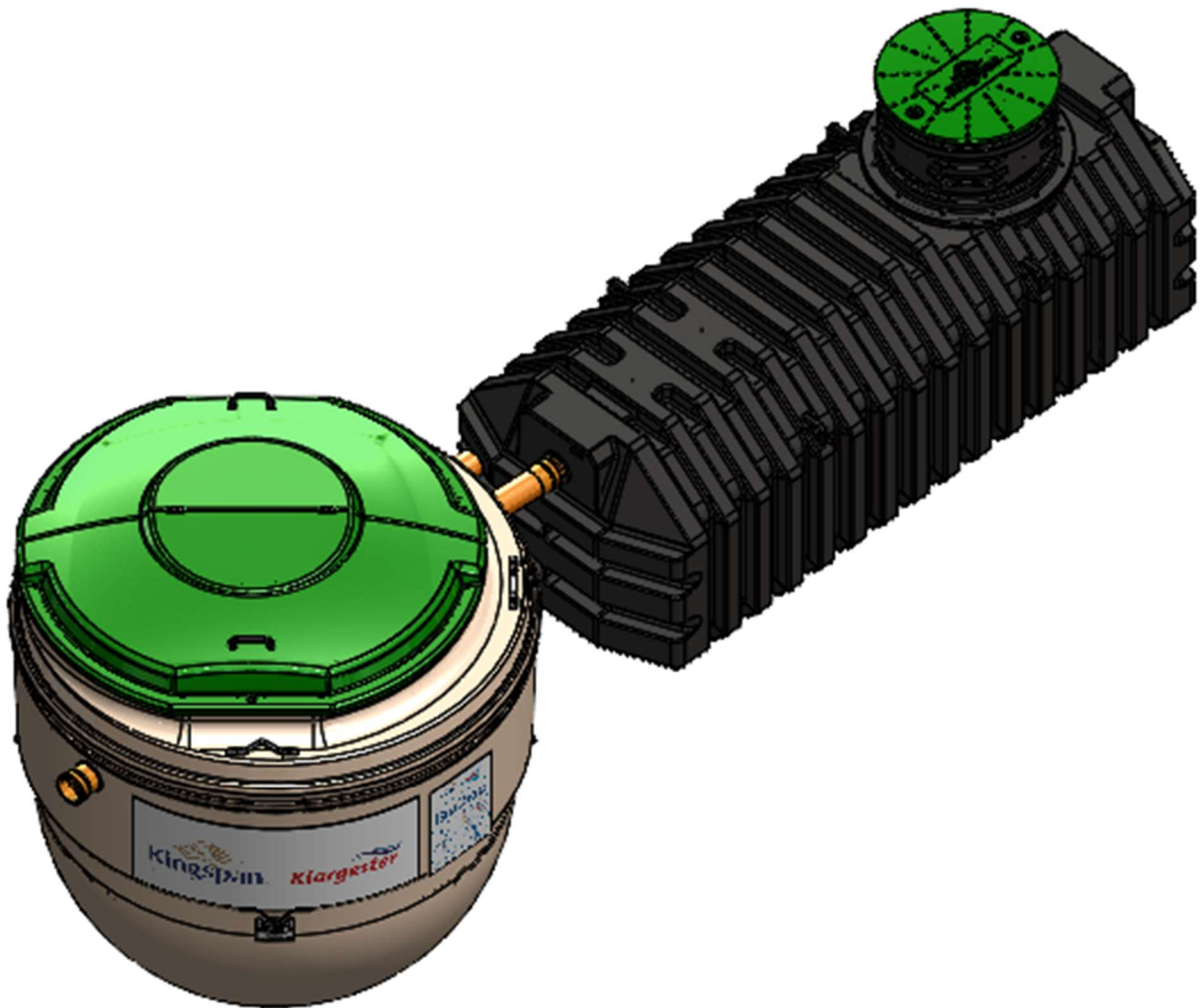


BioDisc® & BioTreat Installation Manual



Part Code	Issue	Description	Date
1012579	03	ECN 2060	Feb 2024

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HEALTH & SAFETY

Please read and follow for your own and others safety

You must read these warnings carefully before installing or using the equipment. Please ensure that you have performed a risk assessment before commencing any installation. Note that the risk assessment should be performed by a person who understands the hazards of the work, and the work environment. Note that it must be *suitable and sufficient*, i.e. adequately considers risks and ensures controls in place to mitigate risks.



You must observe all-hazard labels and take appropriate action to avoid exposure to the risks indicated. Always ensure that all relevant documents are supplied with the equipment when being transferred to a new owner.

General guidelines

- Only experienced and competent person(s) should carry out the installation.
- The unit must have a *Pre-Service Agreement Inspection* by an approved engineer.
- Take care to maintain correct posture, particularly when lifting.
- Use appropriate lifting equipment when necessary.
- A qualified electrician should carry out electrical work deemed necessary.
- The covers must be kept locked.



Personal Protective Equipment (PPE)

- We recommend the use of a dust mask and gloves when cutting GRP components.
- Person(s) carrying out maintenance on the equipment should wear suitable PPE.



