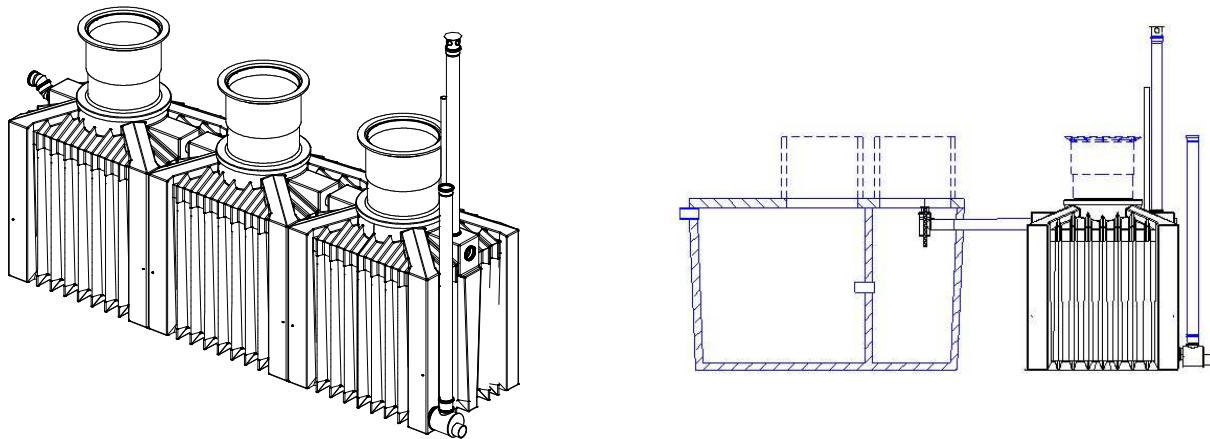


Owner's manual

ClearFox® nature – Small wastewater treatment plant

4 – 16 population equivalent

EN 12566-3 Standard
EN 12566-6 Biomodul




Please read this manual before putting the sewage treatment plant into operation. It contains information on servicing and operating the plant.

There is a separate detailed operating manual relating to the installation of the plastic tank.

PPU Umwelttechnik GmbH, Bernecker Str. 73, 95448 Bayreuth, Tel: 0921 / 150 63 990, Fax: 0921 / 150 63 999, email: info@clearfox.com

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1.0 General		
1.1 EC Declaration of Conformity		
We hereby declare that the following fully biological sewage treatment plant		
<ul style="list-style-type: none"> - Meets the current tests requirements of DIN EN 12566 Part 3. - The tank system fulfils all the requirements of CE signing 		
Manufacturer	PPU Umwelttechnik GmbH	
Address	Bernecker Str. 73 D-95448 Bayreuth	
Product	Small sewage treatment plant up to 50 p.e.	
Date	01.03.2013	
Directors	Wolfgang Pöhl	

1.2 Tests





DIN EN 12566-3 " Small wastewater treatment systems for up to 50 PT - Part 3: Packaged and/or site assembled domestic wastewater treatment plants":

Vertical Stability:	PIA2007-BT-010
Horizontal Stability (Pit-Test):	PIA2010-ST-PIT1003-1008
Water resistance:	PIA2007-WD001
Hydraulic efficiency:	PIA2007-HW-002
Material:	Polyethylen due to EN 12566-3 Appendix
General technical approval C:	Z - 55.41 - 420
Cleaning efficiency:	Test report B 31.09.237.01

DIN EN 12566-6 "Small wastewater treatment systems for up to 50 PT - Part 6: Prefabricated treatment units for septic tank effluent":

Vertical Stability:	PIA2007-BT-010
Horizontal Stability (Pit-Test):	PIA2010-ST-PIT1003-1008
Water resistance:	PIA2007-WD001
Hydraulic efficiency:	PIA2007-HW-002
Material:	Polyethylen due to EN 12566-3 Appendix
General technical approval C:	Z – 55.41 - 583
Cleaning efficiency:	Test report PIA2014-T6-185B40.01



1.3 Signs and Symbols

	The following symbols are used in the manual:
 Caution!	<u>Caution!</u> Failure to observe this point could result in material damage .
 Danger!	<u>Danger!</u> Failure to observe this point could result in personal injury .
	<u>Cross-reference</u> Refers to additional information in another chapter or manual
	<u>Information</u> Provides useful information

1.4 Hazard Warnings

	Please read the warnings in the manual for the tank and the short installation instructions in the appendix.
---	---

1.5 Preface

	In order to prevent any damage, we would ask you in particular to read through this manual completely <u>before putting the plant into operation</u>.
	We reserve the right to make changes to the technical specifications.
 Caution!	Please check the product on delivery for any signs of damage that may have occurred during transport. In this event, you must notify Drainstore.com immediately.

1.6 Warranty

	We would refer you to the General Terms and Conditions of PPU Umwelttechnik GmbH and to those of your trading company.
--	--

2.0 Product Discription

2.1 Use



Caution!

The small wastewater treatment plant may only be used to treat wastewater from households. 4 and 8 population variants can be supplied. Bigger units up to 16 population equivalents can be built in two streets. Please use the according drawings.

2.2 Scope of Delivery



The parts listed below are included as standard:

For plants larger than 4 population equivalents (more than 2 Aquaplast®-container, the connecting pipes (KG pipe DN 100 nominal size) between the prechambers must be provided as part of the infrastructure.



	Please tick off
- Polyethylene tanks (number depends on plant version)	
- Telescopic shaft (number depends on plant version)	
- Technical equipment for prechamber/buffer	
- Technical equipment for biological tank	
- connectable device for the aeration pipe, the sampling pipe and the alarm device	
- sampling device	
- as an option: pumping shaft DN 600 nominal size with an integrated floating switch	

2.3 Standard use



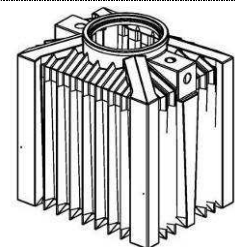
For standard use the technical equipment is delivered installed in the tanks ready for operation. Please observe the appropriate depths relating to frost protection. An adjustment to the ground surface to meet differing invert depths can be achieved using a telescopic shaft. Please refer to the manual for the tank and the accessories depicted in the appendix.

2.4 Tank



There is one easily transportable tank version used for the small sewage treatment plant.

Aquaplast®-Tank large (2250 l)



2.5 Plant Versions



Caution!

All plant versions are listed below. The delivery documents will show you what kind of plant you have got. The version for 16 population equivalents will be built in two parallel streets. Special solutions are also possible.

Please make sure that the tanks are in the correct position from inlet to outlet. There is a detailed manual for the connections in appendix 9.9.

False connections or false positions will cause dysfunction.

