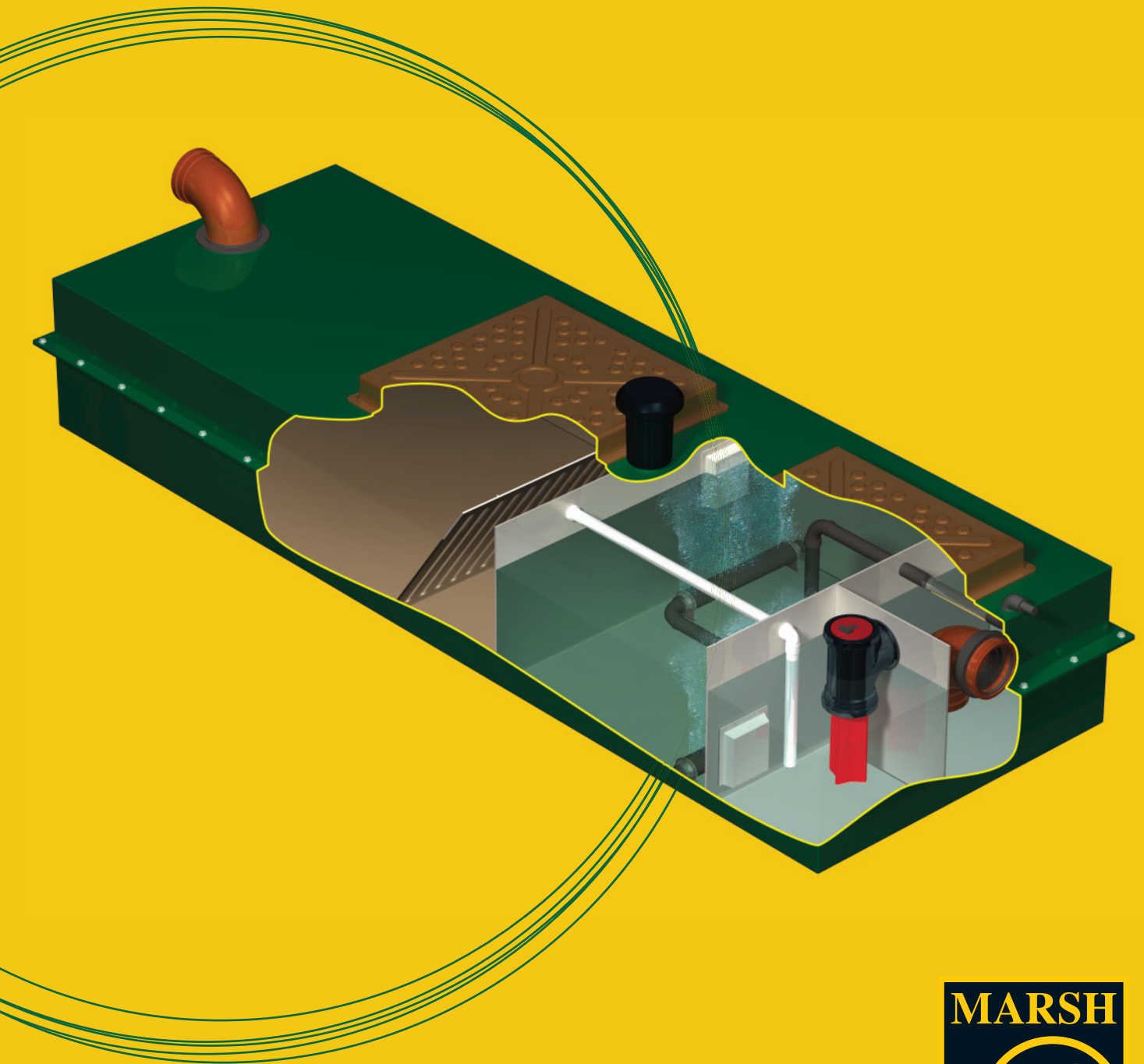


Portapura

Installation and maintenance



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Before you begin...

This installation guide refers only to the installation of the Portapura sewage treatment plant sizes 2, 3 and 5.

Please ensure that all information contained within this installation and maintenance guide is adhered to at all times – failure to do so could potentially result in the warranty of the Portapura being invalid; taking into account any local, regional or national Health and Safety, planning or consent regulations.

