001372

NSBP003 – NSBP006 Class 1 Bypass Separator Installation & Operation Guidelines

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Enclosed Documents

DS0993P	NSBP003 – NSBP006 Class 1 Bypass Separator
DS1013P	NSBP003 - NSBP006 Installation Drawing
NSBPEXTzz	NSBP Neck Extension Assembly

Issue	Description	Date
05	CC1405 – Coalescer Extension Chains were Pipes	February 2018

CONTENTS

Page

CONTENTS 2

1 Introduction 3

1.2 Handling & Storage 3

1.3 Site Planning 3

2 Installation 4

2.1 Installation - General 4

2.2 Separator Installation 5

2.3 Pipework Connections 6

2.4 Oil Level Alarm Neck Fitting 7

2.5 Alarm Installation ..... **Error! Bookmark not defined.**

3 Operation 8

4 Maintenance 8

4.1 Waste Removal and Servicing 8

4.2 Waste Removal Procedure – Oil & Silt 9

4.3 Checking the Coalescer Assembly 9

4.4 Removing the coalescer assembly 10

4.5 Cleaning the coalescer assembly/ Media Replacement 10

4.6 Replacing the coalescer assembly 10

5 Connection of Extension Neck 10

6 Emergencies 10

HEALTH & SAFETY 11

Appendices

Separator Maintenance Log

1 Introduction

1.1.1 These Guidelines represent Best Practice for the installation of the above Separator Units. Many years of specialist experience has led to the successful installation of thousands of separator units. It must be noted, however, that these Guidelines are necessarily of a general nature. It is the responsibility of others to verify that they are appropriate for the specific ground conditions and in-service loads of each installation. Similarly, any information or advice given by our employees or agents regarding the design of an installation must be verified by a qualified specialist (e.g. Civil engineering consultant).

1.1.2 For guidance of Separator selection and application, please refer to the most recent issue of Environment Agency Guidelines pollution prevention guidelines No. 3 (PPG3).and BS EN 858. Our units have been independently tested by BSI and are certified as meeting the standards.

1.2 Handling & Storage

1.2.1 Care must be taken to ensure that units are not damaged during delivery and handling on site. Please take care and place unit so that it cannot fall and become damaged

1.2.2 The design requirements of these products will frequently mean that the centre of gravity of the unit is “offset”. Care must therefore be taken to ensure that the unit is stable when lifting. Rainwater may also collect inside units, particularly if they have been stored on site prior to installation, adding weight and increasing instability. Check units before lifting and pump out any excess water.

1.2.3 When lifting units, use webbing slings of a suitable specification. Do not use chains.

1.2.4 A suitable spreader bar should be used to ensure that units are stable and that loads are evenly distributed during lifting. When lifting separators, a spreader bar should be used where the slings would otherwise be at an angle > 30 degrees to the vertical.

1.2.5 Lifting equipment should be selected by taking into account the unit weight, length and the distance of lift required on site.

1.2.6 We accept no responsibility for the selection of lifting equipment.

1.2.7 Whenever units are stored or moved on site, ensure that the storage location is free of rock, debris and any sharp objects, which may damage the unit. The units must be placed on ground, which is flat, and level and the unit orientated onto its side with even support. Do not roll separators.

1.3 Site Planning

The following points should be considered before installation of the equipment:

1.3.1 The discharge must have the consent of the relevant Environmental Regulator.

1.3.2 The installation should have Planning and Building Control approval.

1.3.3 Consider installing flow cut-off valves to isolate the separator in an emergency or during site cleaning operations. See Environment Agency Guidelines PPG3.

1.3.4 We will fit a tube to receive the alarm probe. This tube provides protection and ensures that the probe is positioned at the correct level to sense the oil build up. The tube design and probe level setting assumes the use of our standard oil alarm system and may not be suitable for other alarm supplier’s equipment. The probe tube is fitted within the neck of the unit. It should be extended to ground level when extension necks are required. Consult the alarm supplier’s instructions for they’re detailed fitting installation instructions.

1.3.5 Consider venting of the unit. Comply with local regulations. In the UK, comply with the following regulations. For Petrol Stations: Health and Safety Guidance Note 41 (HS(G)41). For other applications: BS8301: 1985 (obsolescent) BS EN 752 Building Drainage. Adequate ventilation should be provided to the separator. The ventilation pipe should be as short as is practicable and be terminated not less than 2.5m above paving nor less than 1m above the head of an openable window or other opening into a building within a horizontal distance of 3m. Each neck should be vented independently, we advise against joining these below ground prior to their rising as vent stacks.

1.3.6 Consider installation of a sampling point downstream of the separator. There is no suitable facility to effectively sample the wastewater from inside the unit.

1.3.7 Uncontaminated run off such as roof water should be excluded from separators. (EA Guidelines PPG3.)

1.3.8 Ground conditions and water table level should be assessed. If the water table will be above the base of the units at any time of the year, adequate concrete backfill must be provided to avoid flotation. In poorly draining ground, consideration should also be given to the likelihood of flotation due to surface water collecting in the backfill, and an appropriate installation method devised to avoid this.

1.3.9 If the discharge is to a soakaway, a porosity test should be carried out as part of the assessment of suitability for sub-soil drainage.

1.3.10 The separator must be installed at a level, which will allow connection to the incoming drain and a free discharge at the system outlet. The water table must be below the discharge outlet.

1.3.11 Do not install the unit deeper than necessary, ensure that you purchase extension shaft kits. The minimum invert depth of the unit is shown on the customer drawing.

1.3.12 Adequate access must be provided for routine maintenance. Vehicles should not be permitted within a distance equal to the depth of the unit, unless suitable structural protection is provided to the installation.

1.3.13 There must be at least 1 metre of clear, level ground all around the access covers to allow for routine maintenance.

1.3.14 It is essential that a mains water supply is accessible for routine cleansing and refilling after removal of waste material and liquid.

1.3.15 Provide electrical supply for alarm system.

1.3.16 Installation should only be carried out by suitably qualified and experienced contractors in accordance with current Health and Safety Regulations. Electrical work should be carried out by a qualified electrician, working to the latest edition of IEE wiring regulations.

1.3.17 This unit is designed to operate with gravity in and out flows. The unit is not designed to operate with a pumped influent.

2 Installation

2.1 Installation - General

2.1.1 When units are installed in unstable ground conditions where movement of the surrounding material and/or unit may occur, the connecting pipework should be designed to minimise the risk of damage from differential movement of the unit(s) and/or surrounding material.

2.1.2 For separators with burial depths greater than 1000mm from cover level to the top of the unit, specific site conditions should be taken into consideration and the backfill designed to bear any loads which may be applied during and after installation to prevent the tank being subjected to these loads.

2.1.3 The excavation must be deep enough to provide bedding and cover depth as determined by the type of surface pavement and loading. Asphalt and concrete pads should extend a minimum of 300mm horizontally beyond the unit in all directions.

2.1.4 In situations where the excavation will not maintain a vertical wall, it will be necessary to shore up the sidewalls of the excavation with suitable trench sheets and bracing systems to maintain a vertical wall from the bottom to the top of the excavation. DO NOT completely remove the shoring system until the backfilling is complete, but before the concrete fully hardens.

2.1.5 In areas where the water table is above the bottom of the excavation and/or the excavation is liable to flood, the excavation should be dewatered using suitable pumping equipment and this should continue until the installation is complete.

2.1.6 During installation care must be taken to ensure that the body of the unit is uniformly supported so that point loads through the unit are avoided.

2.1.7 The Concrete Specification 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:	C25 /30 C25 /30 C16 /20	REINFORCED & ABOVE GROUND WITH HOLDING DOWN BOLTS REINFORCED (EG. FOR HIGH WATER TABLE) UNREINFORCED (NORMAL CONDITIONS)
MINIMUM CEMENT CONTENT	C30 C20	270 - 280 Kg/M^3 220 - 230 Kg/M^3
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		

2.1.8 Pea Shingle - 6 mm to 10 mm rounded pea shingle, offering low point loading characteristics is considered to be the most suitable material for back filling in dry ground installation. (PEASHINGLE ONLY TO BE USED IN DRY SITE CONDITIONS).

2.2 Separator Installation

2.2.1 **DRY GROUND CONDITIONS**

2.2.2 Excavate the site, allowing for a minimum clearance on all sides and base of the unit of 200mm and level the base.

2.2.3 Ensure that the hole is kept dry. Should any rain or surface water collect in the hole, this should be pumped out.

2.2.4 A base of at least 200mm of lean mix concrete should be provided.

2.2.5 Lower the tank in the hole using a rope sling through the lifting points provided on the tank. Under no circumstances should the sling be attached to the inlet pipe or the outlet pipe.

2.2.6 Position the inlet pipe in line with the incoming drain. Note that the inlet and the outlet pipes are clearly embossed on the tank. The unique profile of the base will help to level the tank, but make sure the tank is in the truly upright position in order to maintain the 100mm fall between the inlet and outlet pipes.

2.2.7 After any concrete in the base has taken up it's initial set (usually after one day), ballast the tank by putting approximately 0.5m depth of water into it.

2.2.8 Backfill the space around the tank with pea gravel or similar material (PEASHINGLE ONLY TO BE USED IN DRY SITE CONDITIONS). The backfill should be free from organic material, large stones, brick or sharp objects. Backfilling should be carried out in layers, making sure that voids are not left under and around the sides of the tank and that there are no localized stress concentrations. Its is most important that the installer progressively fills the tank with water to the level above the backfill in order to stabilize pressures on the tank.

2.2.9 Remove any temporary covers and connect up the tank inlet and outlet pipes to your own pipework.

2.2.10 Backfilling can now proceed up to ground level in 300mm stages ensuring tank is ballasted in all chambers as you go.

2.2.11 A galvanized lockable manhole cover (600x600mm) and frame is to be fitted to suit specific site loadings, THE TANK MUST NOT BE LOAD BEARING. The top of the manhole should not be sat below the local ground level. If necessary a further neck extension should be added to the tank to bring the cover up to ground level (see section 6).

2.2.12 Venting can be provided through the cover or a Tee piece arrangement on the outlet/inlet.

2.2.13 **WET GROUND CONDITIONS**

2.2.14 Excavate a hole to appropriate depth allowing at least 300mm for lean mix concrete and hard-core base. Allow for tank width plus at least 400mm with additional allowance for any necessary shuttering.

2.2.15 De-water the excavation using suitable pumping equipment. Ensure that the pump discharge does not saturate the ground in the immediate vicinity. In wet ground conditions the installer should ensure that the base is adequate to support the weight of the tank and its contents. If the base of the excavation is unstable, i.e. running sand or similar, excavate an additional 250-300mm below concrete levels and fill up with compacted hard-core. Place a sheet of polythene over the hard-core and up the sides of the excavation before putting in the concrete cradle.

2.2.16 Lay a bed of concrete (minimum 150mm thick) on top of the polythene at the base of the excavation. De-watering is to continue until you are satisfied that the concrete has cured.

2.2.17 Lower the tank onto the concrete bed, ensuring that the inlet and outlet are in the correct position. Ensure the tank is upright and then ballast it with water to a maximum of 500mm deep.

2.2.18 Haunch up the concrete bed at least 450mm all round the base, ensuring that all voids in the concrete are eliminated and at least 150mm of concrete is left below the tank base.

2.2.19 Backfill to the invert depth with concrete. Ensure that the water level inside the tank is maintained no more then 250-300mm above concrete backfill level. It is most important that the installer progressively fills the tank with water to a level above the backfill in order to stabilise pressure on the tank.

2.2.20 Backfill evenly all round the tank, consolidating in layers. The backfilling should start before the base has hardened and be a single continuous operation so that the tank has a full concrete jacket without joins.

2.2.21 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.

2.2.22 Align and connect pipework.

2.2.23 Build up a shell of concrete around the neck of the tank to 150-200mm thickness before completing the backfill with a suitable material. Care must be taken to avoid distortion of the neck whilst concreting this area.

2.2.24 Fit cover and frame. Apply surface finish e.g. turf

2.2.25 Do not empty tank until the concrete backfill has cured. Tanks may be left filled with water.

2.3 Pipework Connections

2.3.1 In all cases, ensure that the outlet pipework level is maintained for correct operation. (Unless specified on the order, the fall across the unit will be as per the customer drawings).

2.3.2 These units are fitted with **PVCu spigots** to both the outlet and the inlet.

2.3.3 Connect using the same size PVCu socket or a suitable reducer.

2.3.4 Ensure that the connecting pipework seal is secure and watertight before backfilling the pipe.

2.3.5 Alternatively, proprietary **flex seal couplings** can be obtained to fit over the outside of the site pipework. When using this connection method, ensure that the seal is secure before backfilling the pipe. If purchasing a flexseal coupling for use with clay /concrete, we suggest that a size 110 mm larger than the ID is selected.

2.4 Oil Level Alarm & Neck Fitting

2.4.1 We will fit a tube to receive the oil alarm probe. This provides protection and ensures that the probe is positioned at the correct level to sense oil build up.

2.4.2 See alarm supplier information and ensure that the probe is placed within the tube and can be accessed from ground level.

2.4.3 Continue backfilling with concrete/pea shingle (dry site) over the tank body to the required level. Build up a shell of concrete, minimum 225mm thick, around the access shaft(s). When using pea shingle continue to back fill up to required level. Temporarily strut the access shaft to avoid distortion.

2.4.4 Where we supply an extension shaft to meet a deeper invert requirement, a coalescer extension chain will be required. When fitting, ensure that the chain is secured to just below the surface so that the coalescer can easily be removed. Remove the coalescer from the unit before adding the extension chain. When refitting, ensure that the coalescer is correctly inserted and fully pushed into the base fitting. This is important and you must ensure that the coalescer is correctly located before putting the unit in to operation.

2.4.5 It is advisable to seal the joints on the extension shafts (particularly on sites with high ground water) with proprietary sealant. Temporarily strut the extension neck(s) to avoid distortion during back filling. Where more than one neck section is required to suit a deep invert, consider back-filling section by section. The original fixing hole bolting the coalescer to the neck should be sealed.

2.4.6 The maximum recommended inlet invert is 2000mm (using 500mm long extension sections). If you are installing a unit deeper than this then you must make your own arrangements for removing and replacing the coalescer. Consideration must be given to the depth of lift involved.

2.4.7 Continue back-filling, ensuring minimum 225mm concrete thickness around the access shaft/ extension neck. When using pea shingle back fill as required.

2.4.8 Mains powered Alarm Systems. See alarm suppliers installation instructions. Lay 82mm diameter PVCu underground ducting between the alarm panel location and the alarm probe position. The ducting should be 500mm below ground level and fitted with a drawstring for later cable insertion. Any changes of direction should be by long radius bend. If necessary, drill a suitable hole in the access shaft adjacent to the alarm probe terminal box, to accept the ducting and seal.