2.5.1 Standard due to DIN EN 12566-3

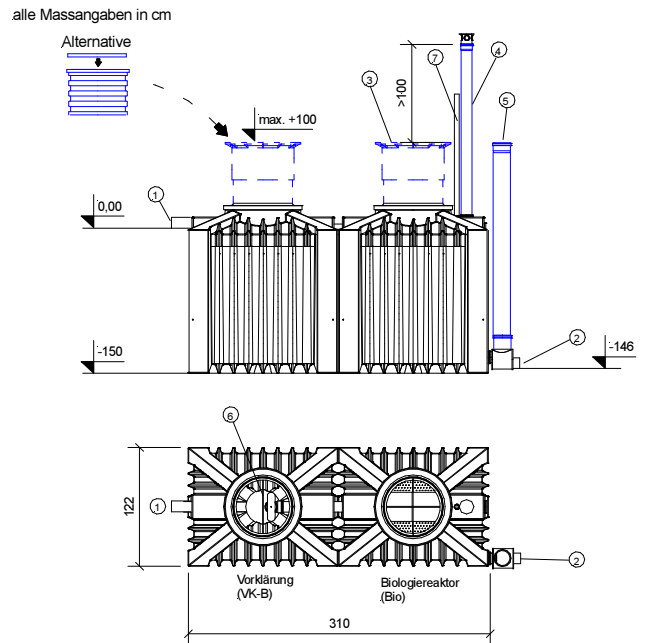
4 Population equivalents (PE)

This small wastewater treatment plant consists of 2 tanks:

- 1 tank as prechamber, buffer and sludge storage - inlet (VKB)
- 1 chamber as biological reactor - outlet (BIO)

- 1 Inlet DN 100 nominal size
- 2 Outlet flow by gravity DN 100 nominal size
- 3 Aerated lid
- 4 Aeration pipe DN 100 nominal size
- 5 Sampling shaft DN 150 nominal size
- 6 Internal baffle wall and throttle
- 7 Alarm device (mechanical tailback alarm)

All blue marked components must be delivered by the customer. They are available as an option.
The standard height between inlet pipe and surface of the area is approximately 20 cm.



Caution!

Tanks 1 and 2 must be placed directly next to each other in the ground as the connection lines are prefabricated for this purpose. There is the possibility to extend with a KG-pipe. The slope of the line must be in flow direction, never against!
Horizontal installation of the biological tank is imperative for proper function.

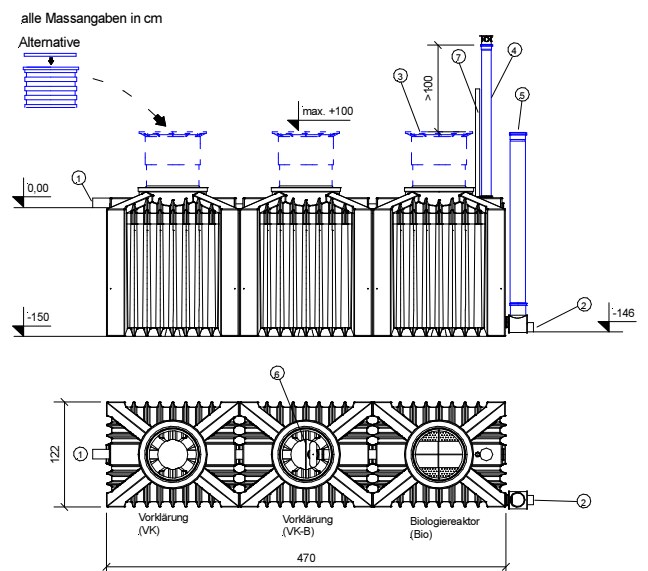
8 PE

This small wastewater treatment plant consists of 2 tanks:

- 1 tank as prechamber, buffer and sludge storage - inlet (VK)
- 1 tank as prechamber, buffer and sludge storage (VKB)
- 1 chamber as biological reactor outlet (BIO)

- 1 Inlet DN 100 nominal size
- 2 Outlet flow by gravity DN 100 nominal size
- 3 Aerated lid
- 4 Aeration pipe DN 100 nominal size
- 5 Sampling shaft DN 150 nominal size
- 6 Internal baffle wall and throttle
- 7 Alarm device (mechanical tailback alarm)

All blue marked components must be delivered by the customer. They are available as an option.
The standard height between inlet pipe and surface of the area is approximately 20 cm.





Caution!

Tanks 1 and 2 must be placed directly next to each other in the ground as the connection lines are prefabricated for this purpose. There is the possibility to extend with a KG-pipe. The slope of the line must be in flow direction, never against!

Horizontal installation of the biological tank is imperative for proper function.

2.5.2 Biomodul due to DIN EN 12566-6

8 PE

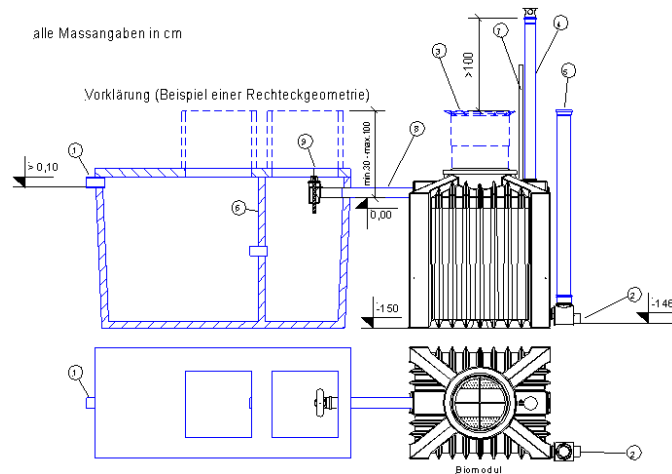
This small wastewater treatment plant consists of 1 tank:

1 tank as a biological reactor (BIO)

The septic tank is only schematically drawn. It is not part of the delivery. It has to be delivered by the customer (blue marked components)

- 1 Inlet DN 100 nominal size (Mat. KG/PE)
- 2 Outlet flow by gravity DN 100 nominal size (Mat. PE)
- 3 Aerated lid (Mat. PE)
- 4 Aeration pipe DN 100 nominal size (Mat. KG/HT/PE)
- 5 Sampling shaft DN 150 nominal size (Mat. KG/PE)
- 6 Internal baffle wall (Mat. PE or concrete)
- 7 Alarm device (mechanical tailback alarm)
- 8 Connecting pipe DN 100 nominal size to the bioreactor (Mat. KG/PE)
- 9 Throttle

Biomodul (Material: PE)



Requirements:

The septic tank has to be constructed due to DIN EN 12566-1 or DIN EN 12566-4.

The septic tank has to be waterproof

The openings of the shaft must allow an access to the throttle

The levels of the throttle and the outlet of the septic tank have to be the same.

There must be an access to all chambers.

Minimum volume (V) due to the German general technical approval No. Z-55.41-583:

4 PE: V > 2.250 L

8 PE: V > 4.500 L

Minimum surface (A) to reach the minimum buffer volume:

4 PE: A > 1,6 m²

8 PE: A > 3,2 m²

Buffer height > 0,10 m

Buffer volume (difference in height between the inlet and the outlet of the septic tank)

4 PE > 0,2 m³

8 PE > 0,4 m³



Caution!

Tanks 1 and 2 must be placed directly next to each other in the ground as the connection lines are prefabricated for this purpose. There is the possibility to extend with a KG-pipe. The slope of the line must be in flow direction, never against!

Horizontal installation of the biological tank is imperative for proper function.

