



INSTALLATION & USER GUIDE FOR THE

MONOBLOCK SYSTEMS:

MONOBLOCK-2

MONOBLOCK-3



TABLE OF CONTENTS

A.	INSTALLATION GUIDE	5
B.	USER GUIDE.....	25
C.	APPENDICES	39



Dear Customer,

Congratulations on your purchase of this BIOROCK Domestic Sewage Treatment Plant. Your new MONOBLOCK will guarantee years of trouble-free operation, peace of mind and protection for the environment.

We highly recommend that you familiarize yourself with this guide for the installation, commissioning and maintenance of your new MONOBLOCK system.

The instructions for the maintenance and visual checks of the system will ensure that you have a reliable and long-lasting sewage treatment plant.

Please do not hesitate to contact your BIOROCK distributor for any queries or further assistance. Thank you for choosing BIOROCK.

READ CAREFULLY

The installation and commissioning of your MONOBLOCK system should be carried out by a competent drainage engineer.

Please follow the maintenance procedures in this manual to ensure best performance of your system.

BIOROCK Sewage Treatment Ltd.
5300 Lakeside, Cheadle Royal Business Park,
SK8 3GP Cheadle, Cheshire
E-mail: info@biorock.co.uk
Telephone: 01612466065







A. INSTALLATION GUIDE

MONOBLOCK SYSTEMS:

MONOBLOCK-2

MONOBLOCK-3



TABLE OF CONTENT

1. THE MONOBLOCK SEWAGE TREATMENT PLANT	7
1.1. General points	7
1.2. Sizing	7
1.3. Precautions	8
1.4. Identification	9
1.5. Handling and transport	9
2. OPERATING PRINCIPLES OF YOUR MONOBLOCK SYSTEM	9
2.1. Primary Compartment – Operating principle	10
2.2. Secondary Compartment – Operating principle	10
2.3. MONOBLOCK system: Technical	11
3. INSTALLATION LAYOUTS	12
3.1 Installation layout n°1: Gravity discharge (non-electric)	12
3.2 Installation layout n°2: Pumped discharge	12
4. INSTALLATION OF THE SYSTEM	13
4.1 Installation principles	13
4.1.1 <i>Before the installation of the complete system</i>	13
4.2 Installation in dry ground conditions	14
4.2.1 <i>Installation and digging in dry ground conditions</i>	14
4.2.2 <i>Installation of the tank in dry ground conditions</i>	14
4.2.3 <i>Backfilling in dry ground conditions</i>	15
4.3 Installation in wet ground conditions	15
4.4 Installation in specific sites	16
4.4.1 <i>Installation in difficult areas and sites</i>	16
4.4.2 <i>Installation in difficult ground conditions</i>	16
4.4.3 <i>Backfilling in difficult sites</i>	16
4.5 Installations under roads, courtyards or storage areas	17
4.6 Other specific cases	17
4.6.1 <i>Incline too steep</i>	17
5. VENTILATION AND WATER DISTRIBUTION	18
5.1 Ventilation of the Primary Compartment (“Primary tank”)	18
5.2 Ventilation of the Secondary Compartment (“Bioreactor”)	19
5.3 Water distribution	19
5.4 BIOROCK media	21
5.5 Securing the lids	21
6. STOPPING AND RESTARTING THE SYSTEM	23
7. CONFORMITY AND WORK COMPLETION	23
8. RECOMMENDATIONS OF USE AND MAINTENANCE	23
9. COMPLIANCE WITH REGULATIONS AND STANDARDS	23
10. WARRANTY	24



1. THE MONOBLOCK SEWAGE TREATMENT PLANT

1.1 GENERAL POINTS

The MONOBLOCK SYSTEMS from BIOROCK are compact non-electric Sewage Treatment Plants. The treatment relies on the revolutionary BIOROCK biological purification process. The MONOBLOCK sewage treatment unit is exclusively designed for domestic waste water purification.

The MONOBLOCK plant consists of 2 compartments in a single tank. The primary treatment (anaerobic) takes place in the first compartment which is equipped with a BIOROCK effluent filter. The secondary treatment (aerobic) takes part in the second compartment.

Ventilation of both compartments is combined, assuring a continuous natural air draft through the system for proper, efficient venting. The MONOBLOCK system is equipped with:

- One air inlet pipe downstream the system at the treatment compartment
- One air outlet pipe upstream the system at the primary compartment

A small pump can be installed in a pump shaft downstream of the system to lift the treated water and discharge to a higher level if needed.

BIOROCK recommends the installation of an effluent sampling at the outlet of the treatment compartment.

1.2 SIZING

The MONOBLOCK-2 units (2000 liters primary compartment) have a capacity of 4, 5, and 6 P.E. (Person Equivalent).

The MONOBLOCK-3 units (3000 liters primary compartment) have a capacity of 5, and 6 P.E. (Person Equivalent).

The capacities of the MONOBLOCK units are based on the results achieved during the EN-12566-3 Performance test.

UNITS PARAMETERS	MONOBLOCK-2-700	MONOBLOCK-2-800	MONOBLOCK-2-900
MAX. PEOPLE EQUIVALENT	4 P.E.	5 P.E.	6 P.E.
VOLUME PRIMARY COMPARTMENT	2000 L	2000 L	2000 L
WASTE WATER TREATED	150 L/day/ PE	150 L/day/ PE	150 L/day/ PE
TREATED ORGANIC LOAD (BOD5)	0,24 Kg/day	0,30 Kg/day	0,36 Kg/day

UNITS PARAMETERS	MONOBLOCK-3-900	MONOBLOCK-3-1000
MAX. PEOPLE EQUIVALENT	6P.E.	8P.E.
VOLUME PRIMARY COMPARTMENT	3000 L	3000 L
WASTE WATER TREATED	150 L/day/ PE	150 L/day/ PE
TREATED ORGANIC LOAD (BOD5)	0,36Kg/day	0,48Kg/day





1.3 PRECAUTIONS

Important precautions for the proper use of the MONOBLOCK system:

Please note that BIOROCK shall not be responsible for any installation design parameters and groundworks at any case. We recommend to involve a civil engineer or a specialized design office in the design of the system installation if necessary and to follow best practices of the industry.

Only domestic sewage should enter the system; no rainwater is allowed.

To ensure the good working order of the MONOBLOCK system, the use of automatic toilet cleaners, electric waste-disposal systems and pumps equipped with blades are not to be used. If there is a professional kitchen on site, an efficient and properly sized grease trap should be installed. The grease trap should be installed before the primary tank.

The MONOBLOCK is equipped with an effective effluent filter at the outlet of the Primary compartment before the water goes on to the secondary compartment. However, do not dispose of the following items to the MONOBLOCK system as it may affect the treatment process:

Kitchen or motor oils, fats, wax, resin, paint, solvents, hydrocarbon-based products (petrol, crude oil etc.), any pesticide or antibacterial product, items of a toxic nature, boiler or air-conditioning condensate, swimming pool backwash, rainwater, drainage water or ground-water.

We recommend that pipework after the MONOBLOCK unit should allow sampling.

Special care should be taken with the aeration of the system. The aeration should be checked by the installer using a smoke test once pipework and ventilation ducts have been connected and before backfilling the system. The smoke test should be performed under normal representative conditions.

Each system should be vented independently and equipped with its own ventilator (wind driven or electrical). The number of elbows used in the pipework should be limited as much as possible. 90° elbows should not be used but 45° elbows instead. The high air outlets should be installed as close as possible to the low air inlets.

Achieving efficient ventilation is the responsibility of the installer as he is familiar to the implementation site and local conditions that may interfere in the system's venting.




1.4 IDENTIFICATION


Before installing please copy the serial number of each tank on to the documents to be kept by the customer (Appendix 5 of this Guide.)

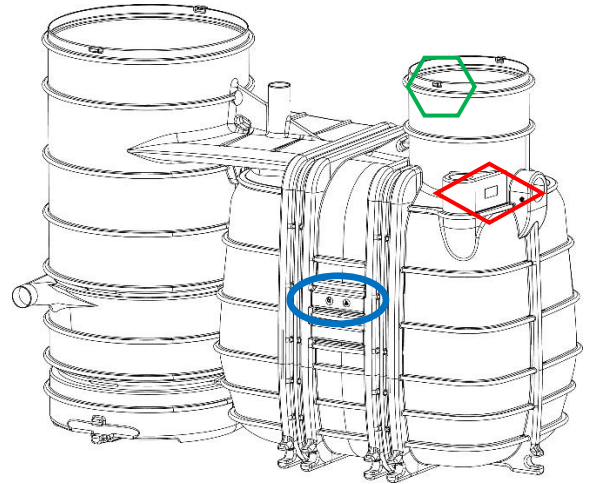
When looking at the tank facing the CE logo , marked  as on the drawing below, the serial number is:

- > On an identification tag inside the tank, and /or;


Marked  as on the drawing below

- > Engraved on the area to your right at the air outlet ;

Marked  as on the drawing below



- > Detail of the identification plate inside the tank:

Name + Number of Independant Testing platform		BIOROCK[®] LUXEMBOURG	Factory ID
	CERIB 1164	17	CE mark (year)
Products usage	DoP XXXXXXXX		Performance Declaration (year)
	EN 12566-3+A2		Reference standard
Serial Number of the tank	SMALL WASTEWATER TREATMENT PLANT		Name + Capacity of the system
	MONOBLOCK-X-XXX-X		
	XXXXXXX		
	HDPE		

1.5 HANDLING AND TRANSPORT OF THE TANKS

Lifting eyes are situated on the top of each tank, enabling lifting by crane or JCB. The tanks should be handled, transported and stored with care after delivery to avoid being damaged.