It is essential that the Portapura is operated strictly in accordance with the instructions provided; and that the system should only be used for the purpose of treatment of human sewage. A notice should be displayed within the building stating the dwelling/premise discharges to a sewage treatment plant.

The owner/operator of any sewage treatment plant is responsible for the operation and maintenance of the system and its associated pipework connections.

- ✓ Do not deviate from any instruction in this manual
- ✓ Do not alter any part of the Portapura system's internal and external components.
- ✓ Do not remove the covers of the Portapura, or access the unit in any way, without firstly isolating the mains power

- ✓ Do not install a Portapura treatment plant in water logged or uneven ground.
- ✓ If the site is water logged please contact Marsh Industries.

For any installation or aftercare queries please contact Marsh Industries on +44 (0)1933 658582

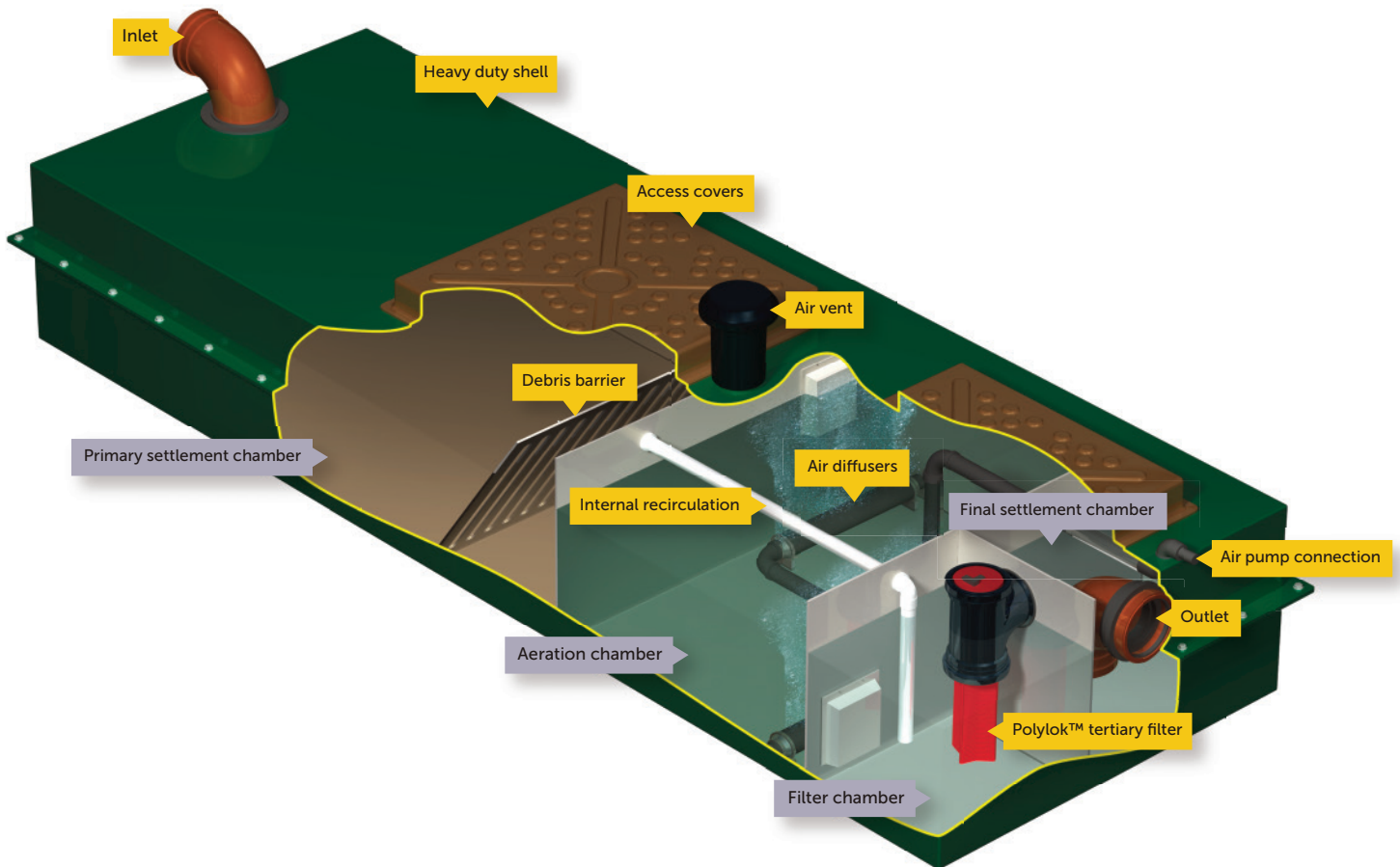
Note: Marsh industries accepts no liability for any damage or loss, including consequential loss caused by the failure of any drainage equipment or any failure caused by inclusion of 'non-sewage' solids (eg, disposable nappies, sanitary towels, wet wipes, cotton buds, etc) or fats entering the Portapura.