Maintenance and Inspection Procedures

If you wish to inspect the equipment's operation, please observe all necessary precautions as stated in your risk assessment; including those listed below.

- The power supply must be isolated at the control panel(s) before lifting the covers.
- If the equipment should run with the covers off, care must be taken to avoid contact with moving parts and electrical components or conductors.
- Once the power has been isolated, the control panel must be kept locked shut to avoid accidental reconnection while work or inspection is being carried out.

Working Area

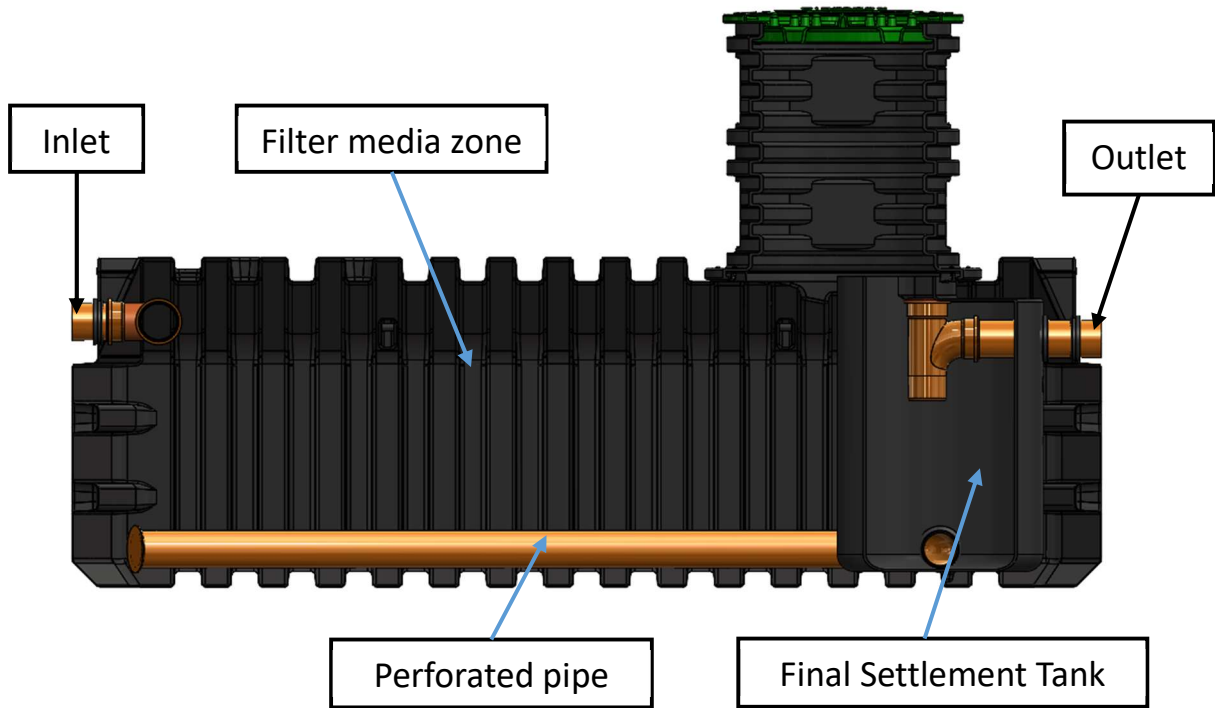
- Ensure that the working area is adequately lit.
- Ensure that you are familiar with the safe working areas and its access and egress.
- Use only the designated access walkways.
- Do not walk on the cover or deep well safety mesh(es).
- Always keep proper footing and your balance, avoid any sharp edges, or restricted points.

Desludging

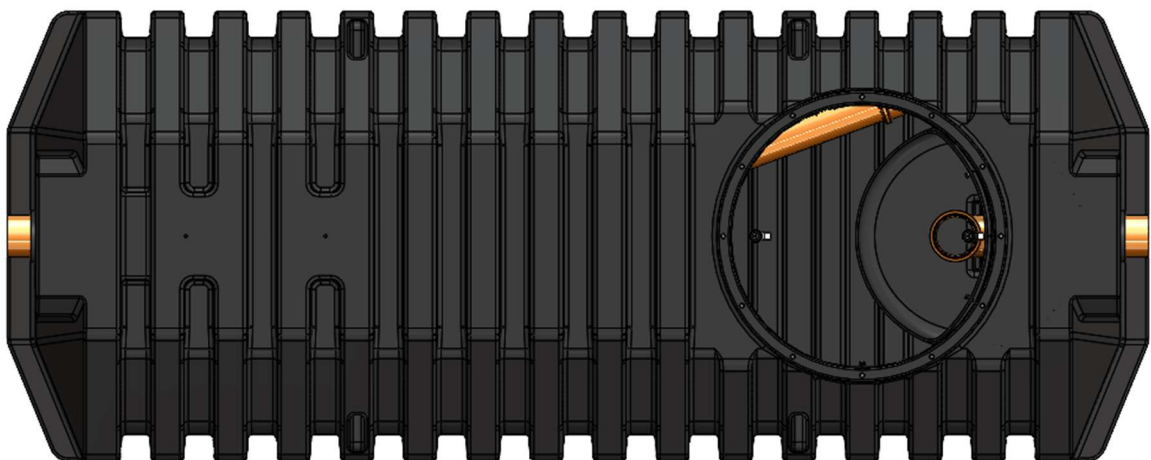
- Desludging should be carried out by a licensed waste disposal contractor holding the relevant permits to transport and dispose of sewage sludge in your region/area.