2.4.9 In traffic areas a suitable top slab must be constructed. The top slab should bear on a suitable foundation to prevent superimposed loads being transmitted to the unit and access shafts. Loads applied to covers and frames must bear on the top slab, not the access shaft.

2.4.10 The unit should be filled with clean water up to the invert level of the outlet pipe. Ensure the unit identification is placed/ marked inside the neck for future information. The unit is now ready for use.

2.5 Alarm Installation

2.5.1 Install the alarm probe and control panel, as per the Suppliers Alarm Installation Guidelines. Ensure that the probe is positioned correctly for the required storage of oil. The table below indicates the maximum volume of oil to be stored and the depth of floating oil expected in the separation chamber.

Unit	Recommended Minimum Oil Storage volumes in litres	Actual Oil Storage volume in litres	Max. (100%)Depth of floating oil (Static)
NSBP003	45 litres	107	210mm
NSBP004	60 litres	107	210mm
NSBP006	90 litres	107	210mm

3 Operation

3.1.1 The unit is sized on treating a defined area and rainfall (6.5 mm/hour) EN.858 Part 1 and using the factor provided in the Environment agency guidelines PPG3. (0.0018 = 6.5mm/hr) The unit will treat the entire flow i.e. NSBP003 will treat a flow of 3 litres per second. If the flow is greater than this then the excess flow will bypass the main treatment chamber. A NSBP003 unit will work in bypass mode over 3 and up to 30 litres per second. Flows in excess of this will back up on to the site. During a storm, the rain falls and flushes any surface debris, silt or oil into the tank. This first flush, up to the maximum rated flow is fully treated. As the severity of the storm increases, so does the rate of flow increase. The liquid entering the separator after the first flush tends to be cleaner and so, in lower risk applications, is allowed to bypass the oil separation chamber for directly discharge.

3.1.2 The bypass unit has three chambers. The entire flow up to the units listed flow rating is fully treated and passes through all chambers. (E.g. NSBP003 treats 3 litres per second.)

3.1.3 Flows in excess of this rating will bypass the separation chamber and the liquid passes untreated to the outlet chamber.

3.1.4 The first chamber will accumulate silt and grit. The maximum volume that can be retained is the rating x 100 e.g. a NSBP003 is capable of holding 300 litres of silt.

3.1.5 The second / separating chamber is sized to separate oil at the rated flow rate and to accumulate the required oil storage volume. A NSBP003 maximum oil storage volume is 45 litres. An oil probe should be positioned to detect the accumulation of oil when there is no or low flow conditions. The probe should be positioned so that the alarm operates at 90% of the rated oil storage volume.

3.1.6 In bypass flow conditions, the flow moves directly from the inlet to the outlet chamber avoiding the separating chamber.

3.1.7 Bypass Class 1 Separators are fitted with a removable coalescer which also includes media to further improve the discharge quality. The coalescer media requires maintenance.

3.1.8 Bypass Class 1 Separators are not effective for the removal of soluble or emulsified pollutants such as oil/detergent mixes found in vehicle wash effluents. With permission such discharges should be drained to the foul sewer. Consult our technical department for Separation equipment to meet these applications.

4 Maintenance

4.1 Waste Removal and Servicing

4.1.1 Separated light liquid **must** be removed from separator when the oil capacity has been reached.

4.1.2 An oil level alarm system is available for purchase which gives warning when the separated light liquid/water interface level reaches 90% of the maximum recommended oil storage volume.

4.1.3 Separators should be inspected at least every six months or more frequently if experience dictates. A log should be maintained detailing the depth of oil found, any oil volume removed and any silt removal or cleaning carried out. A specimen maintenance log is included in the appendices.

4.1.4 Every site is different, in respect to the amount and type of silt generated by the drain design and installation. Frequently, the construction programme itself generates large and perhaps unusual quantities of silt and grit. We do recommend that following the initial installation, an inspection of the separator contents be made to check that building rubble has not entered the unit. Further inspections at 3 and 6 months should be made so as to be able to assess the volumes of silt and oil accumulated. The inspection and emptying programme can then be defined following the first 6 months site experience. We recommend leaving a maximum interval between inspections of 6 months.

4.1.5 Alarm probes should be removed and cleaned with water whenever waste material is removed from the separator. Please note the alarm may alert until the liquid level is replaced.

4.1.6 **Separator waste is a “special waste” under the terms of The Waste Management Code of Practice. The Code imposes a duty of care on the waste producer to ensure that the Cleansing contractor is registered with the Environment Agency and that the final disposal of the waste is to a licensed facility.**

4.1.7 You should consider the purchase of a maintenance service, which includes bi-annual inspections, removal of oil and silt, cleaning of the alarm probe and cleaning or replacement of the coalescer (where appropriate).

4.2 Waste Removal Procedure – Oil & Silt

4.2.1 **Oil can only be effectively removed when there is no flow entering the unit. Isolate the unit and prevent flow from entering. Always remove the oil before attempting to remove the coalescer. If this is not done, when the coalescer is withdrawn the oil can coat the media surface and when replaced the oil may be forced through the media, contaminating the effluent.**

4.2.2 Remove the access cover and lower the desludging hose in to the separation chamber. Draw off the surface oil.

4.2.3 If removing the silt, lower the desludge hose to the base of the tank and empty the contents of the chamber. Ensure that you access and clean both compartments.

4.2.4 Remove the alarm probe, if fitted, clean with water and replace.

4.2.5 Consider the period of time that the coalescer has been installed and consider removing and inspecting (cleaning or replacing) the coalescer media. If removed, ensure that it is correctly replaced and secured into position. Replace the access covers. It is best to lower the water level to aid re-fitting.

4.2.6 Re-fill the separator with clean water up to the outlet level.

4.2.7 If an alarm is fitted, it will display an alarm condition until the separator is re-filled. Check alarm operation when unit full.

4.3 Checking the Coalescer Assembly

4.3.1 Coalescers, where fitted, may be cleaned periodically to maintain efficiency. Coalescers should be checked following a major incident and media replaced if necessary. Please contact us if you wish to purchase the coalescer media.

4.3.2 Identify the type and size of separator (shown on labels inside the access neck).

4.3.3 Assemblies weighing less than 25 Kg may be removed by hand. Heavier assemblies should be lifted by mechanical means. Any lifting device employed must be capable of lifting:

4.3.3.a In excess of the maximum assembly weight.

4.3.3.b The assembly completely out of the access shaft.

4.3.3.c Giving a smooth and controlled lift.

4.3.3.d Swinging the assembly to one side clear of the access shaft.

Unit	Dry Weight (Kg)	Wet Weight (Kg)	Silted Weight (Kg)	Replacement Media Part No.
NSBP003	5.7 kg	≈50 kg	≈60 kg	402715
NSBP004	5.7 kg	≈50 kg	≈60 kg	402715
NSBP006	5.7 kg	≈50 kg	≈60 kg	402715

4.3.4 Ensure that the area around the access shaft is clear and that there is space to place the assembly once removed. If space is not available it will be necessary to support the assembly over the access shaft. e.g. by scaffold poles and platform.

4.3.5 Only remove the access cover when necessary to remove the assembly. Do not leave the access shaft uncovered and unattended.

4.4 Removing the coalescer assembly.

4.4.1 Undo any fixings which secure the coalescer to the access shaft (if fitted).

4.4.2 Lift the assembly with a smooth and steady motion. Coalescers will become lighter as water drains from the exposed media. Allow the water to drain completely. Assemblies blocked with fine silt may be very heavy.

4.4.3 Fully extract the assembly and set it down adjacent to the access shaft.

4.5 Cleaning the coalescer assembly/ Media Replacement.

4.5.1 Hose down the assembly using clean water at normal pressure. If the media is heavily contaminated with oil and silt, it may not be possible to clean it effectively by hosing. Do not allow untreated cleaning water to pass out of the unit. Continue hosing until the water runs clear.

4.5.2 To replace the media, undo the banding. Slide media of the core tube and slide new media on. Ensure all the apertures on the core tube are covered by the media. Re-secure or replace banding. Consider replacing media and banding every two years.

4.6 Replacing the coalescer assembly.

4.6.1 Position it over the access shaft.

4.6.2 Lower the assembly steadily into the access shaft ensuring that the end locates within the sump at the bottom of the tank. Re-secure the fixings (if fitted).

4.6.3 Replace the access cover.

5 Connection of Extension Neck

(Option in 1800L Tanks only)

5.1.1 See the accompanying illustration.

5.1.2 Remove existing lid by unscrewing 8 screws and lifting off lid.

5.1.3 Apply mastic around flange of tank that joins to extension neck.

5.1.4 Place extension neck onto flange of the tank and screw down using 8 fixings.

5.1.5 Please refer to drawing NSBPEXTzz

5.1.6 Apply mastic to top face of extension piece that is joining to cover.

5.1.7 Place lid on top of extension neck and screw down using 8 fixings.

5.1.8 Backfill in 200mm stages with concrete (wet site) or peashingle (dry site), bracing neck during each stage until you reach the cover level.

5.1.9 For traffic area loading ensures you refer to tank installation section.

6 Emergencies

6.1.1 At sites where there is a high risk of spillage, spill kits containing drain seals, absorbent materials, disposal containers and other appropriate equipment should be held. In the event of a spillage on site, the material should be contained, (if a spill kit is not available, sand or soil may be used) and the Environment Agency notified immediately using the appropriate emergency hotline number listed in the Agency Guideline PPG3. Year 2012 **- 0800 80 70 60**

HEALTH & 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 these guidelines.

We recommend the use of a dust mask and gloves when cutting GRP components.

Electrical work should be carried out by a qualified electrician.

Contaminated surface water can contain substances 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.

Access covers should be selected with reference to the location of the unit and traffic loads to be accommodated. These are not (normally) part of the Separator supply.

When covers are removed precautions must be taken against personnel falling into the unit.

Should you wish to inspect the operation of the equipment, please observe all necessary precautions, including those listed below, which apply to maintenance procedures.

Ensure that you are familiar with the safe working areas and accesses. Ensure that the working area is adequately lit.

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.

OIL ALARM SYSTEMS

PPG3 requires that that the oil level alarm be fitted, tested and commissioned by a competent Installer. This is to ensure that the excessive oil probe is calibrated correctly, raising an alarm when 90% of the recommended maximum oil storage volume is reached. Should the oil level alarm fail to provide an early warning, excessive oil could pass through the separator, thus polluting the environment. This could result in substantial cleanup costs and legal action being taken under the water resources act 1991.

MAINTENANCE

The correct ongoing maintenance is essential for the proper operation of the equipment. Operators who rely on oil level alarms to prompt them to service separators between maintenance intervals run the risk of polluting should the alarms not work, hence the ongoing functional assessment of the oil alarm systems is fundamental if pollution incidents are to be avoided.

The removal of sediment and retained oil/grease should be carried out by a contractor holding the relevant permits to transport and dispose of such waste. The contractor must refer to the guidelines in this document.

SEPARATOR MAINTENANCE LOG

Site address/location .....

.....

Separator location .....

.....

Type of separator .....

Nominal Flow .....

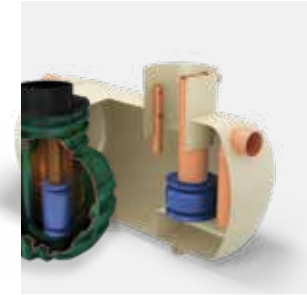
Total capacity .....

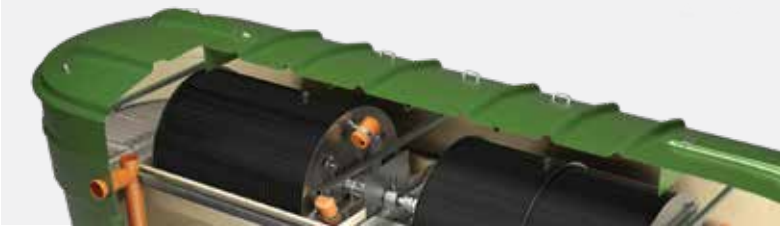
Inspection/ Maintenance Date	Comments	Waste Volumes Removed (if appropriate)

Water Management Solutions

Klargester
Product Guide

The Klargester range of fully integrated wastewater management, surface water and rainwater harvesting solutions





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About Kingspan

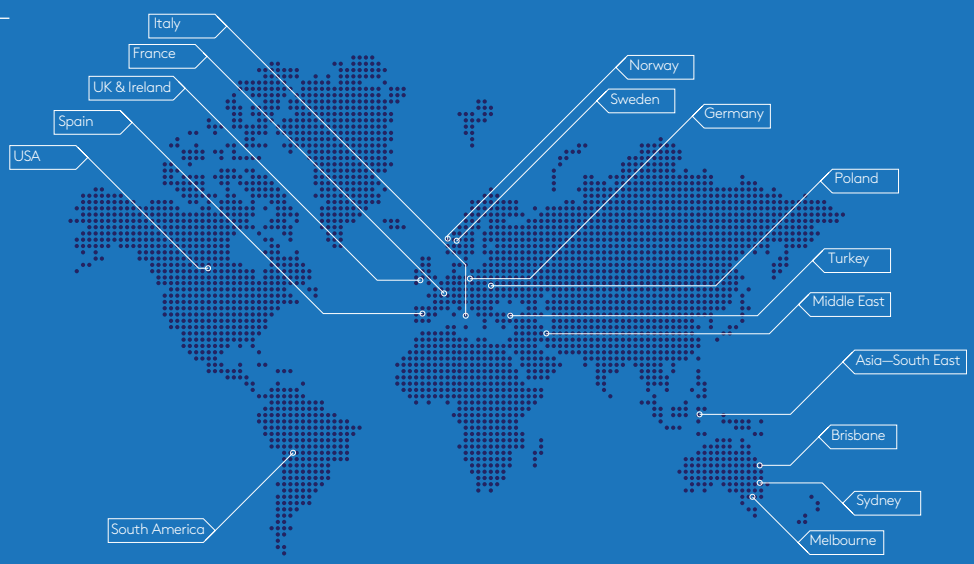
Operating in over 85 countries worldwide, we offer a global distribution network backed by experienced local sales and technical teams.

Trusted Water Management Solutions

Kingspan, manufacturers of the Klargester Product Range, are the water management experts with over 60 years of innovation and knowledge. We design and manufacture tried and tested water management solutions on a global scale for the leisure, public, hospitality, transport and domestic sectors whilst offering one of the largest and most technologically advanced wastewater ranges available.