It is the responsibility of the installer/contractor to undertake installation of the sewage treatment plant as per the manufacturer instructions.

Marsh Industries believes that the information printed in this manual is accurate, and published for information only. No warrants, express or implied, are contained therein, nor does any legal liability attach to Marsh Industries for any reason whatsoever. The company's policy is one of continuous product improvement and we reserve the right to make alterations to our range and specification without prior notice.

1 Delivery and offloading

- ✓ The Portapura sewage treatment plant will be delivered to the nearest safe point to your site.
- ✓ Offloading is the responsibility of the receiving party.
- ✓ Whilst the Portapura unit is not heavy (please see relevant CAD drawing for approximate weight), a safe lifting plan should be used, in accordance with manual handling regulations, Health and Safety regulations, whilst taking the local environment into account.
- ✓ Take care not to damage or drop the unit during offload, as this will affect your warranty.
- ✓ Do not 'drag' the unit along a surface as this could damage the body of the tank.
- ✓ Set the Portapura down either in the pre-excavated hole or on a flat, level ground surface.
- ✓ Perform a visual check of the Portapura unit upon delivery to ensure there is no damage, scratches, abrasions or fractures.



2 Pre-installation checklist

Pre-installation checks must be undertaken by qualified installers with the appropriate qualifications and certification.

- ✓ Check the Portapura has the correct invert depth to suit your application.
- ✓ Check that all items detailed on the delivery note have been delivered to site. If any issues are noted during the inspection, please notify Marsh Industries immediately. Do not attempt to repair any damage on the unit yourself as this could invalidate the warranty.



3 Portapura installation

Above ground installation (See figure 1)

- The Portapura should be installed at the required level to accommodate incoming drainage pipes.
- Excavate a shallow, rectangular area approximately 150mm wider than the unit and approximately 75mm deep.
- Remove any flint or stones or sharp objects from the base and sides of excavation.
- Form a 25mm level, graded base using sand binding.
- A foundation of semi-dry concrete should then be laid and levelled. The concrete should be of sufficient grade and thickness (minimum 50mm and grade 25N) to ensure the Portapura is fully supported uniformly across the span of the unit. A spirit level should be used.
- Connect the drainage pipework to the unit as appropriate.
- Make electrical connections as required (See section 4). This should be performed by a suitably qualified electrician.
- Ensure connection hose from the compressor to the sewage plant is not kinked or crushed. Ducting pipe should be used.

Below ground installation (See figure 2)

Note: The Portapura can be fitted with 250mm or 500mm risers to accommodate varying incoming drainage depths. Contact Marsh Industries for details.

- Excavate an area approximately 150mm wider than the unit and approximately 150mm deeper than the height of the unit (measure to the bottom of the lid).
- Form a 25mm level, graded base using sand binding.
- A foundation of semi-dry concrete should then be laid and levelled. The concrete should be of sufficient grade and thickness (minimum 100mm and grade 25N) to ensure the Portapura is fully supported uniformly across the span of the unit. A spirit level should be used.
- Ensure the orientation of the Portapura is correct by checking the inlet and outlet positions (these are clearly indicated on the unit), then safely place the Portapura into the excavation using appropriate lifting methods.
- Ensure that the Portapura is completely level using a spirit level.
- Connect the drainage pipework to the unit as appropriate.
- Begin to backfill surround the unit with concrete – do not use vibrating rammers at any time during the installation.
- As backfilling continues, fill the Portapura with water progressively. This will ensure the Portapura stays in position during installation.
- Continue backfilling up to the flange on the unit with a minimum of 100mm surround (grade 25N concrete).
- The remainder of the excavation should be backfilled with suitably selected self-compacting pea shingle/gravel or any other suitable granular material (with a compaction factor of 0.2 or less) to the underside of the pipe work connections.
- The Portapura uses a 110mm uPVC pipe inlet connection. A short length of pipe with flexible joints should be used immediately before and after the system to allow for movement between the tank and pipework.
- Make electrical connections as required (See section 4). This should be performed by a suitably qualified electrician.
- Ensure connection hose from the compressor to the sewage plant is not kinked or crushed. Ducting pipe should be used.