SYSTEM OVERVIEW

Pictorial representation below indicates basic requirements for BioTreat .



BioTreat Top View

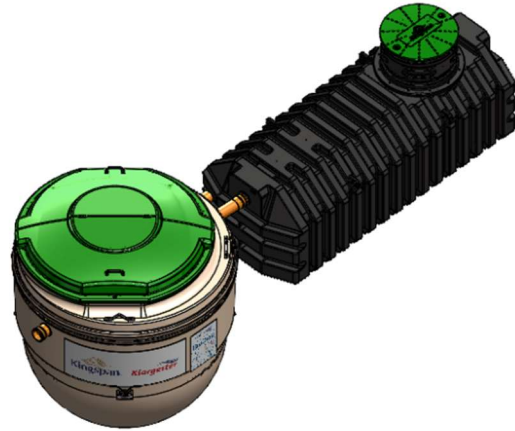


BioDisc® & BioTreat CHECKLIST

BioDisc & BioTreat

1. The units will be fitted complete with internal pipework and equipment.
2. BioDisc items should be as per checklist on BioDisc installation manual.
3. Individual unit pipework will be fitted.
4. BioDisc unit supplied strapped to a standard pallet.
5. Unit overall heights are as follows:

Unit	BioDisc Inlet Invert (mm)	Height (mm)
BioDisc	450	2170
	750	2470
	1250	2970
BioTreat	600	1320
	960	1680



If any items are missing, Kingspan must be alerted within three days of delivery.

INSTALLATION

General

- Our domestic treatment plant are structurally tested in accordance with EN 12566-3, which specifies structural stability testing for both wet and dry sites using granular backfill 3-8mm. However, in GB it would be typical for tanks to be installed in concrete due to rising water table, and it can generally be assumed that buoyancy prevention of concrete backfill is more advantageous than the granular backfill materials used in testing.
- For cases where more than one BioTreat module is required, position the BioTreat(s) so that there is a fall of at least 100mm. between each module.
- During installation, care must be taken to ensure the body of the unit is uniformly supported to avoid point loads on the unit.
- A water supply must be available on site to enable the unit to be ballasted during backfilling.
- When units are installed in unstable ground conditions where movement of the surrounding material and/or unit may occur, the connecting pipework must be designed to minimise the risk of damage from differential movement of the unit(s) and/or surrounding material.
- In situations where the excavation will not maintain a vertical wall, it will be necessary to support side walls of the excavation (E.g. with suitable trench sheets and bracing systems) from the bottom to the top. DO NOT completely remove the shoring system until after the backfilling is complete, but before the concrete fully hardens.
- If there is a risk of a high water table or of the site flooding, a structural design by a suitable specialist will be required to hold the tank in place.
- In areas where the water table is above the bottom of the excavation and/or the excavation is liable to flood, the excavation must be de-watered, using suitable pumping equipment, until the installation is complete. Ensure that the pump discharge does not saturate the ground in the

immediate vicinity. In such conditions it may be advisable to line the excavation with polythene sheeting, to prevent cement being washed out of the concrete surround/base.

- Concrete Specification below is a *general* specification. It is not a site-specific installation design.

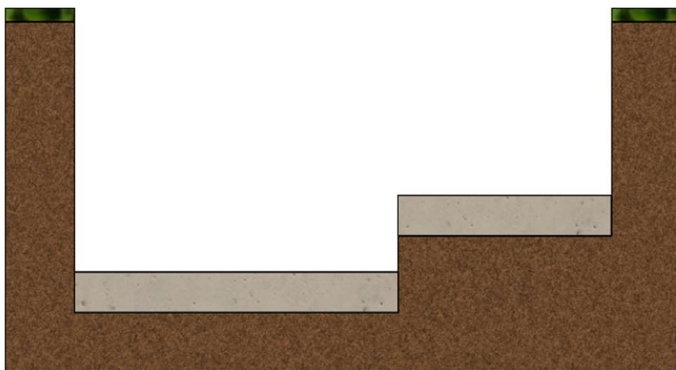
GENERAL CONCRETE SPECIFICATION IN ACCORDANCE WITH BS EN 206-1 (BS 8500-1)	
TYPE OF MIX	(DC) DESIGN
PERMITTED TYPE OF CEMENT	BS 12 (OPC); BS 12 (RHPC); BS 4027 (SRPC)
PERMITTED TYPE OF AGGREGATE (coarse & fine)	BS 882
NOMINAL MAXIMUM SIZE OF AGGREGATE	20 mm
GRADES:	REINFORCED & ABOVE GROUND WITH HOLDING DOWN BOLTS
C25 /30	REINFORCED (EG. FOR HIGH WATER TABLE)
C25 /30	UNREINFORCED (NORMAL CONDITIONS)
C16 /20	
MINIMUM CEMENT CONTENT:	270 - 280 Kg/M3 220 - 230 Kg/M3
C30 C20	
SLUMP CLASS	S1 (25mm)
RATE OF SAMPLING	READY MIX CONCRETE SHOULD BE SUPPLIED COMPLETE WITH APPROPRIATE DELIVERY TICKET IN ACCORDANCE WITH BS EN 12350-1
NOTE: STANDARD MIXES SHOULD NOT BE USED WHERE SULPHATES OR OTHER AGGRESSIVE CHEMICALS EXIST IN GROUND WATER	

