

Operating and Maintenance Manual

for

Clereflo Package Sewage Treatment Plant

**CT35, CT50, CT75, CT100, CT125
and CT150**

Standard Unitank Range

Quick Installation Guide

Do:

- ➔ read this O&M Manual including appendix for full details
- ➔ keep this manual together with any drawings that were issued and any other communication (order acknowledge, quotation, etc...)
- ➔ take care when offloading the unit – external and internal pipework & pumps could be damaged!
- ➔ ensure adequate ventilation – the treatment plant is part of the foul drainage system and requires venting (see section “Installation Instructions”, p. 12)
- ➔ use a suitable rated cable to connect the junction box inside the CT unit to the control panel (see “Electrical Installation”, p. 15)
- ➔ isolate the main power supply to the control panel before opening it (panel isolator has to be fully in the “OFF”-position)

Don't:

- ➔ install any CT units deeper than the supplied access turrets (i.e. do **not** extend the turrets)
- ➔ incorporate a standard household earth leakage circuit breaker (RCD) in the power supply to the unit, unless required by IEE regulations. Then a dedicated device should be provided (see section “Electrical Installation”, p. 14)

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Introduction

Congratulations on purchasing your Clereflo CT Sewage Treatment Plant. It is designed and manufactured entirely in the UK and is designed to give you long and reliable service.

This Operation and Maintenance (O&M) manual includes descriptive literature, specifications and drawings relating to the principal mechanical and electrical equipment incorporated in the unit. It is the responsibility of the operator to read and fully understand these instructions before installing, commissioning or operating the plant. In the unlikely event of problems occurring with your plant you may either refer to this manual, your equipment supplier or directly to Conder Products Ltd.

The plant comprises four treatment stages; a primary settlement zone, two aerobic biological zones and a final clarification zone. The design combines the benefits of a well proven treatment process with our engineering expertise to produce a high quality system which is robust and reliable. The plant will provide long and trouble free operation provided the simple maintenance procedures laid out in this manual are regularly carried out.

Your attention is drawn to the 'Health and Safety' section at the beginning of this manual. It is IMPERATIVE that you read these instructions BEFORE working on the plant.

The plant has been designed to treat the volume and strength of sewage specified in the original quotation. Please note the following points :

- The maximum design loadings must not be exceeded (see original quotation and order acknowledgement for details).
- The plant is designed for gravity feed and should not be pumped to.
- Surface water must not enter the plant and or sewerage system.
- High volume discharges from swimming pools or Jacuzzi's must not enter the plant.
- Large quantities of chemicals such as water softener regenerant, disinfectants, strong acids or alkalis, oil and grease, pesticides or photographic chemicals must not enter the system.
- Do not use chemical or biological emulsifiers in grease traps.

If you have any doubt about a particular substance, please contact us or your local supplier for further advice.

Health and Safety

(Important - Please Read This First.)

United Kingdom Health and Safety At Work Act 1974.

Section 6(a) of this Act requires manufacturers to advise their customers on the safety and the handling precautions to be observed when installing, operating, maintaining and servicing their products.

The user's attention is therefore drawn to the following :

1. The appropriate sections of this manual must be read before working on the equipment.
2. Installation and servicing must only be carried out by suitably trained or qualified personnel.
3. Normal safety precautions must be taken and appropriate procedures observed to avoid accidents

Refer to us or your local supplier for technical advice or product information.

Health

The following is extracted from a health warning card supplied to Conder Products staff. It is the customer's responsibility to ensure that all necessary protective clothing/equipment is available.

Leptospirosis - what is Leptospirosis and are you at risk?

Two types of Leptospirosis infection affect people in the UK.

1. Weil's Disease - this is a serious and sometimes fatal infection that is transmitted to humans by contact with soil, water or sewage contaminated with urine from infected rats.
2. Hardjo-type Leptospirosis - this is transmitted from cattle to humans.

What are the symptoms? ➔ Both diseases start with a flu-like illness with a persistent and severe headache, muscle pains and vomiting. Jaundice appears about the fourth day of the illness.

How might I catch it? ➔ The bacteria can enter the body via cuts and scratches and through the lining of the mouth and throat or through the eyes.

How can I prevent it? → After having worked in contact with sewage or anything contaminated with sewage, wash your hands and forearms thoroughly with soap and water. If your clothes, boots or tools are contaminated with sewage, wash thoroughly after handling them.