2. Operating principle of a MONOBLOCK Treatment Plant

The MONOBLOCK system is composed of 2 compartments. Initially the raw sewage enters the first compartment to provide separation and the breakdown of organic solids (Primary Treatment). The sewage then passes through an effluent filter before discharging into the secondary compartment which incorporates the well proven aerobic digestion process (Secondary Treatment) and filtration process (Tertiary Treatment).

2.1 PRIMARY COMPARTMENT: OPERATING PRINCIPLE

The effluent (domestic wastewater composed of black water: origin toilets – and grey water: origin kitchen, bathroom, laundry) enter the primary compartment of the MONOBLOCK system. This primary compartment carries out the first basic phase of wastewater treatment, that is separation of solids and fats by flotation (formation of a grease layer) and by clarification (the suspended solids sink to the bottom of the tank by natural settlement). Separated solids building up at the bottom of the primary compartment are called “primary sludge”. This sludge breaks down in time by anaerobic digestion.

The primary compartment is equipped with an efficient effluent filter. This filter holds back remaining suspended solids, fats and other floating matter which enables a higher quality of pre-treatment.

2.2 SECONDARY COMPARTMENT: OPERATING PRINCIPLE

The well-proven BIOROCK biological purification process takes place in the second compartment of the MONOBLOCK system. The BIOROCK media is used as a carrier material allowing colonization of the necessary bacteria, a process which is essential for the effective treatment of domestic wastewater.

The MONOBLOCK system consists of three biological filtration stages and one aeration stage. *(See Appendix 1.5 : Détail of BIOROCK media layer)*

- > The pre-treated water is spread over the surface of the first layer of BIOROCK media by an effluent distribution system and penetrates into the media for purification.
- > The effluent flows via gravity through a ventilated area, mixing oxygen with the effluent prior to the secondary filter stage. Efficient ventilation throughout the treatment plant is essential for maximized performance.
- > A second section of the compartment contains a second media bed providing further treatment
- > Finally, the lower section of the tank contains a third media bed providing final treatment.
See Ch. B/3.2 for weight details of each BIOROCK media layer

The treated water discharging from the unit must flow by gravity to the next stage or a discharge point. We advise to avoid stagnant treated effluent at the discharge point. Make sure the discharge pipe is equipped to avoid small animals entering the system.

Each MONOBLOCK system should be vented independently and equipped with its own ventilator (wind driven or electrical if necessary). *(See appendix 2.4: Ventilation scheme).*



2.3 MONOBLOCK SYSTEM – TECHNICAL

- ◆ The tanks and covers are made of polyethylene
- ◆ Each system has lifting eyes are situated on the top of the tank
- ◆ The water inlet has a \varnothing of 110 mm
- ◆ Air inlet and air outlet have a \varnothing of 110 mm
- ◆ Each unit has a serial number that is located on the right side of the tank (*A/Chapter 1.3*)
- ◆ All materials in the BIOROCK plants are resistant to corrosion and guarantee a long-term lifespan
- ◆ The tanks are made by rotational molding in HDPE (High Density Polyethylene)
- ◆ The tanks are UV resistant and have a lifespan of at least 25 years
- ◆ The HDPE tanks are 100% recyclable
- ◆ The screws are made of stainless steel
- ◆ The pipes are made of PVC and Polypropylene
- ◆ The entire system is nearly 100% recyclable



3. Installation layouts

The installation of the MONOBLOCK depends on the available site, gradient, type of ground, the level of the water inlet and the discharge options.

When the outlet for final effluent is not accessible, a sampling shaft should be installed. When using a final effluent pump the pump shaft can be used as a sampling shaft.

3.1 INSTALLATION LAYOUT N°1 GRAVITY DISCHARGE (non-electric)



3.2 INSTALLATION LAYOUT N°2 PUMPED DISCHARGE



4. INSTALLATION OF THE SYSTEM

This chapter provides a guide to the installation and commissioning of the MONOBLOCK system. This manual cannot be a substitute for documentation and instructions from manufacturers of non-BIOROCK products integrated into the system by the user.



Please take photographs of each stage of the installation with particular attention to all of the connecting pipework



DO NOT completely fill the tank with water before unit is backfilled
DO NOT use dirty or contaminated water



DO NOT use a mechanical compactor, only compact manually



DO NOT reuse the excavated soil or spoil from the site



DO NOT install the system too close to the house or other buildings
DO NOT install the system too close to large trees

4.1 INSTALLATION PRINCIPLE

Dimensions and footprint of the MONOBLOCK system:

	WIDTH (backfilling included)	LENGTH (backfilling included)	Minimum footprint
MONOBLOCK-2	1,80 m	3,40 m	6,12 m²
MONOBLOCK-3	1,80 m	4,40 m	7,92 m²

See all technical features of the MONOBLOCK systems at **part C** of the User Guide.



4.1.1 Before the installation of the complete system

- ◆ Always keep the system accessible
- ◆ Check the tank and associated equipment (options, connections, seals, etc.) Before installation, see technical details for each system;
- ◆ A minimum distance of about 3 m¹ from the house and 3 m¹ from trees which have extensive roots should be ensured;
- ◆ A minimum distance of 2.5 m¹ from any building should be ensured, otherwise the stability of the building should be checked;
- ◆ The installation should be located away from any traffic areas and parking (at least 2 m¹);
- ◆ The installation of the MONOBLOCK system is possible in high ground water conditions if special precautions are taken
- ◆ Consult a professional engineer if the units are to be installed with extension sets (“deep” installations)
- ◆ System lids should not be buried and should always remain accessible for maintenance
- ◆ The minimum distance between the primary tank and the treatment unit is 300 mm
- ◆ The distance between the side of the excavation and the tanks must be minimum of 300 mm
- ◆ Connections for the MONOBLOCK system are made with flexible seals with a diameter of 110 mm
- ◆ The effluent inlet pipe to the first compartment should have a minimum gradient of 2 % and a maximum of 4%
- ◆ Local rules and legislation should be respected

4.2 INSTALLATION IN DRY GROUND CONDITIONS

See appendix 1.1 «Installation in dry ground conditions»

❖ Conditions for installation:

- Dry and stable ground conditions
- Absence of water at the bottom of the excavation

4.2.1 Installation and digging in dry ground conditions

- ◆ The maximum level of top soil above the backfill is 200 mm
- ◆ The units must stand on a clean and stable base such as concrete
- ◆ In dry ground conditions pea gravel can be used as backfill
- ◆ Mud and other soft materials must be removed from the bottom of the excavation prior to installation
- ◆ A stable base must be created at the bottom of the excavation
- ◆ The base of the excavation should be level and compacted
- ◆ There must be a distance of at least 300 mm between the walls of the excavation and the units

4.2.2 Installation of the system in dry ground conditions

- ◆ Once the base of the excavation is stable, the installation can begin.
- ◆ The MONOBLOCK system should be positioned horizontally.
- ◆ Before connecting any water or ventilation pipes, ensure that the units are perfectly installed and stable on the base.
- ◆ Ensure that all levels are correct so that the wastewater can flow freely through the system
- ◆ Check that all connections are correctly positioned
- ◆ Ensure that the seals are watertight



4.2.3 Backfilling in dry ground conditions

- ◆ Backfill the hole with 3 to 6 mm smooth pea gravel, or lean-mix concrete whilst filling the tanks with water at the same level
- ◆ Do not exceed 300 mm per water filling and compaction cycle
- ◆ Backfilling around and filling both the Primary Tank and BIOROCK unit with water should take place at the same time.
- ◆ Make sure that the BIOROCK media is completely saturated with water
- ◆ Do not backfill with the soil removed during the excavation: roots and stones can damage the tank.
- ◆ Do not compact the backfill material mechanically: compact manually.
- ◆ Once the backfilling is finished and compacted, check the levels of the tanks again
- ◆ The lids or access covers of the system should be installed just above ground, level to provide easy access for maintenance.
- ◆ Close and secure all covers with screws
- ◆ Complete the backfilling once all pipework has been checked and connected.

4.3 INSTALLATION IN HIGH GROUND WATER CONDITIONS

Appendix 1.2 «Installation in high ground water conditions»

❖ Conditions for installation:

- Wet ground
- Presence of high ground water table etc.

The MONOBLOCK units can be installed in high ground water conditions with special precautions.



The level of the water table must never exceed the level of liquid inside the Primary Compartment. Extremely high water tables signify a flood risk which could cause water ingress or collapsed tanks.

Perform the same work as in dry ground conditions with the additional recommendations and modifications below:

- ◆ For installations in a high water table area, ensure the adequate drainage of the excavation during installation
- ◆ Anchor the unit to the concrete slab (slab thickness should be a minimum 200 mm)
- ◆ The base must extend to a minimum distance of 300 mm beyond the base of the tanks on all sides
- ◆ If you are unsure, a qualified civil engineer should be consulted
- ◆ Anchoring the tanks to the base is achieved with a system using the anchoring points; these are positioned at the bottom of the tank.
- ◆ Lateral backfilling is 300 mm thick around the system and consists of sand/cement lean mix concrete (dosing: 200 kg cement / m³.)



