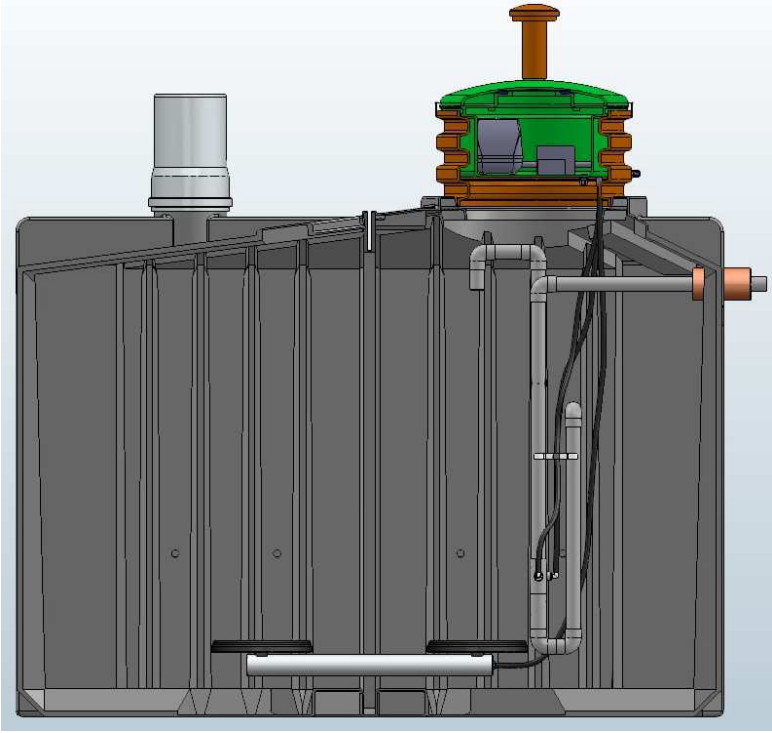
Owner's manual

ClearFox® – SBR QuickONE + small sewage treatment plant

in plastic tanks 4 - 12 p.e.

EN 12566-3, Annex B



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

Contents

1.0 General Information

1.1 EC declaration of conformity

We hereby declare that the following kit for fully biological small sewage treatment plants

- with separate dimensions in accordance with calculations for industrial wastewater

complies with the basic requirements of

DIN EN 12566-3, Appendix B
Small sewage treatment plants for up to 50 p.e.

Manufacturer:	PPU Umwelttechnik GmbH
Street:	Bernecker Str. 73
City:	D-95448 Bayreuth
Product:	Kit for small sewage treatment plant up to 50 p.e.
Date:	15.09.2016
Responsibility:	Wolfgang Pöhnl

CE

1.2 Signs and symbols

The following symbols are used in the manual:

Caution !
Failure to observe this point could result in **material damage**.

Danger !
Failure to observe this point could result in **personal injury**.

Cross-reference
Refers to additional information in **another chapter or manual**

Information
Provides useful **information**

1.3 Hazard warnings

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

1.4 Preface

Dear Customer,

Congratulations on your purchase of a high-quality, innovative product.

In order to prevent any damage we would ask you in particular to read through this manual completely before putting the plant into operation.

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 your dealer or PPU Umwelttechnik GmbH in writing immediately. A transport-damage can´t complained after the plant installation !

1.5 Warranty

We refer you to the General Terms and Conditions of PPU Umwelttechnik GmbH (www.clearfox.com), and to those of your dealer.

2.0 Product discription

2.1 Use

Caution !

The small sewage treatment plant may only be used to treat household wastewater.
4/6/8/10/12 p.e. variants can be supplied.
Larger plants can be set up with multiple process lines. You will need an additional tank as distributor. This tank size is dependent to the plant size (e.g. 30p.e.)

2.2 Scope of delivery

The parts listed below are included as standard.
For plants larger than 6p.e. (more than 1 PE tank) the connecting pipes between the chambers must be provided as part of the infrastructure (main sewer DN100). The same applies to the duct (drain pipe DN100) between the biological tank and the buffer / pre-chamber tank.

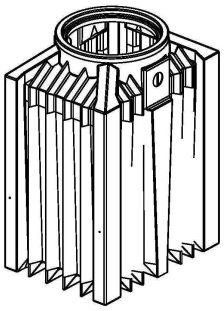
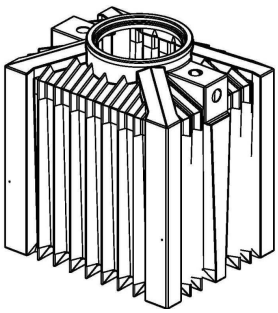
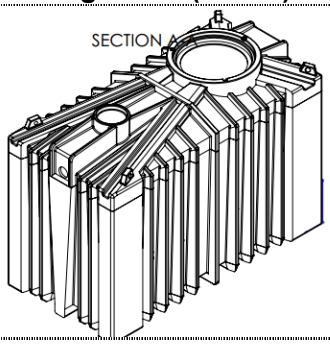
	- PE tanks (number depends on plant version) number + size	see description on following pages
	- kit (technical equipment) for biological tank	preinstalled (one chamber)
	- control module, integrated in the dome-shaft of the biology	prepared for easy installation
	- fixing material (but no pipes!)	included

2.3 Standard use

For standard usage the technical equipment is delivered pre-installed in the PE tanks ready for operation. Please observe the appropriate depths relating to frost protection.
Dome-shaft standard in 30cm height
For other need of heights, please note that in order.
The adaption for dome-shaft and the control cabinet needs to be installed.

2.4 Tank versions

There are 3 easily transportable tank versions for the small sewage treatment plant - a large and a small tank. Depending on the plant version (size) these can be combined with each other in different ways.

Small tank (1250 l)	Middle tank (2250 l)	Large tank (3500 l)
		

2.5 Plant versions

All 5 standard plant versions are listed below. You can see which plant you have from the delivery documents and CE-plate.

Please make sure that the tanks are assigned correctly (small/large) and are in the correct order from inlet to outlet.
Incorrect assignment or order = can lead to **no function**

Caution !

4 p.e.

This small sewage treatment plant consists of 1 tank.

- 1 middle tank 2250L as pre-chamber/buffer and reactor

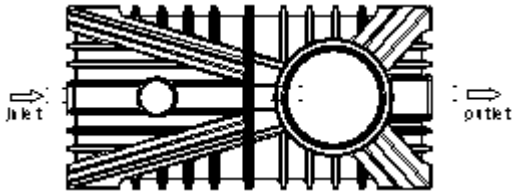
Caution !

The hose and cable connection between the tanks ensued direct from the control module (integrated inside the dome-shaft-extension of the tank.
For the option with extern control module, the hose and cable connection ensued from the tank.

6 p.e.

This small sewage treatment plant consists of 1 tank.

- 1 large tank 3500L as pre-chamber/buffer and reactor



Caution !

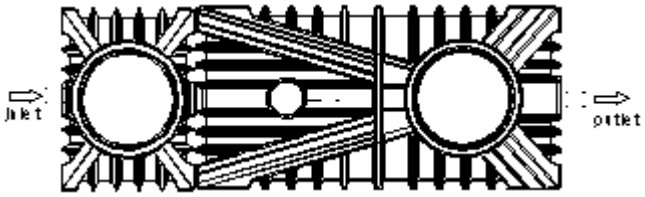
The hose and cable connection between the tanks ensued direct from the control module (integrated inside the dome-shaft-extension of the tank.
For the option with extern control module, the hose and cable connection ensued from the tank.