- Take **immediate** action to wash thoroughly any cut, scratch or abrasion of the skin as soon as possible. Apply antiseptic to the wound, cover with cotton wool or gauze, and protect with a waterproof plaster.
- **DO NOT** handle food, drink or smoking materials without first washing your hands.

If you contract the symptoms described above after coming into contact with sewage, report it to your doctor immediately and advise him/her of the circumstances.

Safety

Sewage gases are potentially hazardous. **DO NOT** enter the unit, any sump or primary tank.

Before carrying out any maintenance work, the equipment must be electrically isolated at the control panel and the **Isolator padlocked in the "OFF"-position**.

DO NOT leave manways open for any longer than is necessary. Temporary barriers and warning signs should be erected around any open covers or manways as appropriate.

Responsibility

The owner of the Sewage Treatment Plant is entirely responsible for plant operation and ensuring that the effluent quality does not breach the Discharge Consent Standards.

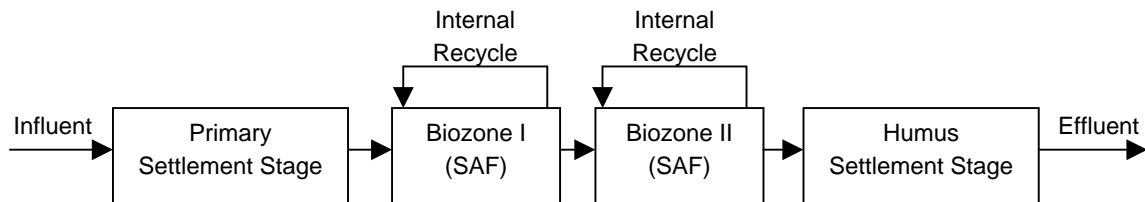
As part of our after sales customer services, we can provide a 'Service Agreement'. If required, the details and extent of the 'Service Agreement' will be submitted for your consideration. You are reminded that the existence of a service agreement does not transfer responsibility for general maintenance which must be conducted in accordance with the accompanying instructions.

Soakaways, drains and emptying of Primary Tanks and Humus Tanks remain the responsibility of the Client, as does the prevention of the influx of surface water or backing up of the soakaways or treated effluent drains and as such are not covered by any service agreement. We shall not be liable for any damage or loss, including consequential loss, caused by the failure of any pumping equipment.

Process and Plant Description

The Treatment Process – Submerged Aerated Filter Technology

The unit is specifically designed to treat domestic sewage and other bio-degradable waste. The biological treatment process utilises microorganisms to aerobically break down the incoming organic load. Therefore, it is very important that toxic chemicals do not enter the system and "poison" the microorganisms. The unit comprises four treatment stages:



- Primary Settlement Stage
- Biozones I and II (plus Biozone III, CT125 and CT150 only)
- Humus Settlement Stage (Secondary Settlement Stage)

Raw sewage is first received in the Primary Settlement Stage, where gross solids (primary sludge) settle to the bottom. These remain until the tank is "de-sludged" as described in the MAINTENANCE section of this manual.

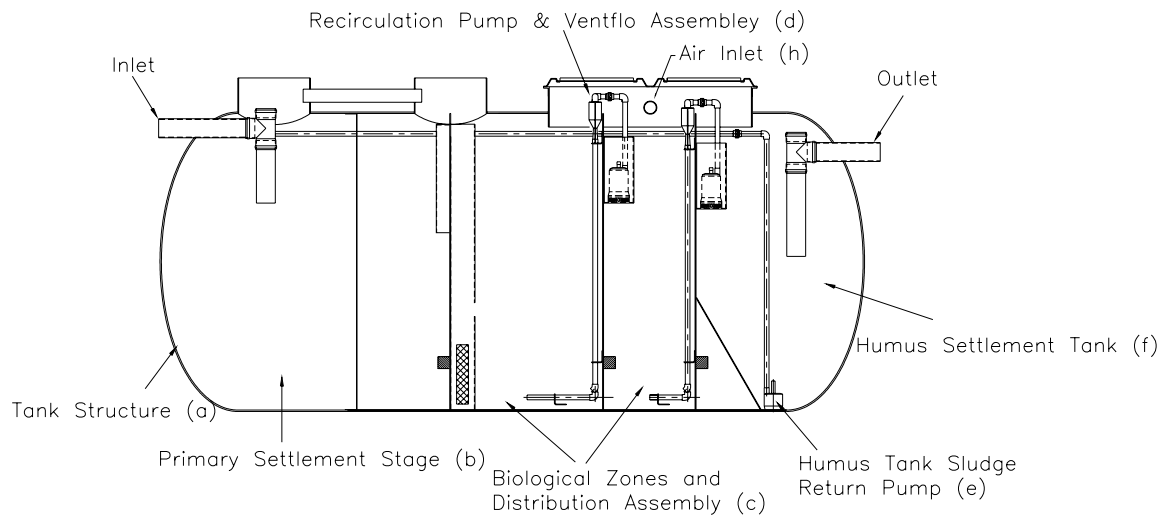
The "settled" liquor is displaced from the Primary Tank and flows into the first biological treatment zone (Biozone I). Incoming flow mixes with recycled liquors within this biozone. The recirculation/aeration pump is located in a separate chamber. Wastewater is pumped through the VENTFLO-Aerator (jet-aeration) and subsequently drawn down through the pipe and released below the media at the bottom of the tank. Air bubbles and aerated water continuously circulate within the tank, creating a perfect environment for microorganisms to treat and purify the wastewater. Effluent is displaced into the second biological treatment stage (Biozone II), which operates identical to the first stage. Excess humus solids are transferred to the humus tank by displacement, as liquor enters the biozone from the primary tank.