Our technical support teams provide focused customer service from delivery scheduling to consultancy and installation guidance. We give you the confidence of support over the lifetime of the product and beyond, in your local area.

Global Reach

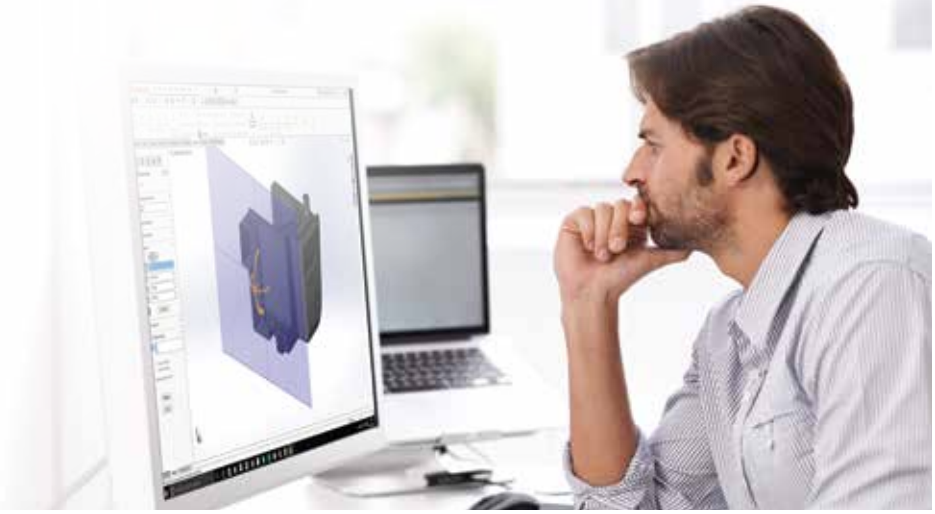


Locally Accessible

Nationwide Distribution

Expert Technical Support

Kingspan's support doesn't stop once you have purchased the product. Our expert team are here to help you with technical, sales and delivery enquiries. We are dedicated to our customers and pride ourselves on top class customer service.



We stand by the quality and performance of Kingspan water management solutions and our support doesn't stop once your tank is installed.

Our world class design consultancy is complemented by engineering expertise and advice as well as service throughout your commercial or industrial water management project.

We use the latest design technology to produce drawings of extremely high quality. Our project management process is a step-by-step one, to ensure the very best experience and results. It covers everything from system sizing, product selection and system design to calculations, manufacturing, installation and delivery.

Our advice also spans water management specification, design, product application and integration with building regulations, code compliance and site work installation practices to meet the most demanding effluent qualities, flow rates and discharge consents.

Contact our technical team today for expert advice and information on any of our water management solutions.

Email: **water@kingspan.com**

Regional Installations

Manufactured in the UK and Ireland, the Klargester Product Range is supported by our nationwide network of dedicated external Area Sales Managers.

We offer free site visits to discuss project specific requirements and provide a detailed written report and specification to recommend the best water management solution for your project.

We also provide on-site installation assistance when required and help you with formal discussions with Building Control, Local Planning departments, The Environment Agency/SEPA, architects and consultants.

To arrange your free site survey contact us now on **01296 633033** or email **water@kingspan.com**

Kingspan operates in over 85 countries worldwide, with currently over 5 million water management system installa-tions. Take a look at a selection of our case studies for the Klargester Product Range.

Thanet Earth
Kent, England
UK

Four vertical pumping stations to aid water management for a complex green house development.

Manchester City FC
Manchester, England
UK

Oil separators for its all-important surface water drainage system.

Barn Conversion
Wing, England
UK

Domestic BioDisc sewage treatment plant, ensuring a safe, odour-free environment.

Social Housing Installation
Co. Louth, Ireland
IRE

Rainwater harvesting solution used to flush the WCs in each home. The system is fully integrated with the main plumbing, easing demand on the mains supply.

Elite Office Furniture
Goole, England
UK

Surface water separators, foul, effluent and crude sewage pump stations, grease trap and BioFicient commercial system.

The Castlefields Inn
Clifford, England
UK

BioDisc Commercial sewage treatment plant providing an efficient water management solution.

Supermarket Carpark
London, England
UK

Bypass separator, NSBE50, to assist in decontamination of surface water drainage.

Marble Arch Caves
Co. Fermanagh, N. Ireland
IRE

Grease separator and BioDisc sewage treatment plant work together giving optimum performance and extremely low running costs.

Everton FC (Training Ground)
Liverpool, England
UK

Modular BioFicient commercial system including fuel/oil separators for a complete waste water management solution.

Primark Distribution Centre
Kettering, England
UK

Modular BioFicient commercial system for multi-million pound distribution centre.

Multi-Housing Development
Dundee, Scotland
UK

A complex sewage treatment and surface pumping solution to meet the varying needs of multiple housing.

Klargester BioDisc® Domestic Sewage Treatment Plant

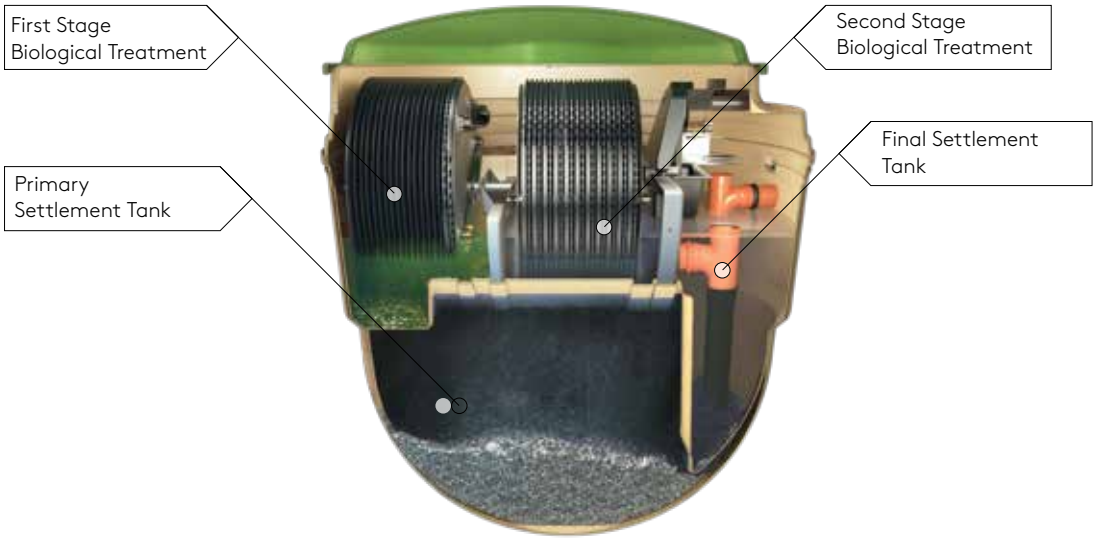
The Klargester Domestic BioDisc® is engineered to treat wastewater to the highest level of standards and offers one of the lowest lifetime costs compared to other treatment processes.

Product Benefits

- Utilises Rotating Biological Contactor technology.
- Low running costs.
- Low level visibility with a lockable child-proof cover – safe for children and pets.
- Delivers better than 95% pollution removal.
- 10 year warranty options available when purchased with a service and maintenance plan.
- Supplied with a control panel and alarm.
- Managed Flow System.
- Totally silent in operation.
- The most stable process in the market.
- Controls the discharge volume.

The Rotational Biological Contactor

The RBC is central to the operation of each Klargester BioDisc®. It supports a biologically active film or biomass onto which aerobic micro-organisms, naturally found in sewage, become established. Natural breakdown of sewage can then occur as described below.



01

Primary Settlement Tank

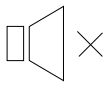
Wastewater and sewage flows into the primary settlement tank where the large solids are retained for future removal.

02

First Stage Biological Treatment

The liquor and fine solids then flow into the Biological Treatment Zone 1 where the first stage of treatment occurs.

Noise Free



Technical Specifications

Model Reference	BA	BA-X	BB	BC
Population Equivalent (Std Flow)	6	9	12	18
Maximum Daily BOD (kg)	0.36	0.54	0.72	1.08
Maximum Daily Flow (m3)	1.2	1.8	2.4	3.6
Ø/Width (mm)	Ø1995	Ø1995	Ø1995	Ø2450
Length (mm)	-	-	-	-
Inlet Invert depth (mm)	450/750/1250	450/750/1250	450/750/1250	600/1100
Depth Below Inlet Invert (mm)	1400	1400	1400	1820
Outlet Invert Depth (mm)	1315	1315	1315	1735
Overall Height (mm)	2160/2460/2960	2160/2460/2960	2160/2460/2960	2825/3325
Height to Rim of Cover (mm)	1945/2245/2745	1945/2245/2745	1945/2245/2745	2485/2985
Empty Weight (kg)	310/325/380	310/325/380	335/350/405	650/750
Standard Power Supply	1 phase	1 phase	1 phase	1 phase
Motor Rating - 1 Phase (Watts)	50	50	50	75
Full Load Current 1 Phase (amps)	0.51	0.51	0.51	1.1
Optional Power Supply	N/A	N/A	N/A	3 phase
Motor Rating - 3 Phase (Watts)	N/A	N/A	N/A	90
Full Load Current 3 Phase (amps)	N/A	N/A	N/A	0.38
Sludge Return Pump Rating (watts)	250	250	250	250

Pumped Outlet Available on BA, BA-X, BB models.

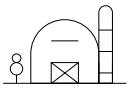
Performance and Compliance

- Certified to European Standard BS EN 12566 Part 3.
- Performance certified to achieve 10mg/l BOD, 15mg/l SS and 3.8mg/l ammonia.
- Fully marked in line with the CPR 2013.

Applications:

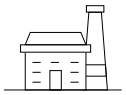
The Klargester Domestic BioDisc® BA–BC range is suitable for a range of applications including:

Single & Multiple Homes



Barn Conversions

Small Offices



Light Industrial Premises

Farms

03

Second Stage Biological Treatment

The liquor is then fed forward at a controlled rate into Biological Treatment Zone 2 for further cleaning.

04

Final Settlement Tank

The clean liquid passes into the final settlement tank where it can be discharged to ground or water course.

Klargester BioFicient®
Domestic Sewage Treatment Plant

The Klargester BioFicient® treatment plant provides a reliable and effective solution for domestic applications without access to mains drainage. Suitable for homes with up to 30 people, the BioFicient is manufactured from high quality materials and uses the latest treatment technology to deliver a high level of water discharge quality.

Product Benefits

- Shallow Dig.
- New low energy compressor.
- Low level visibility with a lockable child-proof cover – safe for children and pets.
- Suitable for installation in traffic areas (structural advice required).
- Supplied with a control panel and alarm.
- Easy to set up and operate.
- Integral pump option available for BioFicient 1-4.

Performance and Compliance

› BS EN 12566 Part 3 tested and approved.

› Industry leading NH4 (ammonia) removal.

› Fully CE marked in line with the CPR 2013.

01

Primary Chamber

Raw sewage gravitates to the unit where it is received in the primary settlement zone. Here, gross solids and other social debris settle to the bottom of the tank where they remain until the tank requires desludging. Settled sewage is displaced from primary zone and enters the first of two sequential moving aerated media reactors.

Control Panel Included

Technical Specifications

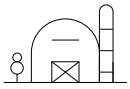
Model Reference	BioFicient 1	BioFicient 2	BioFicient +2	BioFicient 3	BioFicient 4	BioFicient 5	BioFicient 6
Population Equivalent	6	8	10	10	15	20	30
Overall Diameter (mm)	1,540	1,420	2,010	1,420	1,920	1,920	1,920
Length (mm)	2,500	3,760	3,189	3,760	3,230	4,390	6,220
Depth (mm)	1,794-2,104	1,830/2,330/ 2,830	2,785	1,830/2,330/ 2830	2,300/2,800/ 3,300	2,300/2,800/ 3,300	2,300/2,800/ 3,300
Inlet Invert (mm)*	500-810/ 500-810*	500/1,000/ 1,500	700-1,500	500/1,000/ 1,500	500/1,000/ 1,500	500/1,000/ 1,500	5,00/1,000/ 1,500
Outlet Invert (mm)	600-910/ 555-865*	600/1,100/ 1,600*	800-1600	600/1,100/ 1,600*	630/1,130/ 1,630*	630/1,130/ 1,630	630/1,130/ 1,630
Material	MDPE	GRP	MDPE	GRP	GRP	GRP	GRP
Blower Ratings	50W	95W	95W	95W	115W	180W	225W
Cover sizes	700	1,500/900	700	1,500/900	1,500/900+600**	1,500/900+600**	1,500/900+ 600**

Note: *Optional inlet depth down to 1800mm*
**BioFicient IPS models only (Outlet Depth 320mm) | **BioFicient 4, 5, 6 has two shafts.*

Applications:

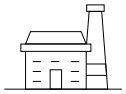
The Klargester Domestic BioFicient® 1–6 range is suitable for use across the following applications:

Single & Multiple Homes



Barn Conversions

Small Offices



Light Industrial Premises

Farms

02

Biozone 1 & 2

Solids are broken down by air agitated media in the Biozone. Media and liquid circulation in the Biozone is achieved through the use of a compressor and diffuser, which introduces fresh air into each compartment. The liquor is constantly re-circulated and contacts the moving media and as it does so, it is purified by the micro organisms growing on the surface of the media and within the moving liquor. Excess growth of biomass is shed as solid particles into the liquor.

03

Final Settlement Tank

Where fine solids are settled out. The Final effluent is discharged via either gravity outlet or IPS (Integral Pump System) chamber. With regulatory approval, it is suitable for discharge to a watercourse or drainage field.

Klargester BioTec® Domestic Sewage Treatment Plant

The Klargester BioTec® sewage treatment system is ideal for single/multiple houses and employs the well proven aerobic biological trickling filter process for the treatment of sewage.

Product Benefits

- No mechanical or electrical components within the plant – low running and maintenance costs.
- Low level visibility with a lockable child-proof duty cover – safe for children and pets.
- Easy to install and maintain with annual desludging.
- PPFDS and HLA Alarms as standard.
- Control Panel
- Beacon

Performance and Compliance

› Certified to BS EN 12566 Part 3.

› Assured performance of 20mg/l BOD, 30mg/l S.S., 20mg/l Ammonia.

› Fully CE marked in line with the CPR 2013.

**Blower is externally mounted.*

01

Incorporating the well-proven aerobic biological process, the BioTec® sewage treatment plant has a three-stage process.

Coarse solids are filtered and retained for gradual breakdown.

02

The resulting liquid is continuously distributed over a plastic suspended filter by an integral lift, powered by a remotely sited blower.