8 p.e.

This small sewage treatment plant consists of 2 tanks.

- 1 small tank 1250L +
- 1 large tank 3500L as pre-chamber/buffer and reactor

→hydraulically connected !



Caution !

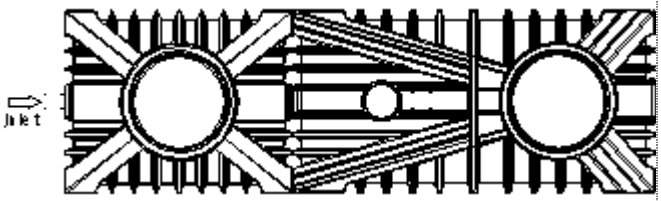
The 2 tanks must be hydraulically connected at specified positions !
Please follow instruction under point: **3.2 Tank connections**
The hose and cable connection between the tanks ensued direct from the control module (integrated inside the dome-shaft-extension of the tank.
For the option with extern control module, the hose and cable connection ensued from the tank.

10 p.e.

This small sewage treatment plant consists of 2 tanks.

- 1 middle tank 2250L +
- 1 large tank 3500L as pre-chamber/buffer and reactor

→hydraulically connected !



Caution !

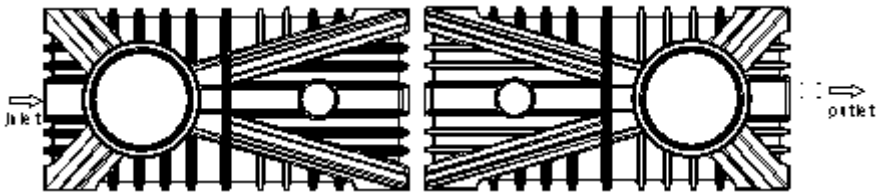
The 2 tanks must be hydraulically connected at specified positions !
Please follow instruction under point: **3.2 Tank connections**
The hose and cable connection between the tanks ensued direct from the control module (integrated inside the dome-shaft-extension of the tank.
For the option with extern control module, the hose and cable connection ensued from the tank.

12 p.e.

This small sewage treatment plant consists of 2 tanks.

- 2 large tanks 3500L as pre-chamber/buffer and reactor

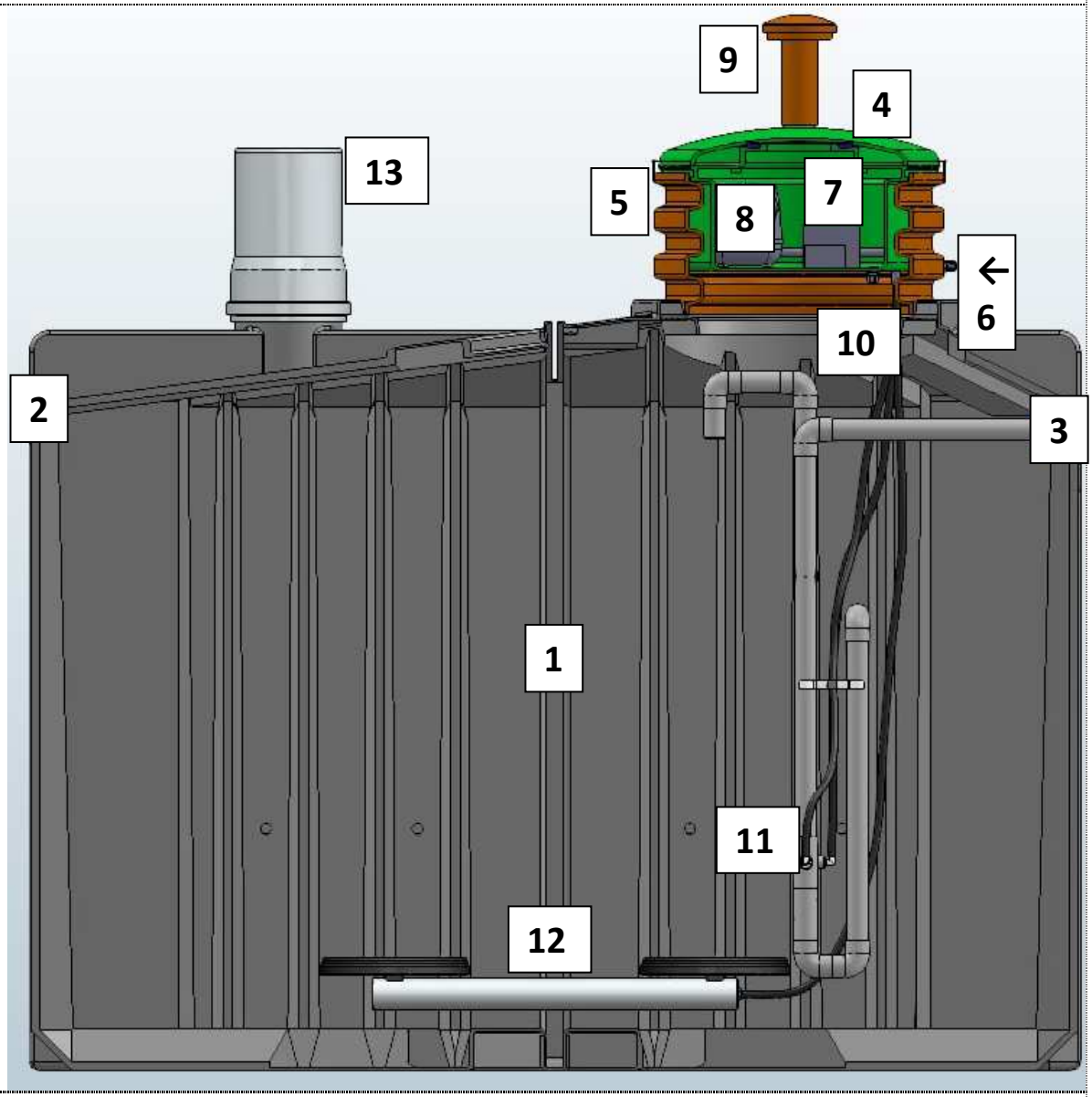
→hydraulically connected !



Caution !

The 2 tanks must be hydraulically connected at specified positions !
Please follow instruction under point: **3.2 Tank connections**
The hose and cable connection between the tanks ensued direct from the control module (integrated inside the dome-shaft-extension of the tank.
For the option with extern control module, the hose and cable connection ensued from the tank.

2.5.1 Function diagram (shown on standard version of 6 p.e.)



Legend:

1. Single chamber tank (example: 3500Liter tank for 6p.e.)
2. Inlet connection, seal for DN 100 inlet-pipe
3. Outlet connection, seal for DN 100 outlet-pipe
4. Control cabinet (integrated, with childproof lid)
5. Domeshaft-extension, Wavin-pipe DN 600, standard height 300 mm)
6. PG gland (for input power supply cable)
7. Control unit
8. Blower **(not included in standard delivery)**
9. Aeration scoop DN 75 **(not included in standard delivery)**
10. Air supplier
11. Clearwater-feedpump (airlift, with backflush system)
12. Aeration system
13. Optional extension pipe DN 250 with lid **(not included in standard delivery, not required for this system)**

3.0 Installation

3.1 Tank installation

Please refer to the manual for the PE tank and the short installation instructions in the appendix.