The Humus solids settle to the bottom of the Humus tank to form a sludge, which is intermittently returned back to the inlet of the treatment system. However, some sludge will remain within the tank and requires desludging as described in the MAINTENANCE section of this manual.

The fully treated liquid displaced from the humus tank is known as Final Effluent. It is suitable for discharge to a watercourse or soakaway as defined in the Consent to Discharge.

The Treatment Plant

The unit is a single tank design containing the following components required for the biological treatment of domestic sewage:



a) The Tank Structure

The glass reinforced polyester (GRP) tank is supplied complete with covers and access manways. Resin gel-coats ensure it is completely impervious to sewage and stiffeners ensure a robust construction with a long service life. Access to the tank internals for normal maintenance is provided through multiple manholes in order to carry out:

- De-sludging of Primary Settlement / Humus Settlement Stage.
- Inspection, Service and Maintenance of VENTFLO-Aerator/Recycle Pump.

b. The Primary Settlement Stage

The Primary Settlement Stage forms an integral part of the tank structure. It is designed to settle out any gross solids and other insoluble materials. It contains two settlement sections, which are connected via a centre hole in the separating baffle. Generally, the size of the primary settlement section is determined in accordance with BS 6297. We recommend that this section is de-sludged as described in the MAINTENANCE section of this manual. This should be carried out according to the intervals stated on the separate design sheet or every 3 months, whichever is sooner.

c. The Biological Zones and Distribution Assembly

Both biozones contain random filled media to provide a very large specific surface area. Sewage and air is distributed uniformly in these sections below the media via

the Recirculation Pump and VENTFLO-Aerators. This ensures that sufficient quantities of aerated sewage pass the biological effective surface area of the media.

d. Recirculation Pump and Ventflo Assembly

The submersible pumps are located in separate pump chambers at the end of each biozone and deliver sewage to the VENTFLO-Aerators. Each stage contains two VENTFLO-Aerators to ensure even distribution/mixing of aerated sewage below the media. The pumps run continuously.

e. Humus Tank Sludge Return Pump

The pump is located at the bottom of the humus tank and is timer-operated (20 seconds every hour) to return settled sludge for co-settlement into the primary tank.

f. Humus Settlement Stage

The Humus Settlement Stage is an integral part of the tank structure and is fed from the second biozone. The size of the chamber is determined in accordance with BS 6297. We would recommend that the Humus Tank is de-sludged, after the Primary Tank is emptied, either by tanker or by transferring the contents to the empty Primary Tank.

g. Control Panel (not shown on sketch))

The control panel has a lockable cover mounted isolator and is fitted with visual fault indicators. Separate motor-protective circuit-breakers with adjustable overload release are used for each pump. The amber fault lamps on the panel cover indicate any trip conditions of the pumps. The panel isolator has to be placed in the "off" position in order to remove the cover. As the incoming supply to the isolator (bottom) is still "live", it is essential that the instructions on the WARNING label fitted to the cover of the enclosure be adhered to, i.e. **'Disconnect the mains supply before removing the cover'**. An optional Warning Beacon can be supplied for remote siting. The panel is suitable for external mounting; however, an optional kiosk is available for enhanced security.

h. Low Level Air Inlet

The treatment system is part of the foul drainage system and as such requires venting to extract any foul odours and provide oxygen for the microorganisms. For this reason, the system is supplied with a low level air inlet connection (please see the installation section and refer to BS8301, BS6297 and Building Regulation Section H for further details).

