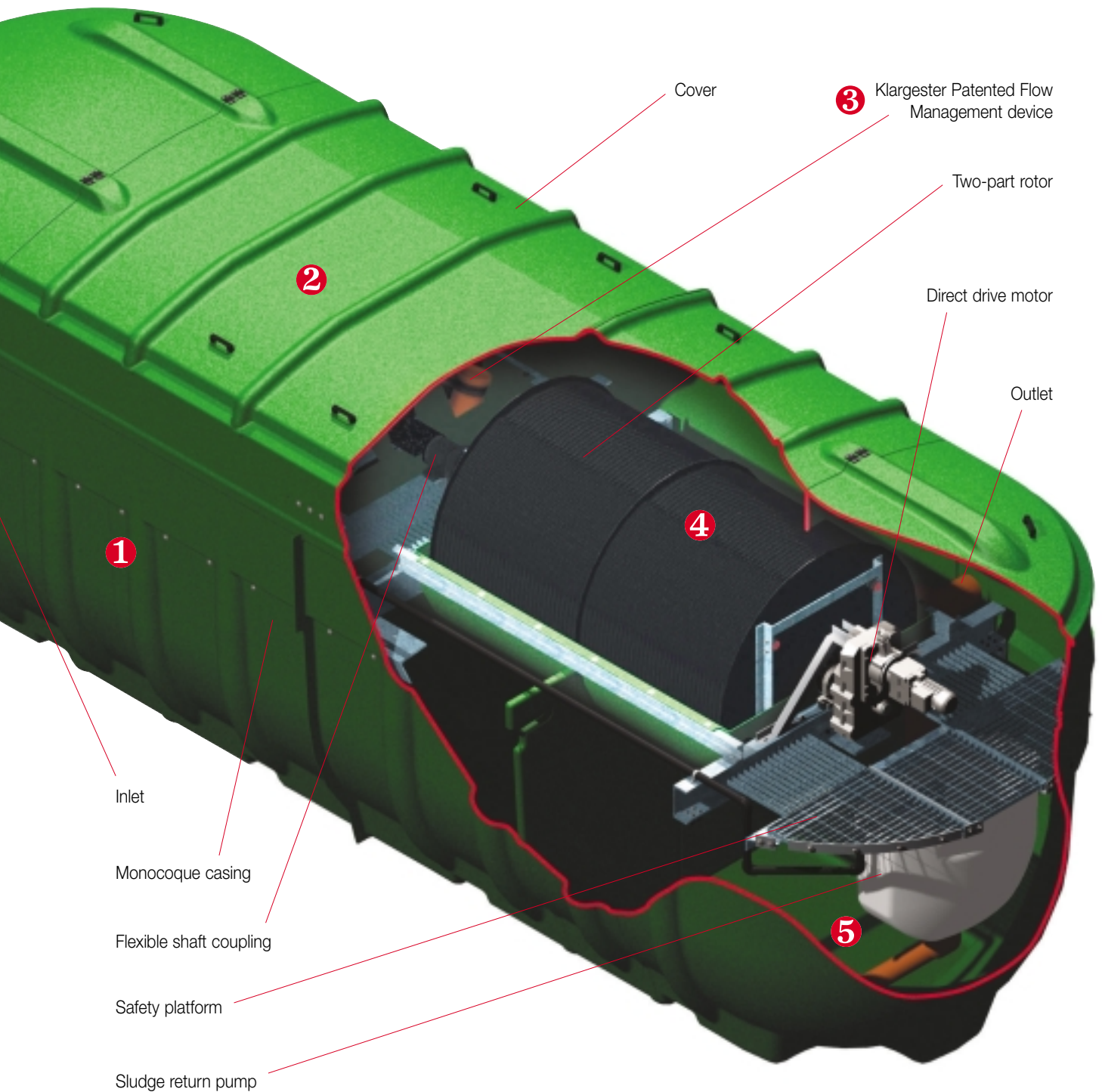
It is often the case with submerged or fixed media treatment processes, that the biological zones become clogged with dead or excessive biological growth, inhibiting treatment and demanding expensive and dirty maintenance.