Information for wet sites (See figure 3)

A wet site is defined as being where the local water table can rise above the base of the system. Installation on a wet site could pose serious problems for the disposal of treated effluent. Please ensure you have considered the outfall before wet site installation.

- Excavate an area approximately 150mm wider than the unit and approximately 250mm deeper than the height of the unit (measure to the bottom of the lid).
- A 250mm hardcore sub-base should be laid, compacted and levelled. The grade and thickness of the base should be designed to suit site conditions (minimum 250mm thickness, grade 25N).
- Ensure the excavation is kept dry by pumping out excess water using a submersible pump or suction hose arrangement. De-watering should be continued for as long as necessary.
- Line the excavation with a 1200 gauge polyethylene sheet.
- Continue installation as normal.

Figure 1
Above ground installation

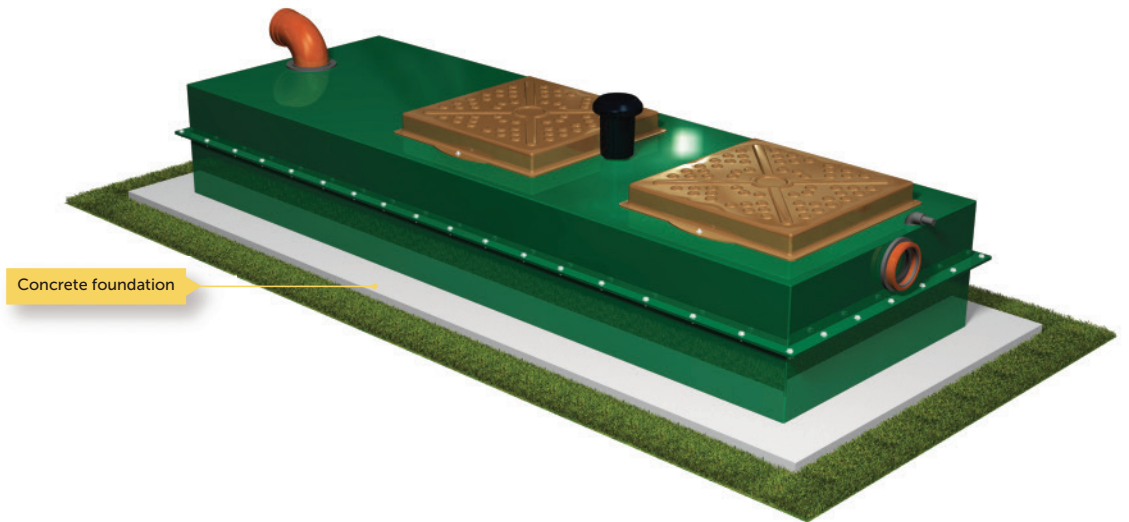


Figure 2
Below ground installation

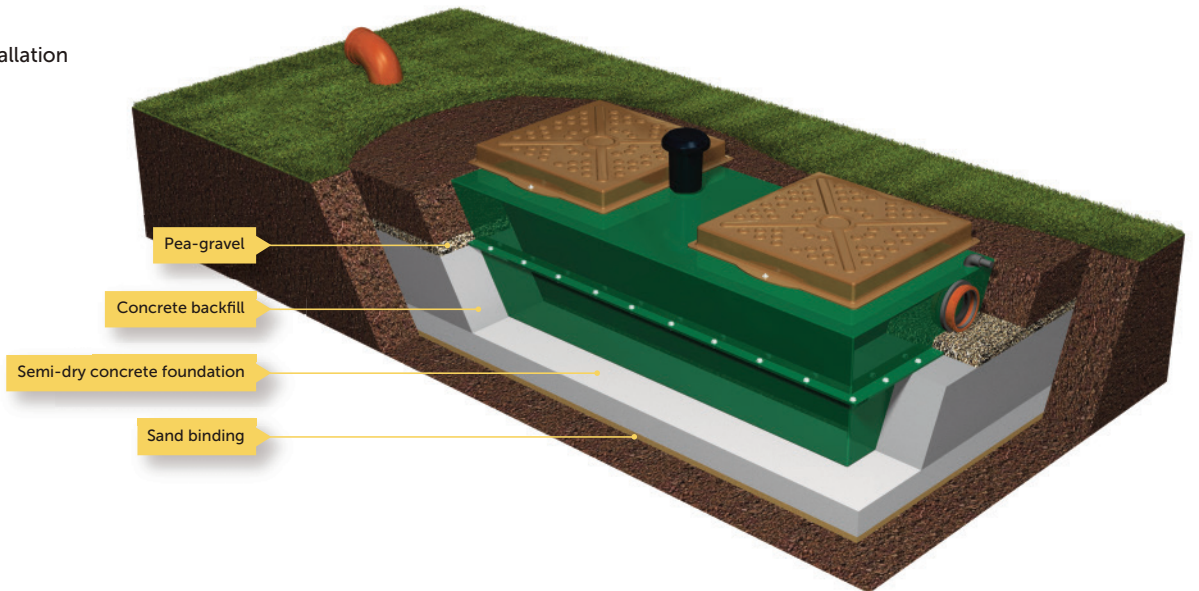
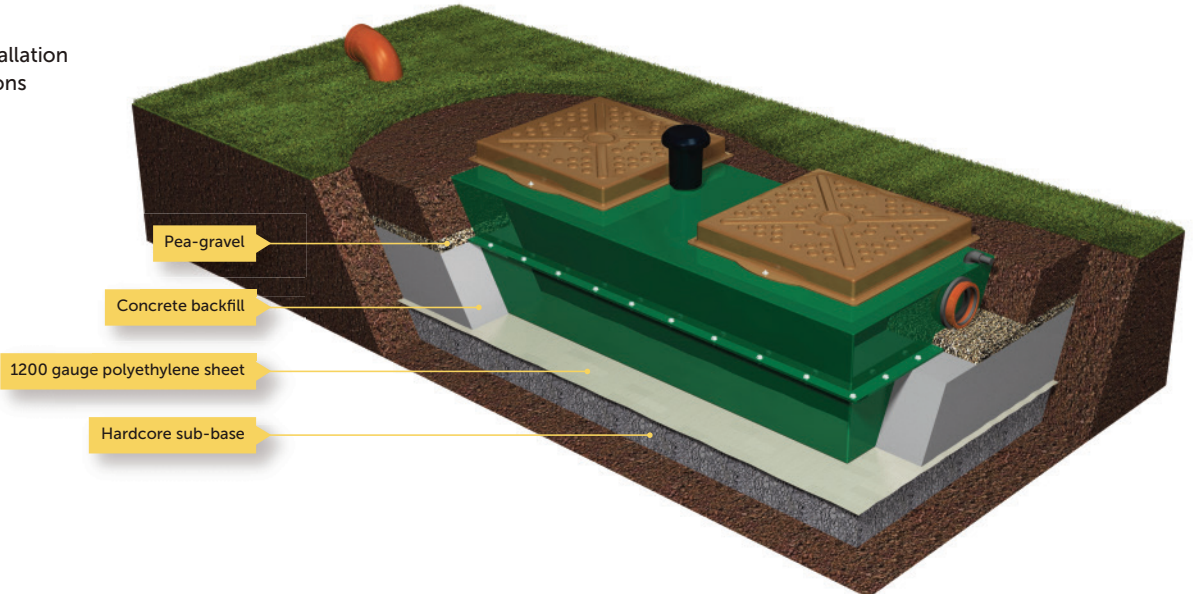


Figure 3
Below ground installation
in wet site conditions



4 Electrical connection

It is imperative that the electrical installation of this equipment is entrusted to a competent and qualified electrician working to the latest IEE regulations.

It is virtually impossible to state a specific installation configuration that would suit all sites. The selection of current protection devices must remain the responsibility of the installer who should select a suitable cable and current overload protection whilst taking into account the distance from the power source to the unit and any other relevant factors. In most cases steel wire armoured (SWA) cable, minimum 1.5sq mm will be suitable.