Installation Guide

IMPORTANT! PLEASE READ HEALTH AND SAFETY INSTRUCTIONS BEFORE ATTEMPTING ANY WORK.

The following instructions are offered for guidance only. We can accept no responsibility for incorrect off loading or installation.

Plant Specification

The tanks are designed to be installed below ground where the inlet invert is no deeper than **1m** from ground level and as such are supplied with access turrets to suit a **1.0m** invert. If the actual drainage system is lower, the access turrets can be trimmed to suit any invert level up to a minimum of **0.5m**. This can either be done on-site by the installer (see appendix for details) or prior to delivery by ourselves at no extra cost. Alternatively, we can attend site and ammend the turret dimensions on site at an extra cost (please contact our office for further details and prices). Ground water should never rise higher than **2.5m** above the bottom of the tank. If the tank is installed outside these parameters it may suffer irreparable damage.

Concrete Specification

The specification for the concrete mix to surround the tank may be taken from BS 5328 : Part 1 : 1991 (including amendments), taking into account the site conditions and application requirements. For a typical non-structural application in non aggressive soils a Standard Mix ST4 with a 50mm slump is generally suitable, but also permits the equivalent Designated Mix GEN3 to be specified as an alternative. If for non typical applications, structural or other reasons a higher than normal designation is required, the purchaser of the fresh concrete can use table 6 in BS 5328: Part 2: 1991 (amendment 8759/October 1995) for guidance.

Lift height (rate of rise)

Determine the lift height (m), or rate of rise (m/h) for the specific concrete type used, to ensure that a design pressure (P_{max}) of 25kN/m² on the tank is not exceeded.

Vibration

The design of the tank assumes minimal compaction of the surrounding concrete. Where necessary, this may be extended to include light internal vibration. *Never* use deep revibration which will substantially increase the pressure on the tank, possibly causing failure.

Impact of Concrete on Discharge

The effects of impact on discharge are considerable. These are controlled by the vertical form height, the tank diameter and the method of discharge. Under no circumstances should concrete be discharged directly onto the tank.

Loadings

If the tank is installed in an area where traffic or other superimposed loadings can be applied, consult a structural engineer for the design of a reinforced concrete slab to prevent the load being transmitted to the tank (or its concrete surround). If this slab is constructed immediately above the tank, it should be separated from the concrete surrounding the tank by a compressible material.

Handling

The contractor is responsible for offloading the tank and any accessories. The tank should be lifted using straps only. Any chains or steel ropes used in rigging ***must not*** be in contact with the tank. ***Do not*** use chains or wire ropes, or lift the tank if it contains any water. Maintain control over the tank when lifting by use of guide ropes. ***Do not*** allow the tank to impact against other objects. If the tank is stored on site prior to installation, it must be upright on a flat and level ground where it cannot be punctured or otherwise damaged. Chock with tires or other cushioning material to prevent rolling, and tie down if high winds are expected.

Ventilation

Before installing the tank, care has to be given on how to provide adequate ventilation across the plant. As each site is different we can offer the following advice as guidance only (see BS8301, BS6297 and Building Regulation Section H for further details). Ensure that an existing vent stack is in place or is supplied to the building serving the treatment plant. Further, provide an air inlet by connecting a local low-level vent (cowl) to the 110mm air inlet spigot at the side of the rectangular turret. This will ensure aerobic conditions for the microorganisms within the biozone.

General Installation Procedure

Installation procedures must be in accordance with the Health and Safety at Work Act 1974, and other relevant legislation. Your procedures must also align with good building practice.

- 1 Excavate to the tank dimensions allowing a minimum clearance of 300mm between the tank and the sides of the excavation. The depth of the excavation will be determined by the inlet/outlet invert levels and the thickness of the base slab (minimum 250mm).

NOTE: *Check that the depth to the base slab is within the Plant Specification requirements for the tank.*

- 2 Maintain a completely dry excavation until the final pour of concrete has set.
- 3 Pour the concrete into the bottom of the excavation to form a level and smooth base onto which the tank can sit.