1. Excavate Hole & Lay Concrete Bed

- Approximate dimensions of units:

Unit	Inlet Invert Depth (mm)	Diameter (mm)	Length (mm)	Base to Ground Level (mm)	Internal Volumes of Unit (L)	
					Base to Outlet	Outlet to Ground Level
BioDisc	450	1995		1995	3000	3000
	750	1995		2245	3000	4750
	1250	1995		2745	3000	7500
BioTreat	600	1180	3000	1320	2100	700
	960	1180	3000	1680	2100	840

- Excavate a stepped hole with clearance on all sides and base of the units of 150 – 200 mm, depending on site conditions.
- If shuttering is required to maintain a vertical wall, increase the width of the excavation to accommodate.
- If the excavation has an unstable base, excavate an additional 250 – 300 mm and fill with compacted hard-core.
- If water is present in the excavation, de-water using suitable pumping equipment. Place a sheet of polythene over the base and up the sides of the excavation before creating the concrete slab.
- The four anchor bars must be assembled and attached to the tank as shown.
- A minimum base of 150 – 200 mm of lean mix concrete is required for all ground conditions. The installer must ensure that the base is adequate to support the weight of the tanks and their contents.
- It is recommended to backfill with C25 SEMI-DRY MIX.



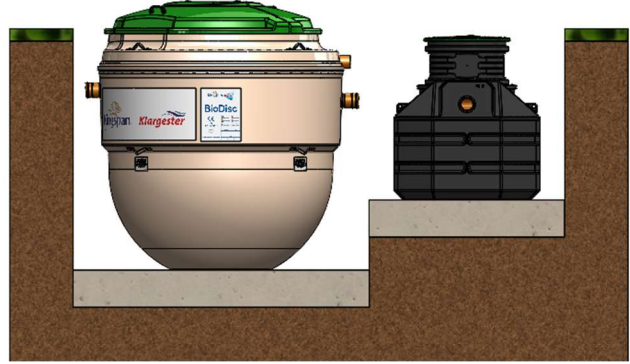
2. Lower Units onto Concrete & Ensure Level

- Approximate weights of units in kilograms, depending on inlet invert:

Inlet Invert (mm)	NA (kg)	NAx (kg)	NB (kg)	TTM1 (kg)
450	310	335	360	
750	325	350	375	
1250	380	405	430	
600				177
960				189

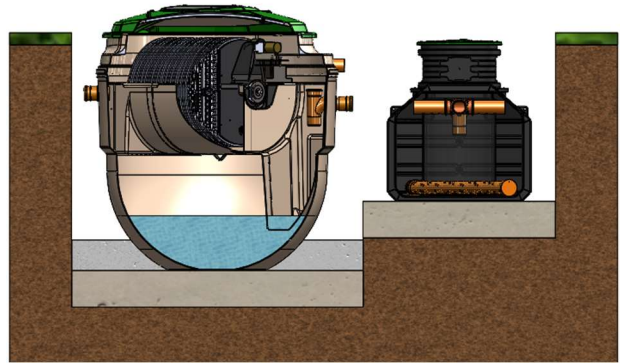
- Lower the tanks into the hole. A suitable spreader bar must be used with lifting slings located through the lifting points provided on the tank.
- The slings must not be attached to the inlet or the outlet pipe.
- Tank must not be lifted with any water inside.
- Check the **Inlet** and **Outlet** pipe orientation is correct.

- Check the unit is levelled. The rotor shaft must be level end to end, to within $\pm 3\text{mm}$, measured at the bearing caps or directly on the shaft. The unit must also be level to within $\pm 5\text{mm}$ from side to side, measured at the GRP platform on either side of the rotor.
- Check the BioDisc rotates freely with no clashes before turning on to ensure no damage occurred during transit.