When installing the electrical supply to the unit, the following points should be considered:

- The electric power supply to the tank should be by means of a dedicated circuit with isolation and protection devices consistent with the requirements for fixed equipment and in accordance with the latest regulations of the Institute of Electrical Engineers.
- The power supply should be independent of all other household protection devices other than the supply authority's main fuse and that provided specifically for the power supply.
- In particular, earth leakage devices provided for normal domestic protection must not form part of the supply circuit to the tank.
- An earth leakage circuit breaker should be incorporated in the supply to the unit. A device with 30mA min trip current is recommended.
- The power supply cable should connect to the IP67 rated isolator socket mounted internally in the blower housing.
- Any terminal shrouds removed during the connection of cable cores must be replaced afterwards.
- A separate duct or conduit should be provided by others.

Standard 'gravity' outfall system with air blower Internal compressor alarm only

- A 230V 16amp waterproof plug and socket connector will be supplied with the Portapura system.

The site owner needs to provide:

- A single runoff 1.5mm² TWO core + earth – two conductors plus earth conductor – steel wire armoured (SWA) cable from the customers distribution cabinet to the tank socket.
- Cable protection via 10 amp MCB protected by residual current detector (RCD) rated 230V AC and tripping current 0.03amps.
- The cable armour must be correctly earthed.
- A control panel with alarm is available. Please contact Marsh Industries for details.

Standard 'gravity' outfall system with air blower External alarm and pumped outlet for raised bed percolation

- A 230V 16amp waterproof plug and socket connector will be supplied with the Portapura system. These conform to current UK and European Standards 1&2 eg, IP Rated 3-pin socket and 3-pin plug 0563-03.

The site owner needs to provide:

- A single runoff 1.5mm² TWO core + earth – two conductors plus earth conductor – steel wire armoured (SWA) cable from the customers distribution cabinet to the tank socket.
- Cable protection via 10 amp MCB protected by residual current detector (RCD) rated 230V AC and tripping current 0.03amps.
- The cable armour must be correctly earthed.
- A control panel with alarm is available. Please contact Marsh Industries for details.

Note: The steel wire armoured cable must be routed through 25mm glands in the unit then to be terminated to the junction box

Connections

- One core from 3 to 3
- Neutral core from 4 to 4
- One core from 5 to 5
- One core 6 to 6
- Earth core from PE Terminal to PE Terminal

System start-up

Once the electrical connection has been put in place between the Portapura and the electrical supply, the system is now operational. If the system is running correctly a slight 'hum' will be heard from the air blower and there will be air bubbles appearing from the bottom of the aeration chamber.

5 Alarm options

A compressor alarm for air pressure failure is supplied as standard.

Marsh Industries can supply alarm systems to a variety of different standards and specifications. Please contact Marsh Industries if you require a specific alarm system to suit your requirements (SMS alarms are also available as an optional extra).

Note: The alarm option that you choose may require variation of the electrical connections used.

Why install an alarm and what protection does it offer?

- The alarm will warn you of failures in the system.
- Detects high water level.
- Detects float switch failure.
- Detects pump failure (in a pumped system).
- Protects the fuse board from overload.
- Protects your home of a short circuit problem.
- Has a reset facility.

6 Discharge of treated effluent

The Portapura discharges treated effluent to standards of BOD 20: SS 30: NH₄ 20 or better. This treated effluent is now suitable for disposal. Disposal can be by any of the following means:

- Subsurface irrigation in accordance with building regulations Part H.
- Direct to watercourse (consent to discharge approval may be required). The Environment Agency or Building Control Office will be able to assist with this if necessary.
- Raised bed percolation in accordance with Building regulations Part H.

The best disposal method can depend on a variety of site factors including percolation results, soil type, water table level and topography of the site. If you require assistance in this area please contact Marsh industries.

7 Operation/maintenance

Air compressor

- The air compressor must never be turned off apart from when undergoing maintenance or inspection. It is imperative that is left running 24-hours a day, every day, to ensure a constant supply of oxygen to bacteria in the second chamber.

Polylok Filter

- The Polylok Filter is to be removed and cleaned once a month.



Desludging

To maintain system efficiency, the Portapura will require desludging every six months as a minimum, however depending on usage more frequent desludging may be required.