Easy to Install

Technical Specifications

Model Reference	BioTec® 1	BioTec® 1 IPS	BioTec® 2	BioTec® 2 IPS	BioTec® 3	BioTec® 3 IPS	BioTec® 4	BioTec® 4 IPS
Population Equivalent	6	6	12	12	18	18	25	25
Outside Diameter (m)	1.9	1.9	1.9	1.9	2.7	2.7	2.7	2.7
BOD Load (kg/day)	0.36	0.36	0.72	0.72	1.1	1.1	1.5	1.5
Weight Empty (kg)	195	220	217	260	445	471	470	495
Depth (m)	2.2	2.2	2.7	2.7	2.6	2.6	2.6	2.6
Inlet Invert (m)	1.0*	1.0*	1.0*	1.0*	1.0*	1.0*	1.0*	1.0*
Inlet Invert to Base (m)	1.2	1.2	1.7	1.7	1.6	1.6	1.6	1.6
Outlet Invert (m)	1.1	0.605	1.1	0.605	1.1	0.605	1.1	0.655
Motor Rating (watts)	60	60	60	60	150	150	150	150

** There are two depths of inlet in the range 1.0m and 1.5m.*
IPS - Integral Pump System

Applications:

The Klargester Domestic BioTec® Range is suitable for a range of applications, including:

Single & Multiple Homes

Barn Conversions

Light Industrial Premises

Farms

Small Offices

Economy Version Available

The Klargester Domestic BioTec® Economy Range is available for requirements of up to 18PE and features the following Product Benefits:

Product Benefits

- No mechanical or electrical components within the plant – low running and maintenance costs.
- Low level visibility with a lockable child-proof duty cover – safe for children and pets.
- Easy to install and maintain with annual desludging.

03

The solids are allowed to settle and under normal domestic conditions, effluent of 20mg/l BOD, 30mg/l S.S., 20mg/l Ammonia can be achieved.

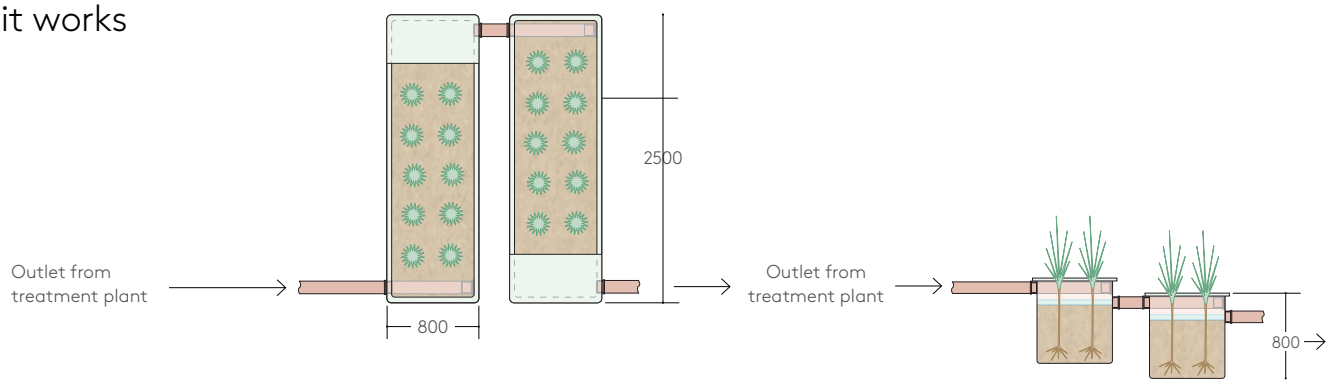
Klargester Reed Beds

A reed bed is a filtration process used in conjunction with a Klargester sewage treatment system to further enhance the quality of the effluent migrating into a drainage field or surrounding watercourse.

Product Benefits

- Tertiary treatment for new applications with tight discharge consents.
- Satisfies new building regulations.
- Improved effluent quality for existing works.
- Very low maintenance.
- Aesthetically pleasing and environmentally friendly.
- Easy to install and maintain.
- Effluent discharge is typically improved by at least 50% providing reduced BOD and suspended solids.

How it works



Technical Specifications

Model Reference	Population Equivalent	Length (mm)	Width (mm)	Depth (mm)	No. Required	Outlet Size (mm)
HRB006	6	2500	800	800	2	110
HRB012	12	2500	800	800	4	110

Selecting the Correct Solution

Regulations Compliant

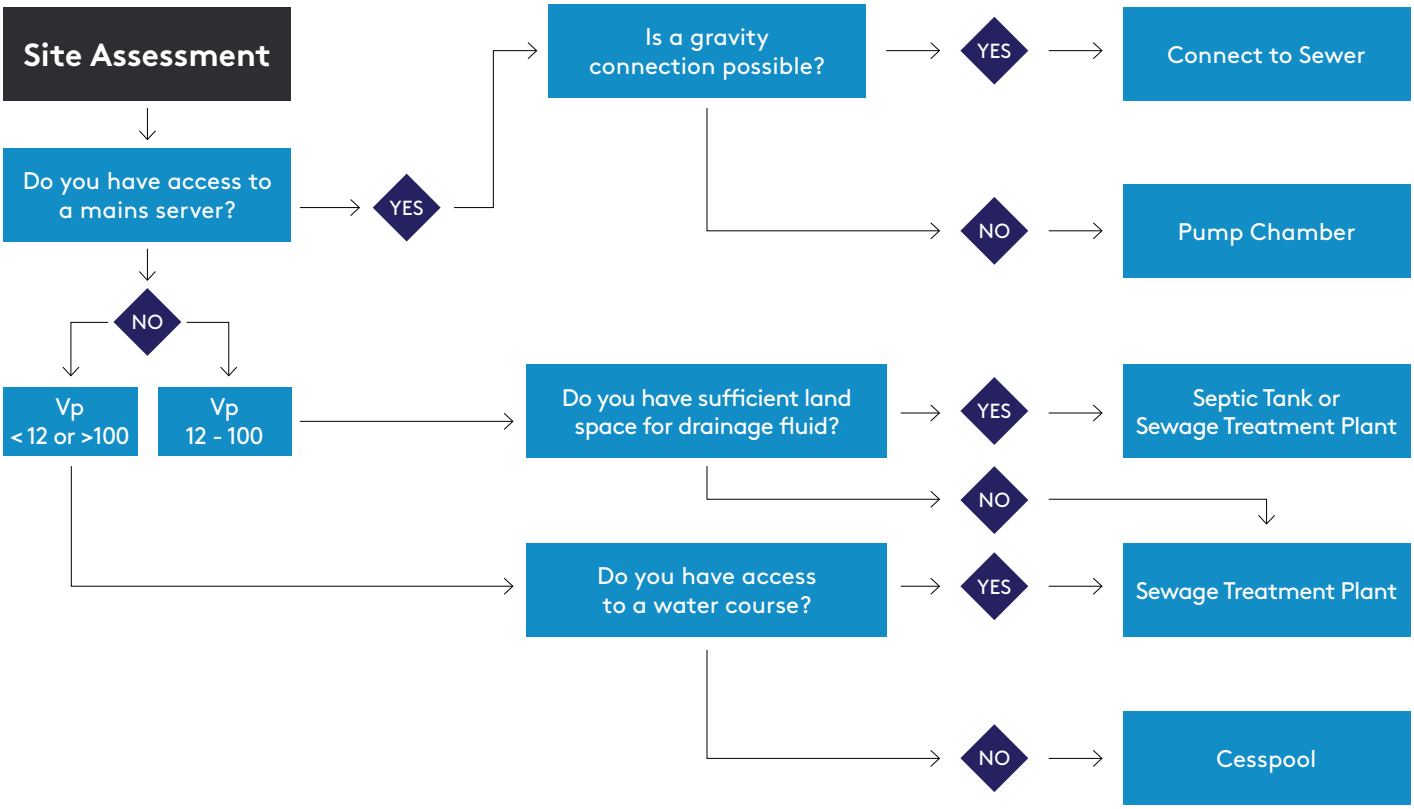
To ensure selection of the correct sewage treatment and disposal method to meet your requirements, expert advice should be sought. In all instances a sewage treatment plant should be considered as the first option.

Environmental Regulators and British Water have developed the system selection process below, to help in guiding you through the process to choose the correct system to meet your requirements.

Did you know?

If you have a septic tank that discharges directly to a surface water you will need to replace or upgrade your treatment system by 1 January 2020, or when you sell your property if before this date.

Environment Agency — General Binding Rules



Klargester Alpha Septic Tank

Klargester Alpha tanks provide a reliable and economic solution for homes not connected to mains drainage.

Did you know?

If you have a septic tank that discharges directly to a surface water you will need to replace or upgrade your treatment system by 1 January 2020, or when you sell your property if before this date.

Environment Agency — General Binding Rules

Basic septic tanks only retain solids and discharge effluent of low quality. The installation will not contaminate any ditch, stream or other watercourse. However, many authorities in the UK prohibit their use. In all instances a sewage treatment system should be considered as a first option.

Septic tanks may be installed, subject to consent, in applications where:

- Soil is of suitable porosity.
- Installation complies with Building Regulations (Approved Document H).
- The installation will not contaminate any ditch,stream or other watercourse.

—

Product Benefits

- Made from composite GRP - strong, light, and watertight.
- Press moulded shape provides wide, squat, form which makes the tank easy to install and handle.
- Stable base for storage.
- Lifting eyes are provided for lifting and positioning within the excavation.

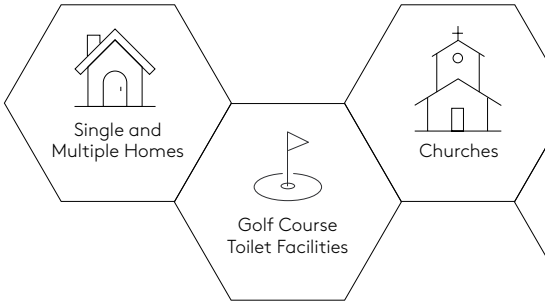
Performance & Compliance

› Performance tested to BS EN 12566 Part 1 requirements.

› Fully CE marked in line with the CPR 2013.

Applications

The Klargester Alpha and Gamma septic tank ranges, each comprise three sizes and are typically suitable for applications not connected to mains drainage including:



Technical Specifications

Model Reference	Volume (L)	No. People (150 Ltrs/head/day)	Overall Diameter (mm)	Height (mm)	Standard Inlet Invert (mm)	Standard Outlet Invert (mm)
STS02810	2800	5	2075	2599/3099	1000/1500	1050/1550
STS03810	3800	12	2075	2810/3310	1000/1500	1050/1550
STS04610	4600	17	2084	2984/3484	1000/1500	1050/1550

Klargester Gamma Septic Tank

The Klargester Gamma tank is an affordable solution for domestic applications with an efficiency rating of 99.97% – an industry benchmark.

Manufactured from tough polyethylene, the tank is robust and lightweight which makes it easy to handle and install.

Due to its design features, the Gamma tank is the perfect solution where a shallow dig installation is required, reducing installation time and costs.

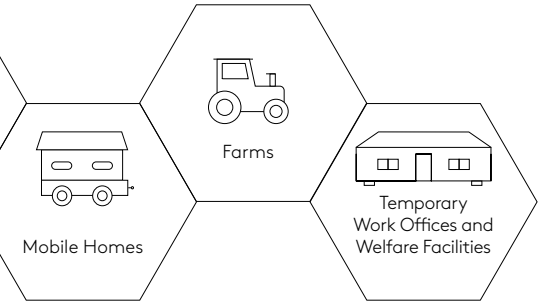
—

Product Benefits

- Manufactured from robust, impact resistant, high quality polyethylene.
- Strong, easy to move and simple to install.
- Less excavation costs, less soil disposal and less backfill material.
- Wide neck for easy access for annual desludging.
- Trimmable neck to suit site.

Performance & Compliance

- 99.97% efficiency rating.
- BS EN 12566 Part 1 approved.
- Fully CE marked in line with the CPR 2013.



Technical Specifications

Model Reference	Volume (L)	No. People (150 Ltrs/head/day)	Width (mm)	Length (mm)	Height (mm)	Standard Inlet Invert (mm)	Standard Outlet Invert (mm)	Depth (mm)
GST028	2800	5	1130	2480	1755 - 2255	550-1050	550-1050	2255
GST035	3500	10	1180	3000	1755 - 2255	550-1050	550-1050	2255
GST040	4000	13	1215	3360	1755 - 2255	550-1050	550-1050	2255

Klargester Sigma Septic Tank

The Klargester Sigma shallow dig septic tank is designed to reduce both installation time and cost. The range is available in various sizes suitable for properties with dig height restrictions.

Product Benefits

- Made from GRP - strong and durable for ultimate reliability.
- Robust and simple to install, reducing on site installation time.
- Less excavation costs, less soil disposal and less backfill material required.
- Light, watertight and chemically resistant.
- Robust, weather proof for guaranteed durability, giving you value for money.

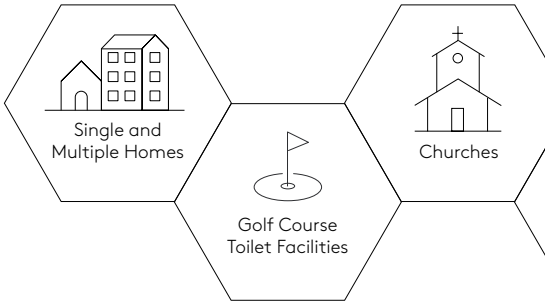
Performance and Compliance

› Certified to BS EN 12566 Part 1

› Fully CE marked in line with the CPR 2013.

Applications

Klargester Sigma septic tanks and below ground water storage tanks and cesspools, offer a solution for applications not connected to mains drainage including:



Technical Specifications

Model Reference	Volume (L)	No. People (150 Ltrs/head/day)	Overall Diameter (mm)	Length (mm)	Standard Inlet Invert (mm)	Standard Outlet Invert (mm)	Depth (mm)
STH028	2800	5	1225	2955	500	530	1627/1587*
STH038	3800	12	1225	3895	500	530	1617/1577*
STH057	5700	24	1425	4275	500	530	1826/1786*
STH071	7150	34	1920	3225	500	550	2290
STH091	9150	47	1920	3960	500	550	2290

**110mm diameter pipework/ 160mm diameter pipework*

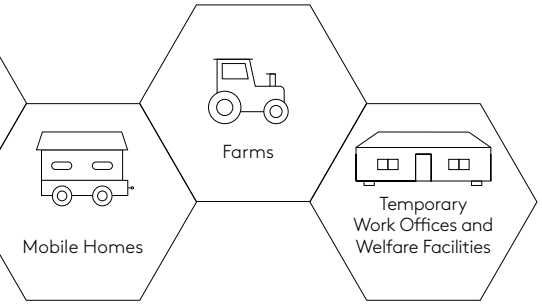
Klargester Below Ground Water Storage Tanks and Cesspools

The range of Klargester below ground storage tanks provide a reliable solution for the collection and retention of sewage (cesspool), surface water, veterinary / animal waste, firefighting reservoirs and rainwater harvesting reservoirs.