For installations in a high water table area, ensure the adequate drainage of the excavation during installation and anchor the unit to the concrete slab



4.4 INSTALLATION IN «DIFFICULT» AREAS AND SITES

❖ Conditions of installation:

- ◆ Difficult ground conditions can be unstable ground, clay, rocks, etc.
- ◆ If necessary, ensure the adequate drainage of the excavation during installation and anchor the unit to the concrete slab.
- ◆ Solutions such as sheet piling should be used to secure the sides of the excavation.
- ◆ A retaining wall may be necessary to ensure that the backfill does not move in a difficult installation.

4.4.1 Installation in difficult areas and sites

- ◆ Do not use heavy clay soil for the top soil level. If the top soil to be used is predominantly clay then it should be mixed with sand.
- ◆ In all difficult grounds conditions the base of the excavation should be constructed from concrete with a minimum depth of 300 mm.
- ◆ Roots and stones can result in damaging the tank wall and should be removed.
- ◆ The depth to the bottom of the excavation and the concrete base for the Primary Tank must allow an incline of 2% minimum for the wastewater inlet pipe from the property to the Primary Compartment of the system.

4.4.2 Installation in difficult ground conditions

- ◆ Once the base of the excavation is stable and level the installation can begin.
- ◆ Before connecting any pipe work or ventilation pipes ensure the system is perfectly installed and stable on the excavation base. Ensuring that all levels are correct is crucial if the wastewater is to flow efficiently through the system.
- ◆ Pay special attention to the rubber seals. The seals ensure that the system is watertight.

4.4.3 Backfilling in difficult ground conditions

- ◆ In all difficult ground conditions backfilling should be carried out to a level of 20 cm below the tank covers. Concrete should be used, compacted and applied in layers of 300 mm.
- ◆ A retaining wall may be necessary to ensure that the backfill does not move in a difficult installation. The thickness and structure of any retaining wall should be specified by a qualified engineer along with the method of construction and backfilling procedure.
- ◆ At the same time as backfilling around the MONOBLOCK system both tanks should be gradually filled with clear water (increments of 300 mm)
- ◆ Once the backfilling is finished and compacted, check the levels of the tanks again
- ◆ The various lids or access covers for the system are installed just above ground level to provide easy access for maintenance.
- ◆ Position the hatches and secure them with the screws positioned on the sides.
- ◆ Backfilling to the surface is completed once all pipe work has been connected. With a maximum depth of 20 cm the backfill should consist of top soil without any stones or sharp objects. When building up the final level of backfill around the covers keep in mind any future settlement of the soil.



4.5 INSTALLATION UNDER ROADS, COURTYARDS OR STORAGE AREAS

❖ Installation conditions:

- ☑ Roads, courtyards or storage areas: The installation will be carried out in accordance with the preceding paragraphs, taking into account the nature of the soil.



For an installation under roads, courtyards or storage areas, a distribution slab of reinforced concrete should be constructed and placed above the tank

- ◆ The concrete slab must be constructed in such a way that it does not rest on the tank
- ◆ The edges of the slab must rest on the surrounding ground; the ground must be stable. If unstable ground, specific foundations should be built
- ◆ These foundations, the thickness of the slab distribution, the access to the lids of the tanks, the unit and sampling pipe, the reinforcement and the structure of the slab, etc., will be specified by a qualified civil engineer, based on expected traffic loads and the nature of the soil .
- ◆ The high air outlet pipes should preferably be installed outside the concrete slab area. Ventilation should be checked before leaving the site in any case (smoke test).

4.6 OTHER SPECIFIC CASES

4.6.1 Incline too steep (>5%)

A retaining wall may be necessary to ensure that the backfill does not move if the incline is too steep. The thickness and structure of any retaining wall should be specified by a qualified engineer along with the method of construction and backfilling procedure.

Generally, the backfill material must be compacted pea gravel or lean mix concrete applied in layers of 30 cm. (depending on ground conditions)



A detailed assessment must be carried out for all installations in difficult ground conditions. If you are not sure about the installation, always consult a local engineer



5. VENTILATION & WATER DISTRIBUTION



Never smoke in the vicinity of the installation or sewage works in general. Never enter the tanks without taking the necessary safety precautions such as ventilation, air monitoring, air supply and other procedures as required. Always have someone else on site if entering confined spaces.



Achieving efficient ventilation is always the responsibility of the installer as he is familiar to the implementation site and local conditions that may interfere in the system's venting.



Make sure that the ventilation works properly. Always check the efficiency of the ventilation through the system with a smoke test prior to backfilling.



If the site is not suitable for non-electric ventilation, electric ventilation should be installed.



**Use as few bends as possible
NEVER USE 90° bends
Only use 45° bends**

The MONOBLOCK system is continuously vented.

5.1 VENTILATION OF THE PRIMARY COMPARTMENT

The primary compartment of the MONOBLOCK system generates malodorous gases that must be removed by effective ventilation through the air outlet pipe.

The air outlet is located upstream to the primary compartment, next to the water inlet. The air outlet pipe is of a diameter of 110 mm (minimum 100 mm) and is positioned vertically. It should always be equipped with a wind driven or electrical ventilator positioned at a minimum of 40 cm above the roof or from any other obstacle. This pipe should be away of a minimum of 1 meter from any other ventilation.



5.2 VENTILATION OF THE SECONDARY COMPARTMENT

- ◆ The air intake is located at the front of the treatment unit.
- ◆ The ventilation cap at the air intake is between 150 mm and 1000 mm high from the ground.
(See Appendix 1.4: MONOBLOCK ventilation scheme)
- ◆ Air flows through internal ventilation piping from the air intake to the air outlet.
- ◆ The air intake pipe is of a diameter of 110 mm (minimum 100 mm)

☒ In case of electric ventilation: The electric fan is installed according to the local legislation and if possible protected against frost and severe weather.



Always check the ventilation with a smoke test in representative conditions (calm weather and storms are not representative conditions). Electrical ventilation may be necessary if the site is not suitable for natural, non-electric ventilation.

If the ventilation is not working properly:

- ◆ Check the ventilation system again by following the diagram
- ◆ Check if the pipe work is obstructed or disconnected at any stage
- ◆ Check if the air outlet pipe is positioned high enough
- ◆ Check that the wind driven ventilator has enough capacity, otherwise change to an electric ventilator.

5.3 WATER DISTRIBUTION

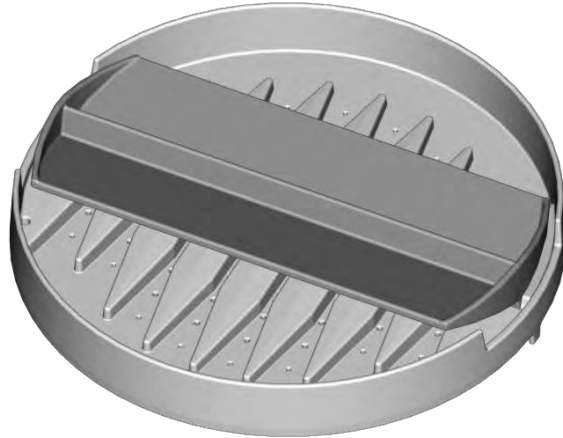


Make sure the BIOROCK Media is saturated with clean water

- ◆ DO NOT completely fill the tanks with water before unit is backfilled
- ◆ DO NOT use dirty or contaminated water
- ◆ Visually check the water flowing from the primary compartment through the effluent filter then to the second compartment.
- ◆ Make sure that the BIOROCK media is completely saturated with water.
- ◆ Water should be at the same level in both compartments.

Check the water distribution system at the second compartment and **pay special attention to water distribution on the BIOROCK media:**





- a. Water is discharged alternately on both side of the water distribution system.
- b. Water is evenly distributed across the BIOROCK media
- c. Flush the toilets several times and / or open taps in the house
- d. Check that the water flows from the primary compartment to the second compartment then discharges at the bottom of the system, all by gravity
- e. There should not be any accumulation of water within the second compartment and water should not accumulate on top of the BIOROCK media.

5.4 BIOROCK MEDIA

BIOROCK Media is an ideal carrier material for bacteria. The BIOROCK Media is clearly visible in the second compartment. Under the water distribution system, the BIOROCK Media will have a grey colour.

The BIOROCK Media is highly resistant to degradation and remains extremely stable over the long term. It is an inorganic material which does not break down over time. It requires little maintenance: Scraping and scarification is not necessary. Its structure and composition ensures unsurpassed and unique surface treatment with exceptional purification results.

In normal use the BIOROCK Media should not be removed or replaced. The top layer of the BIOROCK Media may have to be rinsed after a period of time if contaminated with solids.

The BIOROCK Media is an ecological, recyclable material.



Used BIOROCK media can be returned to your distributor or to BIOROCK for recycling.



For your safety always contact BIOROCK or your BIOROCK distributor for maintenance of the BIOROCK media.



5.5 SECURING THE LIDS

- ◆ The lids of the MONOBLOCK tank should remain accessible for maintenance
- ◆ Always close and secure the lids after use using a screw driver.



Always close and secure the lids
Always keep the lids accessible
Make sure the lids are air tight
The lids are for pedestrian use only



After any maintenance visit on the MONOBLOCK system and if the lids were open:
Make sure the seals of lids are correctly positioned ensuring air tightness once manholes are closed.



6. STOPPING AND RESTARTING THE SYSTEM

The establishment of an efficient biomass varies. The system start-up period differs depending on the system size, its location, the temperature and especially the conditions of use.

For long periods of shutdown or non-use of the system (absence periods), no special precautions are required. The sewage system will re-start as facilities are used again and will not require any particular attention.