The desludging of the Portapura is the responsibility of the owner/operator. Desludging is performed using a vacuum tanker. Your local authority will be able to provide you with a list of suitable contractors.

It is the site owner/operators' responsibility to provide access for the vacuum tanker to desludge the system – vehicles must never drive over the Portapura. Keep at least 4m away from the covers of the Portapura unit.

- Isolate the unit by switching off the air compressor and disconnecting from mains power.
- Inform residents/users that desludging is about to be undertaken and do not use WC facilities whilst desludging is in progress.
- Remove the access cover by undoing the nuts. The access cover can now be removed.
- Empty the Portapura primary settlement chamber using the vacuum tanker. Care must be taken not to damage the system.
- The sludge should not be removed completely – approximately 15mm should be kept in the tank to allow continued bacteria growth.
- Replace the access cover.

Inspection

The inlet manhole should be inspected and any solid matter which may clog the inlet pipe should be removed. The cause of any blockage should also be investigated. The inlet and outlet pipes should be inspected and rodded to ensure that scum does not collect and that the vertical leg is not obstructed. Only qualified personnel should carry this out.

Safety precautions

As safety and security are vitality important in small-scale treatment plants, the following aspects are critical and should be followed at all times.

- There is a potential danger when desludging and therefore should never be done alone.
- Never try to enter the chamber.
- Naked flames should not be used in the vicinity of the tank.
- Manhole covers should never be left off an unattended tank.
- Disused or abandoned tanks should be demolished, filled in or sealed to ensure no accidental entry is possible.
- Protective clothing/gloves should be worn at all times.
- Always remove contaminated clothing and protective equipment after working with sewage treatment systems.
- Wash hands and face prior to eating, drinking or smoking.
- Adequate first aid boxes should be present.
- When working with machinery/electrical equipment the proximity of water should be noted.
- Equipment should not be wet when working with it.
- A second person should be present when carrying out non-routine maintenance.
- Only qualified personnel should carry out electrical work/repairs.
- Great care should be taken when handling sludge.

For optimum performance the Portapura requires regular maintenance and cleaning. It is the owner/operators responsibility to desludge the system and to keep the vents clear. The inlet vent is built under the the lid of the Portapura and guarantees a fresh supply of air to the treatment plant. The outlet vent under the desludging cover allows gas to escape and stops the tank from becoming pressurised.

8 Maintenance of drainage field area

The percolation area should be inspected periodically and any signs of malfunctioning noted. This will show itself by obvious signs of blockage of a distribution box, by ponding, smells or pollution in the surrounding area. In this event expert advice should be sought or use should be made of a reserve percolation area.

Soakaway crates must not be used for a drainage field, crates do not adhere to current Codes of Practice and General Binding Rules.

Portapura

Portapura was established to serve the leisure sector with high quality, cost-effective off-mains sewage treatment plants.

For several decades the leisure sector has had to deal with plant performance issues, costly installation and maintenance, troublesome odours and in some extreme cases, environmental pollution.

Portapura sewage treatment plants are uniquely designed to alleviate these problems by providing a safe, portable, compact and environmentally friendly solution.

For more information, including detailed CAD drawings, accessories and product certification, visit www.portapura.com



Marsh Industries

Marsh Industries delivers world-class water/wastewater treatment products and solutions to the domestic, commercial and agricultural sectors from its UK manufacturing plants in Kettering and Bridgwater.

The company is recognised as a collaborative and trusted partner to its customers, with a reputation for providing quality products that really do add value:

- Sewage treatment plants 4-500+ PE
- WellWater™ Pump stations 234-20,000+ litres
- Septic tanks and cesspools 2800-20,000+ litres
- Uni:Gem™ septic conversion units 4-60+ PE
- Marsh GMS grease traps 234-20,000+ litres
- Degrileur™ trash/debris barrier
- Agri-silage tanks Up to 100,000 litres
- Storm:Dammer™ stormwater attenuation Up to 130,000 litres
- RainCell™ rainwater harvesting systems 1500-20,000+ litres
- Marator™ and Hydroil™ oil separators

All products are fully type-tested and certified to ensure compliance with relevant environmental permitting programmes and building regulations.

In addition, the company's state-of-the art computer software, GAIA, can generate precise, bespoke commercial sewage treatment plants and pump chamber systems to the finest specification.



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