OFF-MAINS DRAINAGE PRODUCTS
The **innovator** in domestic, commercial and agricultural off-mains products

**Marsh Industries**
Providing world-class off-mains drainage products and solutions to the domestic, commercial and agricultural sectors from our UK manufacturing plants in Kettering and Bridgwater.

**Working smarter**
Efficiently meeting the demands of our customers
We strive to be recognised as a collaborative and trusted partner for our customers, aligned to their business, and with a reputation for providing quality products that really do add value.

**Innovative thinking**
Enabling technologies that deliver tangible benefits
Working across many areas of the UK and European construction sectors our specialist 'innovation' team combines 100+ years' experience of designing, manufacturing and testing wastewater treatment products that are proven to be economic, efficient and environmentally sensitive.

**Compliant products**
In line with UK/EU building and environmental regulations
Our products are fully type-tested and certified to ensure compliance with relevant environmental permitting programmes and Building Regulations.

**Delivering on time**
UK nationwide and overseas
With one of the largest merchant distributor networks available in Europe, customers specify Marsh products and services because they know we deliver from a solid foundation of knowledge, experience, product quality and proven performance.

**Supporting your business**
Specialist services to further enhance customer requirements
There are times when our customers need a little extra support. Whether this is on-site advice, backup support, specialist testing or bespoke project solutions, we offer a range of services when and where required.

**TOGETHER** we are a strategic partnership
Our core strength lies in the knowledge, experience and enthusiasm of our staff and our customers combined.
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<td>Marsh:Marator oil separators</td>
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DOMESTIC OFF-MAINS DRAINAGE PRODUCTS
What are your options?

Choosing the right sewage treatment and disposal method for your site is essential to ensure effective long-term performance, protection of public health and the environment, and compliance with relevant legislation.

Sewage treatment and disposal can be provided by either public (foul) sewer or by a private sewage system. Use of a private system is only usually acceptable where connection to the public sewer is not possible, and as such should be discussed with your local Planning Authority at an early stage.

Before sewage effluent can be discharged to ‘controlled waters’ it must receive at least primary and secondary treatment:
- For a discharge to ground the micro-organisms in the soil provide the secondary treatment
- For a discharge to a water course the sewage treatment must be provided by a Package Sewage Treatment Plant (PSTP) or equivalent

See page 14 for further guidance on sewage treatment.

System selection

Hierarchy of off-mains discharge routes as laid out by the environmental regulators and British Water

For the very latest information on discharge criteria and environmental legislation please refer to environmental regulators, Building Regulations, and British Water websites.

1  Environment Agency (England)
2  Natural Resources Wales
3  NIEA (Northern Ireland)
4  SEPA (Scotland)
Overview

The Marsh Ensign is widely regarded as one of the most efficient, reliable and economical sewage treatment plants on the market.

The standard Ensign has been adapted to improve reliability and the Ensign:Ultra now brings unique enhancements to further improve noise level, treatment efficiency and final effluent quality.

Class leading performance

Tested and approved to BSEN12566-3/A1:2009 all Ensign units provide treatment well within national consent requirements. Published test results of 11.5:19.2:8.4mg/ltr (BOD:suspended solids:ammonia), with influent concentrations on test higher than those chosen by most competitor plants, effectively equates to 97% pollutant removal.

Unrivalled choice

Ranging in size from 4 to 50 PE in Ultra, Standard and Shallow versions of each, and with a wide range of ancillaries, almost all site, consent and budget requirements can be met by units from the range.

Why choose the Marsh Ensign?

End users, merchants and installers alike recommend the Ensign range due to its ease of installation, reliability, and cost-effective operation and maintenance. All backed by technical support from local contacts.

Operating principle

In addition to anaerobic digestion taking place in the primary settlement chamber the Ensign:Ultra unit allows the clarified water to pass into a second 'aeration' chamber where it is treated to remove the dissolved constituents. Here aerobic bacteria, supported by diffused air and mobile media, ensures full treatment is achieved before the treated effluent and 'sloughed off' bacteria flows to a final settlement chamber. The final effluent is then discharged to the drainage field or watercourse via a Polylok filter.
Benefits

1. Inlet with ‘Forsheda seal’
   Forsheda seal provides flexibility in the joint for easier installation.
   Optional risers to increase invert depth are available.

2. Primary settlement chamber

3. Aeration chamber

4. Advanced compressor with alarm (Ensign:Ultra units only)
   Near silent compressor ensures minimal running, maintenance and servicing costs. Integral alarm
   detects low pressure in air line. (Regular Low-energy compressor on Ensign:Standard models).

5. Compressor housing - internal or external options available
   The compressor can be housed internally or externally with no difference in cost.
   External recommended to increase compressor life, and supplied as standard on 4PE, shallow and
   pumped outlet versions.

6. RCD/Electrical connection (Ensign:Ultra units only)
   The RCD box provides easier installation and proveds a higher degree of safety. (Regular
   plug/socket connection on Ensign:Standard models).

7. PVC pressure pipe/diffuser(s)
   Provides a protective conduit for the air diffuser line. Can be easily removed for maintenance
   and cleaning.

8. Bio-media
   High specification bio-media (310m³ per m²) and membrane diffusers ensure even circulation to
   eliminate ‘dead spots’. The bio-media is contained by a stainless steel securing mesh to ensure no
   migration during handling or potential flooding.

9. Stainless steel mesh
   Retains media in aeration chamber during transportation and handling, and in the event of flooding.

10. Final settlement chamber

11. 32mm sludge return
   Larger diameter sludge return prevents the possibility of blockages and improves system
   circulation. Provides higher effluent quality whilst balancing flow over a 24 hour period or periods
   of intermittent use.

12. Unique Polylok tertiary filter (Ensign:Ultra units only)
   The Polylok tertiary filter reduces suspended solids and BOD by a further 40% helping to extend
   drainage field life.

13. Outlet with ‘Forsheda seal’
   Forsheda seal provides flexibility in the joint for easier installation. Optional pumped outlets are available.

14. Impermeable lid
   Heavy duty lid/frame improves strength and durability whilst blending into the surrounding
   environment. (Regular lid on Ensign:Standard models).

15. Integral lifting eyes
   For safe and secure on-site handling.

16. Stabilising feet
   Stabilising feet prevents the tank from rolling and allows safe and steady transportation and
   installation.

17. Unique ‘keying-in’ lip
   Assists anchoring into granular or concrete surrounds.

Guidance notes

Package Sewage Treatment Plant’s (or PSTP’s) are often a suitable option where groundwater
in the surrounding environment is vulnerable, drainage field percolation values are restrictive,
or direct discharge to a water course or surface water sewer is the preferred discharge method.

- PSTP’s should be sized using the latest version of British Water Flows & Loads which provides
detailed information on sewage production figures and sizing calculations

- Regulatory authorities for the control of pollution in the UK normally require treatment
   plants conforming to BSEN12566:3 to be demonstrated as capable of producing a
   minimum effluent discharge quality of 20:30:20
   (Biochemical Oxygen Demand:Suspended Solids:Ammoniacal Nitrogen in mg/ltr),
   although in certain areas more stringent site-specific qualities may be required

- No surface water should enter the system as this can reduce the system’s capacity and cause
  solids to be flushed out which may prematurely block drainage field or cause pollution

- As with septic tanks sludge should be removed annually or in line with manufacturers
  instructions

Many domestic sewage treatment plants offered by “internet resellers” claim to hold
EN12566-3 compliance. This does not necessarily mean compliance with the UK

These plants may have been tested in their country of origin but not tested to the same
criteria as Marsh Industries, where we strictly adhere to the UK National Forward. Contact
contracts@marshindustries.co.uk for more information.
The Marsh Ensign is widely regarded as one of the most efficient, reliable and economical sewage treatment plants on the market.

### Specifications

**Ensign:Ultra and Ensign:Standard**

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**Notes:**

- Larger population sewage treatment plants may be supplied as multiple tank configurations.
- For precise tank sizes and configurations, please contact Marsh Industries.
- All dimensions in mm
Shallow units

Common sewage treatment plants on the market often exceed 2.3m high. Marsh Industries offer a range of shallow plants from 4-35PE that are only 1.6m in height, meaning installation is not only possible*, but easier and safer too.

*Shallow Ensign’s are often favoured when hard rock site conditions mean deeper alternatives, involving costly and time-consuming excavation.

Shallow Ensign: Ultra and Shallow Ensign: Standard

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Notes:
- Larger population sewage treatment plants may be supplied as multiple tank configurations.
- For precise tank sizes and configurations, please contact Marsh Industries.
- All dimensions in mm.

20-30% reduction in excavation
40-50% reduction in excavation
Ultra:Polylok L
Sewage treatment plants
Intensive biological processing for off-mains wastewater

Overview
The Marsh Ultra:Polylok L (UPL) draws upon Marsh Industries’ extensive experience in the industrial and commercial sewage treatment sectors bringing its outstanding performance and high-quality engineering to the domestic sector.

The UPL is available in 6PE and 12PE models, is approved to BS EN12566-3 and carries an impressive effluent quality of 20:30:20, within national consent standards.

Both models are compact and easy to install, meeting the needs of installers and specifiers alike.

Benefits
- Tested and approved to the most stringent European Standards: EN12566-3: 2005+A1:2009
- Small footprint and shallow dig for easy installation provides enhanced health and safety benefits
- Heavy duty shell as standard enables installation in all ground conditions. Unique 'keying-in' lip assists anchoring into granular or concrete surrounds
- Near silent, energy efficient compressor (located externally) with integral alarm (approximate annual running costs of £35 p/annum)
- High specification bio-media (310m³ per m²) and membrane diffuser ensures even circulation and maximum treatment efficiency
- Unique Polylok tertiary filter reduces suspended solids and BOD by a further 40% helping to extend drainage field life
- Sludge return pipe improves system circulation
- Variable inverts for ease of installation at various depths – 250, 500 and 750mm risers available
- Pumped outlets available

Operating principle
The UPL uses a similar operating principle as the Marsh:Ensign. In addition to anaerobic digestion taking place in the primary settlement chamber the UPL unit allows the clarified water to pass into a second 'aeration' chamber where it is treated to remove the dissolved constituents. Here aerobic bacteria, supported by diffused air and mobile media, ensures full treatment is achieved before the treated effluent and 'sloughed off' bacteria flows to a final settlement chamber. The final effluent is then discharged to the drainage field or watercourse via a Polylok filter.

Key
1. Inlet
2. Primary settlement chamber
3. Aeration chamber
4. Compressor with alarm
5. Compressor housing
6. Air diffuser
7. Bio-media
8. Final settlement chamber
9. Polylok tertiary filter
10. Outlet
11. Heavy duty lid

Whisspurr
Acoustic Vibration Reduction (AVR) unit
Suitable for all types of diaphragm compressors.
See page 14.