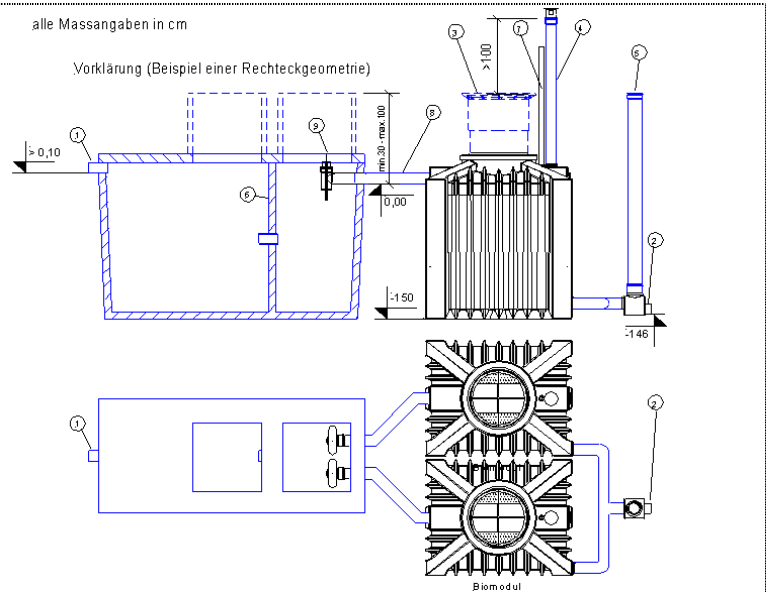
16 PE

This small wastewater treatment plant consists of 2 tanks:
2 tanks as biological reactors (BIO)

The septic tank is only schematically drawn. It has to be delivered by the costumer (blue marked components)

- 1 Inlet DN 100 nominal size (Mat. KG/PE)
- 2 Outlet flow by gravity DN 100 nominal size (Mat. PE)
- 3 Aerated lid (Mat. PE)
- 4 Aeration pipe DN 100 nominal size (Mat. KG/HT/PE)
- 5 Sampling shaft DN 150 nominal size (Mat. KG/PE)
- 6 Internal baffle wall (Mat. PE or concrete)
- 7 Alarm device (mechanical tailback alarm)
- 8 Connecting pipe DN 100 nominal size to the bioreactor (Mat. KG/PE)
- 9 Throttle

Biomodul (Material: PE)



Requirements:

The septic tank has to be constructed due to DIN EN 12566-1 or DIN EN 12566-4.
The septic tank has to be waterproof
The openings of the shaft must allow an access to the throttle
The levels of the throttle and the outlet of the septic tank have to be the same.
There must be an access to all chambers.

Minimum volume (V) due to the German general technical approval No. Z-55.41-583:
16 PE: $V > 9.000 \text{ L}$

Minimum surface (A) to reach the minimum buffer volume:
16 PE: $A > 6,4 \text{ m}^2$

Buffer height $> 0,10 \text{ m}$
Buffer volume (difference in height between the inlet and the outlet of the septic tank)
16 PE $> 0,8 \text{ m}^3$

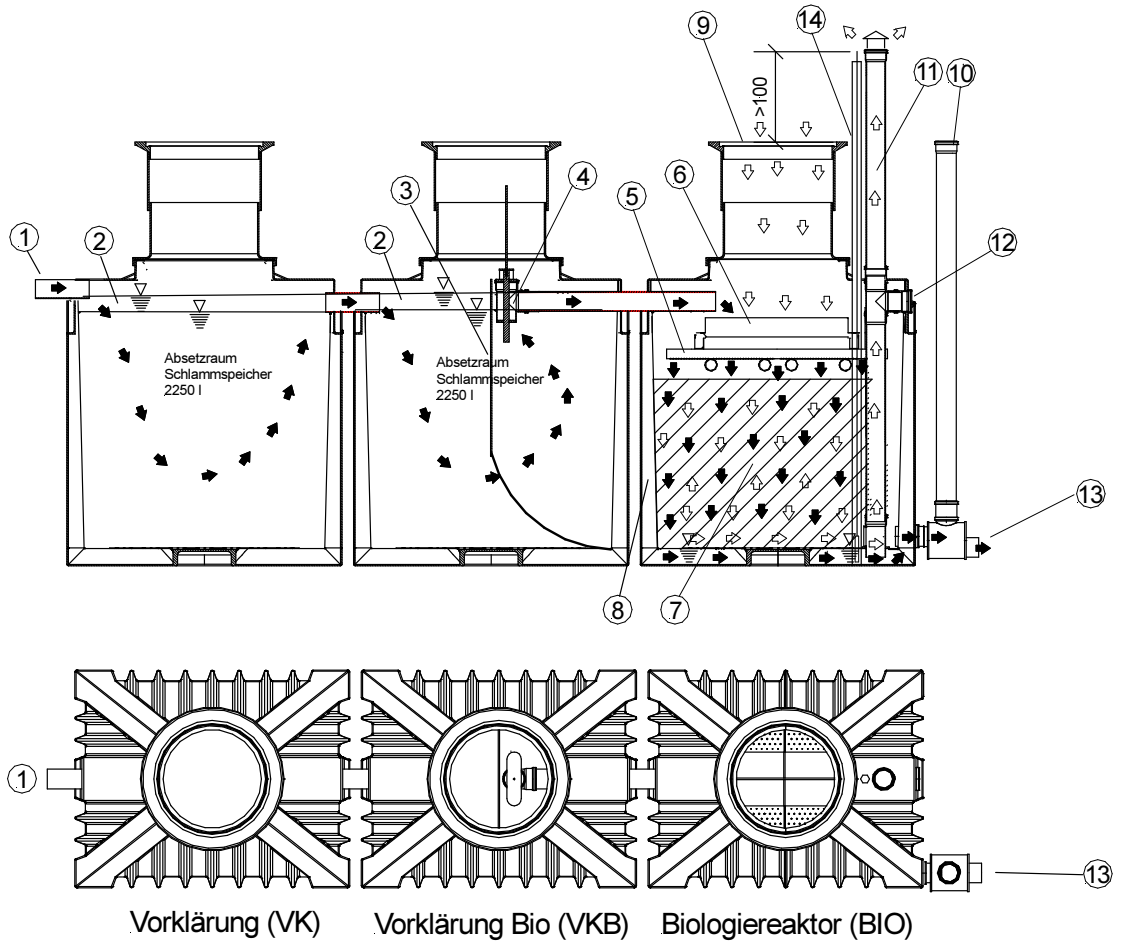


Caution!

Tanks 1 and 2 must be placed directly next to each other in the ground as the connection lines are prefabricated for this purpose. There is the possibility to extend with a KG-pipe. The slope of the line must be in flow direction, never against!
Horizontal installation of the biological tank is imperative for proper function.