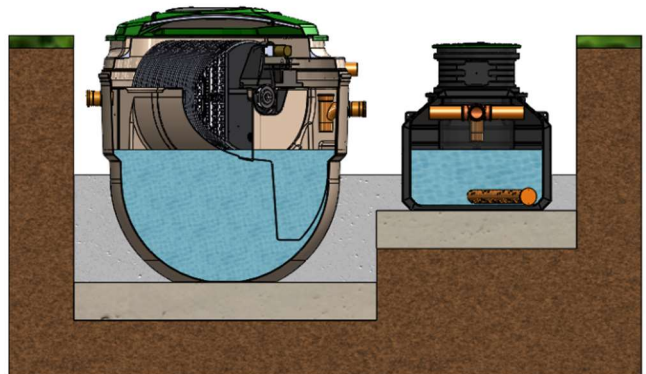
3. Backfill the Units

- The backfilling must start before the base has hardened and must be a single continuous operation, so the tanks have a full concrete jacket without joins.
- The backfill must be free from organic material, large stones, brick or sharp objects.
- Backfilling must be carried out in layers, making sure that voids are not left under or around the sides of the tanks and there are no localised stress concentrations.
- The installer must progressively fill the tanks via a hose while keeping the water level 300 mm above the backfill to stabilise pressures on the tanks. If the pressures are not stable the tanks can become distorted and damaged.



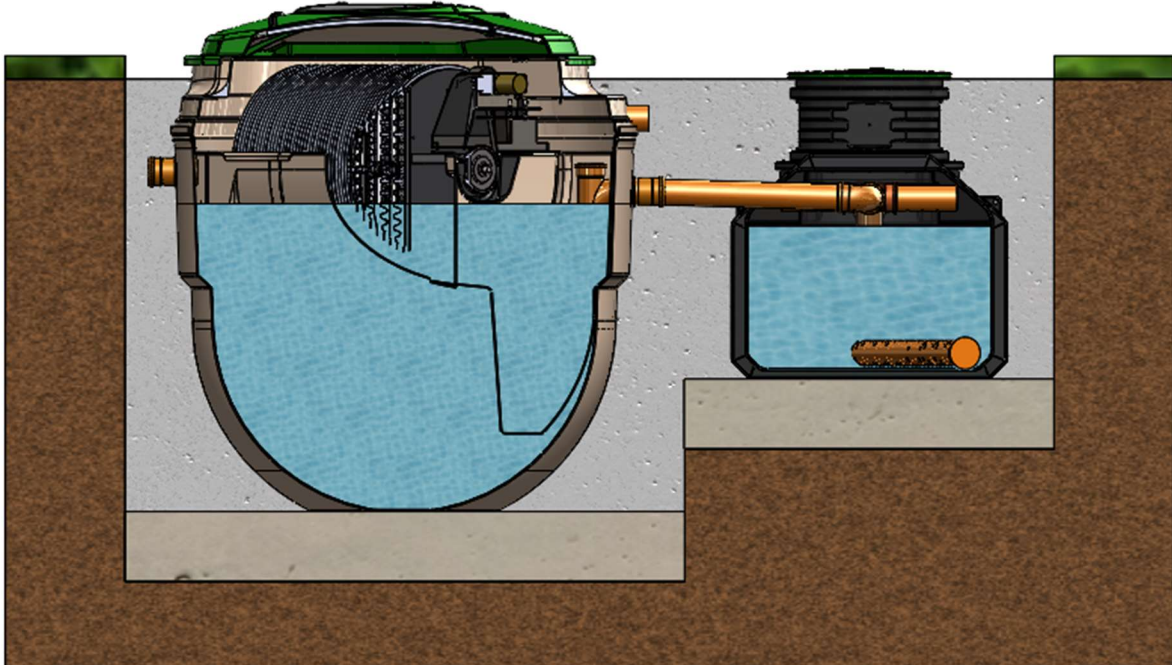
4. Second Backfill Stage

- Continue to fill the tanks with water and backfill evenly around the tanks, consolidating in 300 mm layers.
- DO NOT use vibrating pokers to consolidate concrete.
- DO NOT discharge concrete directly on to the tank.
- Ensure that the concrete is not too wet and that is tamped in around the tank.
- Continue until just below inlet and outlet pipework.
- Remove covers and connect inlet and outlet pipework.



5. Final Stage

- Ensure BioDisc is connected to control panel as per BioDisc Installation manual.
- Continue to concrete backfill up to the lip of the covers.
- Once the units have been installed, they must be left filled with water.



Granular Material Specification

- Granular fill material shall be that of the specification sheet attached on Page 14 and this will be supplied with the BioTreat module(s).
- The media volume required for each BioTreat module size is specified in the relevant sales drawing.

BioDisc Installation

Refer to BioDisc installation manual for details on electrical and other components installation.

BioTreat Maintenance

- The BioTreat service, where required, should be carried out in tandem with the wastewater treatment plant service. This is to be completed by the tankering company. There may be the requirement to jet wash the media to remove solids and silt that may have built up over time (the frequency of this depends on site loading).
- After completing the jet wash procedure, desludge the FST of the BioTreat module(s).
- The maintenance frequencies in the table below are those which can be anticipated under full loading. If the system is not loaded to full capacity, the maintenance period may be adjusted, but it is essential that the build-up of silt and solids is not allowed to accumulate to the detriment of the treatment module.