Specifications

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<th>Model</th>
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Notes:
> For precise tank sizes and configurations, please contact Marsh Industries
> All dimensions in mm
Overview

The Marsh Portapura is the most compact and efficient sewage treatment plant we’ve ever made.

Designed for small domestic premises, temporary accommodation and workshops, the Portapura is portable, can be installed above or below ground and treats domestic wastewater to a level that is 25 times better than the recommended EN standard.

Full Portapura tank specifications are shown on page 29.

Operating principle

Wastewater enters the primary settlement chamber \( A \) where large solids are removed by settlement and flotation. An accumulation forms at the base of the tank and is removed by desludging.

The clarified water is then transferred to the main aeration chamber \( B \) where aerobic bacteria, supported by diffused air, ensures full treatment is achieved before the effluent and ‘sloughed off’ bacteria flows to the filter chamber \( C \) for further solids removal.

The final effluent is then discharged to a water course via the final settlement chamber \( D \).

Key

1. Inlet
2. Debris barrier
3. Air diffusers
4. Polylok tertiary filter
5. Outlet
6. Air pump connection
7. Recirculation to primary chamber
8. Air vent
9. Access covers (Available in brown or green)
10. Heavy duty shell
11. Compressor with alarm
12. Accoustic compressor housing

Benefits

- Available in three sizes – 2, 3 or 5 person units (gravity or pumped outlet)
- Compact, lightweight construction – No heavy plant required
- Portable – Systems can be installed above ground and removed/stored when not in use
- Cost effective installation – Below ground installation can be achieved in approximately 2 hours
- Outstanding treatment efficiency – 14:19:0.7mg/ltr (BOD:Suspended solids:Ammonia)
- Near silent air compressor – Ensures minimal running, maintenance and servicing costs
- Electrical consumption: 1.8kWh/d – Equivalent to the daily use of a lightbulb
- CE approved to BS EN 12566
- Fire resistance tested in accordance with EN ISO 11925-2:2010
- Tested for structural integrity in accordance with EN ISO 179-1/1eA

Whisspurr
Acoustic Vibration Reduction (AVR) unit
Suitable for all types of diaphragm compressors. See page 14.
Uni:Gem★
Septic conversion unit
Unique septic tank to sewage treatment plant conversion unit

Overview
Marsh Industries’ latest innovation, the Uni:Gem★, is a unique septic tank conversion unit which exceeds EN12566-3 / EN12566-6 standards and conforms with 2020 General Binding Rules (GBRs for septic tanks or small sewage treatment plants for domestic use).

Positioned behind any existing septic tank the Uni:Gem★ treats the septic tank discharge to an effluent quality of BOD 12.25: TSS 16: Ammonia 14.845 mg/l (The UK Forward is less than BOD 20: TSS 30: Ammonia 20), meaning final effluent can be discharged safely to a river, ditch or watercourse.

The Uni:Gem★ provides notable benefits for existing septic tank owners, particularly those who need to upgrade or replace their septic tanks before 1st January 2020.

Operating principle
Effluent from the existing septic tank or sewage treatment plant is transferred to the Uni:Gem★ unit and enters the aeration chamber where it is treated to remove dissolved constituents. Here aerobic bacteria, supported by diffused air and mobile media, ensures full treatment is achieved before the treated effluent (and ‘sloughed off’ bacteria) flows to a final settlement chamber prior to discharge.

Key
1 Existing septic tank
2 Uni:Gem★ tank
3 Inlet
4 Aeration chamber
5 Air diffuser
6 Transfer to final settlement
7 Final settlement
8 Outlet
9 Air diffuser feed
10 Bio media
11 Manway access

Benefits
- Converts a polluting septic tank into a fully functioning sewage treatment plant without the need for removing and replacing the old tank or building a drainage field
- Tested to EN12566-3 / EN12566-6 and CE-marked to ensure compliance with environmental and Building Regulations requirements
- Outstanding effluent quality of 12.25:16:14.845 (BOD:SS:NH4) ensures discharges well within national consent standards
- Tested and proven to be suitable for all ground conditions, all year round
- Provides a space saving solution for sites and where minimal disruption to surrounding obstructions is required
- Low energy compressor ensures minimal running, maintenance and servicing costs
- Quick and easy installation provides enormous cost-savings as well as health, safety and environmental benefits
- Offers simple and safe access for maintenance and cleaning
- Horizontal and vertical models available
- Integral lifting eyes for improved on-site handling
- Final effluent is clear and odourless

Whisspurr
Acoustic Vibration Reduction (AVR) unit
Suitable for all types of diaphragm compressors. See page 14.
Specifications

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- Uni:Gem supplied with external compressor and compressor housing
- Check your septic tank outlet invert (ground level to the bottom of the pipe)
- Other sizes of Uni:Gem are available. Contact Marsh Industries for more information
- For precise tank sizes and configurations, please contact Marsh Industries
- All dimensions in mm

2020 General Binding Rules

For decades, millions of septic tanks have been installed throughout the UK in rural and urban areas. Septic tanks are known to be ineffective at processing sewage to modern environmental standards, causing long-term damage to the country’s natural water infrastructure and wildlife.

It was therefore inevitable that new rules and a code of conduct would be introduced to prevent the effects of wastewater pollution once and for all; The Environmental Permitting (England and Wales) (Amendment) (England) Regulations 2014 came into force on 1 January 2015 creating the General Binding Rules (GBRs) for septic tanks or small sewage treatment plants for domestic use. These rules are designed to reduce the level of pollution from sewage in the nation’s watercourses.

The rules state that any existing septic tank discharging to surface water, ie, to a water ditch, stream or river, etc, must either be upgraded or replaced with a new package sewage treatment plant by 1st January 2020.

Marsh Industries, the leading UK manufacturer of package sewage treatment plants, produces over 3000 units per year. However the company’s range of Uni:Gem septic conversion units is the only product available on the market which can treat wastewater from an existing septic tank without the need for a complete replacement product or drainage field upgrade.

To comply with the GBRs and current EN standards, the entire Uni:Gem range was redeveloped from the ground up and tested, not only to meet, but to exceed UK and International standards. The Uni:Gem was born – creating an industry first 2020 compliant septic conversion unit with outstanding processing performance.

The Uni:Gem range was tested in accordance with BSEN12566-3/A1:2009 and EN12566-6 standards at the PIA GmbH test facility in Aachen, Germany, over the course of 38 weeks with a daily loading of:
Flow: 900 litres/day        BOD: 360g       NH4+: 48g

Testing occurred between November 2018 and August 2019 to ensure all seasons were covered whilst minimum/maximum temperatures were tested to assure Ammonia and BOD process reduction for the UK climate. Holiday periods were also simulated during the test procedure.

Final test results yielded an output of 12.5:16:4mg/ltr (BOD:Suspended solids:Ammonia) that is well within national discharge consent requirements.

The Uni:Gem is an extremely cost effective solution for converting any polluting septic tank into a fully compliant sewage treatment plant ensuring homeowners, estate managers, water companies/amenities have an effective way to keep the environment clean whilst providing a quick and efficient installation process.
Overview

Introducing Whisspurr, the innovative AVR unit designed to reduce noise and vibration from diaphragm compressors used in the water and wastewater treatment sectors.

Fitted inline between the compressor and air diffuser, the Whisspurr significantly reduces noise and vibration generated from the pulsation of the diaphragm compressor whilst enabling a consistent, unrestricted flow to the air diffuser.

The Whisspurr is suitable for all types of compressor; Bibus, Secoh, Charles Austen, Nitto, etc.

For accurate unit sizing, contact Marsh Industries’ technical team on 01933 654582.

- Significantly reduces compressor volume and vibration, addressing concerns of noise pollution in rural areas
- No reduction in air pressure from the compressor
- No increase in back pressure to the compressor
- Requires no electrics
- Available in four standard sizes
- Easy retrofit to existing compressors
- Hose tail is 20mm standard
- Dark green unit as standard
- Unique UK design, patent pending
- Optional extras include Marsh acoustic compressor housings (Two sizes available depending on compressor size)

Hear the difference for yourself at marshindustries.co.uk
Euro:Septic™/Septic tanks

Basic treatment to off-mains wastewater

Overview

The Euro:Septic offers significant technical improvements and cost-savings over current market options. The range, available in capacities from 2800-4500 litres, is CE marked to comply with Construction Product Regulations and compliments the company’s existing range of horizontal septic tanks. The Euro:Septic is tested and certified to EN12566-1 Annex B and benefits from an outstanding hydraulic efficiency of 99.63%. Horizontal septic tanks are also tested and certified to EN12566-1.

Benefits

- Tested to BS EN12566:1 and CE-marked to ensure compliance with latest environmental and Building Regulations requirements
- Traditional ‘onion-style’ tanks for standard installations
- Low profile versions for high water table or hard rock site conditions
- Unique Polylok filter improves effluent quality and prolongs drainage field life
- Heavy duty shell as standard to enable installation in all ground conditions
- Integral lifting eyes for improved on-site handling
- ‘Keying-in’ assists anchoring into granular or concrete surround
- Pedestrian cover included as standard

Euro:Septic

For precise tank sizes and configurations, please contact Marsh Industries
All dimensions in mm

<table>
<thead>
<tr>
<th>Size</th>
<th>Dia +/-50mm</th>
<th>Height +/-50mm</th>
<th>Inlet</th>
<th>Outlet</th>
</tr>
</thead>
<tbody>
<tr>
<td>2800L</td>
<td>1700</td>
<td>2780</td>
<td>1000</td>
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<tr>
<td>3800L</td>
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</tr>
<tr>
<td>4500L</td>
<td>2196</td>
<td>3100</td>
<td>1000</td>
<td>110</td>
</tr>
</tbody>
</table>

Operating principle

Normally the simplest and most economical means of treating wastewater from small developments, a septic tank holds sewage and allows solids to settle into sludge at the bottom of the tank. Here it is naturally broken down by a process known as anaerobic digestion, which provides settlement and some biological treatment. The effluent is not fully treated and must receive additional treatment before discharge to the water environment – the most common method being to spread the effluent to land via an underground drainage field.

Key

1 Inlet
2 Settlement chamber
3 Polylok filter
4 Outlet
5 Access cover

Horizontal septic tanks

For precise tank sizes and configurations, please contact Marsh Industries
All dimensions in mm
When discharge to mains is required, but to do so by gravity is impractical, a pump chamber system will be needed. Although available as floor-mounted units for indoor applications such as basements, the vast majority are installed outdoors at levels to suit on-site conditions and topography. The Marsh range incorporates systems for pumping surface water or domestic sewage to mains, septic/PSTP effluent to drainage fields/watercourses, and bespoke systems for larger domestic and industrial applications.