2.6 Diagram of Function

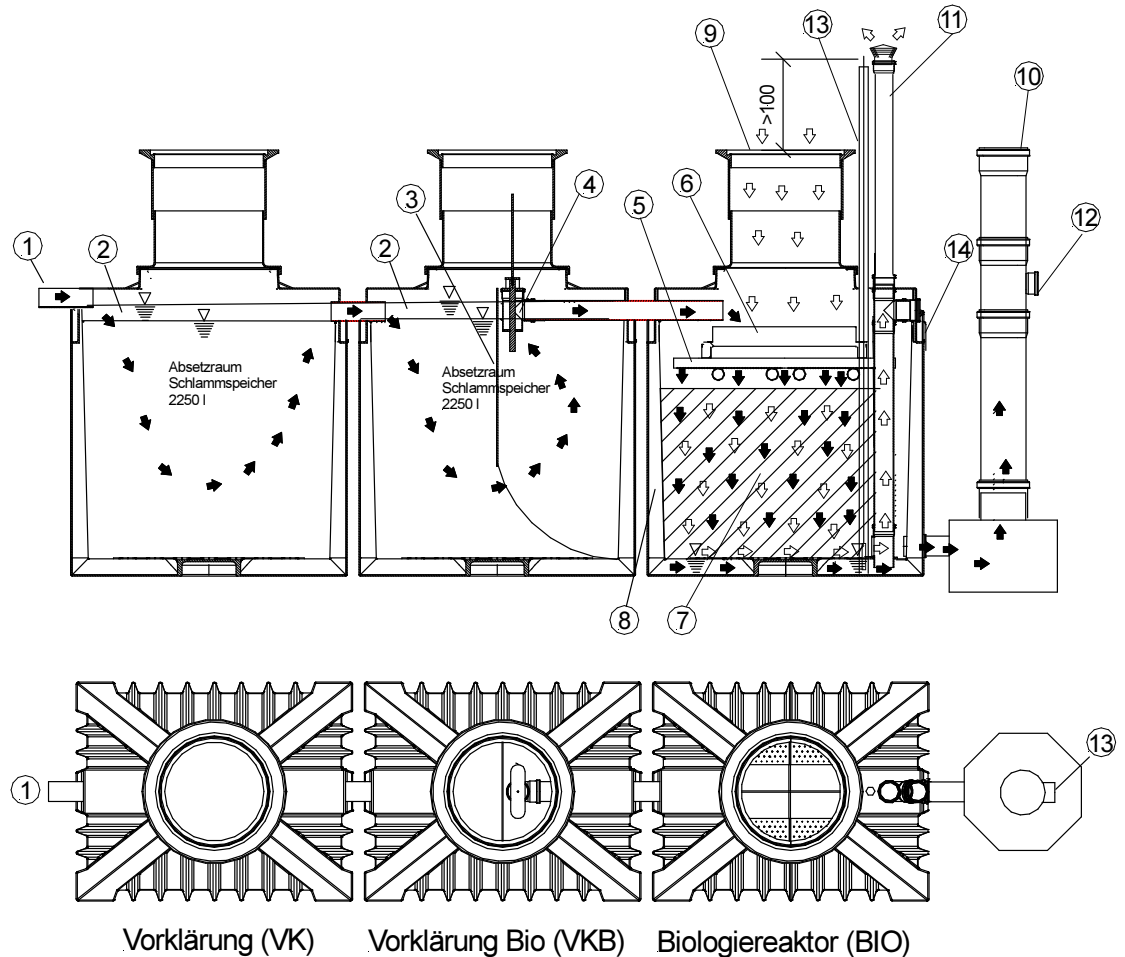
Construction of the small wastewater treatment plant with effluent by gravity (example 8 PE)



Description:

1. Inlet DN 100 nominal size
2. Buffer Height 0,1 m
3. Baffle wall
4. Throttle with floating body and integrated emergency outlet
5. Water distribution plates
6. Tippler device
7. Biofilm treatment zone
8. Emergency overflow via the ribs of the tank
9. Aerated lid
10. Sampling pipe DN 150 nominal size
11. Aeration pipe DN 100 nominal size with a ventilation cap
12. Cover DN 100 nominal size
13. Outlet due to gravity DN 100 nominal size after the sampling device
14. Alarm device (mechanical tailback alarm)

Construction of the small wastewater treatment plant with pumped effluent (example 8 PE)



Description:

1. Inlet DN 100 nominal size
2. Buffer Height 0,1 m
3. Baffle wall
4. Throttle with floating body and integrated emergency outlet
5. Water distribution plates
6. Tippler device
7. Biofilm treatment zone
8. Emergency overflow via the ribs of the tank
9. Aerated lid
10. Sampling pipe and pump shaft DN 250 nominal size
11. Aeration pipe DN 100 nominal size with a ventilation cap
12. Pumped outlet DN 100 nominal size after the sampling device
13. Alarm device (mechanical tailback alarm)
14. Cover DN 100 nominal size

3.0 Installation

3.1 Tank Installation



Please refer to the manual for the tanks and the short installation instructions in the appendix 9.8.



Caution!

Caution: At first fill the pit around the tank with earth layer by layer and compress it carefully. Don't use a machine for compressing but a handstamp!

Caution: When installing the biological treatment tank, do not fill up with water – only fill the prechamber(s) with water.

3.2 Kit Installation



The Kit should be installed before the tank is filled.



Danger!

The installation or deinstallation is dangerous. Only experienced persons are allowed to do that work. The treatment plant is mostly prefabricated.

Do not climb into an unventilated tank as this could cause danger to life. Please observe Health and Safety Guidelines.



Caution!

When touching parts in the tank after operation has commenced please observe the hygienic precautions such as protective gloves, protective clothing, disinfectant and inoculation. There is danger of infection!

Incorrect or faulty installation impairs the function of the unit.

All delivered installation parts are stored inside the bioreactor or inside the prechamber. Please have a look at the quality safety protocol inside the delivery bag:
Sampling device, baffle, throttle (inlet to the bioreactor), tippler device, ventilation cap, alarm device.

Sampling Device



Baffle Wall



Throttle



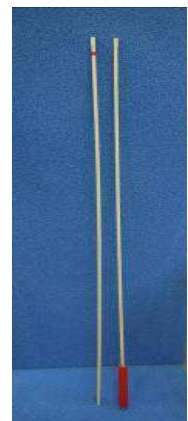
Tipping Device



Ventilation Cap



Alarm Device



3.2.1 Prechamber Installation



Caution!

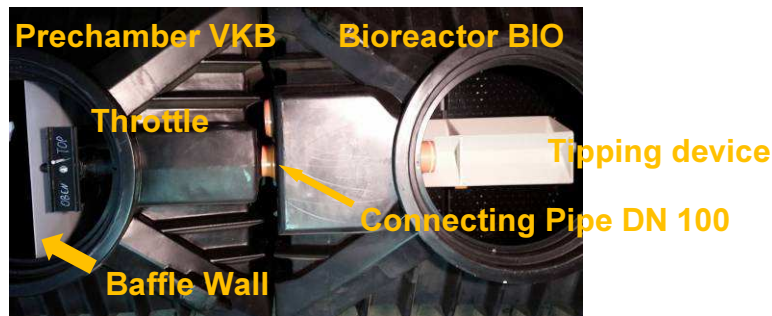
Connect the prechamber (VKB) together with the bioreactor (BIO). If there is a treatment plant for 8 PE use the second pretreatment chamber in flow direction. Connect both tanks (VKB and BIO) with the delivered pipe DN 100 nominal size with throttle. If there is a preinstalled throttle use the single pipe DN 100 nominal size.

When you push the throttle though the outlet opening of the prechamber in the direction of the bioreactor, please attend that the gasket fits well. Push the pipe until the stop. Attend the vertical movement of the throttle having free space. If the throttle deviates a little in vertical direction there will be no influence on the function.

If the tanks won't stand together the connecting pipe has to be extended. Attend the movement of the tipping device.

Fix the connecting pipe between VKB and BIO with the delivered pipe holder. Please attend the instruction in appendix 9.10.

If the baffle wall is not preinstalled, insert the baffle wall into the ribs of the prechamber until it will stop at the internal frame. In the following fix the stiffening pipes at the baffle wall with laces.



3.2.2 Kit Installation in existing septic tank in case of Biomodul according to DIN EN 12566-6

The septic tank must have an opening towards the bioreactor DN 100 nominal size. Connect the septic tank with the biological reactor with the delivered pipe DN 100 nominal size including throttle.

When you push the throttle through the outlet opening of the septic tank in the direction of the bioreactor, please attend that the gasket fits well. Push the pipe until the stop.

Attend the vertical movement of the throttle having free space. If the throttle deviates a little in vertical direction there will be no influence on the function.

If the tanks won't stand together the connecting pipe has to be extended and fixed. There has to be a slope of 1 to 2% in the direction of the bioreactor.