3.2 Tank connections (for plants bigger than 6p.e.)

Caution !

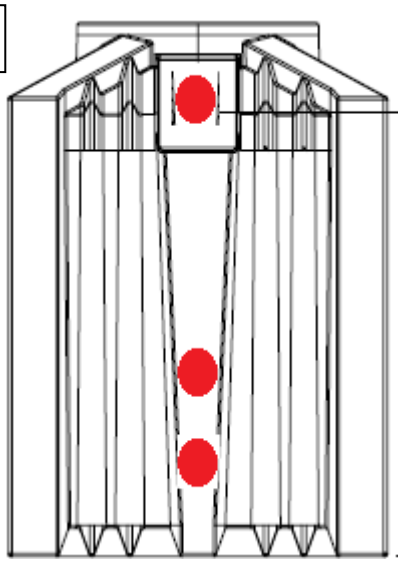
1. Remove the orange sleeve plugs (red marked in the sketch) out of the sealings, to get 3 openings on this tank side.

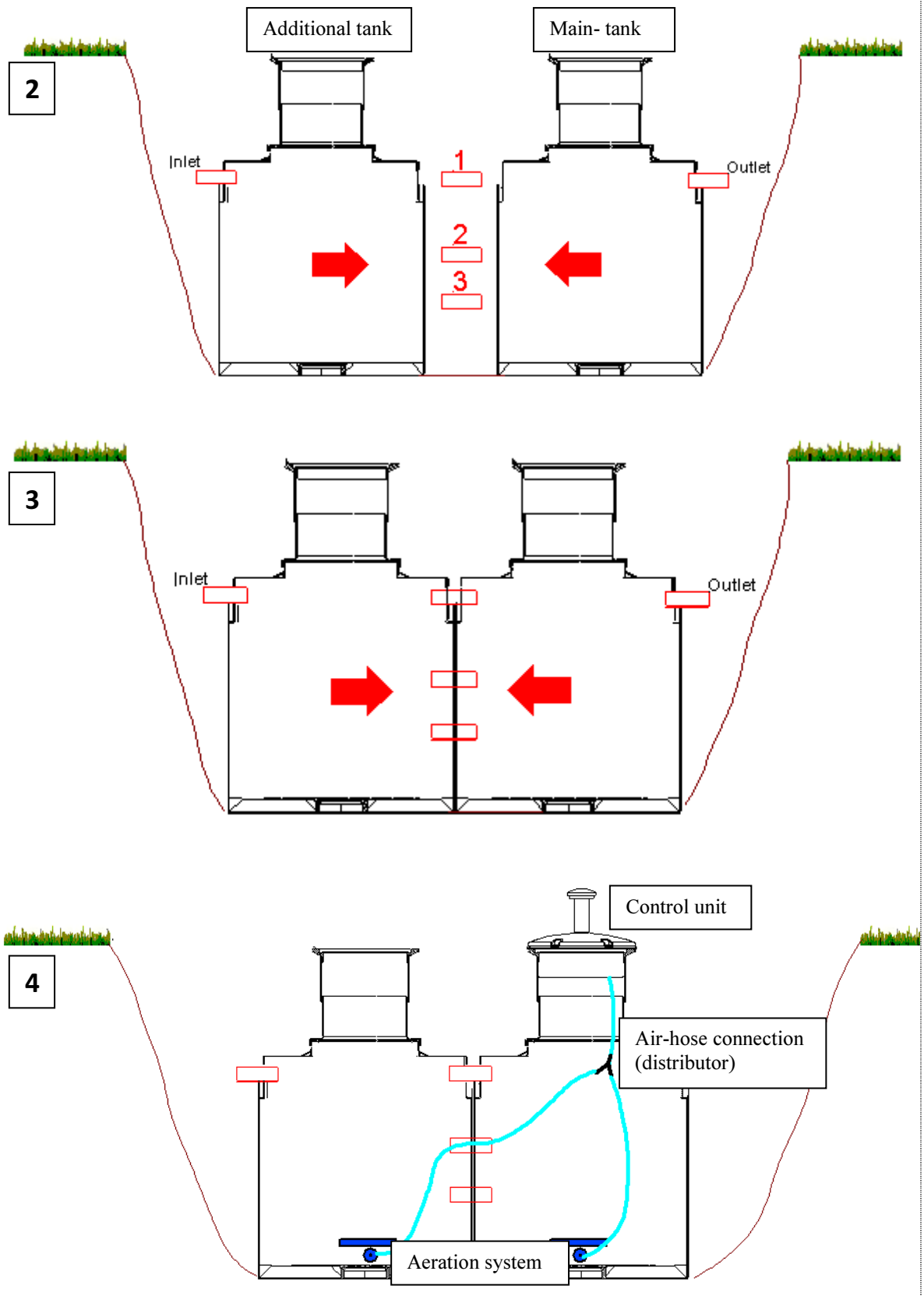
2. Bring this openings of 2 tanks together and install as connection PE or KG DN100 pipes with min. length of 300mm through the sealings. Please control the sealings regarding position and on function.

3. Push the tanks exactly together under consideration of optimal pipe connection. Each pipe should be equal in length inside of each tank.
   Control again the sealings of each connection, otherwise fix it new.

4. The hose of the additional PE-tank needs to be put into the main-chamber and must be connected to its aeration sytem. **Please refer to detail instructions from point 3.3**

1

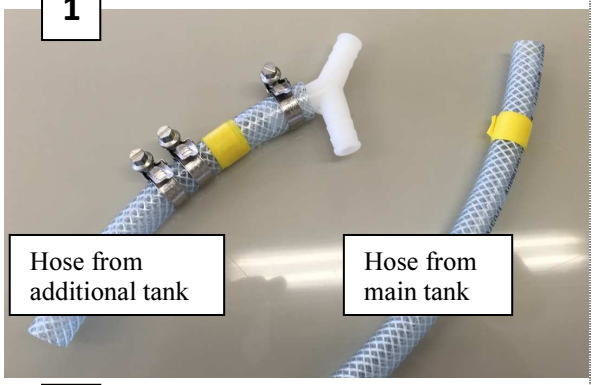




3.3 Hose adjustment (for plants bigger than 6p.e.)

1. After putting the hose of the aeration system from the additional tank into the main tank, you need to adjust the hose connection in order for the aeration system of the additional tank to operate. The required material is pre-fixed on the hose. →Picture 1

1



2. Remove the three stainless steel hose clamps and the plastic distributor from the hose. →Picture 2

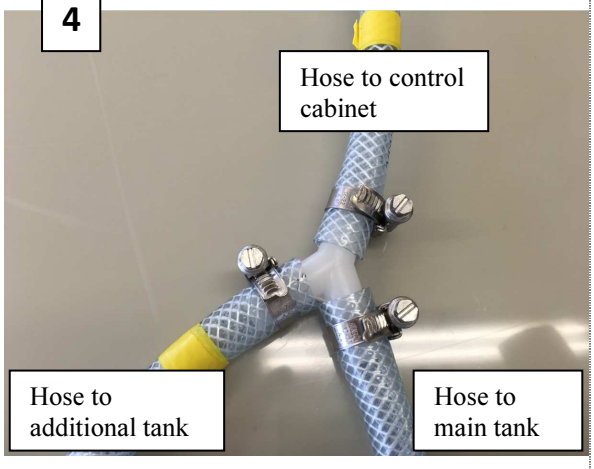
2

3. Cut off about 1 meter of the hose from the main tank. →Picture 3

3

4. Connect all three hoses to the plastic distributor and fix them with the stainless steel clamps. →Picture 4

4



Caution !