**Pump chamber benefits**
- Designed to BSEN12050 for structural strength and water-tightness and to BSEN752 to comply with hydrostatic and electrical requirements
- Smooth internal walls and integral pump well improves pump efficiency and eliminates ‘dead spots’ which can lead to odours and septicity
- Pre-assembled pipework for fully automatic operation (pump/control equipment separate)
- Heavy duty (industrial) ‘peardrop’ floats and Lowara (Xylem) pumps throughout ensure robust, reliable design and maximum efficiency of pump with minimal clogging or wear
- Unique ‘keying-in’ lip to assist anchoring into concrete surround
- High-level alarm as standard
- Variable invert depths and orientations to suit individual site conditions

**Operating principle**
Each pump chamber contains a number of float switches linked to a control panel that automatically controls flow and levels.

In a single pump chamber there are three float switches:
- Float A: Actuates the pump cycle until level drops to low level.
- Float B: Low level float stops the pump.
- Float C: High level alarm – positioned above the pump actuator float (min 100mm).

For twin pump chamber operation there is an additional float switch (Float D) – usually positioned 150mm above first actuator (A) – which actuates the second pump in periods of higher flow.

After each cycle the pumps alternate to extend pump life and are designed to run for a minimum of 60 seconds with no more than 15 starts per hour.

**Marmicro benefits**
- Designed to BSEN12050 for structural strength and water-tightness
- Suitable for floor mounting or burying
- Chamber design and smooth internal walls improve pumping efficiency and eliminate ‘dead spots’ which can lead to odours and septicity
- 2” Lowara (Xylem) vortex pump with integral float ensures simple, robust and reliable design with minimal clogging or wear
- Pedestal positively locates pump in position for optimum performance, guide rails allow simple removal for easy maintenance
- Pre-assembled outlet pipework assists quick and easy installation
- Options include 300mm ‘riser’ for deeper installations (max 2), grinder pumps, and alarms
Guidance notes

- Where foul water drainage from a domestic property is to be pumped to the mains the effluent receiving chamber should be sized to contain 24-hour inflow to allow for disruption in service, the minimum daily discharge being taken as 150 litres per person per day.
- For other building types the capacity of the receiving chamber should be based on the calculated daily demand of the water intake for the building, or when only a proportion of the foul sewage is to be pumped then the capacity should be based pro-rata.
- If the sewer is to be ‘adopted’ by a local water authority, please contact Marsh Industries as Sewers for Adoption (SFA) specification and additional local authority related criteria may apply.

Specifications

Vertical pump stations

For housing projects and small commercial developments

<table>
<thead>
<tr>
<th>Model</th>
<th>Dia +/-50mm</th>
<th>Height +/-50mm</th>
<th>Inlet Ø</th>
<th>Outlet Ø</th>
<th>Storage below invert</th>
<th>Total Storage Litres</th>
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<td>2000</td>
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<td>63</td>
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<td>600</td>
<td>2000</td>
<td>300</td>
<td>63</td>
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<tr>
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<td>CPS5</td>
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<td>300</td>
<td>63</td>
<td>4000</td>
<td>6000</td>
</tr>
</tbody>
</table>

Notes:
- All pump chambers are available for dirty water (DW) or sewage (SW), in single pump (SP) and twin pump (TP) configurations. Pump chambers are usually bespoke.
- The dimensions given on this page are for guidance only.
- For precise tank sizes and configurations, please contact Marsh Industries.
- All dimensions in mm.

Horizontal pump stations

For larger housing projects, and commercial/industrial developments

<table>
<thead>
<tr>
<th>Model</th>
<th>Length +/-50mm</th>
<th>Width +/-50mm</th>
<th>Height +/-50mm</th>
<th>Inlet Ø</th>
<th>Outlet Ø</th>
<th>Total Storage Litres</th>
</tr>
</thead>
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<td>800</td>
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</tr>
</tbody>
</table>

Notes:
- All pump chambers are available for dirty water (DW) or sewage (SW), in single pump (SP) and twin pump (TP) configurations. Pump chambers are usually bespoke.
- The dimensions given on this page are for guidance only.
- For precise tank sizes and configurations, please contactMarsh Industries.
- All dimensions in mm.

Marmicro

For small flows from single developments

<table>
<thead>
<tr>
<th>Model</th>
<th>Length +/-50mm</th>
<th>Width +/-50mm</th>
<th>Height +/-50mm</th>
<th>Inlet Ø</th>
<th>Outlet Ø</th>
<th>Total store</th>
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<td>1270</td>
<td>740</td>
<td>840</td>
<td>350</td>
<td>110</td>
<td>550</td>
</tr>
</tbody>
</table>

All dimensions in mm.
Sewage treatment
General guidance as provided by environmental regulators

As stated in this brochure, for development proposals in sewered areas it is usually a legal requirement to connect to the public sewer, either by gravity or pumping, as the sewage is conveyed to a municipal sewage treatment works.

However, if it can be demonstrated that the proposed sewage disposal system offers a more sustainable solution to the overall water management of the site, then the regulators will consider the installation of a ‘private’ system.

For any such proposal you should:
- Check with your regulating body to confirm current status with regard to Registration/Consent, quality and volume limits, etc
- Take account of the requirements of Building Regulations and discuss with the local planning authority at an early stage - well before any planning application is made

Drainage fields

If you have access to a suitable area of land, discharge from your septic tank or treatment plant to a properly designed and sized drainage field is the best environmental option as the treated effluent recharges groundwater, nutrients are retained in the soil, and nutrient loads on surface waters are reduced.

The most common form of drainage field is a subsurface percolation area comprising perforated infiltration pipes laid in shingle-filled trenches – normally within 1m of ground level to allow the micro-organisms in the soil to break down the organic matter, and at least 1.2m above the winter water table.

The drainage field has two principal purposes:
1. To allow percolation of partially treated/treated effluent to ground at a controlled rate
2. To allow further treatment of partially treated effluent before it reaches the groundwater level

Before you can dispose of effluent via a drainage field you first need to assess whether such a route is appropriate, i.e., you have a good depth of well-drained, well-aerated soil away from watercourses, wells/boreholes, dwellings, and avoiding sloping sites and areas prone to waterlogging.

Trial hole and percolation test method (See figure 1)

To calculate the exact area of land required for effective disposal an ‘assessment’ is required, usually by performing a percolation/water table test as outlined in BS6297 (Code of Practice for the Design and Installation of Drainage Fields for use in Wastewater Treatment) and the latest version of Building Regulations: H2.

A trial hole should be dug to determine the position of the standing groundwater table a minimum of 1m in area and 2m deep, or a minimum of 1.5m below the invert of the proposed drainage field pipework. The groundwater table should not rise to within 1m of the invert level of the proposed effluent distribution pipes. If the test is carried out in summer, the likely winter groundwater levels should be considered.

A percolation test should then be carried out to assess the further suitability of the proposed area. A hole 300mm square should be excavated to a depth 300mm below the proposed invert level of the effluent distribution pipe. Where deep drains are necessary the hole should be enlarged above the 300mm level to enable safe excavation to be carried out.

Fill the 300mm square section of the hole to a depth of at least 300mm with water and allow it to seep away overnight.

Next day, refill the test section with water to a depth of at least 300mm and observe the time, in seconds, for the water to seep away from 75% full to 25% full level (i.e., a depth of 150mm). Divide this time by 150. The answer gives the average time in seconds (Vp) required for the water to drop 1mm.

The test should be carried out at least three times with at least two trial holes and the average figure from the tests should be taken. The test should not be carried out during abnormal weather conditions such as heavy rain, severe frost or drought.

Drainage field disposal should only be used when percolation tests indicate average values of Vp of between 12 and 100. This minimum value ensures that untreated effluent cannot percolate too rapidly into groundwater. Where Vp is outside these limits effective treatment is unlikely to take place in a drainage field.

Figure 1 - Percolation/water table test

Note:
> The phrase ‘soakaway’ is often used in relation to septic/treatment plant discharges. However, the purpose of a ‘soakaway’ is to distribute surface water to ground as quickly as possible and does not provide the required features of a drainage field.
Drainage field construction (See figures 1 and 2)

Drainage fields should be designed and constructed to ensure aerobic contact between the liquid effluent and the subsoil using perforated pipe laid in trenches:

- Pipes should be laid on a 300mm layer of clean shingle or broken stone (graded between 20mm and 50mm) at a minimum depth of 500mm and a uniform gradient not steeper than 1:200
- Trenches should be filled to a level 50mm above the pipe and covered with a layer of geotextile to prevent the entry of silt. The remainder of the trench can be filled with soil
- Trenches should be from 300mm to 900mm wide with areas of undisturbed ground 2m wide being maintained between parallel trenches.
- An inspection chamber should be installed between the septic tank and the drainage field
- Drainage fields should be set out as a continuous loop fed from the inspection chamber

To calculate the floor area of the drainage field \( A_f \) in m², the following formulas should be used:

For septic tanks: \( A_f = p \times V_p \times 0.25 \)

For treatment plants: \( A_f = p \times V_p \times 0.20 \)

Where \( p \) is the number of persons served by the tank and \( V_p \) is the percolation value (secs/mm) obtained.

If it is not possible to discharge to a drainage field but you can discharge to a watercourse, coastal water or surface water sewer you should consider installing a package sewage treatment plant to treat sewage to a sufficient standard as to allow direct discharge to the receiving waters.

Tank sizing

The size of sewage treatment system you will require depends on the number of people that occupy the site and their activities, and it is at this stage you should re-contact Marsh.

You will need to provide detailed information about the sewage to be treated and its disposal method to enable calculation of the size of plant you will need. It is essential that you give accurate information as incorrect specification may result in the system you are provided with being inadequate and not treating the sewage effectively, leading to foul smells and possible pollution.

Distance from properties

Guidance collated from several sources recommends the following:

<table>
<thead>
<tr>
<th>Distance from</th>
<th>Pump chamber:</th>
<th>Dwelling</th>
<th>Watercourse</th>
<th>Borehole/well</th>
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<tr>
<td>1-5 dwellings</td>
<td>5m</td>
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<td>6-20 dwellings</td>
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<td></td>
</tr>
<tr>
<td>Cesspool</td>
<td>7m</td>
<td>10m</td>
<td>50m</td>
<td></td>
</tr>
<tr>
<td>Drainage field</td>
<td>15m</td>
<td>10m</td>
<td>50m</td>
<td></td>
</tr>
</tbody>
</table>

Desludging

Sewage treatment is an ongoing process and the micro-organisms must stay healthy for the system to work. You should desludge the system regularly (usually annually or in line with manufacturer instructions) to prevent the buildup of sludge and solids to ensure sewage flows freely through the unit. It is recommended that not all sludge is removed as it can act as an anaerobic seed.