The advanced design of the Klargester below-ground storage tanks ensures consistent high performance, even in the toughest environmental conditions.

Product Benefits

- Easy to install with minimal on site installation time.
- Designed in accordance with BS6297, ensuring that you meet all building regulations.
- High level alarm available for complete peace of mind.
- Lockable manhole cover for ultimate security.



Technical Specifications

Nominal Litres	Capacity (Gallons)	Length (mm)	Diameter (mm)
18,000	3960	4317	2620
22,000	4889	5073	2620
26,000	5720	5837	2620
34,000	7480	7376	2620
46,000	10,120	9684	2620
54,000	11,880	11,222	2620
59,000	12,968	11,991	2620
63,000	13,860	12,760	2620
71,000	15,620	14,295	2620
79,000	17,380	15,833	2620

Klargester BioDisc® Commercial Sewage Treatment Plant

Delivered as a single, packaged system, the Klargester BioDisc® RBC range (up to 300PE), offers low running costs due to its unique design and operational efficiencies.

Product Benefits

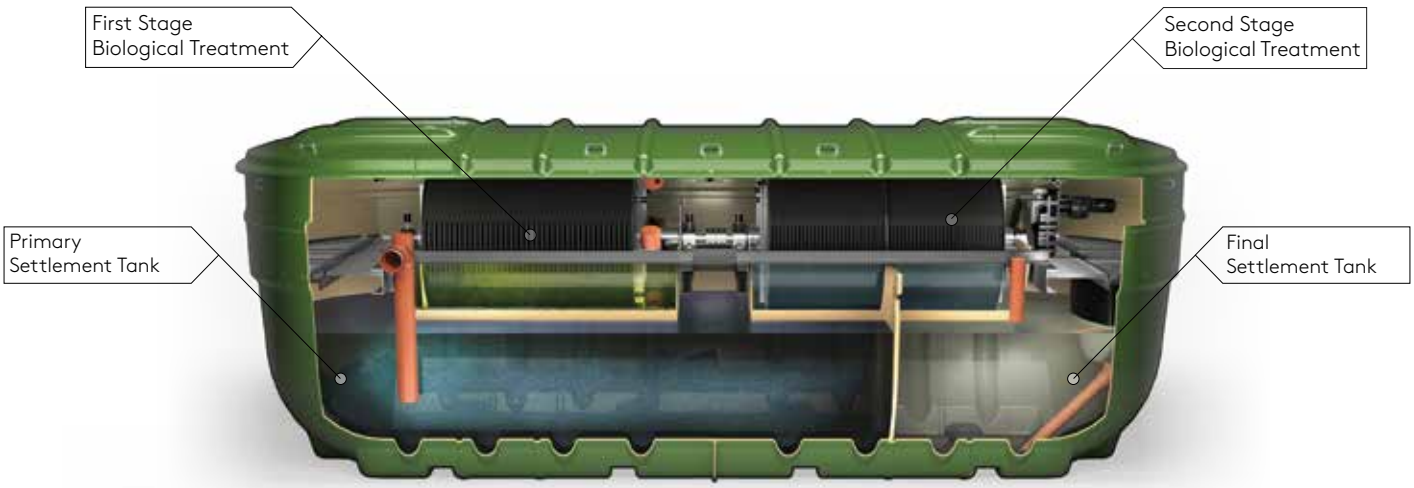
- Unique RBC technology.
- Tried and tested technology, offers robust and efficient water management treatment.
- Low running costs.
- Noise free.
- Fully removable lid for easy desludging.
- Fully packaged system, delivered direct on site.
- Bespoke technical support offered from our in-house technical teams.

Performance & Compliance

› Odour free – tested and fully approved in accordance with BSEN13725.

› Designed for applications selected in compliance with British Water Code of Practice Flows and Loads.

› 100% compliance with industry requirements across commercial sectors, including national and international regulations such as BS EN12255 and EN12566-3 (up to 50 PE).



01

Primary Settlement Tank

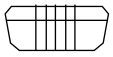
This is the initial stage of treatment and simply involves the retention of coarse solids present in raw sewage and wastewater for subsequent gradual breakdown. BioDisc® features one chamber to ensure efficient operation with a flow balancing facility.

02

First Stage Biological Treatment

The liquor and fine solids then flow into the first stage of Biological Treatment. A unique managed flow system ensures peak performance by smoothing variable loads.

Single Piece System



Technical Specifications

Model Reference	BD	BE	BF	BG	BH	BJ	BK	BL	BM	BN
Maximum Daily BOD (kg)	1.5	2.1	3	4.2	4.5	6	7.5	9	13.5	18
Maximum Daily Flow (m3)	5	7	10	14	15	20	25	30	45	60
Ø/Width (mm)	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
Length (mm)	3340	3340	4345	5235	7755	7755	7755	7755	10420	13100
Inlet Invert depth (mm)	600/1100	600/1100	600/1100	600/1100	600/1000	600/1000	600/1000	600/1000	600/1000	600/1000
Depth Below Inlet Invert (mm)	1820	1820	1820	1820	1790	1790	1790	1790	1790	1790
Outlet Invert Depth (mm)	1735	1735	1720	1720	1640	1640	1640	1640	1640	1640
Overall Height (mm)	2825/3325	2825/3325	2825/3325	2825/3325	2830/3230	2830/3230	2830/3230	2830/3230	2830/3230	2830/3230
Height to Rim of Cover (mm)	2485/2985	2485/2985	2485/2985	2485/2985	2490/2890	2490/2890	2490/2890	2490/2890	2490/2890	2490/2890
Empty Weight (kg)	1100/1200	1200/1300	1315/1465	1660/1810	3000/3020	3100/3120	3200/3220	3300/3320	4200/4250	5500/5650
Standard Power Supply	1 phase	1 phase	1 phase	1 phase	1 phase	1 phase	1 phase	1 phase	1 phase	1 phase
Motor Rating - 1 Phase (Watts)	75	75	120	180	250	250	370	370	550	2 x 370
Full Load Current 1 Phase (amps)	1.1	1.1	1.3	1.6	1.5	1.5	2.35	2.35	2.8	2 x 2.35
Optional Power Supply	3 phase	3 phase	3 phase	3 phase	3 phase	3 phase	3 phase	3 phase	3 phase	3 phase
Motor Rating - 3 Phase (Watts)	90	90	120	180	250	250	370	370	550	2 x 370
Full Load Current 3 Phase (amps)	0.38	0.38	0.42	0.63	0.88	0.88	1.35	1.35	2.8	2 x 1.35
Sludge Return Pump Rating (watts)	250	250	250	250	250	250	250	250	250	250

03

Second Stage Biological Treatment

The liquor is then fed forward at a controlled rate into Biological Treatment stage 2 for further cleaning. This process ensures the whole media area available is utilised ensuring maximum efficiency.

04

Final Settlement Tank

The surplus micro-organisms continuously slough off the discs and are carried forward to the final settlement where they settle out as a humus sludge, leaving a clear treated effluent to be discharged to ground or water course. The settled humus sludge is returned to the Primary Settlement Tank by the sludge return pump under timer control. The sludge return pump also removes any floating scum which helps to keep the final settlement tank working efficiently.

Klargester Modular BioDisc®
Sewage Treatment Plant

The new Klargester Modular BioDisc® containerised sewage treatment plant range, is designed with scalability in mind for populations of between 300PE and 2500PE.

A Brand New Solution for 2018

The Klargester modular RBC system is designed for applications with higher populations.

The RBC comprises of a complete modular system containing the RBC units along with primary and final settlement tanks.

Both RBC units and tanks can be increased in numbers or size to make a flexible system for an expanding or phased population growth.

Each unit is supplied as a 250PE unit and further units supplied depending on population requirements.

Primary and final settlement tanks can be sized for the intended end population or additional tanks can be supplied in the future and fed into the system.

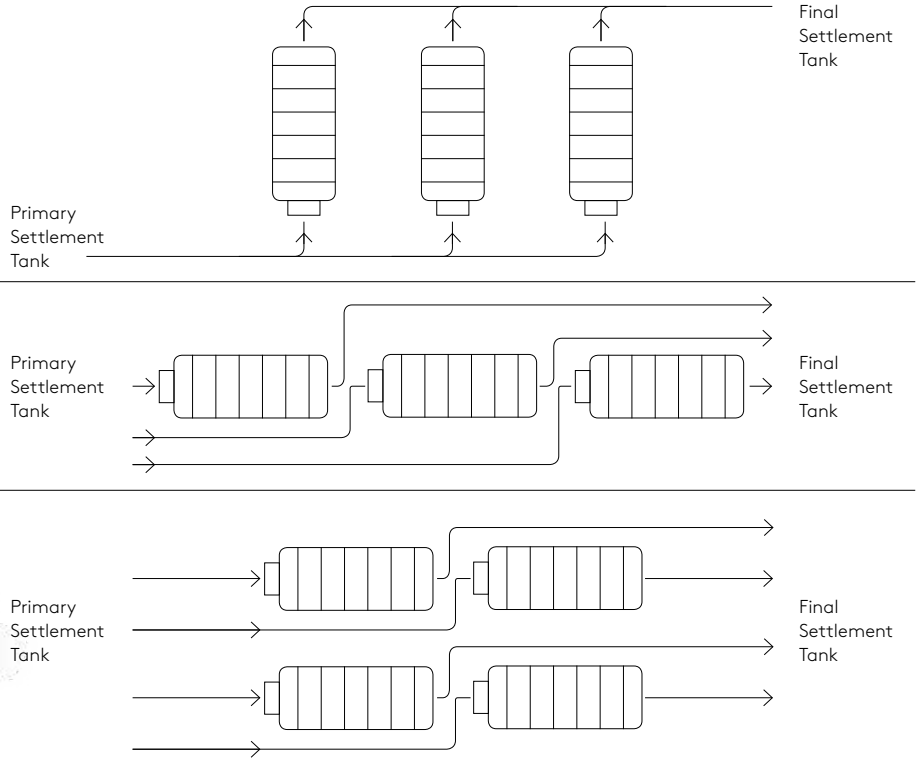
Each of the units can be linked to create a complete sewage treatment system. The feed to each RBC can be controlled independently to give further flexibility.

The RBC unit measures 6.7 metres long x 2.2 metres wide x 2.4 metres high. The size of primary and final settlement tanks will vary with each customer application and site location.

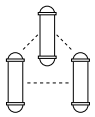
Modular BioDisc®

A flexible engineered solution, for above or below ground installation, the Modular BioDisc solution is ideal for off-mains sites with seasonal loads due to its unique flow management activity.

Total flexibility with a unique modular RBC system



Available in our Modular System



Technical Specifications

Model Reference	Daily Flow (l/day)	Daily Load (kg/BOD/day)	Length(mm)	Width(mm)	Height(mm)	Weight(kg)	Motor Power
Modular BioDisc 250PE	50,000	15	6,700	2,210	2,400	5,000	1.1 Kw/400v

Max daily flow based on 200 L/Person/Day, system PE will vary by site flow rate per person.

More Savings

Kingspan's unique to market solar back up option is the ideal solution for customers in remote locations. Our solar panels can cater for up to 100% of the used energy on any site, offering a potential payback of three years on a typical BioDisc commercial system.

More Scalability

The commercial BioDisc range offers a totally scalable solution. For applications larger than 300PE, we offer a brand new containerised Modular solution, with flexibility to suit sites with populations up to 2500PE.

More Efficiency

Our unique flow management system delivers an improved biological process and overall treatment efficiency, by catering for seasonal changes to flows and loads. Adaptive forward feed management allows for total flexibility for seasonally fluctuating sites.

More Control

Featuring local alarms and Kingspan's intelligent SmartServ remote monitoring solution, the challenges associated with remote performance monitoring are greatly reduced. Our fully integrated connectivity package allows for greater control over your assets, saving time and money when it comes to servicing your treatment plant.

Klargester BioFicient® Commercial Sewage Treatment Plant

The Klargester BioFicient commercial sewage treatment plant is designed with efficiency in mind. It offers reliable performance using tried and tested technology to ensure consistently high effluent quality.

Product Benefits

- Adaptable to specific consent requirements including 'Total Nitrogen'.
- Low head loss.
- Minimal footprint area and visual impact.
- Variable invert options (0.5 - 2.0 m).
- May be installed in trafficked areas (subject to loading).
- Low maintenance.
- Alarm protected.

Performance and Compliance

› Compliant with EN-12255 and EN12566-3 (up to 50 PE).

› Designed and sized in accordance with British Water Code of Practice Flows and Loads but can be sized to suit local site conditions.

Applications:

The BioFicient range is suitable for a range of applications including:

Public sector

Leisure

Transport

Hospitality

Campsites

Offices

Multi-housing developments

—
2.6 diameter BioFicient is also available as an alternative model.
—

01

Primary Settlement Chamber

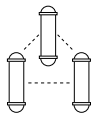
This is the initial stage of treatment and simply involves the retention of coarse solids present in raw sewage and wastewater for subsequent gradual breakdown. BioFicient features two chambers to ensure efficient operation with a flow balancing facility.