Important Note:

To supply enough air for all aeration discs, the blower chosen for the treatment plant has to be suitable for the equivalent p.e. – size.

3.4 Electrical connection of the control module

Caution !

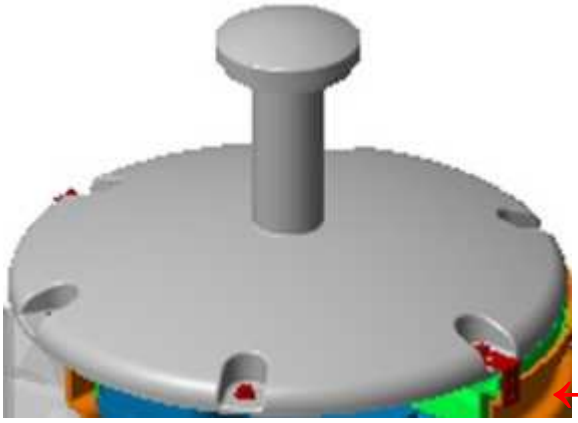
The dome-shaft-extension has to be mounted on top of the main tank (1) with drilling screws from the inside of the extension into the upper edge of the PE tank. The cable for power supply (**recommended H07RNF-F3G1,5**) has to be connected to the socket inside the control cabinet. Also, the blanking plug(s) has/have to be removed from the bottom and replaced with the stainless steel air fittings. The hoses then have to be connected according to their matching colours.

Make sure that there is no danger regarding of damaging and/or breaking of the air-hoses while the control cabinet is put aside on the ground.

Make sure that every opening on the bottom of control cabinet is sufficiently sealed!

Properly use the provided materials in the control cabinet. Otherwise all components on the inside will corrode and start to malfunction.

1. Unfix screws (6 pieces) and (if existing) the fixing-angles (2 pieces)

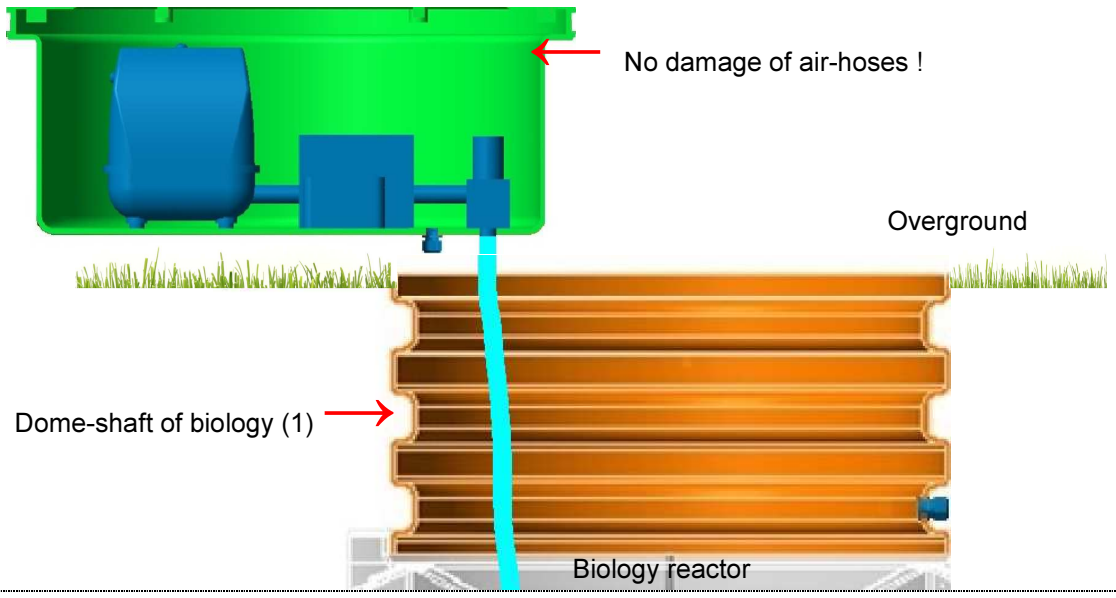


2. ↑Remove the lid (cover)

Fixing-angles

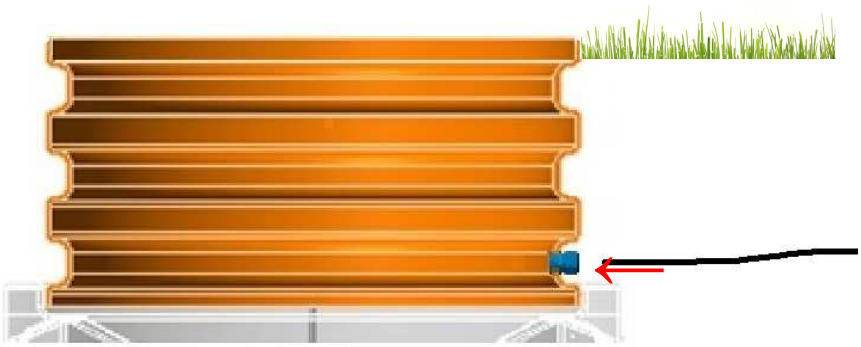
3. ↑Pull out the control module

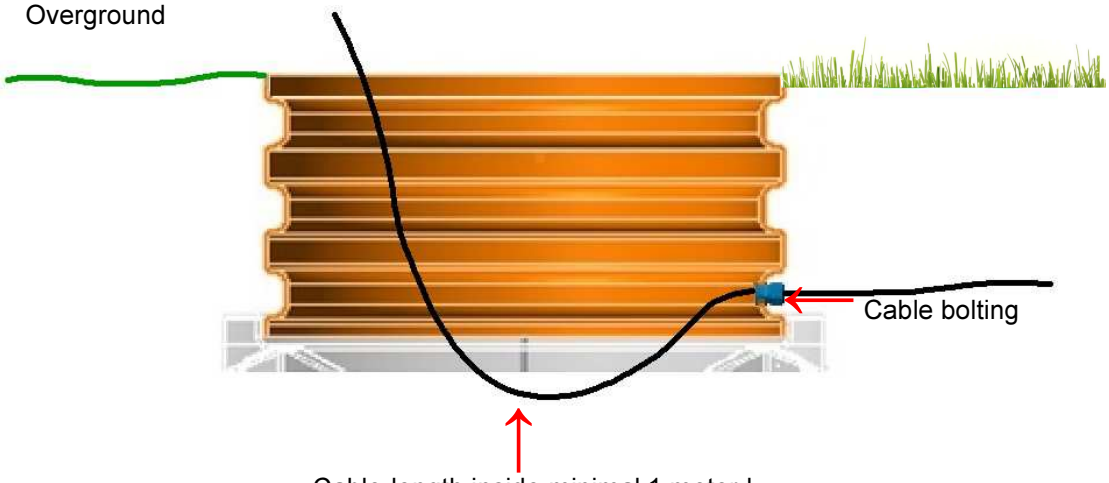
←Deposit sideways



Caution !