 Tanks should be inspected monthly to check they are working correctly – the inlet chamber should be free-flowing and the effluent from the outlet should be free-flowing and clear.

Where emptying is by tanker, siting within 30m of suitable vehicle access point is recommended.

Notes:

- Septic tanks can only discharge to ground via a drainage field – discharge to a watercourse (stream, ditch, pond) is not allowed.
- Drainage fields are not permitted in Zone 1 groundwater protection zones.
- No underground services or access roads/driveways/paved areas should be located in the disposal area.
- Discharge from a sewage treatment plant requires a smaller (20% less) drainage field than a septic tank for effective treatment.
- Elevated drainage mounds can provide an alternative to conventional drainage fields in certain circumstances as they provide an aerated layer of soil where a conventional drainage field is inappropriate due to occasional waterlogging.

Figure 2 - Typical drainage field construction
Project management

With extensive experience of managing the design, manufacture and dispatch of pump stations, sewage treatment plants, attenuation tanks, rainwater harvesting systems and associated products, Marsh Industries’ Civils Team works closely with clients to ensure projects are delivered on time and on budget.

The company trains its team to recognised competency standards to address the growing management requirements from order placement through to delivery and installation.

All products are backed by Marsh Industries commercial and technical support.

Post installation and commissioning visits are available, together with service and maintenance contracts if required.

Gaia Sege© Process design software

Developed by Marsh Industries, the unique Gaia Sege process design software uses core information to accurately calculate and tailor key variables ensuring total optimisation for individual applications.

These precise calculations provide assurance to consultants, engineers, specifiers and contractors that the system is specifically designed to meet the appropriate standards of regulatory bodies.

Sewage treatment plants

For sewage treatment plants, the software uses established core process equations to accurately calculate and tailor key variables ensuring total processing optimisation for Biological Oxygen Demand (BOD), Total Suspended Solids (TSS) and Ammonia (NH4) reduction and removal.

Gaia Sege software also uses ‘British Water Flows & Loads’ data to calculate initial flows and loadings whilst also calculating peak flows and levels.

The programme can also calculate accurate sludge generation and storage on a daily basis, dependent upon final effluent standards required, ensuring the optimisation of primary chambers, individual clarifiers, diffused oxygen feed and final settlement chamber.

Pump chambers

Gaia Sege utilises current building regulations to calculate precise storage chamber sizes. Pump systems are determined by using friction head loss calculations based on minimum self-cleansing velocities in order to specify the best possible pump(s) for the application.

Grease traps

Appropriate grease trap sizes are generated by accounting for the amount of grease and flow generated from the grease producing facility whilst providing adequate retention time befitting of these variables.

Storm Dammer water attenuation tanks

Marsh Industries’ rainfall storage sizing programme, Gaia Storm Dammer, can simulate the calculated flood storage required for any prolonged period within a set geographic area (ie, 1 in 5 year or 1 in 100 year rainfall).

Structural integrity testing

Structural integrity tests, performed in accordance with EN ISO 179-1/1eA:2010–11, were undertaken to evaluate the strength of Marsh Industries’ GRP materials against similar GRP materials used by other manufacturers.

Three separate material samples were submitted for impact testing; Marsh GRP material (virgin unfilled resin), a GRP material containing calcium fillers and a GRP material containing sand filler.

The tests involved 12 samples of each material at a size of 80x10x5mm. The nominal pendulum energy was 15J at an impact velocity of 3.8m/s.

Results proved Marsh GRP material to be 40% stronger than the other materials tested.

Fire resistance testing

Fire resistance testing was performed to assess ignitability of products subjected to direct impingement of flame. Marsh Industries’ GRP material passed all practical testing to achieve EN ISO 11925–2:2010 standard.
Overview

Marsh Ultra Polylok sewage treatment systems provide advanced biological treatment to off-mains wastewater on sites ranging from 50-500PE.

The units are ideally suited for large residential, commercial, industrial and leisure sites - particularly where onerous consent standards preclude the use of standard ‘off the shelf’ units.

Proven reliability of the simple but effective Submerged Aeration Filtration (SAF-MBBR) system offers both operating and financial benefits when compared to more complex alternatives that require frequent servicing and maintenance to sustain performance.

Benefits

Plant sizing
Bespoke design with optional tank sizes ranging from Ø1.9 - 3m satisfies the demands of site conditions. Each option is the same price.

Class-leading effluent quality
20:30:20mg/ltr (BOD:suspended solids:ammonia) effluent quality ensures discharge is well within national consent standards. Improved effluent quality to meet tighter consent standards can be achieved by Gaia design.

Heavy duty shell as standard
Structurally sound and built to last. Enables installation in all ground conditions.

High media surface area
High specification bio-media (310m² per m³) and membrane diffusers provide even circulation to eliminate ‘dead spots’.

Eco-friendly process control
Energy-efficient, economical and flexible process control for minimal running, maintenance and servicing costs (see pages 24-25).

For sites that do not need the ability to regulate process control, Marsh can offer diaphragm compressors for sewage treatment plants up to 150PE.

Internal recirculation
Continues the treatment process to provide higher effluent quality whilst balancing flow over 24 hour period or periods of intermittent use.

Polylok tertiary filter
All plants fitted with the patented Polylok tertiary filter to reduce suspended solids in the final effluent by a further 35%, whilst also reducing residual BOD and Ammonia levels.

Carbon cover
600mm carbon cover provides significant strength and durability, and helps to reduce possible odours.

Optional extras
Optional extras include extensions for deep installations, pumped outlets for sites with adverse levels, sample chambers, Degrilleur trash barriers, phosphate reduction and UV treatment chambers.
This is not a typical tank installation. Configuration and components are shown for illustration purposes only.

Tank sizing

Developed by Marsh Industries, the unique Gaia Sege process design software uses core information to accurately calculate and tailor key variables ensuring total system optimisation for individual applications.

These precise calculations provide assurance to consultants, engineers, specifiers and contractors that the system is specifically designed to meet the appropriate standards of regulatory bodies.

For Ultra-Polylok sewage treatment plants, the software uses established core process equations to accurately calculate and tailor key variables ensuring total processing optimisation for Biological Oxygen Demand (BOD), Total Suspended Solids (TSS) and Ammonia (NH₄) reduction and removal.

Gaia Sege software also uses ‘British Water Flows & Loads’ data to calculate initial flows and loadings whilst also calculating peak flows and levels.

The programme can also calculate accurate sludge generation and storage on a daily basis, dependent upon final effluent standards required, ensuring the optimisation of primary chambers, individual clarifiers, diffused oxygen feed and final settlement chamber.

GRP kiosks

Marsh GRP kiosks provide safe and secure storage of electrical control panels and other tank monitoring equipment.

The kiosks are typically fitted with one or two doors, depending on kiosk size, with stainless steel vents and yale locks.
Energy-efficient, economical and flexible process control for Ultra:Polylok™ sewage treatment plants

Efficiency
Air blower speed/output is controlled using a variable speed ‘drive’ which supplies the precise amount of air required to enable the sewage treatment plant to function efficiently.

Optimisation of the air blower output results in improved running costs, meaning the end-user can be assured they have the most economical solution for their wastewater system.

This is a unique feature when it comes to overall energy-efficiency as most process control kiosks currently available within the industry have a one size fits all approach.

Flexibility
These next-generation process control kiosks are built with flexibility in mind. Additional control options can be programmed into the ‘drive’ to regulate the volume of air delivered to the sewage treatment plant for different periods. This can be particularly beneficial for seasonal applications such as campsites, caravan parks, lodges or hotels where they may operate at peak capacity for short periods of the year. This functionality permits the volume of air to be increased or reduced, depending on the amount of people to be accommodated, thereby offering the end-user the ability to further reduce energy and running costs.

In addition, the process control kiosk allows for system expansion in the case of business/site growth (subject to design), thus eliminating the need to install extra tanks, pipework, air blowers, etc.

Noise reduction
We believe these kiosks to be the quietest on the market today. They are fitted with a number of noise reduction measures as standard, making them ideal for caravan parks, campsites, etc, subject to kiosk placement/location. This can reduce the need for creating barriers or planting to restrict noise.

Further noise reduction measures can be added through the use of acoustic PUNF foam linings and various acoustic noise absorbing baffles. This not only reduces noise but enables the kiosk to be placed in a more convenient location on sites where space is at a premium (the recommended distance from the sewage treatment plant should be 10m).

Specification/costs of noise reduction options, including measured decibel levels at a given distance from the kiosk, can be supplied on request.

Features
- Powder coated, mild steel or GRP kiosk (Green - RAL6005)
  The kiosk protects the motor and controls from the elements
- Forced ventilation, including ambient temperature control
  A ventilation fan/thermostat maintains the optimal ambient temperature in accordance with the air blower manufacturer’s specifications
- Thermal protection on motors
  Protects the motor windings from overheating, increasing the reliability and lifespan of the motor
- Electrical overload and short circuit protection
  As required by electrical regulations
- Air intake filter maintenance alarm
  Alerts the end-user when the intake filter needs cleaning/replacing
- High pressure alarm
  Alerts the end-user if the system design pressure has been exceeded, typically suggesting a blockage or restriction in the pipework
- Low pressure alarm
  Alerts the end-user if the system design pressure is low, typically suggesting a leakage in the pipework
- Standard acoustic attenuation including air intake silencer and external acoustic hood
  Reduces noise from the blower motor and air intake
Installation

All kiosks are supplied fully assembled, tested and ready for installation. An electrical supply/connection to the kiosk should be all that is required on site (electrical supply requirements will be supplied upon kiosk specification).

Key
1. Electrical control panel
2. Kiosk lighting and power DB
3. 230v RCD sockets
4. Kiosk ventilation fans/thermostat control box
5. Electrical panel drawings and documents
6. Test equipment (for use when commissioning)
7. Aeration blowers
8. Pipe manifold including 50mm outlets and return valves
9. Air intake silencer
10. Aeration blower intake filter
11. Blower power and control outlets
12. Kiosk lighting

Specifications

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Notes:
> The dimensions given on this page are for guidance only
> For precise kiosk and Ultra Polylok sewage treatment plant sizes and configurations, please contact Marsh Industries
> All dimensions in mm

Maintenance

Our engineers will advise of the appropriate maintenance plan once the site installation has been completed, however the process controls installed within the kiosk are designed to alert you to any imminent maintenance required on the system.
Marsh:Standard
Cost-effective sewage treatment
Biological processing for off-mains wastewater

Overview
Marsh:Standard cost-effective sewage treatment systems provide biological treatment to off-mains wastewater on large residential, commercial, industrial and leisure sites ranging from 50-300+PE.