For absence periods exceeding six months, it is recommended to empty the Primary Tank and refill with fresh water and do a general maintenance check.

If the unit is equipped with an electric ventilator, it is best to shut it down during the absence period and to check and clean it before the restart.

If a pump station is installed, it is best to commission it and clean it before the shutdown period.

The MONOBLOCK system remains efficient after a shutdown period.

7. CONFORMITY AND WORK COMPLETION

In all cases, the owner and the installer will jointly complete the installation checklist for MONOBLOCK systems (Appendix 3) and send it back to the manufacturer at the address listed. The document is attached to the user's guide. This completed document validates the warranty when received by the manufacturer.

8. RECOMMENDATIONS FOR USE AND MAINTENANCE

See the procedures in Part B of this Manual; User Guide, page 27-40.

9. COMPLIANCE WITH REGULATIONS AND STANDARDS

The MONOBLOCK units comply with all requirements of EN 12566-3 + A2, 12566-6 and the Construction Product Regulations.

Performance tests for the CE marking of MONOBLOCK systems were produced and validated by the European Platform notified as CERIB, notification n°1164, located in Epernon, France.



10. WARRANTY



10 years warranty on the BIOROCK media *¹

25 years warranty on the BIOROCK tanks *²

**¹ The 10 years warranty shall only apply if the annual maintenance is carried out by a BIOROCK approved installer or supervised by a trained BIOROCK Certified professional*

**² The 25 years warranty shall only apply if the installation is carried out by a BIOROCK approved installer or supervised by trained BIOROCK Certified professional*

Manufacturer's Warranty - Terms and Conditions:

Content of BIOROCK warranty:

Every BIOROCK treatment plant leaving the production line is inspected and verified according to ISO 9001 standards. The guarantee covers the tanks, materials and parts.

As the operation of the system is linked to the use of the products and not the manufacturing, the warranty does not apply to the function of the plants.

If a defect in the manufacture of the product is acknowledged by the supplier, the guarantee is limited to the replacement of the defective parts, this excludes any other expenses. Defective equipment and associated accessories should will be made available to the manufacturer and repackaged in the original packaging if necessary.

The warranty is subject to installation and operation as per the manufacturer's instructions and in accordance with good installation practices. The warranty will not apply in the event of:

- Failure to comply with the basic design data for the wastewater treatment plant;
- failure to return the completed commissioning form / or failure to issue a valid notice of conformity when commissioning is complete;
- Failure to follow installation instructions detailed in the Installation Guide, for the primary tank and effluent filter (including the water tightness test) and the treatment unit;
- Failure to present or regularly update the maintenance reports by the user (the maintenance report can be found in the manual);
- Failure to comply with other requirements, norms, local regulations or common standards;
- Damage caused by any accidental or climatic events, beyond our control.

Activation of the BIOROCK warranty:

In order to activate the BIOROCK Warranty, the owner of the installed products must complete the approval certificate correctly (Appendix 5 "BIOROCK Installation and user guide"). This form must be completed by both the installer and person commissioning the system, it should then be returned to the address indicated on the document.

Length of the BIOROCK warranty:

Annual maintenance is a condition for the manufacturer's warranty. This must be carried out by a



trained and qualified contractor. The maintenance must be carried out to the manufacturer's instructions as specified in the user guide.

The owner must complete the maintenance book and keep it up-to-date by adding any maintenance and commissioning activities carried out on the BIOROCK plant.

Attention: Sludge emptying documents - confirmation of emptying, receipts, dates and volumes etc issued by the contractor must also be retained. The maintenance book must be made available in the event of a complaint.

BIOROCK warranty:

- **10 years on the BIOROCK Media (biological part of the treatment plant).**
- **25 years on BIOROCK tanks**
- **2 years on electrical options, supplied by BIOROCK**

Condition of delivery: In the case of incomplete delivery (missing equipment or accessories) or damage observed on delivery, these remarks / observations should be listed on the carrier delivery note or bill. The carrier and the supplier must be informed within 48 hours or 2 business days.

Follow the maintenance instructions and visual controls to maintain a reliable and durable system. Please contact your dealer with any question.





B. USER GUIDE

MONOBLOCK SYSTEMS:

MONOBLOCK-2

MONOBLOCK-3



TABLE OF CONTENTS

1. SAFETY INSTRUCTIONS	27
2. SUSTAINABLE DEVELOPMENT	28
2.1 Useful information.....	28
2.1.1. <i>Sustainability</i>	28
2.1.2. <i>Waste disposal</i>	28
2.2 Polyethylene and PVC.....	29
2.2.1. <i>Energy recovery</i>	29
2.2.2. <i>Material recycling</i>	29
2.2.3. <i>The BIOROCK Media</i>	29
3. OPERATING AND MAINTENANCE INSTRUCTIONS	30
3.1 Primary Compartment and Effluent filter.....	31
3.2 Secondary Compartment.....	34



1. SAFETY INSTRUCTIONS

Related to the installation and operation of a MONOBLOCK System

- ☛ **NOTE:** Consult with certified professionals regarding all installation and maintenance work, and for all operations undertaken on this sewage treatment plant. Your distributor and/or your installer will advise you on how to set up a maintenance contract.
- ☛ **NOTE:** Household wastewater contains human faeces. This means that wastewater may contain very noxious pathogenic bacteria. Under certain conditions (for instance stagnant wastewater, high temperatures etc.) these noxious pathogenic bacteria may be present in large numbers. Therefore, always use plastic gloves and proper disinfectants if you come into contact with wastewater or with parts which have been in contact with wastewater. The term wastewater also includes the final effluent (the purified wastewater from the MONOBLOCK System).
- ☛ **NOTE:** The effluent CANNOT be reused for any other purpose other than discharge into the surface water or infiltration into the soil. The water may contain traces of bacteria, which under certain circumstances (stagnant water, high temperature etc.) may grow in large numbers and be potentially harmful to human health.
- ☛ **NOTE:** The final effluent (the "clean" water from the system) is NOT drinkable.
- ☛ **NOTE:** Always keep the lid closed and open it only for inspections and maintenance work. Never leave the lids and inspection points unsupervised while open. Lids are for pedestrian use only.
- ☛ **NOTE:** Do not put your head directly into any septic tank or sewage treatment plant through the manhole even to "have a look" or in an effort to find the cause of a malfunction. Noxious gases may accumulate in the system and may interfere with respiration and cause nausea, dizziness and in very extreme cases loss of consciousness.
- ☛ **NOTE:** Do not install, repair, change or check electrical components yourself; this can be extremely dangerous due to the combination of electricity and water especially when using 230 Volt. Leave this task to a qualified electrician, who can install the system in accordance with NEN 1010. When using 12 Volt electrical accessories, there is no danger of electrocution, but contact a qualified electrician if in doubt.
- ☛ **NOTE:** Never smoke near the work area while the operations described in this manual are being carried out, and never enter the work area without having taken all the prior precautions for ventilation and atmospheric testing as prescribed in the applicable local regulatory provisions.
- ☛ **NOTE:** Any risks during the installation are related to excavation or handling of material. While installing the tanks, use a sling hung from the rings of the tank. Make sure that no one is in the maneuvering area, and do not position yourself under the load
- ☛ **NOTE:** Check the seal ensuring proper air tightness of the lids is correctly positioned before closing.



2. SUSTAINABLE DEVELOPMENT

In order to support sustainable development, BIOROCK has developed sewage treatment plants with a very low carbon footprint. They do not need electricity, mechanical parts or chemicals to work.

Selecting a product that offers a sustainable solution to the problem of waste disposal is a key factor in protecting the environment. The construction market is becoming increasingly aware of the need for environmentally sustainable solutions to issues such as sewage treatment and the disposal of effluent from off-mains systems. There is a clear shift towards responsible and sustainable products. BIOROCK sewage treatment systems are the acknowledged leader in this rapidly changing market.

All materials used in the manufacture and assembly of the BIOROCK systems equipment are corrosion-resistant to ensure a long term installation. The main components are polyethylene (Tanks), PVC (piping) and the BIOROCK media. Nearly 100% of the components can be recycled.

2.1 USEFUL INFORMATION

2.1.1 Sustainability

Sustainable development is based on three factors: Protection of the environment, social progress, and economic development.

Both production methods and consumption must respect both human beings and the natural environment to enable all inhabitants on Earth to meet their basic needs (food, clothing, education, work, living in a healthy environment).

Education for sustainable development is fundamental: it is the main necessary step towards a general change in mindset and behavior. This change in mindset for each of us (citizens, businesses, local authorities, governments, international institutions) is necessary to address threats to the Earth (social inequality, industrial and health risks, climate change, biodiversity loss, etc.).

2.1.2 Waste disposal

Waste results from the operation of treatment systems and maintenance of drainage systems for sewage and rainwater. These are predominantly organic waste (sludge, grease, wastewater treatment plant waste, drain material, etc.) or mineral (sand treatment plant, sludge, sewage sands, etc.).

Sludge produced in the Primary Compartment must be removed by a licensed contractor.

The used BIOROCK media can be returned to BIOROCK or to a BIOROCK Certified Partner for recycling.

The effluent filter for the Primary Compartment can be disposed after rinsing.



2.2 POLYETHYLENE AND PVC

PE and PVC are recoverable using different processes.

2.2.1 Energy recovery

Incineration leads to energy recovery. However it may generate pollutants and gas.

2.2.2 Material recycling

Plastics (PVC, PE) can be recycled into granules or powder which can be sold as an alternative to virgin material for manufacturing.