- 4 Place the tank onto the concrete base, while the concrete is still wet, and determine the correct orientation for the tank inlet(s). Connect and seal your pipework to the tank, checking alignment, and ensure that there is an adequate and correct fall for each pipe.
- 5 Commence backfilling around the tank with concrete, and, ***at the same time*** commence filling the tank evenly in ***all stages*** with clean water, via the tank turrets, ensuring that the progressive concrete and water levels are equal.
- 6 Place the concrete in lift heights (rate of rise) ensuring that the nett lateral pressure (P_{max}) on the tank is less than 25 kN/m².

NOTE: *Never increase the lift height or accelerate the rate of rise for the concrete type used, or allow the concrete to be compacted to an extent which will cause the tank walls to distort. If you contravene this warning you will cause damage to the tank.*

- 7 Continue placing concrete to surround the tank up to the top of the access turret. If the rectangular turret has been altered to suit lower invert levels, ensure a watertight seal before commencing the concrete encasement. Allow the concrete to set.
- 8 Prepare suitable footings for the separate manhole frames ensuring that any loads on the cover are not transmitted to the tank access turret or access extensions, if fitted.
- 9 Access extensions shall be surrounded with concrete poured in 400mm lifts allowing initial set between each lift. The pressure from concrete placed in higher lifts may cause access extensions to distort or collapse.

Electrical Installation

(Refer to individual drawings in control panel for further details regarding connections)

In order to achieve a safe and cost effective installation, it is not possible to state a specific installation configuration that would suit all sites. The selection of current protection devices must remain the responsibility of the installer as the person qualified to assess site conditions and supply configuration. It is therefore imperative that electrical installation of this equipment is entrusted to a fully qualified electrician.

When installing the electrical supply the following points should be considered:

1. The supply to the unit should be provided by a dedicated circuit via isolation and protection devices consistent with the requirements for fixed equipment and in accordance with the latest regulations issued by the Institute of Electrical Engineers;
2. The supply to the unit should be independent of all protection devices other than the supply Authority's fuse and that provided specifically for the unit's circuit. In particular, Earth Leakage Devices provided for normal domestic protection must not form part of the supply circuit to this unit. If it is found necessary to incorporate an earth leakage circuit breaker in the supply to the unit, a device with a 300 mA minimum trip current is recommended to avoid nuisance tripping.

Failure to comply with the following could result in the invalidation of warranty:

3. All connections to the panel should be made via the enclosure's base plate using correctly sized and rated glands.
4. When drilling the control panel, care must be taken to prevent the ingress of swarf into the electrical components.
5. Check all power terminations for tightness prior to commissioning. Loose connections will cause localised overheating and the possibility of fire (Electrical connections can become loose due to vibration in transit and by some fixing methods used during installation).
6. The control panel is rated at IP65 degree of protection and therefore suitable for external mounting, however, consideration should be given to security when deciding a final location.
7. The submersible pumps need to be connected & terminated in an IP65 junction box, which should be fitted below the cover of the main access turret. The box should be orientated with the individual pump connections coming in from the side and the main supply cable from the control panel fitted from underneath. No connections should enter the junction box from the top to prevent water ingress. The connection to the control panel can be made via suitably rated armoured cable or suitably rated cable via ducting (with changes of direction via easy bends and ducts to be fitted with drawcords).

Plant Start-up / Shutdown Procedures

Start-up and Commissioning

**The unit should be commissioned before sewage is allowed to enter the system.
Electrical connections and cabling should be checked by a qualified electrician.**

Check that the overload settings in the Control Panel are set to the correct values as shown in the SPECIFICATIONS section of this manual.

☐

Confirm the settings for the sludge return pump timer.

☐

Fill the unit with clean water until there is a discharge from the outlet.
This is best done by using a hosepipe in the inlet manhole or by running several taps in the connected household(s).

☐

Connect the main power supply to the control panel and wire through to the junction box in the unit and turn the mains isolator switch to the ON position, the recirculation pumps should run continuously.

☐

Switching the Isolator to the ON position will further cause the sludge return pump to run through it's timed cycle. To re-test, avoiding the time delay, turn the isolator to the OFF position, and then ON again. Check the pump is delivering a flow to the inlet of the primary tank for the correct period of time. Replace all covers.

☐

Checked by.....

Signature.....

Date.....

The Treatment Plant is now operational. However, the process relies on the growth of microorganisms in the Biological Zone. The time taken for these naturally occurring organisms to develop is dependant on temperature and is typically 6 - 8 weeks. However this may be up to six months in winter. When the biology has 'matured' in this way, the treatment process will be completely established. During this time, do not allow any strong cleaning agents or bleaches to enter the system.