Proven reliability of the simple but effective Submerged Aeration Filtration (SAF-MBBR) system offers both operating and financial benefits when compared to more complex and expensive alternatives that require frequent servicing and maintenance to sustain performance.

Key
1 Inlet
2 Primary chamber
3 Aeration chambers
4 Diffusers
5 Final (or ‘humus’) chamber
6 Outlet
7 Recirculation to primary chamber
8 Turret guard (optional)
9 Lockable manhole covers
10 High level alarm (optional)
11 Compressors
12 GRP kiosk

This is not a typical tank installation. Configuration and components are shown for illustration purposes only.
Benefits

Plant sizing
Designed to BS12255, systems are available from 50-300+ PE in sizes ranging from Ø2.5-3m satisfying the demands of virtually all site conditions.

Class-leading effluent quality
Designed to British Water loadings (150 litres per person, 60mg BOD litre and 8mg/litre Ammonia) ensures effluent discharge is well within national consent standards.

Cost-effective operation and maintenance
Systems have no internal moving parts and require minimal ongoing maintenance.

Heavy duty shell as standard
Structurally sound and built to last. Enables easy installation in all ground conditions.

High media surface area
High specification bio-media (310m³ per m²) and membrane diffusers provide even circulation to eliminate ‘dead spots’.

Low energy compressor(s)
Easily accessible low energy compressor for minimal running, maintenance and servicing costs. Integral alarm detects low pressure in air line.

Internal recirculation
Continues the treatment process to provide higher effluent quality whilst balancing flow over 24 hour period or periods of intermittent use.

Lockable manhole covers
600mm lockable manhole covers provide significant strength and durability, and helps to reduce possible odours.

Health and Safety considerations
The Marsh Standard is fitted with many safety features including turret guards, failure alarms for compressor components and high level alarms.

Optional extras
Optional extras include carbon covers for odour control, turret guards for additional safety, polylok filters to further reduce suspended solids, high level alarms and telemetry for monitoring, and risers/pumped outlets for deeper installations.

Manufactured in the UK
All units are manufactured in our twin manufacturing plants at Kettering and Bridgwater. The tanks are constructed using GRP (virgin unfilled resin – no ‘fillers’ such as chalk) providing consistent wall thickness ensuring superior structural strength and durability.

Specifications

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- Pumped outlets are available
- The dimensions given on this page are for guidance only
- For precise tank sizes and configurations, please contact Marsh Industries
- All dimensions in mm
Portapura®
Sewage treatment plants
Portable sewage treatment solutions for temporary buildings

Overview
The Portapura is the most compact and efficient sewage treatment plant we’ve ever made.
Designed for temporary accommodation, site offices, site toilets and workshops, the Portapura is portable, can be installed above or below ground and treats domestic wastewater to a level that is 25 times better than the recommended EN standard.

Portapura benefits
- Available in three sizes – 2, 3 or 5 person units (gravity or pumped outlet)
- Compact, lightweight construction – No heavy plant required
- Portable – Systems can be installed above ground and removed/stored when not in use
- Cost effective installation – Below ground installation can be achieved in approximately 2 hours
- Outstanding treatment efficiency – 14:19:0.7mg/ltr (BOD:Suspended solids:Ammonia)
- Near silent air compressor – Ensures minimal running, maintenance and servicing costs
- Electrical consumption: 1.8kWh/d – Equivalent to the daily use of a lightbulb
- CE approved to BS EN 12566
- Fire resistance tested in accordance with EN ISO 11925-2:210
- Tested for structural integrity in accordance with EN ISO 179-1/1eA

Operating principle
Wastewater enters the primary settlement chamber where large solids are removed by settlement and flotation. An accumulation forms at the base of the tank and is removed by desludging.

The clarified water is then transferred to the main aeration chamber. Here it is treated to remove dissolved constituents. Aerobic bacteria, supported by diffused air, ensures full treatment is achieved before the effluent and ‘sloughed off’ bacteria flows to the filter chamber for further solids removal.

The final effluent is then discharged to a water course via the final settlement chamber.

Why choose Portapura?
It’s more efficient than other sewage treatment options... And more portable than all of them.
It’s a space-saving solution... Its compact design provides quick and easy installation with minimum visual impact on the surrounding landscape as well as simple and safe access for maintenance and cleaning.
It’s cost-effective... The cost of installing and running the Portapura is minimal when compared to larger, commercial systems.
It’s environmentally sensitive... CE approved to BS EN 12566 with an ammonia result that is 25 times better than the recommended EN standard means the Portapura is well within discharge consent requirements.
It’s designed specifically for temporary buildings... Design objectives included performance, running costs, installation, transport and storage, making the Portapura the logical choice for sites where temporary buildings are required.
Specifications

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Notes:
- For precise tank sizes and configurations, please contact Marsh Industries.
- Larger population plants can be supplied.
- All dimensions in mm.

Key:
1. Inlet
2. Debris barrier
3. Air diffusers
4. Polylok tertiary filter
5. Outlet
6. Air pump connection
7. Recirculation to primary chamber
8. Air vent
9. Access covers (Available in brown or green)
10. Heavy duty shell
11. Compressor with alarm
12. Acoustic compressor housing

Accoustic compressor housing ensures minimal noise and vibration.

Configuration and components are shown for illustration purposes only.
Overview

Designed and manufactured in accordance with BS4994/ BSEN976, the Marsh range of cesspools provides environmentally safe storage of firewater, Elsan waste, silage and aviation fuel.

Available in capacities up to 100,000 litres in Ø2.5m and Ø3m diameters, the tanks are manufactured using GRP (virgin unfilled resin - no 'fillers' such as chalk) providing consistent wall thickness ensuring superior structural strength and durability. This also enables the tank to be significantly lighter for on-site handling/positioning and better suited to withstand greater hydrostatic pressures when in use.

The tanks are supplied with a chemically resistant gel-coat that protects the fibres in the laminates and provides excellent water and chemical resistance. This inherent integrity allows Marsh to offer an unrivalled 50 year design life, backed by a 25 year structural guarantee.

Guidance notes

- Reference should be made to DEFRA guidance notes "The Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations - UK" and gov.uk guidance "Storing slage, slurry and agricultural fuel oil"

Optional Bauer fittings are available

Benefits

- Available in capacities from 20,000 to 100,000 litres in Ø2.5 and Ø3m diameters
- Designed to meet latest UK and European standards
- Heavy duty shells enable installation in all ground conditions
- Variable invert depths and orientations to suit individual site conditions
- Optional high-level alarm available
- Guaranteed for 25 years with a design life of 50 years

Specifications

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Notes:
- The dimensions given on this page are for guidance only
- For precise tank sizes and turret configurations, please contact Marsh Industries
- All dimensions in mm
Overview
When non dissolvable objects are flushed into the sewer and then into a sewage treatment plant or pump station downstream, it can lead to blockages or worse - possible plant failure.

To combat this Marsh Industries has developed the 'Degrilleur' – a bar screen which prevents any unsuitable materials from entering the system.

The unit has no moving parts and requires no electrics and is suitable for domestic, commercial and industrial installations.

The Degrilleur can also be used as a flow splitting chamber in multi-stream sewage treatment plants or as an upstream trash screen as part of stormwater attenuation systems.

Operating principle
The Marsh Degrilleur, positioned ahead of the system inlet, blocks the debris and forces it to rise to the top of the chamber where it is collected in a retaining trough for disposal.

Key
1. Inlet (110 or 160mm)
2. Grill and frame
3. Perforated retaining trough
4. Outlet (110 or 160mm)
5. Manhole cover

Specifications

Cylindrical Degrilleur

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Horizontal Degrilleur

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<th>Length over flanges (+/-50mm)</th>
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</tbody>
</table>

Notes:
- The dimensions given on this page are for guidance only.
- For precise tank sizes and turret configurations, please contact Marsh Industries.
- All dimensions in mm.
Overview

Available in capacities from 2800 to 20,000 litres, Marsh Industries’ Grease Management System (GMS®) range of grease traps effectively prevents Fats, Oils and Grease (FOG) from entering the drainage network or sewage treatment plants.

Testing and verification

Marsh Industries has reassessed the currently prescribed testing methods for grease traps and devised its own unique test rig and analysis at Loughborough University. The rig, put to test for 12 months, addressed calls from the industry for clarity in testing procedures of grease trap technology. After completing trials, the new range of grease traps are the only products of its type that have been successfully tested using materials that match the FOG used in the food industry – as opposed to the traditional test method of using heating oils.

A white paper, published by Marsh, titled ‘A New way forward for Meaningful Testing of Grease Traps’, reports on analysis from the tests carried out at Loughborough University and can be downloaded from www.marshindustries.co.uk

Benefits

- Storage capacities ranging from 2800-20,000 litres
- Advanced coalescent filter system
- Bespoke design tailored to individual project specifications
- Adjustable turret and invert height
- Optional Polylok filter for further wastewater treatment
- Optional high level alarm

Applications

Typical applications where grease traps/separators may be required:

- Bakeries
- Canteens/kitchens
- Fast food restaurants
- Food processing factories
- Hotels
- Public houses
- Restaurants
- Social clubs

This is not a typical tank installation. Configuration and components are shown for illustration purposes only.
Operating principle

Marsh GMS grease traps provide sufficient storage in its primary chamber allowing for adequate solidification of FOG molecule structures before passing through an advanced coalescing filtration system. The coalescing filtration system contains different grades of filter to prevent solids and waste passing into the final settlement chamber. In larger units, an optional Ultra Polylok UV Filter is available which can provide further treatment to residual solids and can also destroy viruses, parasites and other pathogenic bacteria.

Key

1. Wastewater pipe
2. Tank inlet
3. Solids retention
4. Fats, oils and grease (FOG) retention
5. Advanced coalescing filter
6. Polylok filter (optional)
7. Tank outlet
8. Mains sewer system
9. Additional desludge points (optional)
10. Heavy duty manhole cover
11. Outlet access
12. High level alarm (optional)

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Size</th>
<th>Width +/−50mm</th>
<th>Length +/−50mm</th>
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<td>160</td>
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</tbody>
</table>

Marsh Industries’ GMS Roundel – Ø1812 x 1m high – is shallow, compact and provides easy installation, particularly in urban areas or sites with arduous ground conditions and reduces the risk of undermining existing structures, pipelines or cable ducts.
Overview

Available in capacities from 2800-110000 litres in multiple configurations with tank sizes ranging from Ø1.2m to Ø3m diameters, the Storm Dammer alleviates the risk of flooding and reduces pressure on drains/sewers by storing the excess flow of stormwater before controlled discharge downstream.