2.2.3 The BIOROCK media

The BIOROCK media is inert but if there is a need to replace some of the media it must be cleaned before recycling.

The used BIOROCK Media can be returned to BIOROCK for recycling.

Always use a professional waste disposal contractor to periodically remove sludge. Once removed, the sludge will be disposed safely at an approved facility.



3. OPERATING & MAINTENANCE RECOMMENDATIONS

An annual service and maintenance contract should be set up for your MONOBLOCK system. Shall this not be the case, consult a BIOROCK Certified Installer or a BIOROCK® trained and approved company for the maintenance on your sewage treatment plant.

Contact your dealer if necessary or contact us for more details about the closest dealer to you.

The summary below indicates the commissioning of your sewage treatment plant.

Your sewage treatment plant can be free from any failures as the MONOBLOCK system does not require electricity. (In normal operation, and following the maintenance recommendations)

GENERALLY:

Every year:

- ✓ Visually check the water tightness of the MONOBLOCK at the inlet pipe
- ✓ Check the ventilation
- ✓ Check if there are any smells exiting the tanks

PRIMARY COMPARTMENT:

Every year:

- ✓ Check the sludge level
- ✓ Empty the Primary Compartment if the sludge level is > 50%
- ✓ Rinse or change the effluent filter if necessary or change after emptying the Primary Compartment
- ✓ Take a sample of the effluent from the Primary Compartment and check quality visually

SECONDARY COMPARTMENT

Every year:

- ✓ Clean the water distribution system
- ✓ Check the top layer of the BIOROCK media, clean if necessary (Cf. Procedure B/Ch 3.2)
- ✓ Check and clean the alarm if necessary
- ✓ Take a sample of the outgoing water (final effluent) and check for clearness and odour. Clearness means that the water contains few suspended particles. The colour may vary from neutral to dark yellow. The odour of the water will normally be neutral to light ammonia.

Neutral



Dark yellow



3.1 PRIMARY COMPARTMENT AND EFFLUENT FILTER

BIOROCK highly recommends users to set up a maintenance contract with their local dealer or Certified Installer to ensure long lasting efficiency of BIOROCK products. Completing the maintenance book together with a BIOROCK Certified Professional is a condition for warranty. However, should you be unable to get this service locally, BIOROCK can provide a maintenance planning schedule giving an overview of the maintenance procedures. This planning schedule will allow a professional of the wastewater industry to provide the maintenance service.

Please check with local authorities how often the primary compartment should be emptied as this should be in line with local regulations.

MAINTENANCE GUIDE FOR THE PRIMARY COMPARTMENT (PC) AND THE EFFLUENT FILTER (EF)

Sampling of the pre-treated waste water at the outlet of the Primary Compartment

Take your first sample 6 months after commissioning, then once a year, or at the same time as the Primary Tank is emptied

- ◆ Visually check the pre-treated wastewater quality
- ◆ Take a sample (use rubber or latex domestic use gloves) of the sewage water at the effluent filter point in a clean glass.
- ◆ The color of the water should range from light brown to yellow, from turbid to very turbid, but very little deposit should show at the bottom of the sample after it has rested for twenty minutes.
- ◆ The pre-treated water may have a slight (septic) odor



If the water looks different or you find increased deposits in the pre-treated waste water, this may be caused by:

- ◆ Water flowing too fast through the PT, too short retention time (hydraulic overload). Check that no rainwater run-off system passes through the installation.
- ◆ The volume of the Primary Tank is too small to accommodate normal usage
- ◆ Incorrect disposal of harmful, toxic, anti-bacterial or non-biodegradable products into the installation (see A/Ch.1.2: Precautions)
- ◆ You may need to call a certified septic tank cleaning company to empty the PT and to clean it (skimming off the fats and floating matter — the surface layer). Never completely empty the PT; always leave a layer of sludge at the bottom to ensure that it continues to function correctly after it has been emptied



If foul odors are noticed, these may be caused by:

- ◆ The ventilation system is not working properly
- ◆ The seals at lids are not air-tight, causing interference to the ventilation
- ◆ The internal waste water system in the house is not vented properly with a soil vent pipe
- ◆ Insufficient airflow through the ventilation system; ventilation pipes too small - diameter < 100mm, a badly positioned wind driven ventilator, etc.
- ◆ A venting blockage in the primary compartment, because the surface layer has become too thick (for example fats & floating matter)
- ◆ In all of these cases, please consult the documents and user manuals provided by the manufacturer.



Effluent Filter cleaning and replacement

The BIOROCK effluent filter should be checked annually and cleaned (rinsed) or replaced when required.

- ◆ Open the cover at the PVC pipe that provides access to the Effluent Filter
- ◆ Take the rod holding the Effluent Filter and lift it carefully to remove
- ◆ Beware of flying particles
- ◆ The Effluent Filter should be replaced when necessary, when its condition is not fit for efficient filtering of suspended solids anymore.



Checking/Emptying of the Primary Compartment

The first emptying of the Primary Compartment takes place when the sludge level reaches 50% of the Primary Compartment volume, unless superseded by local regulations.

- ◆ Always ask a certified septic tank emptier / licensed contractor
- ◆ Check sludge level in the Primary Compartment and the Effluent Filter annually.
- ◆ The emptying frequency may be adapted according to the nature of operation and depending on how many people are using the system. The Primary Compartment must be emptied when the sludge level reaches 50% of the volume (height of 660 mm from the bottom of the tank)
- ◆ The cleaning certificate issued by the licensed contractor must be kept by the owner in the maintenance guide.
- ◆ The licensed contractor should pressure wash the sides of the tank and the Effluent Filter to remove the accumulated fats and other matter.
- ◆ The Primary Compartment is immediately re-filled with clear water after emptying before resuming normal operation.
- ◆ The tanker, while emptying the Primary Compartment, must not be parked any nearer than 4 meters (14') from the installation to ensure and maintain stability.

Further information:

The quantity of sludge produced is influenced by how the unit is used (size, frequent overloads, type of waste water, routine maintenance). Each installation is different.

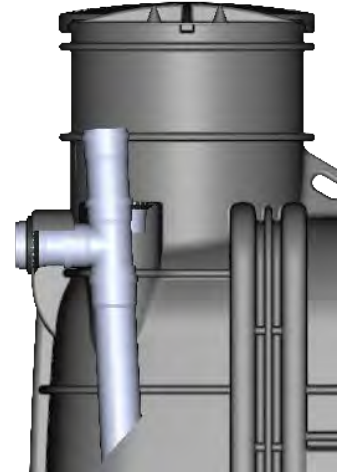
We estimate that an installation of 5 PE will produce a maximum of +/- 900 liters of sludge in the first year. The quantity of sludge produced will reduce over the first few years: normally after the fourth or fifth year, the residual quantities will have decreased by 40%.

When emptying, the cleaner must leave a few centimeters of sludge at the bottom of the tank; the bacteria that break down the sludge are specific and take a long time to develop.



If blockage at the water inlet of the Primary Compartment

- ◆ Unscrew the lid, take the PVC cap away and unblock using a stiff plastic brush or similar tool
- ◆ Rinse the pipe if necessary using a hosepipe
- ◆ Plug the cap and check water distribution
- ◆ Close and secure the lid.
- ◆ Check water distribution before leaving.



3.2 SECONDARY COMPARTMENT

The warranties including the 10 years BIOROCK warranty on the media shall only apply if the annual maintenance is carried out by a BIOROCK approved installer or supervised by a trained BIOROCK Certified professional.

MAINTENANCE PLANNING FOR THE SECONDARY COMPARTMENT



**Only take a sample from running water.
Never use a sample from stagnant water**

Effluent sampling:

6 months after start-up, then every year

- ◆ Only take a sample from running water. Never use a sample from stagnant water
- ◆ Sampling can be done via any sampling point or directly at the outlet of the tank
- ◆ Take a sample of the outgoing water (final effluent) and check for clearness and odour. Clearness means that the water contains few suspended particles. The colour may vary from neutral to dark yellow. The odour of the water will normally be neutral to light ammonia.
- ◆ The outgoing water should be clear. A little deposit might show at the bottom of the sampling glass after it has rested for twenty minutes
- ◆ Always wear rubber or latex domestic gloves when taking a sample
- ◆ The water shouldn't have a septic or nauseating odor. It may have the characteristic smell of fresh humus
- ◆ If the visual check seems to show a malfunction (turbid treated water, presence of deposits or suspended matter, nauseating or septic odor), take the sample to a certified laboratory for testing

- ◆ If the laboratory confirms a problem with the water quality check:
 - if the system is functioning properly
 - the quality of the pre-treated water from the Primary Compartment
 - if there are any fats or solids on the surface of the BIOROCK Media top layer
 - the water distribution in the MONOBLOCK system
 - if the ventilation is functioning properly
 - if the system is correctly sized for its required capacity
 - the presence of harmful, toxic, antibacterial or non-biodegradable products in the system



If you notice the presence of increased deposits (suspended matter) in the treated waste water or if the system is clogged up:

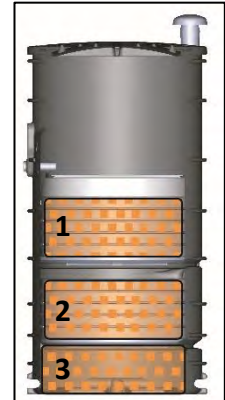
A prolonged overload of pollution in the system, repeated misuse of the Primary Compartment (late sludge removal, an inefficient effluent filter and neglect over several years) can lead to the saturation of the BIOROCK Media in the Secondary Compartment.