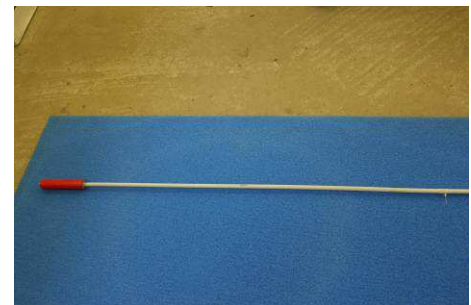
Attend the movement of the tipping device.

The throttle has to be accessible for maintenance. It must be possible to pull it from the top of the septic tank.

The throttle should not float and has to be installed horizontally. If necessary the throttle has to be fixed at the ceiling or the wall of the septic tank.

3.2.3 Installation Alarm Device

Connect all parts of the alarm device and fix them with the delivered lace. Insert the alarm device into the leading pipe at the bioreactor. Attend that the alarm device moves easily. The red mark has to be on the top, the floating body has to be on the bottom as shown in the picture below.



3.2.4 Kit Installation in the Bioreactor



Caution!

This is valid for treatment plants according to DIN EN 12566-3 as well as biomoduls according to DIN EN 12566-6

- Insert the sampling device (1) into the outlet opening of the bioreactor
- **Attend the flow direction! If the installation of the sampling device is inverted, the treatment plant won't work!**
- The outlet of the sampling device has to be lower than the inlet.

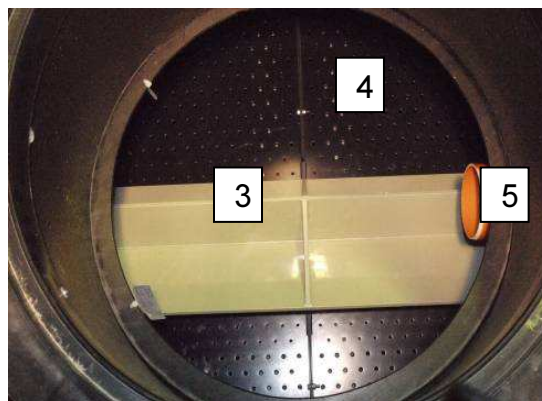


Sampling device



Sampling device with pipe (2) DN 150 nominal size

- The sampling pipe (2) has to be fitted vertically on the sampling device (1).
- All other parts are already factory-adjusted.
- Insert the tipping device (3) and test if it is tipping easily to both sides.
- The distribution plates (4) should be fixed in a horizontal position. The tanks have to be vertically installed before.



View inside the bioreactor with tipping device (3), distribution plates (4) and pipe from the prechamber (VKB) to the bioreactor (BIO) (5)

4.0 Commissioning

4.1 Commissioning Aeration



The aeration system is the essential part of the small treatment plant. Without aeration the wastewater treatment will not work!

There must be a difference in height between air inflow and air outflow of **at least 1 m!**



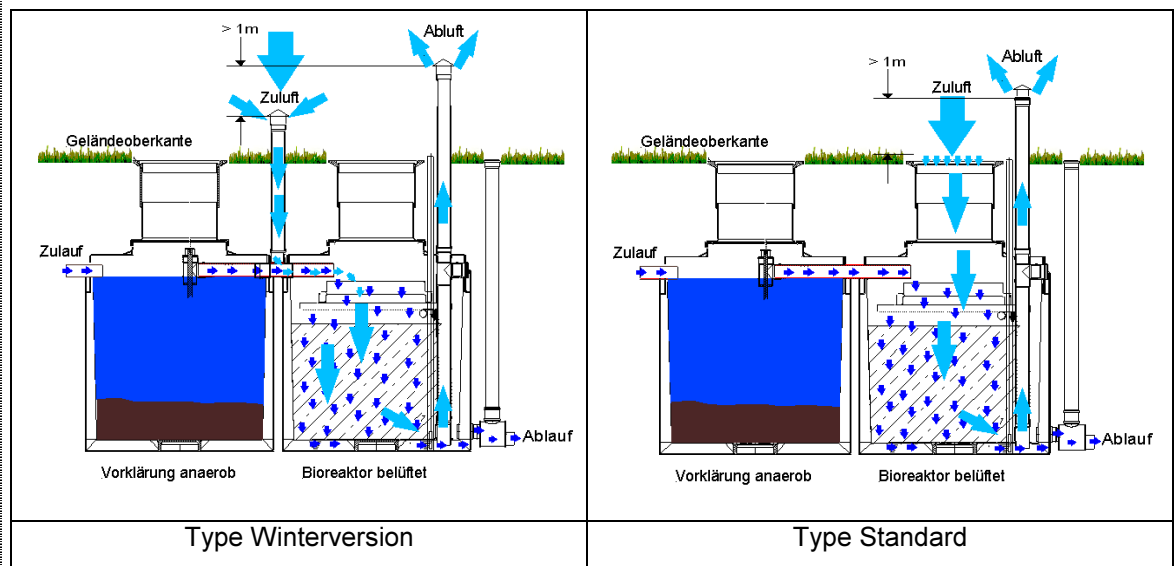
There two types of aeration available:

Type 1: Standard

Inflow through the perforated lid into the tank, outflow through the aeration pipe.
The top level of the aeration pipe (air outlet) has to be more than 1 m higher than the top level of the perforated lid (air inflow)!

Type 2: Winterversion

Inflow along a pipe DN 100 nominal size, outlet along the aeration pipe
The top level of the aeration pipe (air outlet) has to be more than 1 m higher than the top level of the inflow pipe (air inflow)! The top level of the inflow pipe has to be higher than the approximated level of snow.

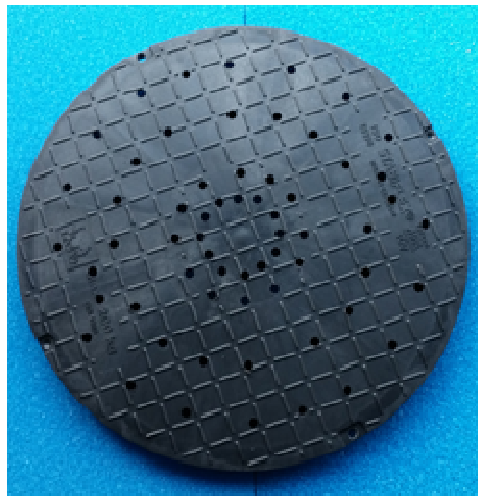


Type Winterversion

Type Standard

4.1.1 Type 1: Standard

- Fix the aeration pipe DN100 nominal size. The higher the pipe the higher the aeration!
- The top level of the aeration pipe (air outlet) has to be more than 1 m higher than the top level of the perforated lid (air inflow).
- If smell appears, the aeration pipe has to be extended.
- The aeration pipe should be black.
- The perforated lid belongs to the bioreactor. Don't use it for the prechamber!
- Fix the lids with screws.
- The perforated lid must not be covered. If the air cannot flow through the holes in the lid the plant will not be aerated.



4.1.2 Type 2: Winterversion (optional available)

- Fix the aeration pipe DN100 nominal size. The higher the pipe the higher the aeration!
- Install the air inflow pipe.
- The top level of the aeration pipe (air outlet) has to be more than 1 m higher than the top level of the air inflow pipe (air inflow).
- If smell appears, the aeration pipe has to be extended.
- The aeration pipe should be black.
- The top level of the inflow pipe has to be higher than the approximated level of snow.
- Fix the lids with screws.

4.2 Commissioning Treatment Plant

- Close the pipe of the sampling device with a cover.
- After having filled the prechamber with water test the tipping device. It should easily tip to both sides.
- Test the throttle and the alarm device if they move easily.