Wastewater Treatment Plant PE	BioTreat Module(s)	Maintenance Interval Period	Model
6	1	Dependent on loading and discharge consent	TTM1
9	1		
12	1		
18	2		
25	2		
35	3		
50	4		

- After many years of service, it may be necessary to replace the granular media. This will be dictated by the effluent quality required.

WARRANTY

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.

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 manual is a **Notice**, describing the necessary maintenance for the plant. This should be fixed within the building.

For any further advice, please contact our Service & Warranty department on +44 (0) 844 225 2785. It would be helpful if you provide your equipment serial number.



Extended warranty for your **Klargester** treatment plant explained

Enjoy an extended warranty period for your Kingspan Klargester sewage treatment plant. In this document, we have outlined the benefits and terms associated with your extended warranty period.

For further enquiries, please contact our Kingspan Service team on:

 helpingyou@kingspan.com

 0333 240 6868 (NI 028 3836 4600 | ROI 0818 543 500)

 kingspanservice.com

How to activate your extended warranty

Register your domestic BioDisc treatment plant online at: www.kingspan.co.uk/klargesterguarantee

Product	Warranty	Exceptions	
		Control Panel	Pumps
BioDisc BA-BB	7 Years	2 Years	2 Years
BioDisc BC-BN	5 Years		2 Years
BioAir Premium	5 Years	2 Years	2 Years
BioAir Economy	1 Year		

Benefits of your extended warranty

Upon activating your extended warranty for your Kingspan Klargester treatment plant, you will benefit from:



Replacement parts if required for your system (fair wear and tear only).



Free expert technical support from our Kingspan Service team.



Remain fully compliant with local DEFRA/Environment Agency regulations.



Peace of mind with no disruption or downtime needed for maintenance or repairs.

Terms of your extended warranty

To ensure your extended warranty is valid, please adhere to the following terms:

- Registration of extended warranty must be made within 3 months of date of dispatch.
- To activate your extended warranty, you must register online at kingspan.co.uk/klargesterguarantee
- Your Kingspan Klargester plant must be commissioned by a suitably qualified professional, either a Kingspan Service engineer or Kingspan Klargester accredited installer & service partner.
- You must arrange to have a full service of your plant within 12 months of date of dispatch. Contact our Kingspan Service team on: helpingyou@kingspan.com to arrange a suitable date.
- Your Kingspan Klargester treatment plant must be serviced in accordance with the manufacturing guidelines, as some tanks will need more than one service.
- Any repair work carried out under the terms of the extended warranty contract will be guaranteed for a period of 28 days unless the original repair works were necessitated by reason of abuse or misuse of the system (in which case any all repair works will be chargeable).
- Your Kingspan Klargester treatment plant must be tankered as per manufacturing guidelines by an accredited company.
- The extended warranty will be invalidated if you do not give us a reasonable opportunity to inspect the goods and the system to confirm the cause of the problem which you have encountered with it.
- The warranty will be invalidated if you abuse and/or misuse the goods and/or the system.
- The warranty set out above will be invalidated if you use the goods and/or the system in any way which is inconsistent with any of the following:
 - (a) any specific instruction given to you by us;
 - (b) the manufacturer's guidelines; or
 - (c) any operating instructions.
- The warranty set out above will be invalidated if you fail to notify us in writing of the defect or failure in the goods or system within 14 days of your discovery of the defect or failure.
- We cannot take responsibility for any loss of profit, which you may suffer as a result of any failure or defect in the goods or system.
- When claiming Warranty, you must keep a record of all service and maintenance records carried out to your Kingspan Klargester plant (either by Kingspan Service and/or the approved installer & service partner).

NOTICE



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 application. Please consult your Operation & Maintenance Manual.

- * A NA BioDisc requires annual maintenance and desludging.
- * A NAX BioDisc requires annual maintenance and desludging at 9 month intervals.
- * A NB BioDisc requires annual maintenance and desludging at 6 month intervals.

Refer to owner's manual for information on desludging points.

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 Service NI on 028 383 64600 or Service Department Ireland on 0818 543 500 to arrange a maintenance service or to request replacement operating instructions. It would be helpful if you provide your equipment serial number.