Cleaning or replacement procedure for the BIOROCK Media

The BIOROCK Media can be removed using a metal hook or a rake. The BIOROCK media can be returned to a local BIOROCK partner. BIOROCK will arrange media recycling after use.

1. Unscrew and open the lid
2. Remove the water distribution system, the dispersion plate and the Ø50mm water inlet PVC pipe
3. Remove the top layer (top basket) of BIOROCK media.
4. Remove the middle layer of BIOROCK media (second basket)
5. Remove the bottom layer of BIOROCK media (bottom of the tank)
6. Clean the inside of the tank
7. If possible clean the BIOROCK media with a normal water hose. Wash the bags in a basin of water, agitating them aggressively, so that all of the sludge that has accumulated in the bags is removed. If it is impossible to clean the BIOROCK media, replace with new bags.



If an inspection shows an accumulation of suspended solids / stagnant water at the top layer of BIOROCK media, then cleaning / rinsing of the top layer of BIOROCK media only, may be sufficient.

Be aware that all media layers are not similar ; keep the right media at the right basket.

8. Build-up of the BIOROCK media : (bags of weight of +/- 1 kg)

	① Top layer (top basket)	② Middle layer (second basket)	③ Bottom layer
4 PE	9,5 kg	9,5 kg	13 kg
6PE	12 kg	12 kg	13 kg
8PE	14,5 kg	14,5 kg	13 kg

9. Re-position the water distribution system, the dispersion plate and the Ø50 mm PVC water inlet pipe. Secure the lid.

Pay special attention to the correct positioning of the seal ensuring air tightness between the lid and the MONOBLOCK system.

⊕ While replacing the bags of BIOROCK Media: Make sure that each layer of bags completely covers the surface of the Treatment Compartment; ensure that there is no free space between the bags. The bags of BIOROCK Media should always overlap each other.

BIOROCK can quote media replacement and recycling through its network of distributors and installers. Contact us for your closest BIOROCK Certified Professional.



**A well performing MONOBLOCK System does not produce any bad smell; it should have a slight smell of fresh humus.
Problems of bad smells are generally caused by a poor ventilation of the system.**



Check the alarm

To be done annually

- ◆ Clean the float and the pipe with clean water.
- ◆ Visually check the alarm positioning: ⇨ Lift lightly and let it go down.



Check water tightness of the water inlet pipe and the water distribution pipe

To be done annually

- ◆ Visually check the water tightness of the water inlet pipe from the Primary Compartment



Check that the water distribution system and dispersion device provides an equal distribution of water to the BIOROCK media

To be done annually

- ◆ Both sides of the water distribution system fill with water and discharge alternatively.
- ◆ Make sure that the water flows equally through the holes of the dispersion plate (plate just above the first layer BIOROCK media)

Check the BIOROCK media and its possible settlement

To be done annually

- ◆ The BIOROCK Media may settle progressively as the water flows through it. This generally occurs after some years of usage.
- ◆ Should this occur, just shake the BIOROCK media bags manually and placed them back in the baskets. Make sure that each layer of bags completely covers the surface of the Treatment Compartment with no free space between the bags which should always overlap each other.
- ◆ If the inspection shows an accumulation of suspended solids at the top layer of BIOROCK media, then the BIOROCK media of the top layer may need to be cleaned more thoroughly. (see Ch. "Cleaning or replacement procedure for the BIOROCK Media")



Any long-lasting water accumulation on the surface of the bags indicates that it is necessary to clean at least the first layer of BIOROCK media.



The frequency of cleaning and / or replacement of the BIOROCK media bags depend on the quantity and quality of effluent leaving the Primary Compartment. Checking the Effluent Filter and Primary Compartment on an annual basis is very important.



If you still notice the presence of fats:

If flow difficulties persist after the above cleaning operations, check for an accumulation of fat in the Primary Compartment and at the Effluent Filter.



Checking water dispersion

To be done annually

The MONOBLOCK water dispersion plate is composed of 68 holes. This number can be reduced by closing holes with small caps depending on the required capacity.

<p>Water dispersion plate 4 PE</p>	<p>36 holes are closed, water is dispersed through 32 holes</p>	<p style="text-align: center;">Top view Bottom view</p>
<p>Water dispersion plate 6PE</p>	<p>20 holes are closed, water is dispersed through 48 holes</p>	<p style="text-align: center;">Top view Bottom view</p>
<p>Water dispersion plate 8PE</p>	<p>No holes are closed, water is dispersed through 68 holes</p>	<p style="text-align: center;">Top view Bottom view</p>

Check water dispersion on top of the BIOROCK media and clean the water distribution system using a hosepipe if necessary.

- a/ Open the lid and remove the 50mm water inlet pipe.
- b/ Remove water distribution system and water dispersion plate.
- c/ Clean with water using a hose pipe
- d/ Position the water distribution system, water dispersion plate and Ø50 mm PVC water inlet pipe
- e/ Close and secure the lid. Pay special attention to the seal ensuring air tightness between the lid and the tank (see A/Ch.5.3)



Checking of the treated effluent at the Secondary Compartment outlet

To be done annually

Treated effluent discharge at the outlet of the MONOBLOCK :

- ◆ No stagnant water should be noticed at the outlet of the system. Water should continuously flow by gravity.
- ◆ Check if any blockage at the outlet pipe.

Alarm : in case of a malfunction :

A visual alarm is installed on top of the MONOBLOCK. The float will pop-up if the system is overloaded with liquid.

- ◆ In normal use, the warning float is in the lower position at ground level.
- ◆ If there is a problem the increase in the water level causes the float to rise. Should this occur, Check if any blockage at the outlet pipe.



C. APPENDICES

Appendix 1:

Technical drawings of the MONOBLOCK-2 (2000 L Primary Compartment)

1.1 Drawing (Cross section) of 1x MONOBLOCK-2 in dry ground conditions.....	40
1.2 Drawing (Cross section) of 1x MONOBLOCK-2 in high ground water conditions	40
1.3 General overview (layout) of 1x MONOBLOCK-2	41
1.4 Aeration & Water distribution schematic of 1x MONOBLOCK-2	41
1.5 Cross section of the layers of BIOROCK Media in 1x MONOBLOCK-2	42
1.6 Technical drawing of 1x MONOBLOCK-2-700 (up to 4 PE).....	42
1.7 Technical drawing of 1x MONOBLOCK-2-800 (up to 5 PE).....	43
1.8 Technical drawing of 1x MONOBLOCK-2-900 (up to 6 PE).....	43

Appendix 2:

Technical drawings of the MONOBLOCK-3 (3000 L Primary Compartment)

2.1 Drawing (Cross section) of 1x MONOBLOCK-3 in dry ground conditions.....	44
2.2 Drawing (Cross section) of 1x MONOBLOCK-2 in high ground water conditions	44
2.3 General overview (layout) of 1x MONOBLOCK-3	45
2.4 Aeration & Water distribution schematic of 1x MONOBLOCK-3.....	45
2.5 Cross section of the layers of BIOROCK Media in 1x MONOBLOCK-3.....	46
2.6 Technical drawing of 1x MONOBLOCK-3-800 (up to 5PE).....	46
2.7 Technical drawing of 1x MONOBLOCK-3-900 (up to 6PE).....	47

Appendix 3 :

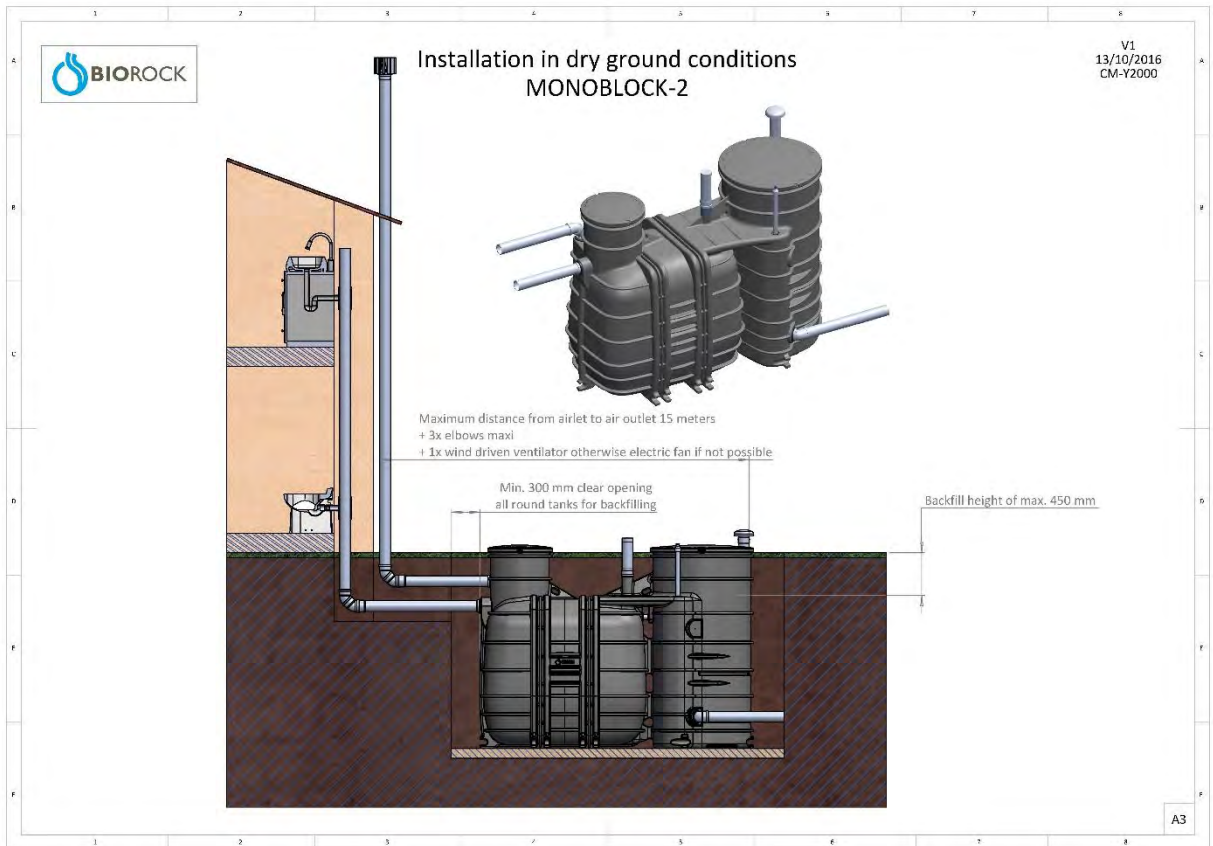
MAINTENANCE AND ACTIONS FORM - To be completed / to be kept by the User	48
---	----