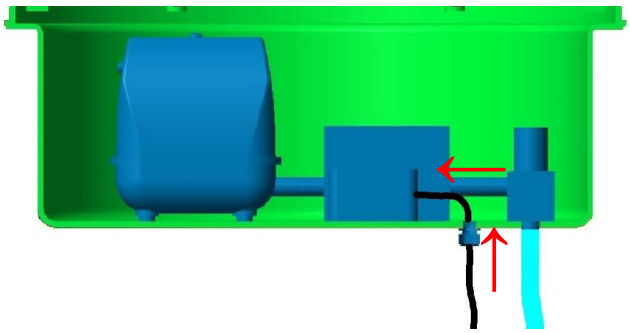
4. Implementation of earth-cable through the cable-bolting





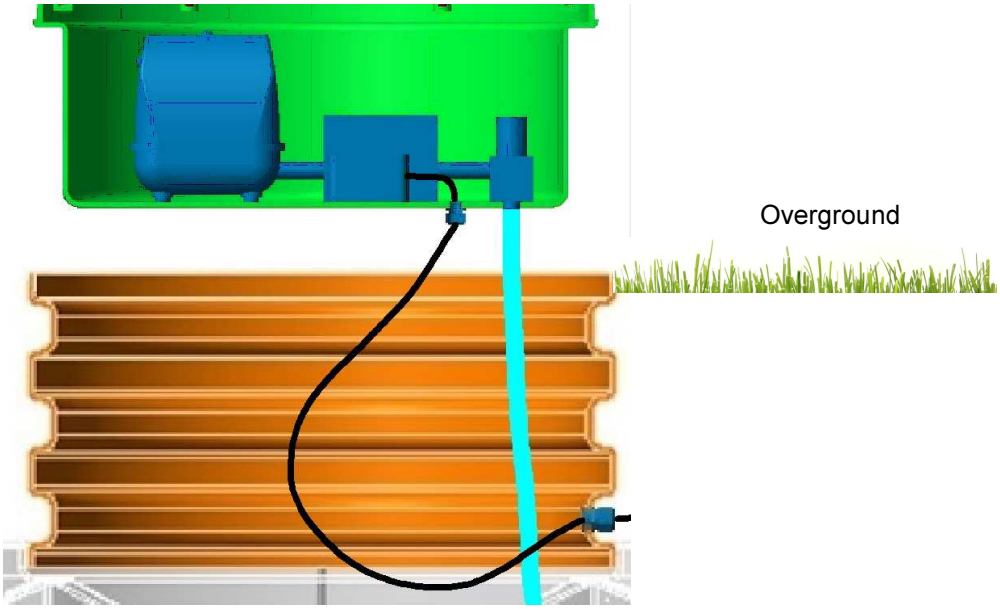
5. Implement the cable into the control module, and connect it with the power socket.

At next, tie up the cable-bolting (see sketch overhead), for saving the control module against wetness.

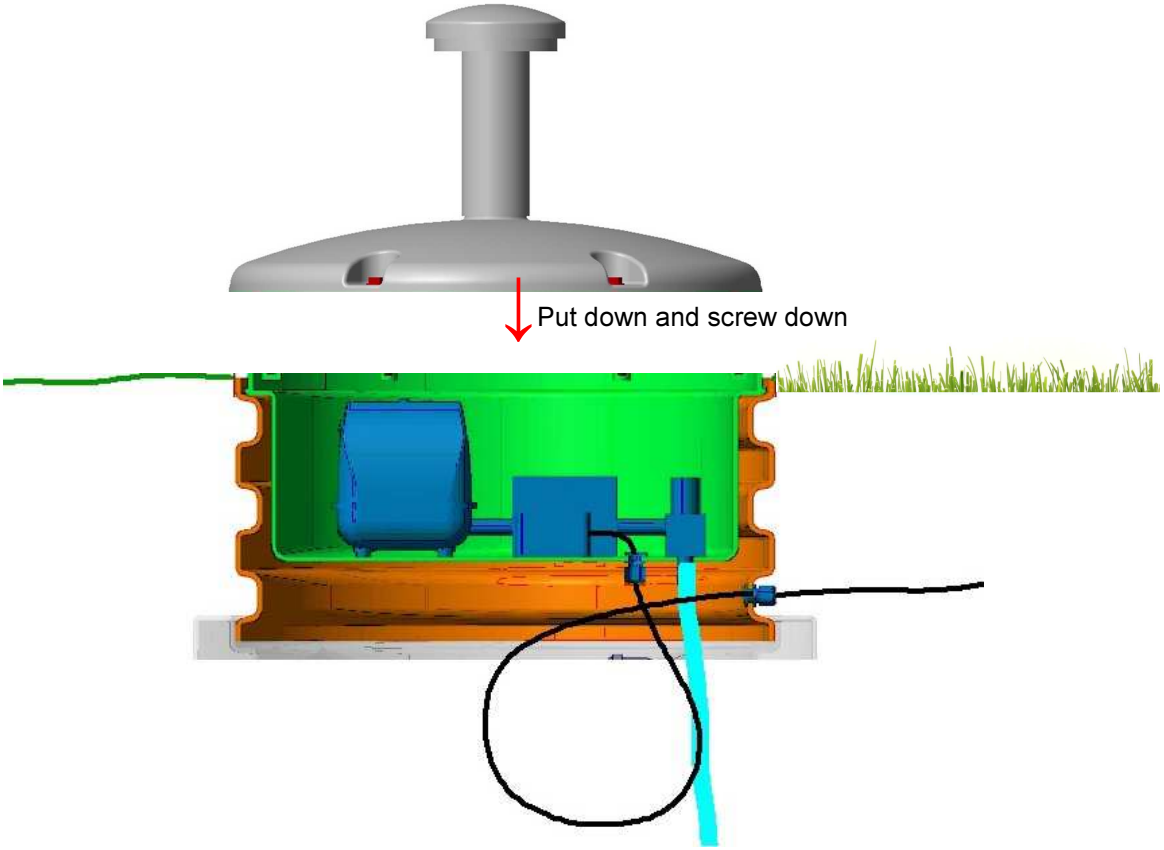


Caution !

6. Insert the plugged control module into the dome-shaft of the biology.
Put the control unit in the control module into the electric socket.



7. Screw down the inserted control module with the 6 screws , please make sure that is in the right position and also the fixing angles !



Caution !