5.0 Description of the Function



The **ClearFox® nature** works as a non energy aerobic biofilm system with sludge stabilization. The plant has an upstream prechamber, used to store the primary sludge as well as to buffer the water supply. The filling is automatically by gravity. Between the prechamber and the bioreactor there is a mechanical restrictor installed in order to regulate the inflow. The mechanical effluent is transferred into the bioreactor by means of a tipping device installed above a distribution box and evenly spreads over the internal surface of the bioreactor. The effluent is cleaned by passing over a cascade of biofilm carriers. The air which flows through the ventilation tube in the tank is evenly distributed over the aeration elements in the tank and provides the bacteria with sufficient oxygen.

6.0 Maintenance and Operation

6.1. Safety Guidelines



Danger!

Flammable gases can emerge in sewage treatment plants. In addition, oxygen levels can fall. For this reason, appropriate safety precautions must be taken when repair and maintenance work is being performed in the plant. Please follow the appropriate Health and Safety guidance.

6.2 Fault Diagnosis



Caution!

The operations have to be done by the owner or a person who is instructed by the owner (Operator).

Daily Check:

Do the following functional tests:

- Is there any water inflowing?
- Does the treated water drains off?
- Does the alarm device remains in the normal position?
- Can the air easily flow through the holes in the perforated lid of the bioreactor (except winterversion)?
- The holes in the perforated lid are essential parts of the aeration system. If they are blocked the plant will no longer be aerated! The wastewater treatment will be inhibited! If there is a winterversion: The inflow pipe has to be open on the top!
- Are the slots of the ventilation cap clean?

If there is a pump integrated:



- Does the pump work? Please attend for further information the manual for the pump.

If there is a breakdown, the operator has to repair it immediately or to call the maintenance company.

Four-week Check:

According to the regulations for the four-weekly maintenance:

- Pull out the throttle and check it. If necessary clean it, especially the small grooves and insert it again. Attend the fixation slam (the throttle has to move easily).
- Check the function of the tipping device (it should tip to both sides)
- The grow of biofilm on the surface of the distribution plate is allowed. The holes must not block. If the holes are blocked, clean them with water or a brush (see the picture below).
- Check the aeration pipe.
- If necessary the checks have to be done more often.

	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Throttle during check</p>  </div> <div style="text-align: center;"> <p>Tipping device distribution plates</p>  </div> </div>
	<p>If there is a treatment system with a pumped effluent:</p> <p>Open the cover of the pumping shaft and splash on the pump on the bottom of the shaft with water. If necessary push the pump out of the shaft. Clean also the tube.</p>
	<p>Operation Logbook:</p> <p>For every treatment plant an operation logbook has to be written. Make a copy of the maintenance list for the four-week check. Each disorder, check, sludge removal or other incidents have to be noted.</p>

6.3 Maintenance



Maintenance should be performed at least once a year by a qualified maintenance company.

The operator is free to choose the maintenance company.

The following work must be performed at least once per year.

- a. Function check for the mechanical parts. These are the mechanical restrictor, tippler device, distribution plate, ventilation pipe and effluent pump in the case of a pumped effluent unit.
- b. Determination of the sludge level in the sludge storage tank. If necessary organise sludge removal. Only empty the tank(s) upstream from the bioreactor, but not the bioreactor itself.
- c. Remove any deposits or foreign bodies.
- d. The maintenance work performed must be recorded in the operations logbook.



Once a year the highest layer of bio zone carrier have to be checked if there are puddles on the surface. Remove the tippler and the distribution plates. If there are small amounts of standing water, remove the highest 100 mm of bio zone carrier and rinse. Then return the cleaned carriers, the distribution plates, the screws and the tippler device. Please ensure that the distribution plates are level.

A sample taken from the outlet could be made to ascertain the following;

- Temperature
- pH-value
- oxygen concentration
- settleable solids
- BOD

Maintenance in the case of an electrical pump:

- Check if the pump or the tube are dirty. To pull the pump out of the pipe, open the cover.
- Draw the pump out of the shaft.
- Clean the pump and the float switch. The grid has to be free from dirt. The float switch has to move easily.
- To check the float switch put the pump into a bucket completely filled with water. Turn the switch to "auto". In the following the pump has to work until it will stop automatically.
- Finally replace the pump in the shaft until it will stand on the bottom.

Sampling:

Before taking a sample the sampling device has to be rinsed with water. Otherwise biofilm could spoil the sample. You also can clean the edge of the outlet pipe with a brush.

Wait some minutes until effluent water will flow again.

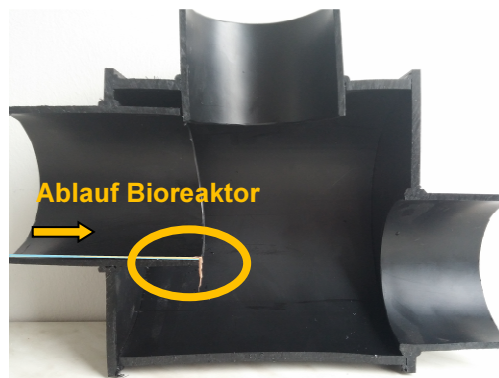
If there is less water in the prechamber you can fill some litres of water into the first section of the prechamber or you flush the toilet.

Take the sample in the sampling shaft (see the sketch of function). Remove the cap of the pipe. Use a sampling beaker fixed at a telescopic rod (see the picture below). You also can buy it from PPU. Push the beaker into the sampling pipe beneath the outlet pipe. The treated water will drop into the beaker. Pull the filled beaker carefully out of the pipe and fill the water in a sampling bottle. The bottle has to be rinsed with sampled water first. Repeat the sampling until the bottle is full. Close the pipe with the cap.

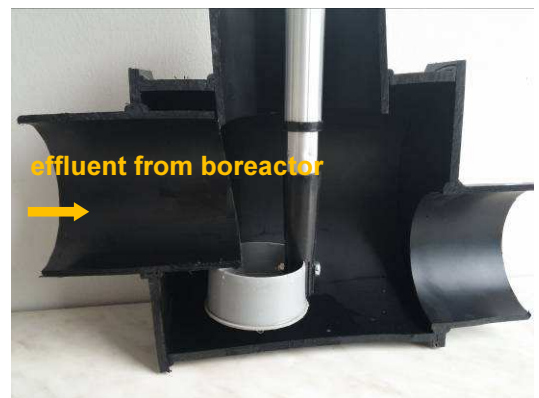


Sampling beaker with telescopic rod

Clean the edge of the effluent pipe



Sampling **after** Cleaning



Maintenance Report:



Every observation and work have to be noted in a maintenance report. The maintenance report must be sent to the owner of the treatment plant. The report must be added to the operation manual. It must be shown to the authority on demand.

Alarm Device:


The position of the alarm device is shown in the drawing in chapter 2.6. During regular operation the top of the alarm device should remain on the same level as the top of the leading pipe. The installation has to make sure that the red mark remains below the top of the leading pipe during regular operation. The alarm rod and the leading pipe have to be shortened if necessary.

If the red mark appears it will indicate a water level higher than normal in the effluent pipe. In that case the ventilation of the treatment plant will be inhibited and the treatment efficiency will be consequently decreased.

Please contact the maintenance company.