Shutdown Procedure

Temporary absence of flow will not be detrimental, as the pump will continue to recycle flows within the system. However, in circumstances where the flow may be interrupted for more than 2 MONTHS, the plant should be shutdown by the following procedure:

De-sludge the system in accordance with the instructions in the
MAINTENANCE SCHEDULE section of this manual.

☐

Refill the system with clean water as described on previous page.

☐

Switch off the mains supply and padlock the Mains Isolator in the OFF position.

☐

Maintenance Schedule

IMPORTANT! PLEASE READ HEALTH AND SAFETY INSTRUCTIONS BEFORE ATTEMPTING TO WORK ON THE SYSTEM.

Primary Tank De-sludging.

NOTE: This operation may be required at different intervals depending upon specific site conditions and effluent discharge standards. Refer to the separate design sheet for the recommended desludging frequency of this particular installation. In case no specific information is at hand, the maximum desludge frequency is 3 months.

Desludge both the primary and humus tanks using a conventional suction tanker (please see appendix C for further details on actual volumes). Remove the manhole covers from the tanks. Ensure that all openings are adequately guarded. Insert the suction hose from the tanker into the tanks and remove all the contents.

It is IMPERITIVE that the biological stages are not emptied by a suction tanker (this could cause permanent loss of the biological media and detriment to the biological process).

If at any time there is insufficient water available to sustain the recycle pump(s), the control panel should be switched OFF. After desludging, it is ESSENTIAL that the unit is refilled with Clean Water, as quickly as possible.

Weekly Inspections

Check the control panel for any trip conditions (amber lights).

Check the operation of the recirculation pump(s). Remove the manhole cover(s) and confirm that liquor and air is being pumped through the media. This will be noticed by the forward flow into the recirculation chamber and air bubbles rising through the media.

Check the final effluent discharging from the unit. If it is cloudy or contains suspended particles, the humus tank is likely to require desludging.

3 Monthly (or as stated otherwise)

As for weekly, plus

Desludge the plant as detailed above and in appendix C.

Switch the power supply OFF and padlock the mains isolator. Disconnect the pump delivery pipework and remove the pump(s). Inspect and clean the recirculation and sludge return pumps. Pressure wash internal Ventflo's and sparge pipes. Reposition the pump(s) ensuring that there are no leaks from the delivery pipework and all cables are tidy and cannot cause an obstruction. Switch the Isolator to the ON position to resume operation.

Appendix A: Clereflo CT Specification

Clereflo CT Unit	CT35	CT50	CT75	CT100	CT125	CT150
Design Loadings (max.)						
Population Equivalent [P.E.]	35	50	75	100	125	150
Hydraulic Load [l/day]	7,000	10,000	15,000	20,000	25,000	30,000
Organic Load [gBOD/day]	2,100	3,000	4,500	6,000	7,500	9,000
Dimensions						
O/A Length [m]	5.8	7.9	6.0	7.7	9.3	10.2
Tank Diameter [m]	Ø1.8		Ø2.5			
Drain Inlet Invert [m]	standard 1.0 m (can be altered to suit 0.5 to 1.0 m)					
Depth from Inlet Invert [m]	1.7		2.4			
Pipework Fitting	Ø160mm (uvpc drain pipe)					
Approximate Weight (empty) [kg]	1000	1200	1800	2000	2200	2500
O/A Volume [m ³]	13	18	26	34	42	51
PST-Volume [m ³]	5.8	7.8	11.2	14.5	16.0	18.0
HST-Volume [m ³]	2.8	3.8	5.3	6.8	12.3	14.4
Operation and Maintenance						
Recycle Pumps	2 x TOP4	2 x TOP5		2 x VXCM15/50	2 x VXCM15/50	3 x VXCM15/50
Power Supply	Single Phase, 240V, 50Hz					
Control Panel	SP-2R/6			SP-2R/10	SP-3R/10	
Max. Sludge Storage [days]	90				60	