**Final Settlement Zone ⑤:** The almost fully treated effluent, is displaced from the disc area into the final settlement zone. Within the final settlement zone, the shed biofilm is directed to settle towards the base of the tank. Following an upward flow pattern, the liquid effluent, free from solids and pollutants, exits the plant through a protected outlet pipe. The final settlement zone is fitted with a simple sludge return pump that transfers the settled material from the base of this zone into the primary settlement zone. This improves process performance by protecting the outlet and returning dilute and active biomass into the primary tank. This feature can be modified for seasonal flow variations.



## Process Features

- Klargest Patent Flow Management (KPFM)
- No process maintenance required
- Simple mechanics
- Self generating bacteriological process
- KPFM provides the capability to adjust plant performance
- Compliance with BS 6297 and Building Regulations Part H2
- Low head loss
- Sludge return pump in final settlement tank to enhance performance. Sludge return can be configured to help overcome seasonal flow variations
- No odour, fly or environmental nuisance
- Silent in operation



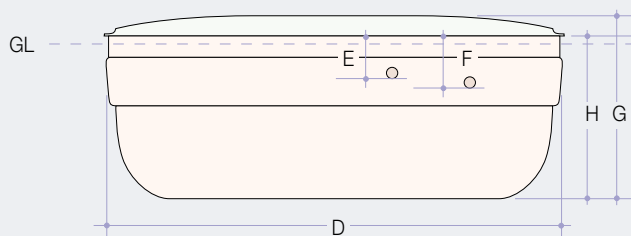
### Consistent Effluent Quality

These plant are designed to achieve an effluent quality of 20mg/l BOD, 30mg/l Suspended Solids and 20mg/l Ammonia on a 95% basis. These new BioDisc® can also be configured to produce better standards of effluent quality with Ammonia levels as low as 5mg/l being achievable. Contact Klargester for design support and further information.

- The systems are designed to deal with flows up to 3xDWF. For applications where flows may exceed this, and in particular where there is surface water infiltration, please consult Klargester

- Applications where commercial catering takes place will generate significant volumes of grease which should not be allowed to enter any treatment system
- Klargester manufacture a wide range of grease traps and their specialist advice should be sought in these types of applications
- The treatment of sewage from applications other than domestic housing can often demand special precautions, therefore specialist advice should be sought from Klargester

### Standard BioDisc® Single Piece System



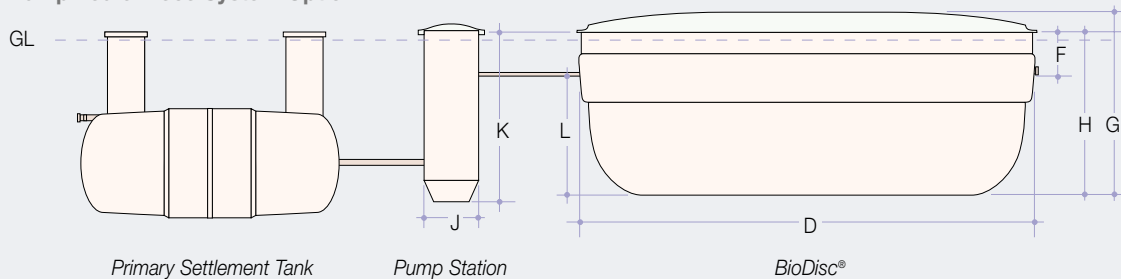
Note: Illustrations are schematic, do not use them for installation. Refer to customer drawings for true pipework orientation.

The loadings given in the chart below are representative of typical domestic housing applications. The sizing of sewage treatment plant requires specialised knowledge and experience. Please consult Klargester for an assessment of your application.

G.L. = Ground Level

PST Inlet Invert Options: 600mm, 1100mm and 1500mm

### Pump Fed 3 Piece System Option



Unit Size	BH	BJ	BK	BL
Maximum Daily BOD (kg)	4.5	6.0	7.5	9.0
Maximum Daily Flow (m <sup>3</sup> )	15	20	25	30

### Primary Settlement Tank & Pump Stations

Please refer to Klargester for specialist advice for applications where primary settlement tanks or pump stations may be required.