Greater capacity and ease of inspection and maintenance makes Storm Dammer the industry choice for developers, municipal planners and civil engineers.

Benefits

- Designed to meet latest UK and European standards
- Multiple tank configurations and inlet orientations to suit storage and site layout requirements
- Tank diameters range from Ø1.2 to Ø3m with length up to 20 metres
- Heavy duty shells manufactured from virgin unfilled resin provides superior structural strength and durability. This also enables the tank to be significantly lighter for on-site handling/positioning and better suited to withstand greater hydrostatic pressures when in use
- Tank design offers easy access for inspection, maintenance and cleaning when compared to inaccessible crate systems
- Systems can be fitted with flow control devices and orifice plates to regulate storage and discharge
- Easily accessible, low energy submersible pumps ensure minimal running, maintenance and servicing costs
- Guaranteed for 25 years with a design life of 50 years

Key

1. Connecting pipework
2. Internal vent pipes
3. Flow control devices
4. Outlet
5. Access manways
Fittings and accessories

Orifice baffles
Utilising Marsh Industries’ unique Gaia Storm Dammer program, in conjunction with the Micro Drainage Design program, the standard range of Storm Dammer tanks are designed using orifice baffles as the primary flow attenuation system.

Precise calculations from the Gaia Storm Dammer program ensures that the correct type of orifice baffles are distributed throughout the system to deliver the optimum outflow required.

Flood and storm control valves
Storm Dammer systems can be designed to include Vortex Storm Control units which can reduce out-flow on varying scales.

Pumps can also be fitted to upline chambers allowing stored water to be distributed to other chambers that may not be in the immediate area.

Pumps
Marsh Industries works in partnership with major UK pump manufacturers to develop attenuation tanks and pump chambers that are designed to distribute water to the mains drainage network or to other off-site storage tanks. Pumps can be supplied as single, twin or multi-line installations in both single and three phase.

AUTOadapt™ sump pump
Designed for a range of water and wastewater applications, the AUTOadapt pump removes the complexity of standard submersible pumps by combining all external sensors switches and cables from the pit within the pump itself. This simplifies installation and operation, and vastly increases reliability.
PUMP STATIONS
Marsh WellWater™
The most comprehensive range of pump stations available in the UK

When discharge to mains is required, but to do so by gravity is impractical, a WellWater™ pump station will be needed.

All Marsh pump station systems are bespoke, however there are several factors that play a role in identifying precisely the right tank sizes and type that are required for your project.

Marsh Industries’ system designers can work closely with you to identify all key requirements in accompaniment with Marsh Industries’ unique process design software, Gaia Sege.

Pump station systems are available as vertical or horizontal units in various sizes ranging from:

Pump stations available in capacities ranging from 141 to 100,000 litres

Why specify a Marsh pump station?
- Designed to British Standard European Norm’s:
  - BSEN12050 for structural strength and water-tightness
  - BSEN752 to comply with hydrostatic and electrical requirements
  - BSEN752-6 for drain and sewer systems in outside buildings
- Smooth internal walls and integral pump well improves pump efficiency and eliminates ‘dead spots’ which can lead to odours and septicity
- Variable invert depths and orientations to suit individual site conditions
- Pre-assembled pipework for fully automatic operation
- Unique ‘keying-in’ lip on WellWater:Seine range assists anchoring into concrete surround

Applications
- The WellWater range of pump stations are suitable for sewage, final effluent, grinders and surface water (twin/single) applications in all domestic, commercial and industrial sites:
  - Agricultural water and wastewater
  - Biofuel systems
  - Commercial buildings
  - Domestic buildings
  - Food processing
  - Industrial boilers
  - Industrial wastewater
  - Industrial water treatment
  - Marine
  - Mining
  - Pharmaceuticals
  - Wastewater transport
  - Wastewater treatment
  - Water distribution
  - Water intake
  - Water treatment

Pump options
Marsh uses market-leading submersible pumps throughout its WellWater range of pump stations to ensure maximum reliability and efficiency with minimal clogging or wear. Pump stations can be specified with a single free-standing pump or single and twin pumps with guide rails as illustrated below.

Note: Floats can be fitted directly to specific pump systems. Please contact Marsh Industries to discuss your project requirements.

Guidance notes
- Where foul water drainage from a domestic property is to be pumped to mains the effluent receiving chamber should be sized to contain 24-hour inflow to allow for disruption in service, the minimum daily discharge being taken as 150 litres per person per day
- For other building types the capacity of the receiving chamber should be based on the calculated daily demand of the water intake for the building, or when only a proportion of the foul sewage is to be pumped then the capacity should be based pro-rata
- If the sewer is to be ‘adopted’ by a local water authority, please contact Marsh Industries as Sewers for Adoption (SFA) specification and additional local authority related criteria may apply
Marsh WellWater:Seine pump stations are available in storage capacities ranging from 141 to 5675 litres.

Each system is supplied as a complete unit with either single or twin free-standing submersible pumps and high quality internal pipework/fitting as standard.

These pump stations are typically used in smaller domestic or commercial applications for pumping foul water or sewage to mains sewer.

### Key
1. Inlet
2. Submersible pump(s)
   - Single or twin free-standing options
3. Pump retrieval chain
4. Non-return valve(s)
5. Gate valve
6. Outlet connection
7. Ducting and cable entry points
8. Vent
9. Manway access
10. Float bracket

### WellWater:Seine range

<table>
<thead>
<tr>
<th>Model</th>
<th>Single/Twin pump</th>
<th>Pump duty</th>
<th>Application</th>
<th>Diameter</th>
<th>Depth</th>
<th>Total storage</th>
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<td>2600</td>
<td>1996</td>
<td>500</td>
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<td>1996</td>
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### Pump duties

- **Effluent pumping stations**
  - Distance m
  - 1: 54
  - 2: 43
  - 3: 30
  - 4: 20
  - 5: 8
  - 6: -
  - 7: -
  - 8: -

- **Up to TS1126 - 6m total head**
  - Distance m
  - 1: 160
  - 2: 120
  - 3: 90
  - 4: 620
  - 5: 330
  - 6: 250
  - 7: -
  - 8: -

- **TS1721 - 10m Total Head**
  - Distance m
  - 1: 700
  - 2: 40
  - 3: 40
  - 4: 10
  - 5: -
  - 6: -
  - 7: -
  - 8: -

- **TS1734 - 7.4m Total Head**
  - Distance m
  - 1: 54
  - 2: 43
  - 3: 30
  - 4: 20
  - 5: 8
  - 6: -
  - 7: -
  - 8: -

### Notes:
- Floats can be fitted directly to specific pump systems. Please contact Marsh Industries to discuss your project requirements.
- All pump stations are available for dirty water (DW) or sewage (SW), in single pump (SP) and twin pump (TP) configurations.
- The dimensions given on this page are for guidance only.
- For precise tank sizes and configurations, please contact Marsh Industries.
- All dimensions in mm.

Tank configurations and components are shown for illustration purposes only.
Marsh WellWater:Hudson pump stations are Ø1.2m vertical units, available from 2000mm to 3500mm heights with storage capacities ranging from 2170 litres to 3860 litres.

Each system is supplied as a complete unit with either single or twin submersible pumps with guide rails and high quality internal pipework/fittings as standard.

These pump stations are typically used in medium to large domestic or commercial applications for pumping foul water or sewage to mains sewer.

**Key**
1. Inlet
2. Submersible pump(s)
3. Single or twin pumps with guide rails
4. Guide rails
5. Pump retrieval chain
6. Valve(s)
7. Outlet connection
8. Ducting and cable entry points
9. Vent
10. Manway access
11. Float bracket

**Float configuration options**
A. Pump 'OFF' float switch
B. Pump 1 'ON' float switch
C. Pump 2 'ON' float switch
D. High water float switch

**Note:** Floats can be fitted directly to specific pump systems. Please contact Marsh Industries to discuss your project requirements.

**WellWater:Hudson range**

<table>
<thead>
<tr>
<th>Model</th>
<th>Single/Twin pump</th>
<th>Application</th>
<th>Diameter (mm)</th>
<th>Depth (mm)</th>
<th>Total storage (Ltr)</th>
<th>Invert (mm)</th>
<th>Pipework dia (mm)</th>
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<td>Twin</td>
<td>Sewage</td>
<td>1200</td>
<td>3000</td>
<td>3300</td>
<td>minimum 500</td>
<td>110 or 160</td>
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<td>Sewage</td>
<td>1200</td>
<td>3500</td>
<td>3860</td>
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<td>110 or 160</td>
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<td>TS1230</td>
<td>Twin</td>
<td>Sewage</td>
<td>1200</td>
<td>3500</td>
<td>3860</td>
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<td>3500</td>
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<td>110 or 160</td>
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<td>3500</td>
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<td>minimum 500</td>
<td>110 or 160</td>
</tr>
</tbody>
</table>

**Notes:**
- All pump stations are available for dirty water (DW) or sewage (SW), in single pump (SP) and twin pump (TP) configurations
- The dimensions given on this page are for guidance only
- For precise tank sizes and configurations, please contact Marsh Industries
- All dimensions in mm

Tank configurations and components are shown for illustration purposes only.
WellWater:Nile
Ø1.8m pump stations

Marsh WellWater:Nile pump stations are Ø1.8m vertical units, available in 3000mm and 4000mm heights with storage capacities of 7250 litres and 9800 litres respectively.

Each system is supplied as a complete unit with either single or twin submersible pumps with guide rails and high quality internal pipework/fittings as standard.

These pump stations are typically used in large domestic or commercial applications for pumping foul water or sewage to mains sewer.

**Key**

1. Inlet
2. Submersible pump(s)
   - Single or twin pumps with guide rails
3. Guide rails
4. Pump retrieval chain
5. Non-return valve(s)
6. Gate valve
7. Outlet connection
8. Ducting and cable entry points
9. Vent
10. Manway access
11. Float bracket

**Float configuration options**

A. Pump 'OFF' float switch
B. Pump 1 'ON' float switch
C. Pump 2 'ON' float switch
D. High water float switch

**Notes:** Floats can be fitted directly to specific pump systems. Please contact Marsh Industries to discuss your project requirements.