	 <p>The red mark is below the upper edge of the leading pipe</p> <p>= normal position</p>	 <p>The red mark is above the upper edge of the leading pipe</p> <p>= backtail out of the sewerage → contact the maintenance company</p>
--	---	---

7.0 What to do when disruptions occur?


	<p>Should you find that you are unable to resolve operation issues, please call your maintenance service company. You should do this immediately to ensure the treatment plant resumes wastewater purification.</p>
---	---

8.0 Classes Treatment

The following treatment levels are required *:

	Classes	Remark	Maximum effluent concentration in the 24 hours mixed sample
	Class C	Degradation of carbon compounds Requirements for infiltration or discharge into a receiving water with a low load of nutrients	COD ≤ 100 mg/l BOD ₅ ≤ 25 mg/l SS ≤ 75 mg/l

The following treatment levels are required *:

	Classes	Remark	Maximum effluent concentration in a spot sample
	Class C	Degradation of carbon compounds Requirements for infiltration or discharge into a receiving water with a low load of nutrients	COD ≤ 150 mg/l BOD ₅ ≤ 40 mg/l SS ≤ 75 mg/l

* The settling-in period takes depending on the season 6-12 months.

9.0 Appendixes

9.1 The following materials should not be disposed of down the sink or in the toilet

Solid or liquid substances that should not be placed in the sink or the toilet:	What they cause:	Where they belong:
Ash	Does not decompose	Dustbin
Sanitary towels	Choke the sewage treatment plant	Dustbin
Chemicals	Poisons wastewater	Collection points
Large amounts of disinfectants	Kills bacteria	Do not use
Paints	Poison wastewater	Collection points
Photographic chemicals	Poison wastewater	Collection points
Frying fat	Forms deposits in pipe and results in blockages	Dustbin
Sour milk, cream	Forms deposit in the tank and disrupts the biological process	Dustbin
Plasters	Blocks pipes	Dustbin
Cat litter	Blocks pipes	Dustbin
Cigarette ends	Settle in the treatment plant	Dustbin
Condoms	Choke the sewage treatment plant	Dustbin
Corks	Settle in the treatment plant	Dustbin / Collection points
Varnishes	Poison wastewater	Collection points
Medicines	Poison wastewater	Collection points, Pharmacies
Engine oil	Poison wastewater	Collection points, filling stations
Oil-based waste	Poison wastewater	Collection points
Cotton swabs	Choke the sewage treatment plant	Dustbin
Plant protection substances	Poison wastewater	Collection points
Brush cleaning fluid	Poison wastewater	Collection points
Cleaning agent residues	Poison wastewater	Collection points
Razor blades	Choke the sewage treatment plant, VerletzungsDanger	Dustbin
Drain cleaner	Poison wastewater	Do not use
Pesticides	Poison wastewater	Collection points
Panty liners, tampons	Choke the sewage treatment plant	Dustbin
Edible oil	Choke the sewage treatment plant	Dustbin
Food leftovers	Choke the sewage treatment plant	Dustbin
Wallpaper paste	Choke the sewage treatment plant	Collection points
Textiles (e.g. nylon stockings, cleaning rags, handkerchiefs)	Choke the sewage treatment plant	Old clothes collection, dustbin
Thinners or solvents	Poison wastewater	Collection points
Bird sand	Choke the sewage treatment plant	Dustbin
WC rim blocks	Poison wastewater	Do not use
Nappies	Choke the sewage treatment plant	Dustbin

9.2 Pre-printed operator check form.

date	restrictor dirty?		restrictor cleaned?		tip works on both sides?		Tip, distribution box dirty?		Tip, distribution box cleaned?		Aeration pipe is fixed		Peculiarities
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	

9.4 Installation and commissioning log for ClearFox® nature

Manufacturer : PPU Umwelttechnik GmbH, Bernecker Str. 73, D-95448 Bayreuth
 Tel. +49 (0)921-150 63 990, Fax +49 (0)921-150 63 999
www.clearfox.com, email: info@clearfox.com

Order-No.:		(see delivery note)					
Serial-No.:		(see tag in the biomodul and labelling at the tank)					
Installation / Dealer: (stamp)	Name of the client:						
	Street, No.:						
	Town, postal code:						
	Tel.:						
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Day of assembly:</td> <td></td> </tr> <tr> <td>Plant load rating (PE):</td> <td></td> </tr> <tr> <td>Number of tanks (pieces):</td> <td></td> </tr> </table>		Day of assembly:		Plant load rating (PE):		Number of tanks (pieces):
Day of assembly:							
Plant load rating (PE):							
Number of tanks (pieces):							

Pos		Yes	No
1.	Tanks have been installed according to the instruction manuals		
2.	Prechamber VKB (4 PE) or VK and VKB (8 PE) had been filled with water		
3.	Water leakage test had been done due to DIN EN		
4.	Plant has been put into operation		
5.	Test run has been performed		
6.	The operator is instructed		
7.	The operation manual has been handed over to the operator		

Remarks:

The tanks were carefully checked before installation for shipping damage. Please report any damages to your delivering company immediately. To register a complaint is impossible after installation. The operator is instructed to take care for the treatment plant.





 Installer, date, signature

 Customer/operator, date, signature

9.5 Datasheet model range 4PE / 8PE / 16PE

size	pretreatment buffer sludge storage			biological treatment		
	number of tanks	Capacity in l	minimum l/person	number of tanks	Capacity in l	minimum l/person
Standard treatment plant according DIN EN 12566-3						
One street:						
4 PE	1	2250	563	1	2250	563
8 PE	2	2 x 2250	563	1	2250	281
Two streets:						
16 PE	6	4 x 2250	563	2	2x 2250	281
Extensions accordingly						
Biomodule according DIN EN 12566-6						
8 PE				1	2250	281
16 PE				2	2 x 2250	281
Extensions accordingly						

9.6 Clearfox® nature Maintenance - Checklist Implementation

1	Collect datas	Remarks
	PE existing Consumption of water Permanent residence / holiday residence	
2	Rinse the sampling shaft	
	Before taking sampe rinse the sampling shaft well; in case clean it with a brush Wait some minutes afterwards, see chapter 6.3	
3	Sampling effluent	
	If there is no water effluent, rinse the toilet or fill some liters of water into the first section of the pretreatment chamber Use a sampling beaker fixed at a telescopic rod; insert it into the sampling shaft and hold it directly beneath the effluent pipe; the effluent water will drop into the beaker; draw it carefully back and fill the sampled water into a sampling bottle; rinse the bottle with sampled water first; fill the bottle completely and close it. If there are sludge flakes in the sample litter the sample and start again or let the flakes settle.	
4	Sampling Influent Bioreactor	
	Rinse the sampling bottle Take the water sample directly at the inflow to the tipping device Fill the water in a sampling bottle Fill it completely	
5	Onsite measurements	
	pH-value, temperature, oxygen concentration, settleable substances	
6	Give a professional opinion at the treatment plant	
	Is there floating sludge? Where, thickness, look? If necessary remove it. Is there any backwater? Installation well? Condition well?	
7	Throttle	
	Never remove it before having taken a sample! Check the easy move. Check the grooves and clean them in case.	
8	Inflow pipe to the bioreactor	
	Is it fixed and does water flow in both parts of the tipping device?	
9	Tipping device	
	Lies the tipping device in the bushing? Will both parts be filled? Tips it to both sides? Are the stopping gums in good order? If necessary change them. Does biofilm grow on the surface? How thick is it, how looks it? The tipping device should not be cleaned. The biofilm does not inhibit the treatment plant. In contrary it improves the treatment efficiency.	
10	Distribution plates	
	Are the holes clean? Can the water percolate through the holes? Does biofilm grow on the surface? How thick is it, how looks it? Clean the distribution plates if the biofilm blocks the holes. Rinse it with a hose pipe or brush it.	
11	Alarm device	
	Check the easy movement. It should not stuck at the bottom!	