02

Biozone 1

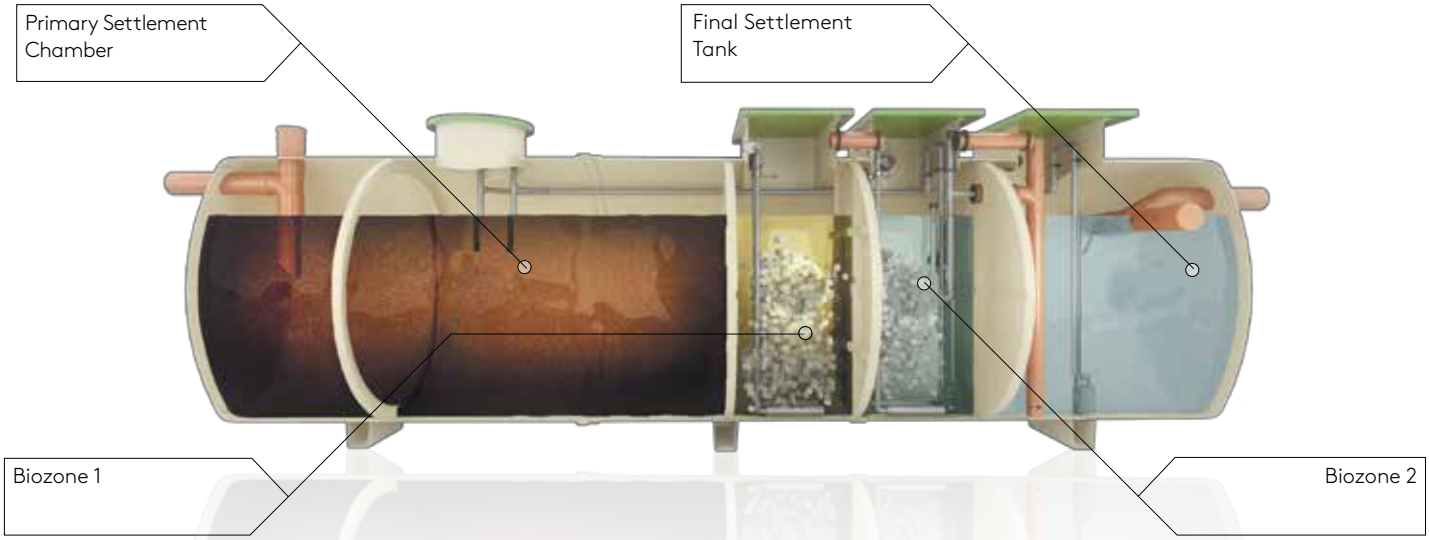
The liquor enters the first stage of Biological treatment where the active bacteria within the fluidized bed begin to break down organic solids, majority of BOD removal occurs here.

Available in our Modular System



Technical Specifications

Model Reference	17H	23H	34H	38H	42H	47H	55H	67H	80H
A Overall Length (m)	7.4	9.3	7.4	8.1	8.9	9.7	11.2	13.5	15.8
B Overall Width (m)	1.9	1.9	1.9	1.9	1.9	2.8	2.8	2.8	2.8
C Height (m)									
560mm Inlet / 860mm Outlet Invert*	2.28	2.28	3.02	3.02	3.02	3.02	3.02	3.02	3.02
1060mm Inlet / 1360mm Outlet Invert*	2.78	2.78	3.52	3.52	3.52	3.52	3.52	3.52	3.52
1560mm Inlet / 1860mm Outlet Invert*	3.28	3.28	4.02	4.02	4.02	4.02	4.02	4.02	4.02
2060mm Inlet / 2360mm Outlet Invert*	3.78	3.78	4.52	4.52	4.52	4.52	4.52	4.52	4.52
D Diameter (m)	1.8	1.8	1.8	1.8	1.8	2.6	2.6	2.6	2.6
Volume (m3)	17	23	34	38	42	47	55	67	80
Weight Approx (kg)	1200	1450	3000	3200	3400	3800	4200	4700	5400
Inlet / Outlet Diameter (mm)	160	160	160	160	160	160	160	160	160
Maximum Flow (m3/day) Models	8	11	15	20	25	30	40	50	60
Retention Time (hrs)	76	66	51	43	39	35	31	31	30



03

Biozone 2

Within the second stage of Biological treatment the second fluidized bed continues to clean the liquor giving further BOD reduction along with removal of nitrogen.

04

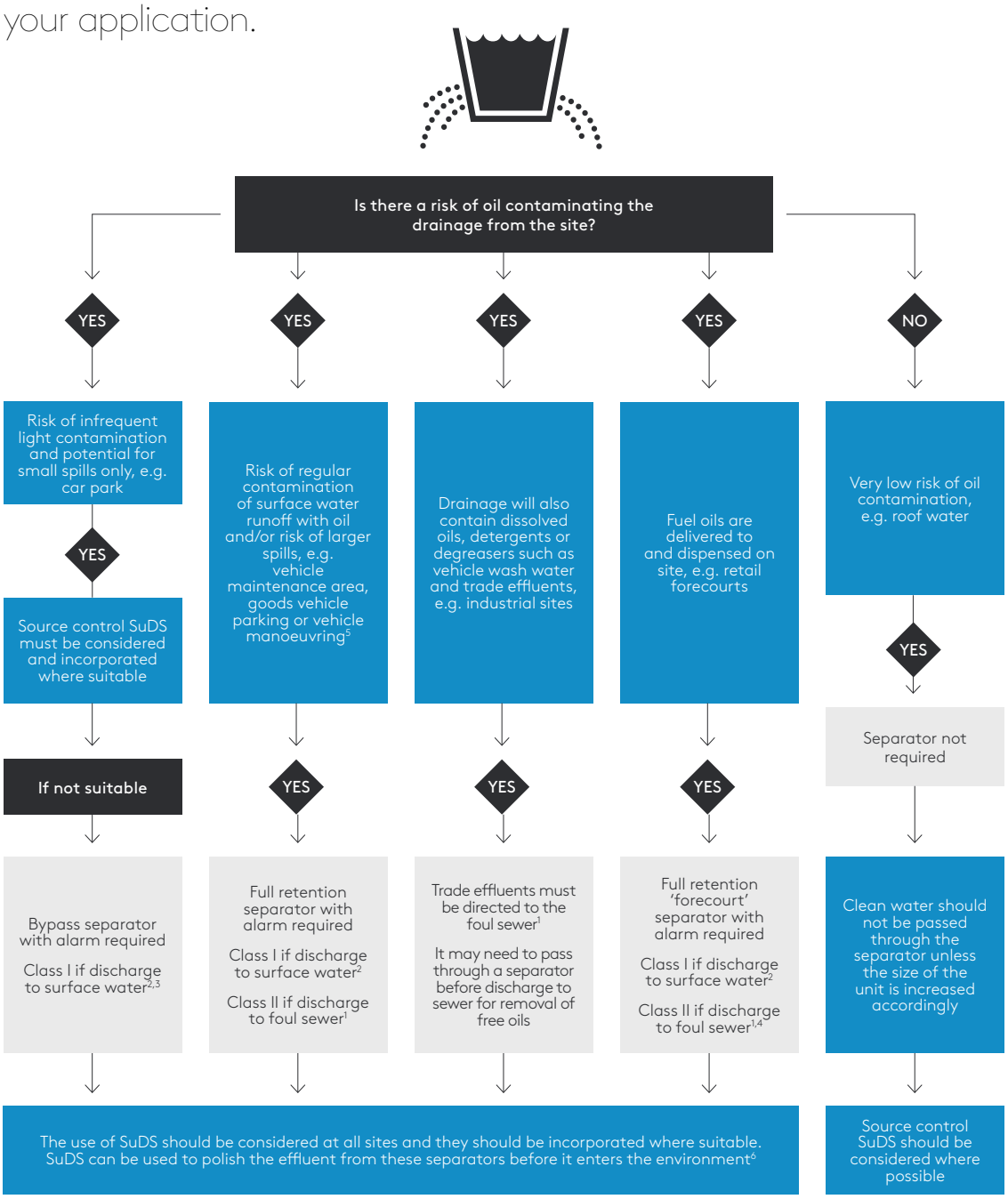
Final Settlement Tank

A natural by-product of biological treatment is humus sludge and this is separated for further treatment. The treated effluent is discharged via the outlet or to disinfection stage.

Choosing the Right Separator

Kingspan has a specialist team who provide expert technical assistance in selecting the appropriate Klargester Separator for your application.

The chart below gives guidance to aid selection of the appropriate type of fuel/ oil separator for use in surface water drainage systems which discharge into rivers and soakaways.



1 You must seek prior permission from your local sewer provider before you decide which separator to install and before you make any discharge.

2 You must seek prior permission from the relevant environmental body before you decide which separator to install.

3 In this case, if it is considered that there is a low risk of pollution a source control SuDS scheme may be appropriate.

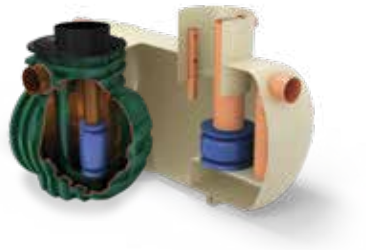
4 In certain circumstances, the sewer provider may require a Class 1 separator for discharges to sewer to prevent explosive atmospheres from being generated.

5 Drainage from higher risk areas such as vehicle maintenance yards and goods vehicle parking areas should be connected to foul sewer in preference to surface water.

6 In certain circumstances, a separator may be one of the devices used in the SuDS scheme. Ask us for advice.

Klargester Full Retention Separators

NSF RANGE



Full Alarm Range Available

Full retention separators are used in high risk spillage areas such as fuel distribution depots, vehicle workshops and scrap metal recycling yards.

Each full retention separator design includes the necessary volume requirements for:

- Oil separation capacity
- Oil storage volume
- Silt storage capacity
- Coalescer (Class 1 units only)
- Automatic closure device

Our full retention separators treat the whole of the specified flow.

Performance and Compliance

- Kingspan were one of the first UK manufacturers to have the required range certified to EN 858-1 in the UK.
- The NSF number denotes the flow at which the separator operates.
- Approved by The British Standards Institute (BSI) in relation to flow and process performance, meeting effluent quality requirements of EN 858-1.

Technical Specifications

Model Reference	Flow (l/s)	Drainage Area (m2) PPG-3 (0.018)	Storage Capacity (Ltrs)		Length (mm)	Diameter (mm)	Manhole Cover Dimensions (mm)	Base Inlet Invert (mm)	Base to Outlet Invert (mm)	Min Inlet Invert (mm)	Standard Pipework Diameter (mm)
			Silt	Oil							
Polyethylene Chamber Construction											
NSFP003	3	170	300	30	1700	1350	600	1410	1335	550	160
NSFP006	6	335	600	60	1700	1350	600	1410	1335	550	160
GRP Chamber Construction											
NSFA010	10	555	1000	100	2610	1225	600	1050	1000	500	200
NSFA015	15	835	1500	150	3910	1225	600	1050	1000	1000	200
NSFA020	20	1115	2000	200	3200	2010	600	1810	1760	1000	315
NSFA030	30	1670	3000	300	3915	2010	600	1810	1760	1000	315
NSFA040	40	2225	4000	400	4640	2010	600	1810	1760	1000	315
NSFA050	50	2780	5000	500	5425	2010	600	1810	1760	1000	315
NSFA065	65	3160	6500	650	6850	2010	600	1810	1760	1000	315
NSFA080	80	4445	8000	800	5744	2820	600	2500	2450	1000	315
NSFA100	100	5560	10000	1000	6200	2820	600	2500	2450	1000	400
NSFA125	125	6945	12500	1250	7365	2820	600	2500	2450	1000	450
NSFA150	150	8335	15000	1500	8675	2820	600	2500	2450	1000	525
NSFA175	175	9725	17500	1750	9975	2820	600	2500	2450	1000	525
NSFA200	200	11110	20000	2000	11280	2820	600	2500	2450	1000	600
NSFA210	210	11667	21000	2100	11991	2820	600	2550	2450	1000	600
NSFA225	225	12500	22500	2250	12760	2820	600	2550	2450	1000	600
NSFA240	240	13333	24000	2400	13527	2820	600	2550	2450	1000	600
NSFA255	255	14167	25500	2550	14295	2820	600	2550	2450	1000	600
NSFA270	270	15000	27000	2700	15065	2820	600	2550	2450	1000	600
NSFA285	285	15833	28500	2850	15833	2820	600	2550	2450	1000	600

** Some units have more than one access shaft – diameter of largest shown.*

Klargester Bypass Separators

NSB RANGE

Concentration Less Than

5 MG/L

Bypass separators are used when it is considered an acceptable risk to not provide full treatment for very high flows, such as, where the risk of a large spillage and heavy rainfall occurring at the same time is small. Typical applications include surface carparks, roadways and lightly contaminated commercial areas.

Product Benefits

- Light and easy to install.
- Inclusive of silt storage volume.
- Fitted inlet/outlet connectors.
- Vent points within necks.
- Oil alarm system available (required by EN 858-1 and PPG3).
- Extension access shafts for deep inverts.
- Maintenance from ground level.
- GRP or polyethylene construction (subject to model).

Performance & Compliance

- Fully compliant and tested to EN 858-1.
- Bypass separators are tested by British standards institute (BSI).
- Certified flow and process performance assessing effluent qualities to the requirements of EN 858-1.
- The unit is designed to treat the 'first flush' - 10% of peak flow. The calculated drainage areas served by each separator are indicated according to the formula given by PPG3 NSB = 0.0018A(m2).
- Class I separators are designed to achieve a concentration of less than 5mg per litre.

Technical Specifications

Model Reference	Flow (l/s)	Peak Flow Rate (l/s)	Drainage Area(M2) Based on UK rainwater flow	Storage Capacity (Ltrs)		Length (mm)	Diameter (mm)	Access Shaft Diameter (mm)	Base Inlet Invert (mm)	Base to Outlet Invert (mm)	Standard Fall Across (mm)	Min Inlet Invert (mm)	Standard Pipework Diameter (mm)**
				Silt	Oil								
Polyethylene Chamber Construction													
NSBP003	3	30	1670	300	45	1700	1350	600	1420	1320	100	500	160
NSBP004	4.5	45	2500	450	60	1700	1350	600	1420	1320	100	500	160
NSBP006	6	60	3335	600	90	1700	1350	600	1420	1320	100	500	160
GRP Chamber Construction													
NSBE010	10	100	5560	1000	150	2069	1220	750	1450	1350	100	700	315
NSBE015	15	150	8335	1500	225	2947	1220	750	1450	1350	100	700	315
NSBE020	20	200	11111	2000	300	3893	1220	750	1450	1350	100	700	375
NSBE025	25	250	13890	2500	375	3575	1420	750	1680	1580	100	700	375
NSBE030	30	300	16670	3000	450	4265	1420	750	1680	1580	100	700	450
NSBE040	40	400	22222	4000	600	3230	1920	600	2185	2035	150	1000	500
NSBE050	50	500	27778	5000	750	3960	1920	600	2185	2035	150	1000	600
NSBE075	75	750	41667	7500	1125	5841	1920	600	2235	2035	200	950	675
NSBE100	100	1000	55556	10000	1500	7661	1920	600	2235	2035	200	950	750
NSBE125	125	1250	69444	12500	1875	9548	1920	600	2235	2035	200	950	750

** Some units have more than one access shaft – diameter of largest shown | ** Larger pipework available on request.*

† Achieves concentration of less than 5MG/L

Klargester Forecourt Separators

Expert Technical Advice

Forecourt separators are used to intercept hydrocarbon pollutants such as petroleum and oil to prevent their entry to the drainage system. Typical applications include petrol filling station forecourts and car breaker yards.