Note:

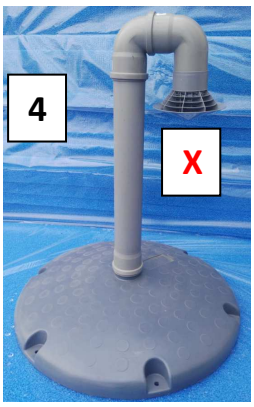
The screws, pipes, bows and/or vent cover are not included in the standard delivery for the treatment system and have to be provided by the client.
→**HT DN 75 pipe and bows/aeration scoop are required.**

1. For an optimal circulation of air for the blower inside the cabinet, we recommend mounting an extension pipe onto the lid for the round control unit. This prevents snow, grass, dirt or water (e.g. rain) from blocking or getting into the opening of the lid.→ Picture 1

2. If acquired, then mount the vent cover on top of the extension pipe. →Picture 2

3. In the event of the surrounding area leading to problems (e.g. bushes, trees) or not having a vent cover, you can mount two bows on top of the extension pipe. The entrance of the pipe should face away of the problematic area. →Picture 3

4. We don't recommend putting a vent cover at the end, if you already installed the version with the two bows. →Picture 4



Caution !

Important Note:

The pipe (and vent cover) has to be checked for blockings from time to time. Otherwise it might get clocked and this will cause the blower inside the cabinet to malfunction.

3.5 Installing an external control unit

Optionally, the standard round control cabinet can be replaced with an external control cabinet.

If you have chosen this option, please refer to the separate installation guide.

The picture shows an example of an external control cabinet.

Note:
Don't forget to also acquire a lid to replace the round control cabinet in order to close the opening of the tank.

3.6 Putting the control unit into operation

All tanks should be filled with water before the following activities are performed. The biology should be filled up minimally until the extraction point of the Clearwater-pump. Install the blower suitable for the plant size and insert the plugs into the according sockets – finished!

Power connection to the power socket with 230V earth-cable.
The power supply should be installed with a separate ground fault circuit interrupter (30mA) and a fuse switch (max. 10A).
All loads connected to the control units output-relays mustn't get over 3,15 A together.
When the control unit is connected to the socket, a small green light on the control unit will go on.
The control unit automatically starts now the operation of the treatment system.

Danger !

Never open the housing from the control module, if it´s connected with power **= Danger to life !**

4.0 Function description of QuickONE+

The **ClearFox®** QuickONE + works fully automatically according preinstalled program.

Purification phase – the wastewater is circulated in the SBR reactor using air fed in through the membrane plate(s) and the bacteria are supplied with oxygen. This occurs at intervals controlled by the computer.

Settling phase – the wastewater separates, with the sludge material sinking (sedimentation) and the cleaned water remaining at the top (a layer of clearwater forms).

Clearwater pump cleaning– before the Clearwater extraction phase starts, the pump-tubes would be cleaned by a backflushed airlift-function, to remove settled particles out of the clearwaterpump.

Clearwater extraction – following the settling phase, the clearwater pump conveys the clearwater that remains above the "clearwater" discharge point to the plant outlet, lowering the water level in the reactor.

The main states listed above are together called the cycle. A complete purification cycle takes approx. 12 hours.

4.1 Program sequence

After connected to the power supply, the control unit will work according to the following steps:

0.Initialising CPU, then testing all channels (Aeration, Flushing and Clearwater)
-> "Booting Phase" = Only once after power is turned on.

1. Pumping Clearwater (blue hose) – 19 min.
2. Continuously aeration (yellow hose) – 1 hour
3. Sequenced aeration (15 min. on – 5 min. off) – 7 hours
4. Sequenced aeration (10 min. on – 10 min. off) – 2 hours, 40 min.
5. Settling (no aeration) – 1 hour
6. Flushing of Clearwater-pipe (green hose) – 1 min.

After the last step, the control unit will restart the program at step 1.
In the event of losing the power supply, the control unit will restart with step 0 when gaining back power supply.

Caution !

Important Note:
This program sequence only applies to the standard delivery of the QuickONE+.
If you want to use an electrical Clearwater-pump, a different program needs to be transmitted into the control unit.

Please refer to the separate installation guide.

5.0 Maintenance and operation

5.1 Safety guidelines

Flammable gases can develop 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. A person may only climb into a sewage treatment plant if there is a second person present as a safeguard.
All live electrical components in the plant must be switched off before climbing into the sewage treatment plant.

5.2 Operator checks

The owner must operate the plant or must contract a third party to operate it (operator).

Daily check:
Perform function check. If there is any disruption in operation encountered, it must be resolved immediately by the operator or by a specially trained person instructed to do so by the operator.

Monthly check:
In accordance with the form for monthly operator check

- Check the reactor on any blockages caused by bigger solids or other materials.
- Check for floating sludge in the reactor, if present, remove it out of the system.
- Visual check for mechanical damage and fine bubbles in aeration process

An operations logbook must be kept for all sewage treatment plants. For this, please make a copy of the maintenance checklist (form for the monthly operator check) to be found at the back of this manual. Any disruptions must be recorded in the operations logbook. Maintenance work, sludge extraction, maintenance reports and any other special incidents must also be recorded in the operations logbook. This operations logbook must be presented to the relevant authorities upon request.

5.3 Maintenance

Maintenance is performed several times a year by a maintenance company.

The relevant responsible authority prescribes how often maintenance must be performed.

The operator is free to choose the maintenance company.

<u>The following work must be performed at least twice per year at intervals of around 6 months</u>:

a. Function check for the mechanical, electrical and other plant equipment that is important for operations such as: blower, pump, control unit.
b. Maintenance of mechanical equipment
c. Adjustment of optimum operating values, e.g, oxygen supply (~ 2 mg/l), sludge volume (300–500 ml/l).
d. For sludge removal out of QuickONE+ system: required, when the sludge reaches half of the water level in the chamber (removal by sludge-truck with suction lance, etc.), according the following steps:

1. Put the control cabinet out of the dome shaft of the main tank opening.
2. Lead the sludge suction lance into the open hole of the main tank on tank ground under the consideration:
-Be carefully with all installed equipment, especially with the aeration discs on the tank ground. It could be damaged through wrong handling of the suction lance!

e. performance of general cleaning tasks, e.g.: removal of deposits and foreign bodies
f. inspection of the structural condition of the plant, e.g.: corrosion, accessibility, ventilation, screw connections, hoses.
g. The maintenance work performed must be recorded in the operations logbook.

The following tests must be performed in the course of maintenance

Caution !

Samples can only be taken from the outlet of an SBR treatment plant during the extraction pump process or from a separate sampling device.

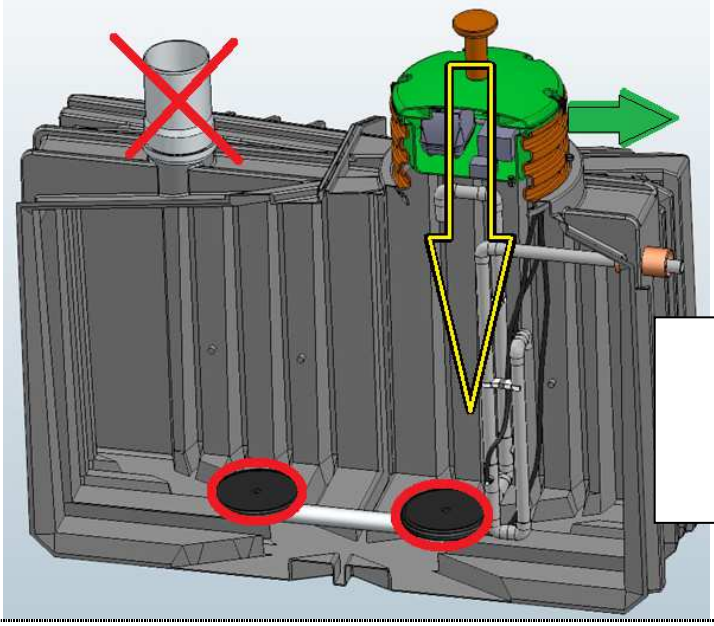
h. Test of a random sample from the outlet for
- temperature
- pH-value
- settleable substances
- transparency
- BOD_5 (at least every 2nd maintenance date)

i. Tests in the activation tank:
- oxygen concentration
- proportion of sludge volume
- sludge index
- dry matter in the activated sludge

The results and the work performed must be recorded in the maintenance report.
The maintenance report must be submitted to the operator.
The operator must include the maintenance report in the operations logbook.
The maintenance report must be presented to the relevant authorities upon request.