Appendix B: Fault Finding

Symptom - Absence of Bubbles in the Biozone

CAUSES	REMEDY
Recycle Pump tripped due to:	
1. Pump Strainer Blocked	Remove the pump and clean the strainer as outlined in the Maintenance Schedule . Reset the overload by pushing the reset button inside the starter and switch on. If the overload trips again, there is a fault with the pump and/or the wiring. Contact your supplier or a qualified electrician.
2. Pump Impeller Jammed	Remove the pump as outlined in the Maintenance Schedule and remove the obstruction. Reset the overload by pushing the reset button and switch on. If the overload trips again, there is a problem with the pump and/or wiring. Contact your supplier or a qualified electrician.
3. Pump Failure	Check status of warranty period on pump and contact service department.
Water is coming out of Ventflo	Remove top cap of Ventflo and check that nothing is blocking the nozzle. Also check that the cap is placed firmly and square on top of the Ventflo body.
Power Cut	Do nothing. When power is restored, the system will restart automatically.
Control Panel Supply (RCB tripped)	Switch off the power and reset the RCB. Switch on, and the system should restart automatically. If it does not, switch off the power and call a qualified electrician.

Appendix C: Equipment Specification

Tank

Material Specification:	Glass Reinforced Polyester Resin with interior and exterior Gel Coat - 1: 2.5 Glass/Resin Ratio.
Colour:	Canary Yellow BS.4800

Control Panel (depending on application, see appendix A for details)

Material Specification:	Polycarbonate
Protection:	IP55
Voltage:	240v / 1 phase / 50 Hz
Dimensions (w x h x d):	375mm x 550mm x 230mm (same for all panels)

Recirculation Pumps (type of pump varies depending on application)

	TOP4	TOP5	VXCm15/50
Material Specification:	Body: Technopolymer		Body: Cast Iron
Outlet Connection:	1 ½" in B.S.P		2 ½" B.S.P
Net Weight:	9.8 kg	10.8kg	33.3 kg
Voltage:	240v / 1 phase / 50 Hz		
Full Load Current:	4.8 A	6.5 A	8.8 A
Input Power:	0.75 kW	0.92 kW	1.1 kW
Typical Application:	4.3 l/sec @ 4m	5.6 l/sec @ 4m	8.6 l/sec @ 4m

Surplus Sludge Return (SSR) Pump TOP1

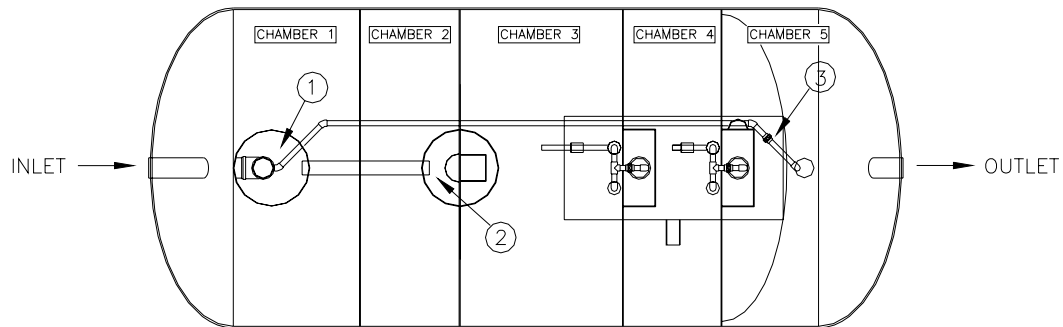
Material Specification:	Body: Technopolymer
Outlet Connection:	1" B.S.P
Net Weight:	4.1 kg
Voltage:	240v / 1 phase / 50 Hz
Full Load Current:	1.3A
Input Power:	250 W
Typical Application:	1.2 l/sec @ 4m Head

Note, all full load currents and input powers are based on manufacturer's details

Alarm Beacon (optional)

General:	Polycarbonate.
Protection:	IP65
Dimensions:	170mm x 105mm x 85mm
Electrical Data:	240v / 1 phase / 50 Hz

Appendix D: De-sludging Instructions



- ① Firstly, empty the 1st stage of the Primary Tank completely (CHAMBER 1).
- ② Secondly, empty the 2nd stage of the Primary Tank completely (CHAMBER 2).
- ③ Thirdly, empty the Humus Tank Section with the tanker, or transfer the contents into empty Primary Tank (CHAMBER 5).

Please Note, that it is ESSENTIAL to refill the Primary Tank with Clean Water as quickly as possible, after de-sludging.

Please Note, that it is IMPERITIVE that the biological stages (CHAMBERS 3 and 4) are not emptied are not emptied using a sludge tanker. (this could cause permanent loss of biological media and detriment to the treatment process)