Argex NV
 Kruibeekesteenweg 162
 2070 Burcht

Technical Sheet 2021
 from 1/07/2021 to 31/12/2021

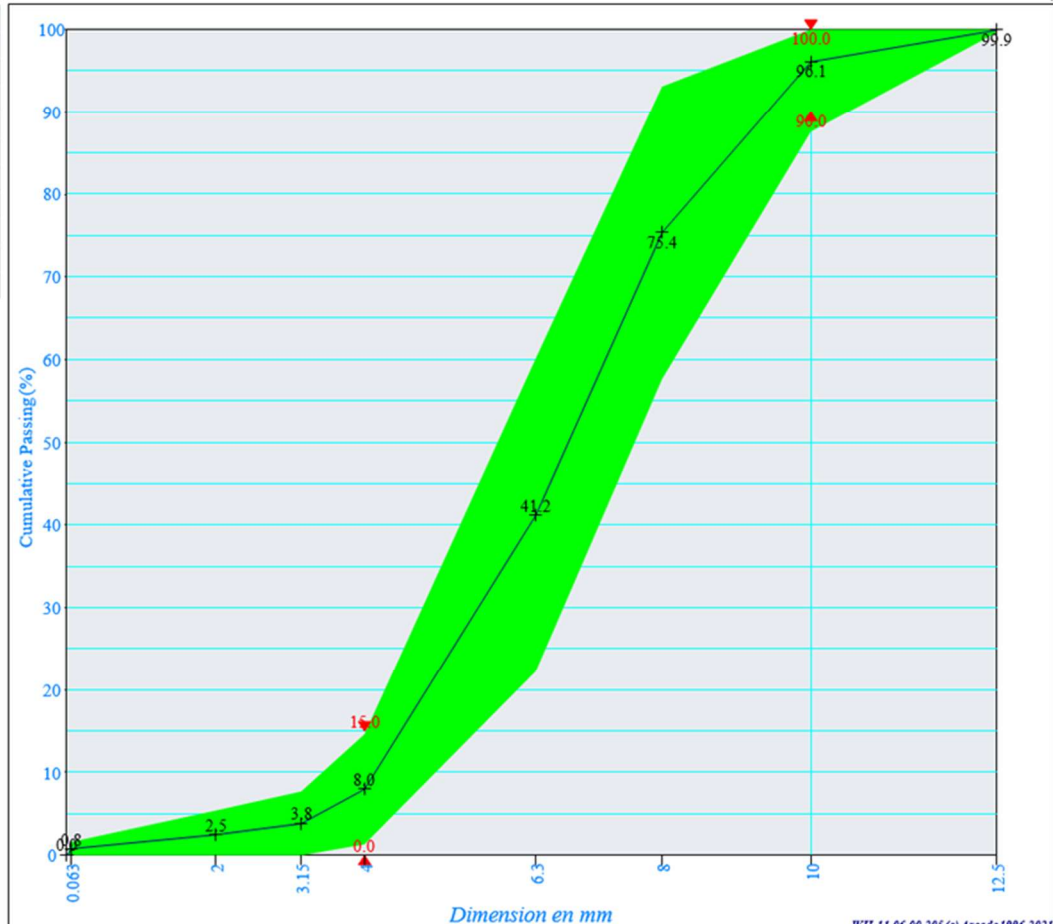
AR 4/10-430 - GEO

Client : Quality Control Argex
 0032/32.50.15.15

lab	Quality Control Argex 0032/32.50.15.15
Aggregate Size	4/10 mm
Certifications	EN 13055 : DoP 2: EN 15732 NL BSB K73820 (1/01/2004)

Essential char. - performance	Minimum	Average	Maximum	Declared	Standard
Particle Shape		Round			EN 13055
Crushing Resistance (T-2x30")	0.80	1.96 N/mm ²	4.65		EN 13055
Loose Bulk Density (+- 15% of declared value)	366	459 kg/m ³	495	430	EN 1097-3
Freezing & Thawing Resistance		2.3 %	3.3		EN 1367-7
Water Content (from silo)	0.0	4.9 %	15.0		EN 1097-5
Water Absorption 5'	11.52	14.92 %	18.37		EN 1097-6 annex C
Water Absorption 1h	16.90	21.10 %	25.67		EN 1097-6 annex C
Water Absorption 24h	26.94	32.87 %	38.56		EN 1097-6 annex C
Water Absorption 28 days (long term water content)		45.00 %			EN 1097-6 annex C
Shear strength-static loading/Triaxial/ Angle of friction(°)	38.5	42.0	44.0	38	EN 15732
Cohesion, c'peak		0 kPa		0	EN 15732
Compressibility - C%		13.0 %			EN 1097-11
Compressive Creep (150 kPa - 24 hours) - Dry		0.08 %		0.14	EN 15732
Confined compressive strength - CS(2)		620 kPa		540	EN 1097-11
Confined compressive strength - CS(10)		1120 kPa		900	EN 1097-11
Cyclic Compression (120 kPa) after 2.000.000 cycles - Dry		3.5 %		4	EN 15732
Shear Strength-cyclic loading/Triaxial Resilient modulus	160	190 MPa	220		EN 15732
Water Permeability		2.0 cm/s		2.2	EN 15732
Water Vapor Transmission (μ)		2		2	EN 15732
Release Of Dangerous Substances		BRL 9315			NL BSB K73820
Reaction To Fire		Euroclass A1			EN 13501-1

Grading (EN 933-1)				
sieve (mm)	mini	% passing	maxi	Declared
0.000		0.0		
0.063		0.8		
2.000		2.5		
3.150		3.8		
4.000	0.0	8.0	15.0	
6.300		41		
8.000		75		
10.000	90	96	100	
12.500		100		