Appendix 5 :

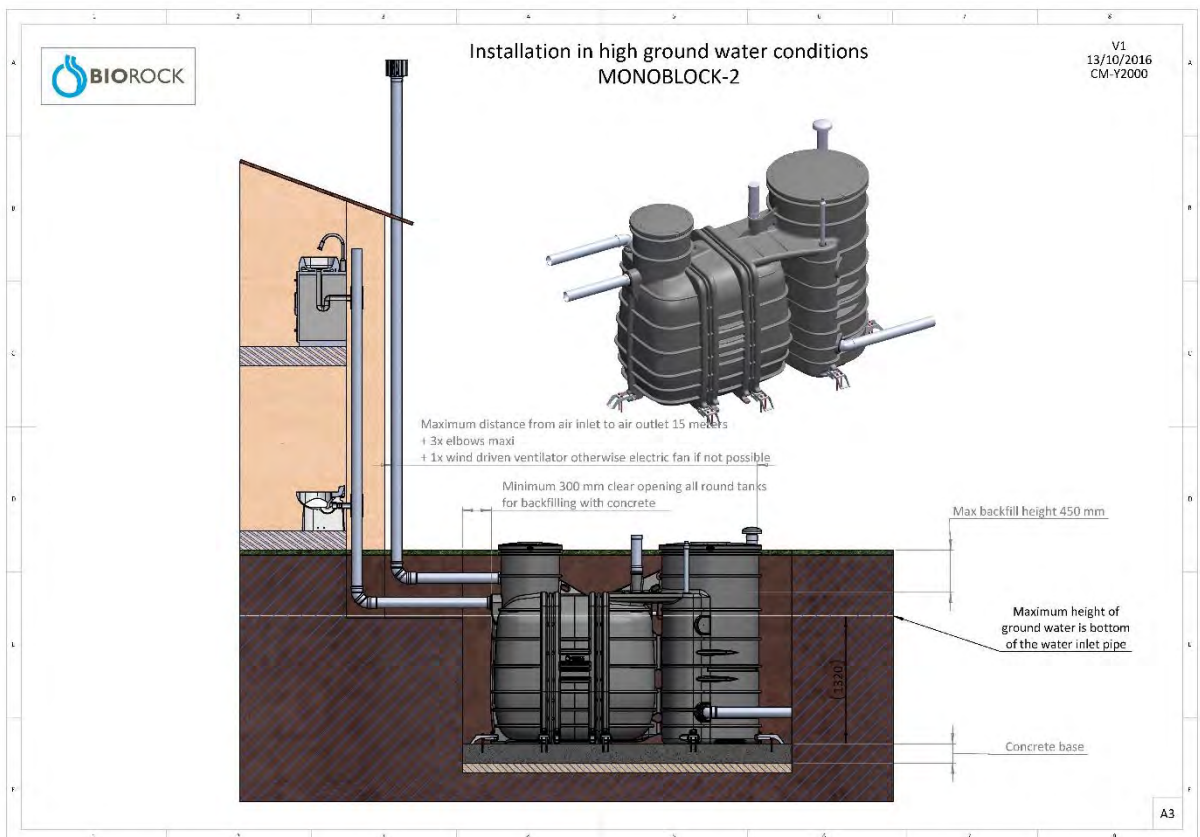
REGISTRATION FORM FOR YOUR MONOBLOCK PLANT - WARRANTY	49
---	----



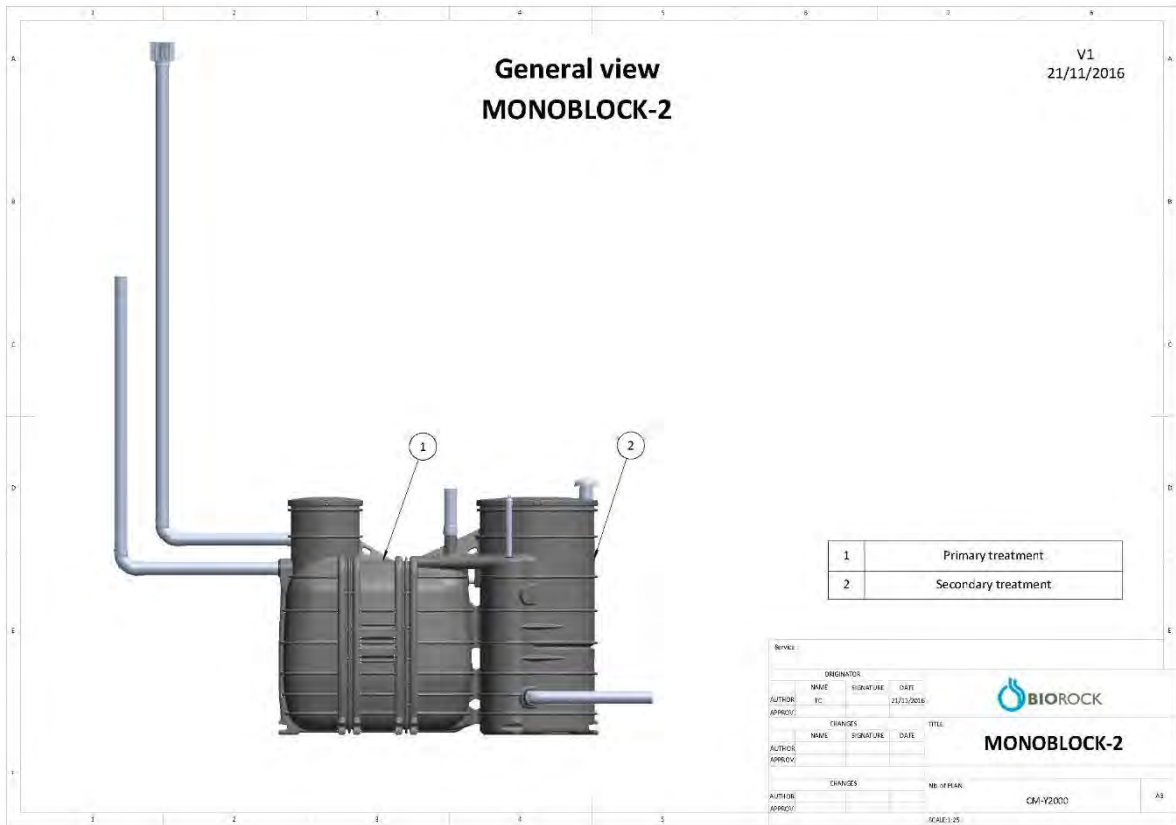
APPENDIX 1
1.1



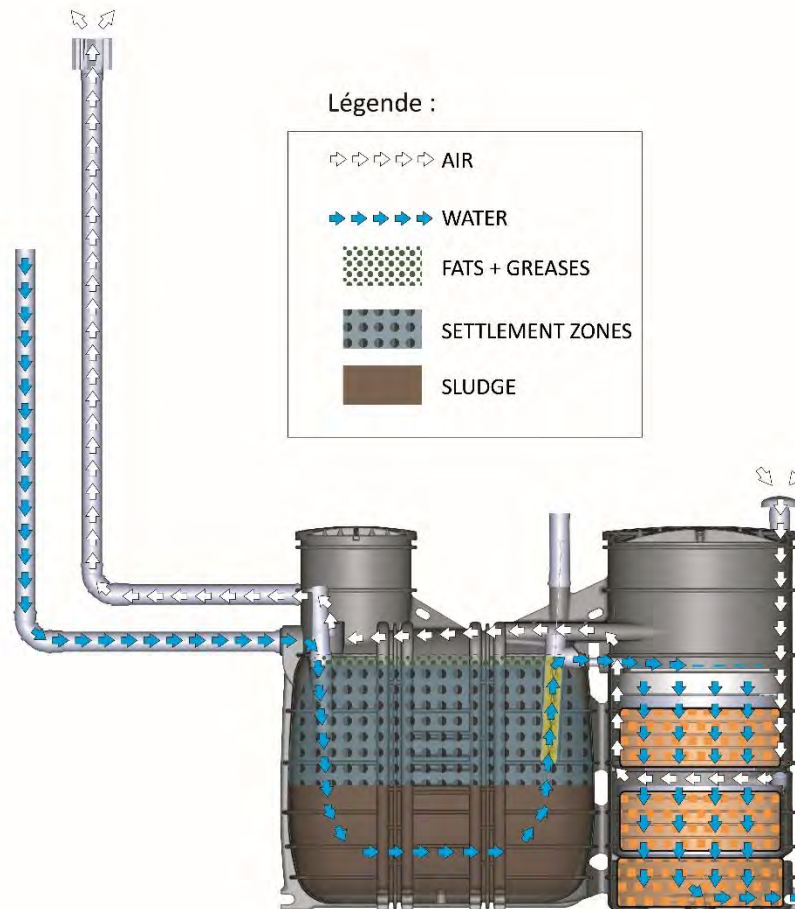
APPENDIX 1
1.2



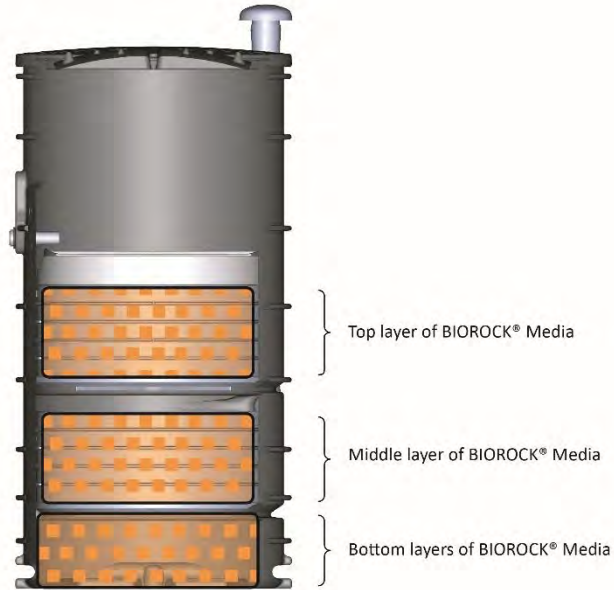
APPENDIX 1
1.3



APPENDIX 1
1.4



APPENDIX 1
1.5



APPENDIX 1
1.6

MONOBLOCK-2-700 Capacity up to 4 PE

This product can be installed in high ground water.

Overall tolerance : 3%

1	Water inlet
2	Air inlet
3	Water outlet
4	Air outlet
5	Access to effluent filter
6	Overflow alarm
7	Access to Primary treatment
8	Access to Secondary treatment

CHARACTERISTICS	VALUE	UNIT
Capacity in Population Equivalent	up to 4	PE
PRIMARY TREATMENT		
Minimum volume of pre-treatment	2000	Liters
Volume per PE	500	Liters
SECONDARY TREATMENT		
Volume	1500	Liters
Daily volume of wastewater**	150	liters/day/PE
Daily hydraulic load	0.6	m ³ /day
Organic load per PE	60	gr.DBOS/PE/day
Organic load raw effluent up to	0.24	kg DBOS/day
SPECIFICATION		
Overall length	2790	mm
Length x Width	1595 x 1140	mm
Primary treatment	1595 x 1140	mm
Secondary treatment area	0.4185	m ²
Overall width	1415	mm
Overall height + ventilation	2240	mm
Total weight (without water)	369	Kg
Pipe diameters	110	mm

** according to DIN EN 12566-3

Service:			
OPERATOR'S			
NAME	ADDRESS	DATE	
PHONE	NO.	OPERATOR'S	
INSTALLER'S			
NAME	SIGNATURE	DATE	
BIOBLOCK			
MONOBLOCK-2-700			
CM-Y2000-6			



APPENDIX 1
1.7

MONOBLOCK-2-800 Capacity up to 5 PE

1	Water inlet
2	Air inlet
3	Water outlet
4	Air outlet
5	Access to effluent filter
6	Overflow alarm
7	Access to Primary treatment
8	Access to Secondary treatment

CHARACTERISTICS	VALUE	UNIT