**WellWater:Nile range**

<table>
<thead>
<tr>
<th>Model</th>
<th>Single/Twin pump</th>
<th>Application</th>
<th>Diameter mm</th>
<th>Depth mm</th>
<th>Total storage Litres</th>
<th>Invert mm</th>
<th>Pipework dia mm</th>
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</thead>
<tbody>
<tr>
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<td>Single</td>
<td>Sewage</td>
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<td>1800</td>
<td>4000</td>
<td>9800</td>
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<td>110 or 160</td>
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<td>1800</td>
<td>4000</td>
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<td>110 or 160</td>
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<td>7250</td>
<td>minimum 500</td>
<td>110 or 160</td>
</tr>
<tr>
<td>TG1830</td>
<td>Twin</td>
<td>Grinders</td>
<td>1800</td>
<td>3000</td>
<td>7250</td>
<td>minimum 500</td>
<td>110 or 160</td>
</tr>
<tr>
<td>SG1840</td>
<td>Single</td>
<td>Grinders</td>
<td>1800</td>
<td>4000</td>
<td>9800</td>
<td>minimum 500</td>
<td>110 or 160</td>
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<td>TG1840</td>
<td>Twin</td>
<td>Grinders</td>
<td>1800</td>
<td>4000</td>
<td>9800</td>
<td>minimum 500</td>
<td>110 or 160</td>
</tr>
</tbody>
</table>

**Notes:**

- All pump stations are available for dirty water (DW) or sewage (SW), in single pump (SP) and twin pump (TP) configurations.
- The dimensions given on this page are for guidance only.
- For precise tank sizes and configurations, please contact Marsh Industries.
- All dimensions in mm.
Marsh WellWater:Amazon pump stations are Ø2.5m horizontal units, available in storage capacities ranging from 7710 litres to 100,000 litres.

Each system is supplied as a complete unit with either twin submersible pumps with guide rails and high quality internal pipework/fittings as standard.

These pump stations are typically used in extra large domestic or commercial applications for pumping foul water or sewage to mains sewer.

**Key**

1. Inlet
2. Twin pumps with guide rails
3. Guide rails
4. Pump retrieval chain
5. Non-return valve(s)
6. Gate valve
7. Outlet connection
8. Ducting and cable entry points
9. Vent
10. Manway access
11. Float bracket

**Float configuration options**

A. Pump ‘OFF’ float switch
B. Pump 1 ‘ON’ float switch
C. Pump 2 ‘ON’ float switch

On twin pump configurations

D. High water float switch

Note: Floats can be fitted directly to specific pump systems. Please contact Marsh Industries to discuss your project requirements.

**WellWater:Amazon range examples** (Tanks with capacities up to 100,000 litres are available on request)

<table>
<thead>
<tr>
<th>Model</th>
<th>Pump</th>
<th>Application</th>
<th>Diameter (mm)</th>
<th>Length (mm)</th>
<th>Total storage (Litres)</th>
<th>Invert (mm)</th>
<th>Pipework dia (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS2520</td>
<td>Twin</td>
<td>Sewage</td>
<td>2500</td>
<td>2000</td>
<td>7710</td>
<td>minimum 500</td>
<td>110 or 160</td>
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<td>2500</td>
<td>3500</td>
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<td>Sewage</td>
<td>2500</td>
<td>4000</td>
<td>17500</td>
<td>minimum 500</td>
<td>110 or 160</td>
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</tbody>
</table>

**Notes:**

- All pump stations are available for dirty water (DW) or sewage (SW), in single pump (SP) and twin pump (TP) configurations
- The dimensions given on this page are for guidance only
- For precise tank sizes and configurations, please contact Marsh Industries
- All dimensions in mm

Tank configurations and components are shown for illustration purposes only
OIL SEPARATORS
Separation by flotation and settlement

Oil separators are designed to prevent oil and other hydrocarbons from entering the drainage system. They separate oil from water, and safely retain the oil until it is removed.

Oil cannot be treated easily and will therefore cause severe pollution if allowed to enter mains sewers or drainage fields. Statutory controls enforce strict regulations on the discharge of such pollutants.

Separators should be used in such applications as petrol stations, industrial yards and garages, or virtually anywhere that a risk of oil contamination exists.

Discharge requirements for oil separators may vary in different areas of the country and it is therefore essential to consult the appropriate environmental controlling authority prior to specifying an oil separator. If the discharge is to a public sewer then local Building Control, the Water Authorities and water companies should also be contacted.

Note: For larger sites, more than one type of oil separator may be required.

Separator types and principles of operation

Classes
Separators are classed in two categories based on performance under standard test conditions.

- **Class 1 separators** are designed to achieve a discharge concentration of less than 5mg/litre of oil. These separators are required for discharges to surface water drains and the water environment.

- **Class 2 separators** are designed to achieve a discharge concentration of less than 100mg/litre of oil under standard test conditions. They are suitable for dealing with discharges where there is a lower quality requirement, such as discharges to the foul sewer.

Both classes can be produced as ‘full retention’, ‘bypass’ or ‘forecourt’ separators as explained below.

**Bypass separators**
Bypass separators treat all flows from rainfall events of up to 6.5mm/hr. This covers over 99% of all rainfall events. Flows higher than 6.5mm/hr are designed to bypass the separator.

These separators are used in a ‘low risk’ environment where there is no requirement to provide full treatment for the flow; for example a car park where the risk of a significant spillage is small.

**Full retention separators**
Full retention separators treat the full flow that is delivered by the drainage system, which is normally equivalent to the flow generated by a rainfall intensity of 65mm/hr.

These separators are used where there may be a ‘high risk’ of a significant fuel spillage, such as vehicle workshops.

**Forecourt separators**
Forecourt separators are a type of full retention separator, however they are specifically designed to store the maximum spillage likely to occur on a petrol station forecourt.

These separators are manufactured to a specific size in order to retain the potential spillage from a single compartment of a road tanker – currently up to 7,600 litres in the UK.

**Wash-down separators and silt traps**
It is a legal requirement to install a silt trap or wash-down separator on commercial sites, such as vehicle wash bays, where there is an environmental risk of contamination from dirt, brake dust, traffic film residue, cleaning agents, oil, etc.

Choosing the right separator

<table>
<thead>
<tr>
<th>Risk of infrequent light contamination and potential for small spills only, eg, car parks</th>
<th>Risk of regular contamination of surface water run off with oil and/or risk of larger spills, eg, vehicle maintenance area, goods vehicle parking or vehicle manoeuvring</th>
<th>Drainage will also contain dissolved oils, detergents or degreasers such as vehicle wash water and trade effluents, eg, industrial sites</th>
<th>Fuel oils are delivered to and dispersed on site, eg, retail fuel forecourts</th>
<th>Very low risk of oil contamination, eg, roof water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Source control SuDS must be considered and incorporated where suitable</td>
<td>Separator not required</td>
<td>Clean water should not be passed through the separator unless the size of the unit is increased accordingly</td>
<td>Source control SuDS should be considered and incorporated where possible</td>
<td></td>
</tr>
<tr>
<td>Bypass separator with alarm required - See p4</td>
<td>Full retention separator with alarm required - See p6</td>
<td>Trade effluents must be directed to the foul sewer. It may need to pass through a separator before discharge to sewer to remove free oils</td>
<td>Full retention Forecourt separator with alarm required - See p8</td>
<td>*</td>
</tr>
<tr>
<td>Class 1 if discharge to surface water</td>
<td>Class 1 if discharge to surface water</td>
<td>Class 1 if discharge to surface water</td>
<td>Class 1 if discharge to foul sewer</td>
<td>*</td>
</tr>
<tr>
<td>Class 2 if discharge to foul sewer</td>
<td>Class 2 if discharge to foul sewer</td>
<td>Class 2 if discharge to foul sewer</td>
<td></td>
<td>*</td>
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<tr>
<td>The use of ‘sustainable drainage systems’ (SuDS) should be considered at all sites and they should be incorporated where suitable. SuDS can be used to polish the effluent from these separators before it enters the environment.</td>
<td>*</td>
<td>*</td>
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</table>
Overview

Bypass separators are used in a ‘low risk’ environment where there is no requirement to provide full treatment for the flow; for example a car park where the risk of a significant spillage is small.

Designed and tested to BS EN858 parts 1&2, Marsh Hydroil bypass separators are manufactured from virgin unfilled resin offering exceptional durability, impact resistance and are guaranteed to be watertight and of uniform thickness. These combined properties ensure that the full range of separators stand up to the most rigorous conditions during their service life.

Internal working components, such as coalescing filters, weirs, oil skimmer plates, and their configurations offer the most modern and efficient oil/water separation capability available to the market today.

A wide choice of inlet and outlet positions are available on the units - detailed requirements should be provided at time of order (standard inlet and outlet positions will otherwise be fitted).

Benefits

- Designed and tested to meet latest UK and European standards
- Corrosion resistant
- Tank shells guaranteed for 25 years with a design life of 50 years
- Heavy duty shells enable installation in all ground conditions
- Easy access turrets for maintenance and servicing (Turret guards optional)
- Various alarm types available (Required by EN858-1)
- Variable invert depths and inlet/outlet configurations to suit individual site conditions
- Vented turrets dissipate excessive fumes and vapours

Operating principle

Marsh Hydroil bypass separators are designed to treat 10% of peak flow.

The drainage areas served by each separator are determined in accordance with both BS EN858 parts 1&2, but also with reference to a formula provided by the Environment Agency, where NSB=0.0018xA (catchment area in m²). Flows from higher rainfall rates are allowed to bypass the main separation chamber.

Flowpath

1. Inlet
2. Oil skimmer plate
3. Coalescer
4. Outlet
5. Access turret
6. Level alarm dip pipe
7. Air vent

Typical applications

- Car parks
- Roadways
- Industrial estates
- SuDS
### Specifications

**Bypass separator range**

<table>
<thead>
<tr>
<th>Model</th>
<th>Flow rate (litre/sec)</th>
<th>Drainage area (m²)</th>
<th>Silt storage (litres)</th>
<th>Oil storage (litres)</th>
<th>Width (+/-50mm)</th>
<th>Length (+/-50mm)</th>
<th>Height (+/-50mm)</th>
<th>Connection size Ø</th>
<th>Inlet invert</th>
<th>Outlet invert</th>
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<td>30</td>
<td>1700</td>
<td>300</td>
<td>45</td>
<td>1554</td>
<td>2254</td>
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<td>2914</td>
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<td>2000</td>
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</tr>
</tbody>
</table>

**Notes:**
- Pipework and inverts sized on application
- The dimensions given on this page are for guidance only
- For precise tank sizes and configurations, please contact Marsh Industries
- Number of access shafts will be built to suit site specifications and to maintain safe access for emptying
- All dimensions in mm
**Marsh:Hydroil™**

**Full retention separators**

*For areas at ‘high risk’ of oil contamination*

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**Overview**

Full retention separators are used where there may be a 'high risk' of a significant fuel spillage, such as vehicle workshops.