Caution !

→Sludge removal has to be done in all tanks of the treatment plant.



6.0 What to do when disruptions occur

If you are unable to resolve the disruption on your own, please call your maintenance service company. You should do this immediately in order for the treatment plant to resume its function of wastewater purification.

Keep this operating manual and your sheet(s) of the monthly operation checks at hand to show them to the service company on demand.

7.0 Purification classification

The following standard purification results can be achieved, depending on the version:

PERFORMANCE RESULTS

PPU Umwelttechnik GmbH
Bernecker Str. 73, 95448 Bayreuth, Germany

EN 12566-3, Annex B
Small wastewater treatment systems for up to 50 PT

Small wastewater treatment system ClearFox® quickONE+
Completely aerated SBR treatment process in a one-chamber tank
Test report PIA2016-273B11
This certificate is valid until 31 July 2017.

Nominal organic daily load	0.23 kg BOD_5/d		
Nominal hydraulic daily load	0.75 m³/d		
Material	Polyethylene		
Treatment efficiency (nominal sequences)		Efficiency	Effluent
	COD	93.7 %	48 mg/l
	BOD_5	98.1 %	6 mg/l
	NH_4-N*	99.4 %	0.2 mg/l
	SS	95.8 %	17 mg/l
Electrical consumption	0.52 kWh/d		

**determined for temperatures ≥ 12°C in the bioreactor*

Performance tested by:

PIA – Prüfinstitut für Abwassertechnik GmbH

8.0 Appendices

8.1 What not to dispose in the sink or toilet

Solid or liquid substances that do not belong down the sink or in 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
Disinfectants	Kills bacteria	Do not use
Paints	Poisons wastewater	Collection points
Photographic chemicals	Poisons 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	Poisons wastewater	Collection points
Medicines	Poisons wastewater	Collection points, Pharmacies
Engine oil	Poisons wastewater	Collection points, filling stations
Oil-based waste	Poisons wastewater	Collection points
Cotton swabs	Choke the sewage treatment plant	Dustbin
Plant protection substances	Poisons wastewater	Collection points
Brush cleaning fluid	Poisons wastewater	Collection points
Cleaning agent residues	Poisons wastewater	Collection points
Razor blades	Choke the sewage treatment plant, VerletzungsDanger	Dustbin
Drain cleaner	Poisons wastewater	Do not use
Pesticides	Poisons 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/solvents	Poisons wastewater	Collection points
Bird sand	Choke the sewage treatment plant	Dustbin
WC rimblocks	Poisons wastewater	Do not use
Nappies	Choke the sewage treatment plant	Dustbin

8.2 Pre-printed form for monthly operator check

Date	Funktion check, visual check		Remarks
DD:MM:YYYY	**X** for Ok	**X** for not ok	

8.3 Installation and commissioning log for ClearFox®quickONE +

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-Nr.:		(see delivery note)
Serial-Nr.:		(see shield in the biology)

Installer/Supplier:
(Stamp)

Customer name:	
Street, Nr.:	
Post code, town:	
Tel.:	

Day of instalation:	
Plant load rating (pe) :	
Number of tanks :	

Pos		Yes	No
1.	Tanks installed in accordance with the instruction manuals		
2.	Instruction manuals handed over to customer		
3.	Plant filled with water		
4.	Water leakage test		
5.	Test run performed		
6.	Plant put into operation		
7.	Instruction given to operator		
8.	Owner's manual handed over		

Commentary:

The operator undertakes to remedy any defects listed above at his/her own expense. The operator was informed of his/her obligation to exercise due care in order to ensure a perfect operating condition. The proper operation of a sewage treatment plant can only be ensured with a valid maintenance agreement.

Installer, date, signature

Customer/ operator, date, signature

8.4 Maintenance Report - ClearFox®quickONE +

Name of Operator:	Location of the Treatment Plant:
Manufacturer:	Size of Treatment Plant:
Number of Population Equivalents:	
Date of Maintenance:	Time:

Plant Section / Function	Checked		Lack		Remark
	yes	no	yes	no	
Tank					
Are the manhole covers in good shape?	□	□	□	□	
Are the influent and effluent pipes and the dived pipes clean to guarantee an unimpeted flow?	□	□	□	□	
Does corrosion influences the function?	□	□	□	□	
Does floating sludge occur?	□	□	□	□	
If there is a pump: Does it work?	□	□	□	□	
Are there additional lacks?	□	□	□	□	
SBR Treatment Plant					
Influent to the reactor	□	□	□	□	
Does the oxygen impact work?	□	□	□	□	
Volume of sewage sludge SV30	□	□	□	□	SV30 = ml/l
Surplus sludge	□	□	□	□	
Does the clearwater outlet work? Visible depth	□	□	□	□	
Floating sludge	□	□	□	□	
Are there additional lacks?	□	□	□	□	