BioDisc®	BH	BJ	BK	BL
D Length (mm)	7755	7755	7755	7755
Width (mm)	2455	2455	2455	2455
E Inlet Invert depth (mm)	600	600	600	600
L Depth below inlet invert (mm)	1790	1790	1790	1790
F Outlet Invert Depth (mm)	750	750	750	750
G Overall Height (mm)	2830	2830	2830	2830
H Height to rim of cover (mm)	2500	2500	2500	2500
Empty Weight (kg)	3000	3100	3200	3300
Standard Power Supply	3 phase	3 phase	3 phase	3 phase
Optional Power Supply	1 phase	1 phase	1 phase	1 phase
Motor Rating - 1phase/3phase (watts)	250	250	370	370
Full load current 1 phase (amps)	1.95	1.95	2.35	2.35
Full load current 3 phase (amps)	0.88	0.88	1.35	1.35
Sludge Return Pump Rating (watts)	250	250	250	250

## Safety Features

- Low profile lockable covers
- Fully removable covers to ease maintenance, simplify de-sludging and provide a safe working environment **without the need for restricted access provision** a requirement of the Confined Spaces Regulations 1997
- Full platform access to motor and bearings
- Secure lockable control panel
- Integrated loss of rotation alarm

## Low Operating Cost

BioDisc® has proven track record for high quality performance, reliability and low operational costs and the new range incorporates features that further enhance that reputation:

- designed to run from either a single phase or 3 phase power source
- **require only 250 or 370 watt motors, offering lowest running costs of any plant in their class**

## Control Panel

The plant are supplied with a three phase direct drive motor, come complete with a control panel and feature:

- inversion device included within the panel
- single phase power supply to the panel converted within the panel to three phase prior to connection to the drive motor

## Direct Drive

The disc assembly rotates through the sewage effluent and supports the growth of a biological matrix. When fully loaded with saturated bacteria the disc assembly becomes heavy, therefore both drive and rotor design are critical. Klargester have many years experience in this field and these new products provide a number of new features:

- direct drive motor which is fixed directly to the disc shaft
- no requirement for chain or belt drive
- reduced and simplified maintenance

## Two-Part Shaft

A two-part shaft has been incorporated to simplify maintenance and reduce bearing wear. The new Klargester two-part shaft assembly:

- supports the rotor in four places rather than two
- significantly reduces the load and wear on the shaft and bearings
- features bearings selected for long life
- features bearings fitted with automatic grease capsules that only require annual replacement
- simplifies installation by reducing potential drive alignment and bearing wear problems sometimes associated with long single shaft motors
- provides performance upgrade options

## Rotor Design

New range includes the well established Klargester foil rotor design which:

- is compact and structurally sound
- is designed and built for long life without the need for rotor maintenance often associated with sectional bolted rotor assemblies

## Monocoque Casing

All four BioDisc® in this range utilise the same casing, providing:

- lightweight, yet robust and structurally strong GRP construction for easy on-site handling
- steel cradle integrated into the casing provides stable platform for mechanical components
- factory pre-engineered to exacting Klargester standards, ensuring consistent high quality and eliminating on-site assembly
- full length ports providing quick and easy access for desludging
- 600mm invert depth, with only 150mm head loss through the plant
- variable desludging/emptying cycles



# Klargester Off-Mains Solutions

- BioDisc® Sewage Treatment Plants
- AirFlow Sewage Treatment Plants
- Sigma Sewage Treatment Plants
- HillMaster Package Pump Systems
- Septic Tanks
- Cesspools
- Grease & Silt Traps
- Oil/Water Separators
- Silage Effluent Tanks
- Reed Beds
- Rainwater Harvesting
- Garden Watering Systems



## Certified Installers

Strategically located throughout the UK, Klargester Certified Installers are appointed following rigorous selection procedures which assess their installation expertise, reputation and financial status.

These performance criteria, together with their design skills and knowledge of Klargester products are also reviewed on an annual basis to ensure that the highest levels of professionalism are maintained.

## Klargester Service

Klargester have a dedicated service division providing maintenance for waste water treatment products. Factory trained engineers are available for site visits as part of a planned maintenance contact or on an 'on-call' basis.

*In keeping with Company policy of continuing research and development and in order to offer our clients the most advanced products, Klargester reserves the right to alter specifications and drawings without prior notice.*



## Klargester Support

Sizing biological treatment plants requires specialist knowledge. Klargester are here to help. We offer the benefit of over 35 years experience free to customers through our Applications Engineers.

## Free Site Visit

To help determine your exact requirements, Klargester offer free site visit support from our team of specialist Area Managers. Please call, fax or click for more information.



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