Performance and Compliance

- Operation ensures that the flow cannot exit the unit without first passing through the coalescer assembly.
- In normal operation, the forecourt separator has sufficient capacity to provide storage for separated pollutants within the main chamber, but is also able to contain up to 7,600 litres of pollutant arising from the spillage of a fuel delivery tanker compartment on the petrol forecourt.
- The separator has been designed with an automatic closure device to ensure that oil cannot exit the separator in the event of a major spillage, subsequently the separator should be emptied immediately.

Installation

- The unit should be installed on a suitable concrete base slab and surrounded with concrete or pea gravel backfill.
- If the separator is to be installed within a trafficked area, then a suitable cover slab must be designed to ensure that loads are not transmitted to the unit.
- The separator should be installed and vented in accordance with Health and Safety Guidance Note HS(G)41 for filling stations.
- Subject to Local Authority requirements.

Technical Specifications

Separator Class	Backfill Type	Total Capacity (Ltrs)	Drainage Area (m2)	Peak Flow Rate (l/s)	Length (mm)	Diameter (mm)	Access Shaft Diameter (mm)	Base Inlet Invert (mm)	Base to Outlet Invert (mm)	Standard Fall Across (mm)	Min Inlet Invert (mm)	Standard Pipework Diameter (mm)	Empty Weight (kg)
I	Concrete	10000	720	15	3915	2020	600	2180	2130	50	600	160	620
I	Concrete	10000	115	20	3915	2020	600	2180	2130	50	600	200	620

Fuel & Oil Separator Alarms

British European Standard EN 858-1 and Environment Agency Pollution Prevention Guideline PPG3 requires that all separators are to be fitted with an oil level alarm system. It should be installed and calibrated by a suitably qualified technician so that it will respond to an alarm condition when the separator requires emptying.

Product Benefits

- Easily fitted to existing tanks.
- Excellent operational range.
- Visual and audible alarm.
- Additional telemetry option.

Klargester Grease Separators

Easy to Install

Klargester Grease Separators are an effective and hygienic method of separating fat and grease from wastewater flow. Grease Separators are designed for restaurants, hotels, public houses, canteens and similar applications.

Key Standard Features

- Greatly reduces drain blockages, for maximum operational efficiency.
- Helps improve performance of septic tanks and field drains and achieve best results.
- Prevents contamination of small sewage treatment plants, reducing risk of breakdown.
- Protects mains drainage system from grease blockages.

How it works

Grease separators allow fats and grease to naturally separate out from water, allowing their removal prior to the wastewater reaching the drainage system. The separator should be installed close to the source of contamination before any foul waste can enter the drainage flow and to suit the expected liquid temperature.

Grease Range Sizing Table

Meals Per Day	Standard Meal	Fast Food	Fine Cuisine
40	NSG01	NSG01	NSG02
60	NSG02	NSG02	NSG02
80	NSG02	NSG02	NSG04
100	NSG02	NSG04	NSG04
200	NSG04	NSG06	NSG09
300	NSG06	NSG09	NSG14
500	NSG09	NSG14	NSG18
700	NSG14	NSG18	NSG24
900	NSG18	NSG24	—
1,300	NSG24	—	—

Technical Specifications

Model Reference	Dimensions (mm)		Flow Rates	Shipping Height (mm)	Capacity (L)	Approx Weight (Kg)		Fall Across The Unit (mm)
	Length	Width				Empty	Full	
NSG01	1320	750	1LPS	1100	500	70	570	75
NSG02	1620	1100	2LPS	1175	1000	90	1090	75
NSG04	2072	1224	4LPS	1570	2000	120	1860	70
NSG06	3018	1224	6LPS	1570	3000	160	2820	70
NSG09	3895	1224	9LPS	1570	4000	190	3760	70
NSG14	4418	1422	14LPS	1745	6000	215	5535	70
NSG18	3231	1917	18LPS	2120	8000	300	7162	70
NSG24	4386	1917	24LPS	2120	11000	380	9885	70

Klargester Washdown and Silt Units

Klargester Washdown and Silt units can be used in areas such as car wash and other cleaning facilities that discharge directly into a foul drain, which feeds to a municipal treatment facility.

How it works

As contaminated water passes through the separation chamber, it is retained long enough to allow solids to sink to the bottom of the unit. Our design uses a maximum of 6 minutes hydraulic retention time, at the flow rate given. The separator water is then able to discharge safely.

The nature of the silt varies depending on either the ground or surface receiving the flow. These aspects should be considered when selecting the size of the unit in relation to the flow being treated.

If emulsifiers are present, the discharge must not be allowed to enter an NS unit.

Applications

These units can be used to serve vehicle wash down areas and car wash facilities, although it should be noted that the prime function of such separators is for the removal of silt. Typical locations using wash down separators are: car wash, tool hire depots, truck cleansing, construction compounds cleansing points.

Locations requiring silt separators are: highly silted sites where NS separators are used, i.e. works constructions sites and temporary work compounds.

Our Washdown and Silt Separators are manufactured from durable, rot and corrosion proof glass reinforced polyester combining lightweight with outstanding strength. The units are delivered complete with inlet and outlet pipework as well as factory fitted access shafts to ensure quick and easy installation on site.

Technical Specifications

Model Ref	Total Capacity (Ltrs)	Max.rec. Silt (Ltrs)	Max. Flow Rate (L/S)	Length (MM)	Diameter (MM)	Access Shaft Diameter (MM)	Base Inlet Invert (MM)	Base To Outlet Invert (MM)	Standard Fall Across (MM)	Min Inlet Invert (MM)	Standard Pipework Diameter (MM)	Approx. Empty (Kg)
W1/010	1000	500	3	1123	1225	460	1150	1100	50	500	160	60
W1/020	2000	1000	5	2074	1225	460	1150	1100	50	500	160	120
W1/030	3000	1500	8	2952	1225	460	1150	1100	50	500	160	150
W1/040	4000	2000	11	3898	1225	460	1150	1100	50	500	160	180
W1/060	6000	3000	16	4530	1440	600	1360	1310	50	500	160	320
W1/080	8000	4000	22	3200	2020	600	2005	1955	50	500	160	585
W1/100	10000	5000	27	3915	2020	600	2005	1955	50	500	160	680
W1/120	12000	6000	33	4640	2020	600	2005	1955	50	500	160	770
W1/150	15000	7500	41	5435	2075	600	1940	1890	50	500	160	965
W1/190	19000	9500	52	6865	2075	600	1940	1890	50	500	160	1200

Klargester Compact Pumping Stations

Our proven range of compact pump stations can be used for effluent or sewage and are easy to install.

Quick to install and easy to maintain, Klargester pump stations are the ideal solution for outbuildings and extensions, cellars, pool houses and external WCs. They can be used for effluent or sewage, depending on the pump, distance and height.

Product Benefits

- Non-return valves and outlet pipe compression coupling as standard.
- 3 pump options; effluent low head, effluent high head and sewage vortex.
- Service and maintenance plans available to prolong the life of the pump systems.
- Complete pre-fabricated solution ready for installation.
- Fully automatic.

Technical Specifications

Chamber Size (mm)	Capacity (Ltrs)	Tank Material	Control Panel	Alarm	Pump Type
610 x 700	200	GRP	N/A	Optional	Single
560 x 1,650	400	GRP	N/A	Optional	Single

Selecting the Correct Pumping Station System

All Klargester pumping stations are suitable for pumping waste water effluent and sewage in accordance with BS 756-2.

They are also designed in line with Building Regulations for Foul Drainage. Your system size will depend on the type of waste you need to manage, your distance from the sewer and the difference in levels.

For expert advice, to help you select the correct system, please contact our specialist team on **01296 633033**

The key factors to size your system are as follows:

- Application: domestic, residential or commercial.
- Material application: sewage, effluent or surface water.
- Inlet depth (below ground level).
- Pumping distance and lift.
- Electrical supply.

Klargester Domestic and Domestic+ Pumping Stations

Our domestic pumping stations are ideal for homes or properties with up to 13 people.

Quick and simple to install, they require minimal maintenance. They come with single or twin pumps, and are suitable for sewage, surface water and effluent. Appropriate for 24 Hour storage requirements.

Product Benefits

- Made with super-tough, low maintenance GRP and high quality polyethylene for guaranteed durability.
- Comes with options of remote monitoring systems.
- Designed with easy access features for maintenance.
- Choose from either 110mm or 160mm inlet connections.
- Lockable covers for optimum security.
- Quick connection outlet couplings.

Technical Specifications - Domestic

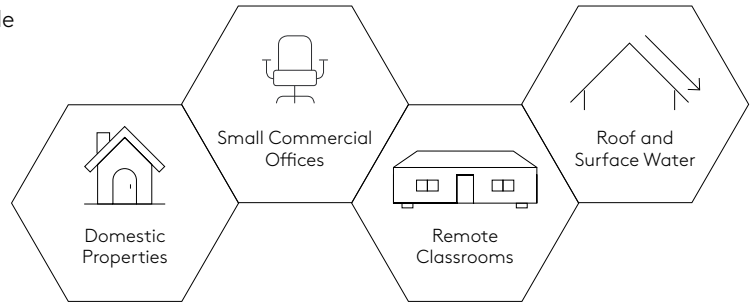
Chamber Size	Capacity (Ltrs)	Tank Material	Control Panel	Alarm	Pump Type
900 x 2580	1,600	GRP	Included	Optional	Single/Twin
900 x 2080	1,250	GRP	Included	Optional	Single/Twin

Technical Specifications - Domestic+

Chamber Size	Capacity (Ltrs)	Tank Material	Control Panel	Alarm	Pump Type
1000 x 2000	1,450	Polyethylene	Included	Standard	Single/Twin
1000 x 2500	2,200	Polyethylene	Included	Standard	Single/Twin

Applications

Suitable for a wide range of applications, the Compact and Domestic range of Klargester Pumping Stations are suitable for the following types of applications and many more:



Klargester Vertical Pumping Stations

Our Pumpstor Commercial pumping systems are ideal for developments and premises where drainage by gravity isn't an option.

Tanks and pumps come in a range of sizes and dimensions and have a 24-hour storage capacity for foul waste to comply with Building Regulations. A wide range of surface water pumps are available for such applications from small roof run offs, to large SUDS schemes, delivering up to 70 litres/second.

Pumpstor Commercial pumping stations are made from robust GRP. They are designed as a single-piece chamber, ready for installation with no man-entry required.

Product Benefits

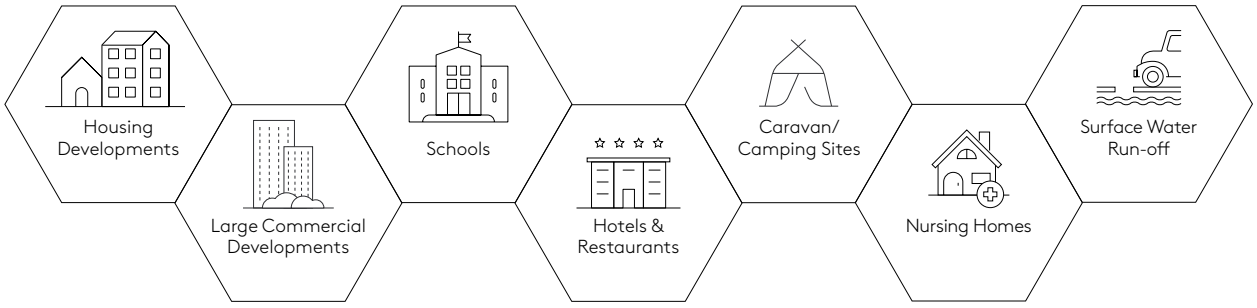
- High-level alarm.
- Internal lifting chains and guide rails (as specified).
- Wide range of pump options including macerators/vortex.
- Range of emergency overflow tanks, if required.
- Inlet connection sizes to suit site.
- Various invert depths and positions.
- GRP chambers with internal pipework in plastic, galvanised or cast iron.
- Optional kiosks with warning beacons and optional telemetry systems.
- Service and maintenance plans available to prolong the life of the pump systems.

Technical Specifications

Vertical Tank Size (mm)	Capacity (Ltrs)	Tank Material	Control Panel	Alarm	Pump Type
1250 Diameter	Up to 4,800	GRP	Included	Standard	Single/Twin
1800 Diameter	Up to 10,000	GRP	Included	Standard	Single/Twin
2600 Diameter	Up to 22,000	GRP	Included	Standard	Single/Twin

Applications

Designed for easy installation and available in many sizes to meet an extensive range of customer requirements, the Klargester range of Horizontal and Vertical Pumping Stations are typically used in applications including:



Klargester Horizontal Pumping Stations

If power supplies fail, Pumpstor Commercial responds instantly, separating liquids and solids into a separate chamber and storing waste for up to 24 hours. Once power is restored, the pumps will work normally again without further maintenance.

Product Benefits

- Single-tank installation up to 79m^3 (multiple tank systems available).
- Multiple valve chamber location and invert options.
- Weir screen features innovative removable filters, so there's no need to access the chamber during maintenance.
- High-level alarm.
- Totally sealed system.
- One-piece tank chamber for easy installation.
- Minimal on-site assembly.
- Less cranage and shallower excavation than concrete pumping stations.
- On-site Health & Safety issues are minimised – no requirement for personnel to enter the tank.

Commercial Pump Systems are made from GRP. It is designed as a single piece chamber with two separate sections. one for normal operation and one for emergency storage.

Technical Specifications

Tank Size (mm)	Capacity (Ltrs)	Tank Material	Control Panel	Alarm	Pump Type
2,600 Diameter	18000-79000	GRP	Included	Standard	Single/Twin

Klargester Adoptable and High Specification Pump Systems

The adoptable and high specification pump stations are designed to meet the requirements of 'Sewers for Adoption 7th Edition' and the 'Water Industry Standard' (WIS).

For expert advice, please contact our specialist team on **01296 633033**

Manufactured as a ready to install pre-fabricated unit for Type 1 and Type 2 installations for up to 20 dwellings.

Product Benefits

- GRP single piece wet well delivered to site ready to install.
- Pre-fitted internal pipework, pump guide rails and overflow filters.
- Approved control panel and kiosk.
- All necessary drawings supplied.

Klargester Gamma
Fully Integrated Rainwater Harvesting System

The Klargester Gamma rainwater harvesting system is designed as an intelligent rainwater harvesting system, tailor made for your home.

Typical Applications Include:

- WC Flushing
- Garden and Landscape Watering
- Domestic Laundry
- Vehicle Washing

With a technologically advanced finish, Gamma is suitable for both self build projects and residential developments.

It works by taking the rain from your roof gutters, filtering out leaves and debris and storing the water in an underground tank.