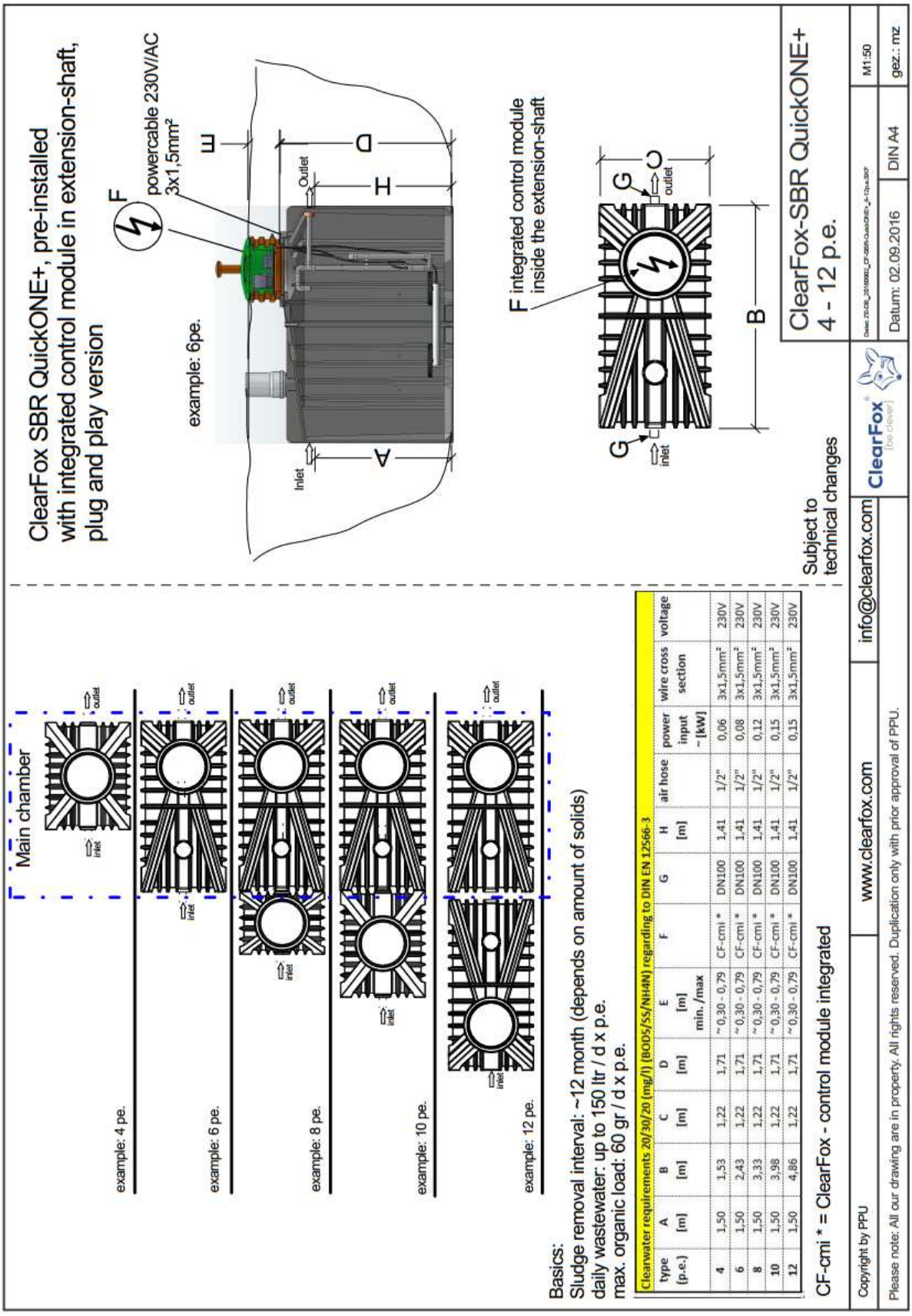
Treated wastewater Analysis (parameters due to the prescription given by the appropriate authority)

Date of Sampling		Date of Analysing	
Time of Sampling		Time of Analysing	
Wastewater Temperature	°C	Organic Nitrogen N_{org}	mg/l
Smell		Total Nitrogen N_{tot}	mg/l
Look		Ammonium – Nitrogen NH_4-N	mg/l
Colour		Nitrite – Nitrogen NO_2-N	mg/l
Settling Agents	ml/l	Nitrate – Nitrogen NO_3-N	mg/l
Chem. Oxygen Demand COD	mg/l	Total Phosphorous P_{tot}	mg/l
Biol. Oxygen Demand BOD	mg/l	pH-value	
Acid capacity	mmol/l	Conductivity	mS/cm
		Dissolved Oxygen	mg/l

Remarks:

Date: Signature:

8.5 QuickONE+ series data sheet



8.6 Short installation guide plastic tanks (**important to read before installation**)

Short installation guide aquaplast® - plastic container

Caution! Read careful and completely before installation! Installation is only to be executed by specialized company!

Container size: 1.250 l and 2.250 l

www.aquaplast.de

Position:
Location should be near to direct house connection

Measurements of dump has to be determined and construction side has to be protected against trespassing.

figure.1

When using dome enhancement and/or telescope excavation, depth of excavation has to be adapted accordingly.

h* (depth from supply bottom edge) = supply edge of container + bed

figure.2

With construction of excavation safety has to be considered (regional restrictions). Do not install excavation for plastic container in depression of the terrain. When installing container an area that is endangered to risk of floating or stagnant moisture or in areas with high ground water level or areas with cohesive or impermeable ground the risk of aquaplaning and deforming of the empty tank has to be determined. (see chapter 7, special installation conditions in owners manual). If necessary an adequate drainage line has to end to dimension in a vertical installed hopper to dewater. A submerged pump has to be in the hopper to pump down the surplus of water. Pump has to be checked regularly! Water can also be drained off to a deeper location to be drained away in gravity or to be diverted to a drainage.
When installing plastic container in terrain with hillside situation it is to be considered that edgewise pushing earth pressure with not naturally grown earth should be absorbed with a supporting wall. Surrounding of container should always be able to be percolated through. Excavation should be planned near to direct house connection with enough distance to the building (fig. 1). This, however, is due to the building class, depth of building and the depth oft he angle of repose. Details are to be found in DIN 4123. Measurements of tank + 50 cm in each direction are the size of the excavation (fig.2) . Angle of repose has to be according to DIN 4124 (ca. 45°-60°).
When difficult ground conditions are encountered or expected :
For example the soil-material under or around the tank cannot be compressed or it is not stable/fixed , or shrinking clay etc., when water can appear around the tank (groundwater, water in soil-layers, rainwater which cannot percolate etc...) there can come a big force on the tank walls. In this cases put concrete under and around the tank ! (Carefully place concrete around the tank in 150 mm thick layers, ensuring that there are no voids remaining around the tank, and the level of water inside is maintained at a level of approx. 450 mm higher than the level of concrete backfill)
Depth of excavation is calculated out of inflow level of container (142 cm) + 15 cm bed (same material as filling material mentioned later on), and compressed by hand (fig. 3). Plastic container is to be installed in excavation (fig.4) and has to be adjusted on bed with air level. After installing all connection lines please check back with air level (fig. 5). Tank has to be filled with water now til 30 cm water level in tank. Afterwards please fill excavation with back-filling material (app. 15 cm) (see chapter 4.2 in owners manual) and compress with hand (fig. 6). Repeat this action and fill in ca. 15 -20 cm of water and fill excavation up to water level with filling material. Repeat until tank is completely covered . Please pay attention on the right position of the stainless steal profiles (for reinforcement) in the tank. The tank should not be erratic deformed. Especially recommendable as backfilling material is gravel or gravel-sand beddings with a friction angle ~~ 32,5 – 37,5° in compressed state. In order to avoid pushing water or backwater, filling material right behind the back of the container has to permeable to water, so surface and stratum water can trickle away. It has to be made sure that container is embedded equally from all sides. The rest of the excavation can now be filled. Soil, earlier removed from excavation can be used (no stones near to container wall). Compress only by hand ! Surface of excavation should be created so that no water can be gathered but be percolated through the earth. Outlets are ready for installation for KG-pipe DN 100. Container will be connected through pre-installed special sealings , and has to extend into the tank about at least 20 cm. Please consider: accessability for cars (see chapter 7, special installation conditions in owners manual). **When ignoring installation instructions all warranty claims will be ceased!**
When inspecting the tank a second person is needed for coveragen! Cover has to be tightened bolt to childproof!

figure.3

figure.4

figure 5

figure.6

The short installation guide gives a brief overview and does not exclude reading the complete owners manual!
When there are troubles don't hesitate to ask us ! The ownersmanual (see under www.aquaplast.de) should be read before using this tank

version 04/2011

Caution !

Please make sure, that the reinforcement frame is in proper position between the two fixing dots !

During installation avoid a warpage which makes the frame unfastened.