9.7 Clearfox® nature maintenance - Checklist Errors

	Source of errors	Remarks/What to do
1	Floating sludge in the pretreatment chamber	
	It blocks the throttle and increases the COD concentration in the influent to the bioreactor higher than designed Is the throttle floating?	Remove it Fix the throttle
2	Floating sludge is cheesy light	
	There are disturbing/toxic substances in the wastewater (e.g. medicals) Will decrease the treatment efficiency	Not allowed (see chapter 9.1)
3	Concentration of oxygen in the effluent is lower than 4 mg/l	
	Aeration is inhibited; treatment efficiency is decreased	Check the aeration system
	The holes in the lid on the bioreactor are blocked	Clean the holes
	The ventilation system is not well installed (pipe is not fixed well, pipe is too short, there is no flow to the pipe)	Overhaul the installation
	Backwater (You can see traces of water at the alarm device; high level of groundwater; missing drainage of the building excavation)	Remove the backwater, Put the plant into operation again
	Ventilation pipe is too short	Extend it
4	Sludge/biofilm flakes in the effluent sample and COD > 150 mg/l	
	Sampling device not rinsed before taking samples	Rinse it
	Light brown	Settling-in period; check the COD
	Middle brown	Check the COD; possibly overload; more people than calculated
	black	Dead biofilm
		Remove backwater Check the aeration system
5	Throttle sticks	
	Installation fault	Overhaul the installation
	The grooves are dirty	Clean the ribs Check the inflow for fat/oil
	Sludge blocks the grooves	Clean them, remove the sludge
6	Inflow pipe to the bioreactor is not adjusted	Adjust it
7	The tipping device will not be filled equally or will not tip to both sides	
	The inflow pipe to the bioreactor is not adjusted	Adjust it
	The tipping device doesn't lie in the bushing	Adjust it
	The tipping device is not adjusted horizontally	Adjust it
8	Biofilm grows on the tipping device	No fault
⚠	Never clean the tipping device before taking samples	
9	The distribution plates are blocked	
	The water cannot equally percolate through the holes; the treatment efficiency is decreased	Clean the holes
⚠	Clean the holes only in the case of blocking; a thin layer of biofilm does not inhibit the water treatment process	No fault
10	The baffle wall is pushed back or is wavy	
	Sludge cannot be sufficiently hold back	Adjust the baffle wall

9.8 Short Manual for the Aquaplast®-Tank

Please have look at the appendix "short installation-guide aquaplast tank"

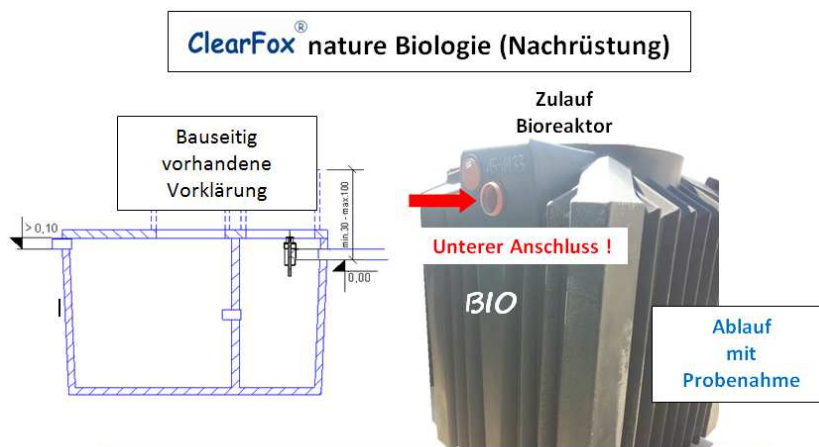
9.9 Instruction Manual for the Connections



Nicht benötigte Eingänge sind mit KG- Muffenstopfen verschlossen!
Verbindungsrohre für die Behälter liegen im Biobehälter!
Einbauanleitung und Betriebshandbuch beachten!



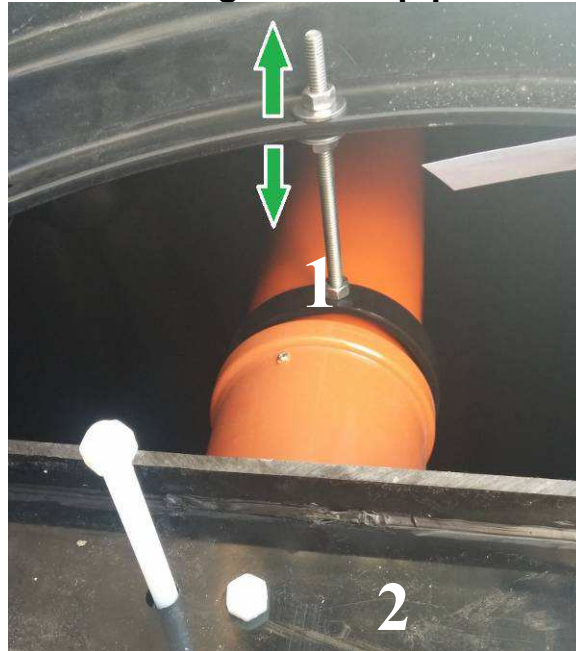
Nicht benötigte Eingänge sind mit KG- Muffenstopfen verschlossen!
Verbindungsrohre für die Behälter liegen im Biobehälter!
Einbauanleitung und Betriebshandbuch beachten!



Nicht benötigte Eingänge sind mit KG- Muffenstopfen verschlossen!
Zulaufdrossel mit Rohranschluss liegt im Biobehälter bei!
Einbauanleitung und Betriebshandbuch beachten!

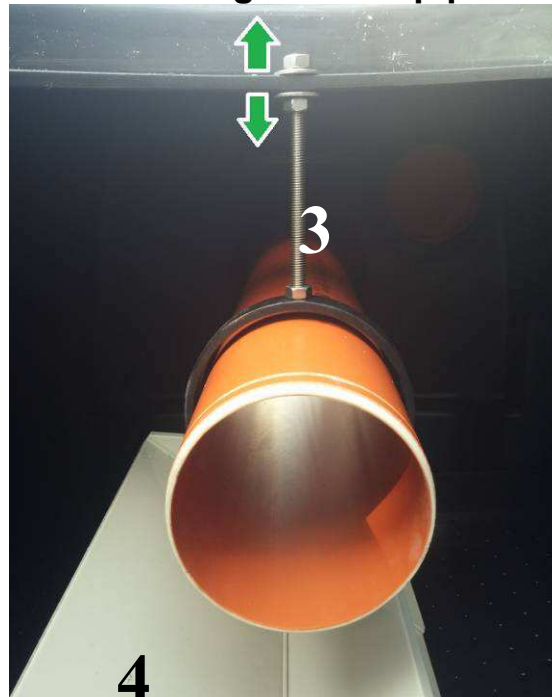
9.10 Instruction Manual Adjustments

1. Adjustment in height of the pipe in the prechamber (VKB)



→ The assembled fixation of the pipe (1) of the throttle (2) has to be adjusted with a bubble level. The slope from the prechamber to the biological reactor has to be 1-2%. The nut has to be fixed well afterwards.

2. Adjustment in height of the pipe in the bioreactor (BIO)



→ The assembled fixation of the pipe (3) into the bioreactor has to be adjusted with a bubble level. The slope from the prechamber to the tipping device (4) has to be 1-2%. The tipping to both sides must not be inhibited. The nut has to be fixed well afterwards.