Manufactured from tough polyethylene, the tank is robust and lightweight, which makes it easy to handle and install. Its fuss free design offers high functionality, making it the perfect choice for your home or garden.

Automatic in operation, the Gamma rainwater harvesting system offers powerful features for complete peace of mind in your home. The intelligent system ensures an automatic supply of harvested rainwater for your home and garden.

For home and garden use, the Gamma is available in capacities between 2,350-4,600 litres.

Model Reference	Tank Dimensions					
	Capacity	Standard Overall Height	Standard Inlet Invert*	Standard Outlet Invert*	Length	Width
Gravity System						
GRW080	2,350 Ltrs	1,770mm	720mm	750mm	3,000mm	1,180mm
GRW110	3,100 Ltrs	2,260mm	720mm	750mm	2,480mm	1,130mm
GRW160	4,600 Ltrs	2,260mm	720mm	750mm	3,360mm	1,215mm
Direct System						
GRW080	2,350 Ltrs	1,768mm	720mm	750mm	3,000mm	1,180mm
GRW110	3,100 Ltrs	2,260mm	720mm	750mm	2,480mm	1,130mm
GRW160	4,600 Ltrs	2,260mm	720mm	750mm	3,360mm	1,215mm

* Includes tank neck - adjustable to suit required invert.

01 The Gravity System

The Gravity System uses an elevated header tank to store filtered water after the main tank.

02 The Direct System

The Direct System pumps water from the main storage tank and is used where a header tank is impractical.

Home and Garden

1 Water main
2 Storage tank
3 Header tank (optional extra)
4 Pressure Vessel (not supplied)
5 In-line filter 120 microns
6 Internal rainwater filter
7 Grundfos Intelligent Pump—SBA 3-23M
8 Adjustable tank neck
9 External tap (not supplied)
10 Roof rainwater feed
11 Filtered rainwater feed

Reduces Water Consumption

Regulations Compliant

Offers Fast Payback

Advisory Consultants

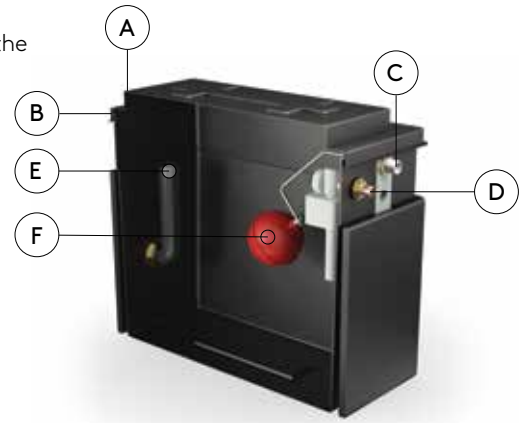
Features and Benefits

- Can reduce water consumption in domestic applications by up to 50%.
- Easy to install and simple to maintain.
- 'Fit and Forget' system, ensuring an automatic supply of harvested rainwater.
- Shallow Dig—the Gamma is designed with easy, affordable installation in mind.
- Pea shingle backfill available—no costly excavation and soil disposal necessary (dependent upon site conditions).
- Fully compliant—Gamma is tested in accordance with BS 8515:2009. standards.

Optional Extra - Header Tank

When ordering your system, to make the Gravity System complete you will require a header tank. Klargester offers a header tank with weir, ballcock and float valve which allows the switch over to mains, the weir provides the mandatory air gap.

A Mains Input
B Rainwater Input
C Water Regulations Compliant Mandatory Air Gap
D Overflow Point
E Rainwater Level Control
F Mains Level Control



Klargester Aquabank®
Rainwater Harvesting Range

Overview

The Klargester Aquabank rainwater harvesting system is designed with simplicity in mind.

Applications:

Vehicle Washing

Garden Watering

WC Flushing

Domestic Laundry

Aquabank is suitable for single residential applications. It uses cohesive design with the system controlled by a pump, with options for either direct or gravity fed applications. It's a highly intuitive system – easy to use with no need for a control panel, display panel or depth sensor.

Manufactured from strong GRP material, Aquabank is a complete 'kit in a box' – easy to install and the smart choice for your home's rainwater harvesting needs. For home and garden use, the Aquabank is available in capacities between 1,000 and 6,000 litres.

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Features and Benefits

- Easy to install.
- Simplified system designed for rapid installation.
- Quick start set up procedure.
- 'Kit in a box' set of key components.
- Easy conversion to gravity system with header tank.
- Minimal energy use in operation.
- Fully compliant - designed in accordance with BS EN8515.

Benefits of Installing Klargester Domestic Rainwater Systems

SAVE UP TO 50% On water consumption in domestic applications with Klargester Rainwater Harvesting solutions

The system that pays for itself — money saved through reduced water bills means aquabank can pay back its purchase costs

Assists Planning Application — Authorities increasingly expect applications to demonstrate Sustainable Drainage (SUDS)

How it works

01

Rainwater is stored in underground tank

02

Rainwater is pumped at a constant pressure to an elevated header tank

03

Water is pumped to a garden sprinkler or hose as required

Model	Capacity (Ltrs)	Standard Overall Height	Standard Inlet Invert	Standard Outlet Invert	Diameter / Width	Length
Gravity & Direct System						
AQB010	1,000	2,140mm	500-800mm	530-830mm	1,225mm	1,125mm
AQB028	2,800	2,582mm	500-1000mm	530-1030mm	2,070mm	—
AQB038	3,800	2,811mm	500-1000mm	530-1030mm	2,070mm	—
AQB046	4,600	2,961mm	500-1000mm	530-1030mm	2,070mm	—
AQB060	6,000	2,365mm	500-800mm	530-830mm	1,424mm	4,275mm

Klargester RainTrap®
Rainwater Storage and Delivery System

Easy to Install

Overview

An economical rainwater harvesting system designed to make garden watering simple. The Klargester RainTrap system comprises of a filter, an underground storage tank and a pump. Rainwater runs down the roof and into the guttering and downpipes in the normal way before passing through the filter, which removes any leaves or debris. Rainwater is stored in the underground tank from which it is pumped at a constant pressure to an outside tap as required.

The RainTrap has many advantages over traditional garden waterbutts. In addition to being able to store far larger quantities of water, it removes the need to carry water around and does not flood when full, since the excess water exits via a soakaway or surface water drain.

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Features and Benefits

- Easy to install.
- Inexpensive.
- Simple on/off operation.
- Suitable for existing and new homes.
- Available in sizes from 1,000 — 6,000 litres.
- Automatic rainwater diversion when tank reaches full capacity.
- Internal leaf filter.
- Designed and manufactured in the UK.

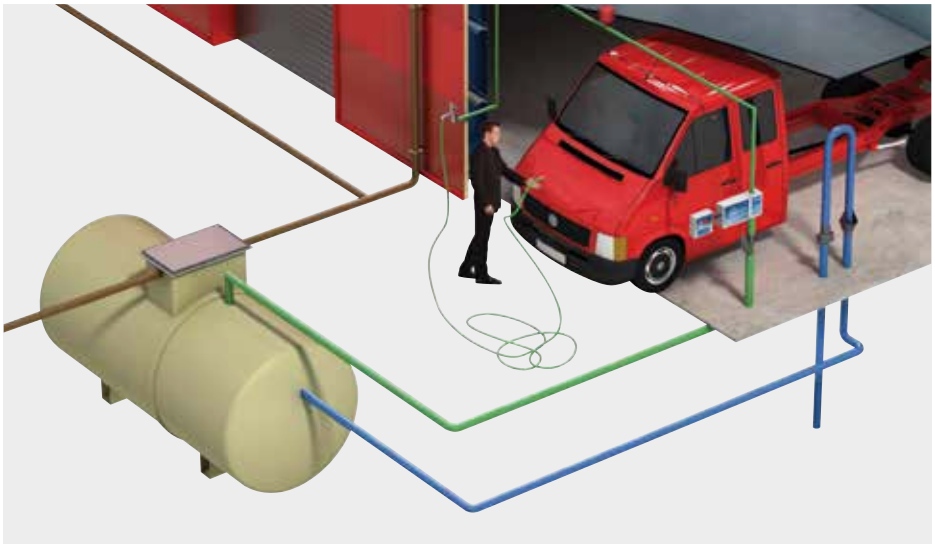
1. Pump power switch
2. Pumped water to required application, e.g. garden hose, power washer
3. Rainwater inlet (110mm)
4. Submersible pump
5. Wastewater/overflow outlet (110mm)
6. Leaf filter
7. Safety manhole lid

Technical Specifications – RainTrap

Model Reference	Capacity (Ltrs)	Diameter (mm)	Height Base to Outlet (mm)
RT2800	2,800	2,070	1,540
RT3800	3,800	2,070	1,760
RT4600	4,600	2,080	1,925

Klargester Commercial Below Ground Rainwater Harvesting System

The Klargester commercial range is a fully integrated, intelligent rainwater harvesting solution suitable for such applications as commercial vehicle washdown areas, garden centres and golf courses.



The commercial range provides a secure solution for any size of building project from 6,000 litres up to 79,000 litres of water in a single tank. For larger capacities, multiple tanks may be connected together to meet storage requirements.

It is available as either a gravity or direct system, depending on specific site requirements.

Large installations are carefully sized and selected, taking into consideration the following factors:

- Roof water yield.
- Projected water consumption.
- Groundwork criteria (prevailing water table, soil conditions, requirements or traffic access).
- Suitable filters and pumps to match system specifications, ensuring the water is kept at an optimum level of clarity and supply pressure).

Features

- Capacities from 6,000 to 79,000 litres within a single tank.
- Multiple tanks can be joined to cater for larger volumes.
- Can be installed under trafficked areas (with reinforced concrete support).
- Complete packaged units delivered directly to site.

Technical Specifications

Single Pump Model Reference	Twin Pump Model Reference	Capacity (Ltrs)	Diameter(m)
ENV0200SKSW	ENV0200TKSW	6000	1.4
ENV0275SKSW	ENV0275TKSW	8000	1.8
ENV0350SKSW	ENV0350TKSW	10000	1.8
ENV0485SKSW	ENV0485TKSW	14000	1.8
ENV0625SKSW	ENV0625TKSW	18000	2.6
ENV0765SKSW	ENV0765TKSW	22000	2.6
ENV0900SKSW	ENV0900TKSW	26000	2.6
ENV1040SKSW	ENV1040TKSW	30000	2.6
ENV1320SKSW	ENV1320TKSW	38000	2.6
ENV1460SKSW	ENV1460TKSW	42000	2.6
ENV1735SKSW	ENV1735TKSW	50000	2.6
ENV2050SKSW	ENV2050TKSW	59000	2.6
ENV2325SKSW	ENV2325TKSW	67000	2.6
ENV2745SKSW	ENV2745TKSW	79000	2.6

After Sales Service and Support

We recognise the importance of after sales service and support and are proud of our nationwide Kingspan Service network, which comprises our Kingspan in-house Service team and Accredited Installer network in support of the Klargester Product Range.

Together we are working to provide first class service across a range of sectors, including domestic, commercial, industrial, leisure, hospitality and many more.

With expertise across the Klargester range of waste water and drainage solutions, pumping stations, separators and rainwater harvesting, our dedicated support network offers the following offers the after sales service and support you would expect from a global organisation.

- First class technical engineering expertise across a range of off-mains sewage and wastewater applications.
- Day to day technical support.
- 24 hour breakdown repair.
- Preventative maintenance plans.
- Installation and commissioning.
- Asset monitoring.
- Consultancy and advice.

To speak with us about any aspect of installation, commissioning or service simply contact:

GB:

Tel: **0333 240 6868**
Email: **helpingyou@kingspan.com**

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We take every care and precaution to ensure that information in this document is accurate at the point of publish but with continuous product development the details given in this document are subject to alteration without notice.

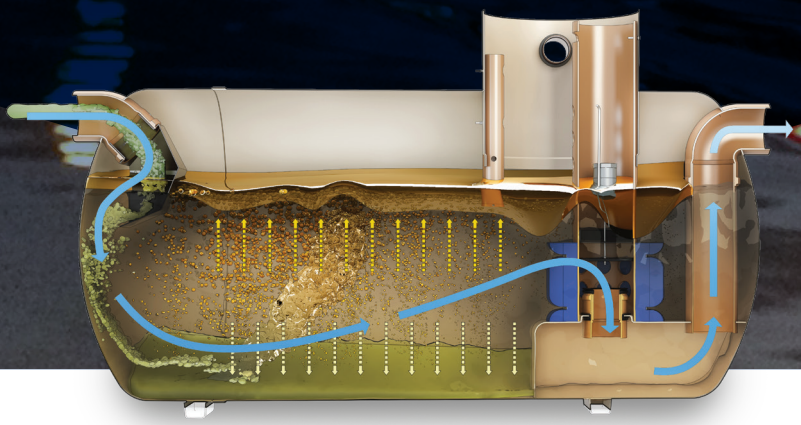
Service & Support Solutions

Avoid flooding and fines with effective maintenance planning

Separators trap hazardous substances to prevent them entering the local environment, therefore preventing pollution on your site. If they are not properly serviced and maintained they can become blocked, with the filters stopping the flow of water and causing overflow or flooding. Consequently, you could be fined for not complying to guidelines or prosecuted for polluting the local environment.

What is a Separator?

Separators are attached to surface water drainage systems to separate oil, or other hazardous fluids, from surface water. They are essential to help you avoid pollution on your premises and therefore it is vital that they are serviced and maintained properly in accordance with manufacturer guidelines and ISO 14001.



Call now to book your service visit on **0333 240 6868**

kingspanservice.com

Kingspan®

Service & Support Solutions

How often should my separator be serviced?

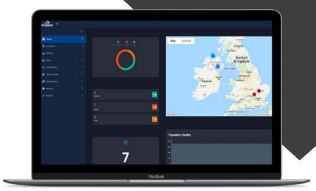
Kingspan's service and maintenance plans have been developed using our knowledge of a range of separators and in accordance with the Environmental Agency Pollution Prevention Guidelines and EN858-2.

Call now to book your service visit on 0333 240 6868

SmartServ Pro

Monitor your separators at the touch of a button

SmartServ Pro has been developed by Kingspan to help owners connect their buildings and equipment to the network through their building management or asset management software, improving the efficiency of the systems at the heart of your facility.



During our service visit we will;

- Complete an internal inspection of the structure for internal damage.
- Check closure device to ensure it is unrestricted by new filter.*
- Remove oil probe to be cleaned and tested to ensure its operational.*
- Fit all covers and check separator is fully operations.
- Complete log book and sign off on site.*

*If applicable

kingspanservice.com

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