BIODISC NA to NF & BIOTREAT - DECLARATION OF PERFORMANCE

kingspan-klargester-biodisc-na-to-nf-&-BioTreat-dop-en-ian2024-v1

1. Unique identification code of the product-type:

**Wastewater Treatment Plant for up to 50 Population Equivalents
NA, NAx, NB, NC, ND, NE & NF BioDisc & BioTreat**

2. Type, batch or serial number or any other element allowing identification of the construction product as required under Article 11(4) of the CPR:

BioDisc & BioTreat Prefabricated Domestic Wastewater Treatment Plant: See CE marking affixed to product NA to NF & BioTreat

3. Intended use/es of the product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer:

To be used for Collection & Treatment of Wastewater from Domestic applications up to 50 Population Equivalent

4. Manufacturer name, registered trade name or registered trademark and contact address as required under Article 11(5):

**Kingspan Water & Energy Ltd
College Rd North
Aston Clinton, Aylesbury, Buckinghamshire
HP22 5EW**

5. Where applicable, name and contact address of the authorised representative whose mandate covers the tasks specified in Article 12(2):

N/A

6. System/s of assessment and verification of constancy of performance (AVCP) of the product as set out in CPR, Annex V:

3

7. In case of the declaration of performance concerning a construction product covered by a harmonised standard:

EN:12566-3:2005+A2:2013

Notified body/ bodies:

Notified Body No: 1739 + PIA Prüfinstitut für Abwassertechnik GmbH

Document date: 13/02/2024	Document version no: v1.	ECN no: 2048
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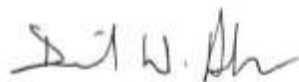
8. Declared performance/s:

Essential characteristics	Performance	Harmonised technical specification	
Structural Behaviour	Confirmed by Pit Test under the following Conditions: BioDisc - Maximum installation Depth 0m over cover level BioDisc - Wet conditions maximum water level 2.49m BioTreat - Maximum installation Depth 0m over cover level BioTreat - Wet conditions maximum water level 1.0m	EN:12566-3:2005+A2:2013	
Reaction to fire	Class E		
Water Tightness (water test)	Water Tight (water test)		
BioDisc Material Durability	Creep Factor $\alpha_{material} = 0,48$ (average value) Ageing Factor $(\beta) = 0,46$ (average value)		
BioTreat Material Durability	MFR (230/2,16) = $(4,0 \pm 3,0g)/10$ min (EN ISO 1133)		
	Density ≥ 930 kg /m ³ (EN ISO 1133)		
	Yield Stress ≥ 19 Mpa (ISO 527-2)		
	Pressure A1 = 1 (EN1778)		
	Pressure A2K = 1 (EN1778)		
Treatment Efficiency	COD		95.8%
	BOD ₅	99.2%	25 mg/l
	NH ₄ -N*	98.4%	0.6 mg/l
	SS	99.3%	2.6 mg/l
	P _{tot}	39.3%	4.3 mg/l
	TN ₀ *	69.4%	17.9 mg/l
Electrical Consumption (measured during 38-week test)	1.5 kWh/d		
Emission of Dangerous Substances	NPD		

* determined for temperatures $\geq 12^{\circ}$ C in the bioreactor

9. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 8. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.

Signed for and on behalf of the manufacturer by:



David Anderson – Water Business Unit Director

At Portadown on 13th February 2024

Document date:	Document version no:	ECN no:
13/02/2024	V1.	2048





Kingspan Water and Energy Ltd
College Road North
Aston Clinton
Aylesbury
HP22 5EW
United Kingdom

Name of Product Type		BioDisc N Range + BioTreat	
Treatment process		Rotating Biological Contactor (RBC) + Expanded Clay Filter Module	
Nominal organic daily load		0.30 kg BOD₅/d	
Nominal hydraulic daily load		0.9 m³/d	
Testing authority		PIA GmbH, NB 1739	
Treatment Efficiency	COD	95.8%	34 mg/l
	BOD₅	99.2%	2.5 mg/l
	NH₄-N	98.4%	0.6 mg/l
	SS	99.3%	2.6 mg/l
	P_{tot}	39.3%	4.3 mg/l
	TN_b*	69.4%	17.9 mg/l
Power consumption		1.5 kWh/d	

* Determined for temperatures $\geq 12^{\circ}\text{C}$ in the bioreactor

Contact Details

UK

Kingspan Water & Energy Ltd.
College Road
North Aston
Clinton |
Aylesbury
Buckinghamshire | HP22 5EW

T: +44 (0) 1296 633 000
F: +44 (0) 1296 633 001
E: klargest@kingspan.com

www.kingspan.co.uk/klargest

Ireland

Kingspan Water & Energy
Ltd.Unit1a | Derryboy
Road Carnbane Business
Park
Newry | BT35 6QH

T: NI: +44 (0)28 3026 6799
F: ROI: 0818 544 500
E: klargestinfo@kingspan.com

www.kingspan.ie/klargest

Kingspan Water & Energy Ltd.
Service Office
Details:180
Gilford Road
Portadown |
BT63 5LF

T: NI: +44 (0)28 3836 4600
F: ROI: 0818 543 500
E: helpingyou@kingspan.com

www.kingspanservice.ie