Designed and tested to BS EN858 parts 1&2, Marsh Hydroil full retention separators are manufactured from virgin unfilled resin offering exceptional durability, impact resistance and are guaranteed to be watertight and of uniform thickness. These combined properties ensure that the full range of separators stand up to the most rigorous conditions during their service life.

Internal working components, such as coalescing filters, automatic closure devices, weirs, oil skimmer plates, and their configurations offer the most modern and efficient oil/water separation capability available to the market today.

A wide choice of inlet and outlet positions are available on the units - detailed requirements should be provided at time of order (standard inlet and outlet positions will otherwise be fitted).

---

**Benefits**

- Designed and tested to meet latest UK and European standards
- Corrosion resistant
- Tank shells guaranteed for 25 years with a design life of 50 years
- Heavy duty shells enable installation in all ground conditions
- Easy access turrets for maintenance and servicing (Turret guards optional)
- Various alarm types available (Required by EN858-1)
- Variable invert depths and inlet/outlet configurations to suit individual site conditions
- Vented turrets dissipate excessive fumes and vapours

---

**Operating principle**

Marsh Hydroil full retention separators treat the full flow that is delivered by the drainage system, which is normally equivalent to the flow generated by a rainfall intensity of 65mm/hr.

**Key**

1. Inlet
2. Coalescer
3. Outlet
4. Access turret
5. Air vent
6. Level alarm dip pipe

---

**Flowpath**

- Oil/water mixture
- Water

---

**Typical applications**

- Vehicle workshops
- Refuel facilities
- Fuel storage sites

---
Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Flow</th>
<th>Drainage area m²</th>
<th>Silt storage litres</th>
<th>Oil storage litres</th>
<th>Width x=50mm</th>
<th>Length x=50mm</th>
<th>Height x=50mm</th>
<th>Connection size</th>
<th>Inlet invert</th>
<th>Outlet invert</th>
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</tr>
</tbody>
</table>

Notes:
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- Number of access shafts will be built to suit site specifications and to maintain safe access for emptying.
- All dimensions in mm.

Illustrations shown for visual reference only.
Marsh:Hydroil™
Forecourt separators
For areas at ‘significant risk’ of oil contamination

Overview
Designed and tested to BS EN858 parts 1&2, Marsh Hydroil forecourt separators are manufactured from virgin unfilled resin offering exceptional durability, impact resistance and are guaranteed to be watertight and of uniform thickness. These combined properties ensure that the full range of separators stand up to the most rigorous conditions during their service life.

Internal working components, such as coalescing filters, weirs, oil skimmer plates, and their configurations offer the most modern and efficient oil/water separation capability available to the market today.

A wide choice of inlet and outlet positions are available on the units - detailed requirements should be provided at time of order (standard inlet and outlet positions will otherwise be fitted).

Benefits
- Designed and tested to meet latest UK and European standards
- Corrosion resistant
- Tank shells guaranteed for 25 years with a design life of 50 years
- Heavy duty shells enable installation in all ground conditions
- Easy access turrets for maintenance and servicing (Turret guards optional)
- Various alarm types available (Required by EN858-1)
- Variable invert depths and inlet/outlet configurations to suit individual site conditions
- Vented turrets dissipate excessive fumes and vapours

Operating principle
Marsh Hydroil forecourt separators are manufactured to a specific size in order to retain the potential spillage from a single compartment of a road tanker – currently up to 7,600 litres in the UK.

Key
1. Inlet
2. Oil level alarm (in 3” pipe)
3. Coalescer
4. Outlet
5. Access turrets

Flowpath
- Oil/water mixture
- Water

Notes:
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- All dimensions in mm

Typical applications
- Petrol stations
- Refuel facilities
- Fuel storage sites

Forecourt separator range

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity litres</th>
<th>Width +/-50mm</th>
<th>Length +/-50mm</th>
<th>Height +/-50mm</th>
<th>Connection size</th>
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</table>

Illustrations shown for visual reference only
Wash-down separators
Available in capacities from 2800-20,000 litres, Marsh wash-down separators safely remove silt and debris from vehicle wash-down facilities.

These units are primarily used on car wash bays, pressure wash facilities or other cleaning facilities where the effluent must be discharged to the foul water drainage system.

It is a legal requirement to install a silt trap or wash-down separator on commercial sites, such as vehicle wash bays, where there is an environmental risk of contamination from dirt, brake dust, traffic film residue, cleaning agents, oil, etc. In all cases, you should contact your local building control or environmental agency for specific site requirements.

Benefits
- Heavy duty shells enable installation in all ground conditions
- Tank shells guaranteed for 25 years with a design life of 50 years
- Variable invert depths and inlet/outlet configurations to suit individual site conditions
- Easy access turrets for maintenance and servicing (Turret guards optional)
- Optional Polylok filter can further reduce pollutants from entering the drainage system
- Various alarm types available (Required by EN858-1)
- Corrosion resistant

Wash-down separator range

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity litres</th>
<th>Width +/-50mm</th>
<th>Length +/-50mm</th>
<th>Height +/-50mm</th>
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<th>Inlet invert</th>
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Notes:
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- Number of access shafts will be built to suit site specifications and to maintain safe access for emptying
- All dimensions in mm

Silt traps

With a capacity of 1050 litres, Marsh silt traps provide effective storage of silt and debris from vehicle wash-down facilities.

Positioned ahead of an oil separator, the silt trap gathers and stores silt and sediment, and prevents it from entering the oil separator system.

Benefits
- Heavy duty body enables installation in all ground conditions
- Hinged, galvanised steel grating provides structural integrity and easy emptying
- Tank body guaranteed for 25 years with a design life of 50 years

Silt trap

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity litres</th>
<th>Length +/-50mm</th>
<th>Width +/-50mm</th>
<th>Height +/-50mm</th>
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<th>Outlet invert</th>
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High performance full retention oil separators for sites where the “industry standard” is just not good enough

Overview

Marsh Industries has developed an innovative separator system that breaks the constraints of the current standards; the ‘Marsh:Marator’.

The Marator takes advantage of nanofiltration technology to produce discharge that is 50 times better than any current separator available on the market today; that is less than 0.1mg/ltr – the standard only requires less than 5mg/ltr for a ‘class 1 discharge’.

Testing was analysed for hydrocarbon content using infrared spectroscopy at GEOTAIX UMWELTTECHNOLOGIE GmbH&Co.

During the sampling period, five samples of 500ml were taken via the sampling point. The quality of discharge from the Marator exceeded the measurable level of the test equipment not to mention the current EN standard:

<table>
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<th>Sample</th>
<th>Result GC in mg/litre (Industry standard &lt;5mg/litre)</th>
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<td>NS 6-7</td>
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<td>Average</td>
<td>&lt; 0.1</td>
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</tbody>
</table>

Key

1. Inlet
2. Oil retention chamber
3. Coalescing filter
4. Nanofiltration technology
5. Outlet
6. Breather pipe
7. Surge balance tank
8. Anti-flood valve
9. Stormwater overflow control
10. High level alarm
11. Access turrets

Benefits

- Designed and tested to meet latest UK and European standards
- Corrosion resistant
- Tank shells guaranteed for 25 years with a design life of 50 years
- Heavy duty shells enable installation in all ground conditions
- Easy access turrets for maintenance and servicing (Turret guards optional)
- Various alarm types available (Required by EN858-1)
- Variable invert depths and inlet/outlet configurations to suit individual site conditions
- Vented turrets can dissipate excessive fumes and vapours

Typical applications

- Car parks
- Roadways
- Industrial estates
- Vehicle workshops
- Refuel facilities
- Fuel storage sites

Illustration shown for visual reference only.
Specifications

<table>
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<tr>
<th>Model</th>
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<th>Drainage area m²</th>
<th>Silt storage litres</th>
<th>Oil storage litres</th>
<th>Diameter +/-50mm</th>
<th>Length +/-50mm</th>
<th>Height +/-50mm</th>
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Notes:
- Larger systems are available, please contact Marsh Industries
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- All dimensions in mm

Are outmoded EN standards an environmental concern?

**Current EN standard**
The European Standard, BS EN 858 parts 1 & 2, was introduced in 2002 to normalise design and regulate testing of products across Europe. This standard settled on a two-tier quality level – class 1 and class 2.

Class 1 – designed to achieve a discharge concentration of less than 5mg/ltr of oil in the discharge
Class 2 – designed to achieve a discharge concentration of less than 100mg/ltr of oil in the discharge

Once testing is complete and approval achieved, manufacturers are free to bring their products to market.

**The reality of current standards**
With the current level of 5mg/ltr for a Class 1 discharge – we ask “Are Class 1 separators the very best that manufacturers can offer?”

Studies have shown that the majority of hydrocarbon pollutants entering the water system stems from urban developments. Figure 2 shows the toxic effects of particular contaminants on humans and aquatic life.

Leaving aside the toxic effects of contaminants on human and aquatic life, when a hydrocarbon molecule spreads to one molecule thick and given enough surface area to spread, five litres of oil would be more than enough to contaminate five football pitches.

In addition, most hydrocarbon molecules are attached to silt particles; where Stokes law proves that these particles will sink rather than float as conventional separators require.

When mixed with other elements in real life scenarios, such as glycol, standard gravity separators become less efficient at contaminant removal.

In our view, the current testing standards covering products within the gravity separator market are outmoded and failing to protect the environment as they should. They do not reflect or address any ‘real-life’ scenario where hydrocarbon pollution is prevalent.

**The solution = the Marsh-Marator**
Alarm systems
Alarms monitor the level of liquid inside sewage treatment plants, pump stations and oil separators units. An alarm signal is generated when there is an excessive level of liquid, or if the unit requires emptying.
Marsh Industries can supply various types of alarm, as well as bespoke options as required.
- Beacon alarms
- Micro SMS battery alarms
- Klaxon and beacon alarms
- Micro SMS solar panel alarms
- SMS Alarms

GRP kiosks
Marsh GRP kiosks provide safe and secure storage of electrical control panels and other tank monitoring equipment. The kiosks are typically fitted with one or two doors, depending on kiosk size, with stainless steel vents and yale locks.

Mild steel kiosks
Mild steel kiosks provide safe and secure storage of electrical control panels and other tank monitoring equipment. The kiosks are typically fitted with one or two doors, depending on kiosk size, with vents and yale locks.

Commissioning and servicing
Marsh Industries offers a nationwide service to cover all aspects of commissioning and servicing on the Marsh WellWater pump station range. Commissioning and servicing packages can be tailored to customer requirements from basic commissioning contracts to commissioning and full service contracts, including on-going support and advice.

Advice and guidance
For advice and guidance on choosing the right products for your site please contact Marsh Industries on +44 (0)1933 654582 or email contracts@marshindustries.co.uk