Capacity in Population Equivalent	up to 5	PE
PRIMARY TREATMENT		
Minimum volume of pre-treatment	2000	Liters
Volume per PE	330	Liters
SECONDARY TREATMENT		
Volume	1500	Liters
Daily volume of wastewater**	150	liters/day/PE
Daily hydraulic load	0.75	m ³ /day
Organic load per PE	60	gr.DBOS/PE/day
Organic load raw effluent up to	0.30	kg DBOS/day
SPECIFICATION		
Overall length	2790	mm
Length x Width	1595 x 1140	mm
Secondary treatment area	0.5281	m ²
Overall width	1415	mm
Overall height + ventilation	2240	mm
Total weight (without water)	375	kg
Pipe diameters	110	mm

This product can be installed in high ground water.

Overall tolerance : 3%

CHANGES		NO. of PLAN	CM-Y2000-5	Ap
APPROVED:	DATE:	REVISION:	DATE:	

MONOBLOCK-2-800

APPENDIX 1
1.8

MONOBLOCK-2-900 Capacity up to 6 PE

1	Water inlet
2	Air inlet
3	Water outlet
4	Air outlet
5	Access to effluent filter
6	Overflow alarm
7	Access to Primary treatment
8	Access to Secondary treatment

CHARACTERISTICS	VALUE	UNIT
Capacity in Population Equivalent	up to 6	PE
PRIMARY TREATMENT		
Minimum volume of pre-treatment	2000	Liters
Volume per PE	330	Liters
SECONDARY TREATMENT		
Volume	1500	Liters
Daily volume of wastewater**	150	liters/day/PE
Daily hydraulic load	0.9	m ³ /day
Organic load per PE	60	gr.DBOS/PE/day
Organic load raw effluent up to	0.36	kg DBOS/day
SPECIFICATION		
Overall length	2790	mm
Length x Width	1595 x 1140	mm
Secondary treatment area	0.6362	m ²
Overall width	1415	mm
Overall height + ventilation	2240	mm
Total weight (without water)	380	kg
Pipe diameters	110	mm

This product can be installed in high ground water.

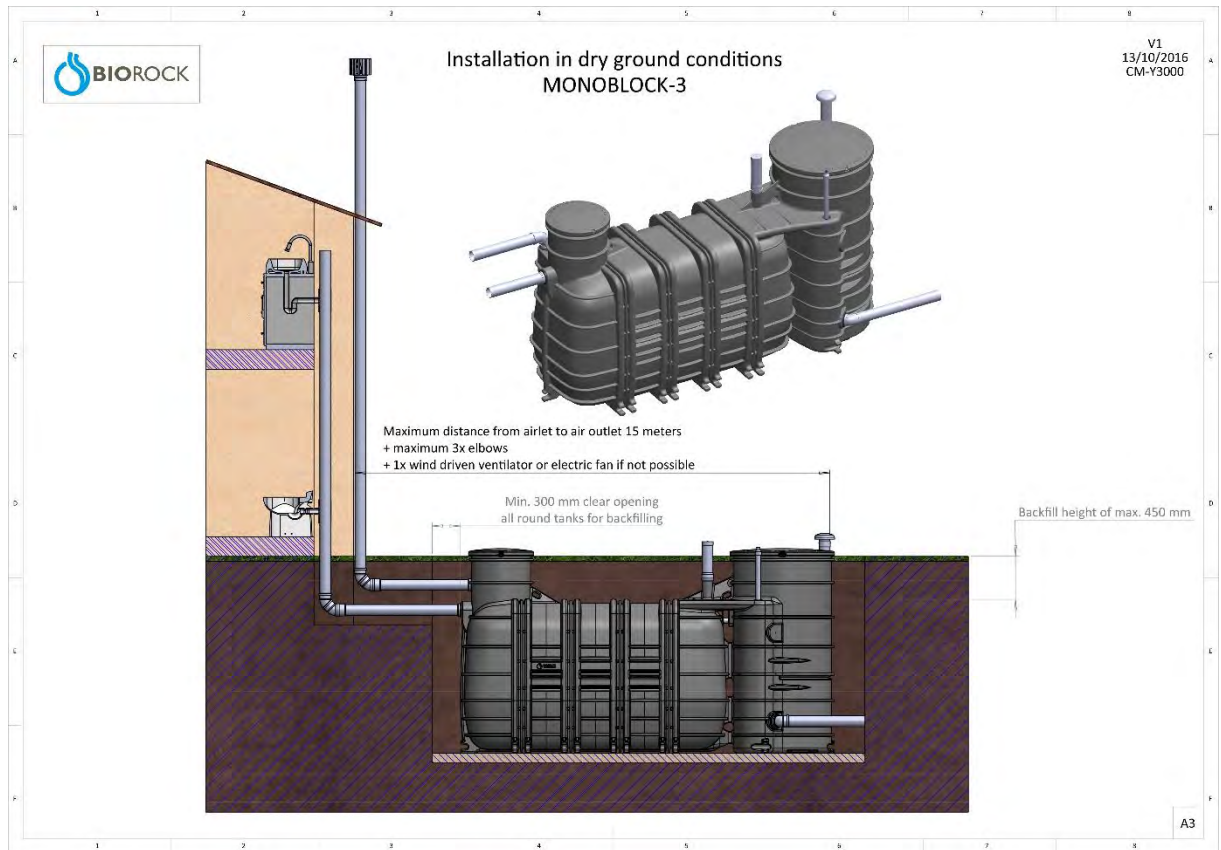
Overall tolerance : 3%

CHANGES		NO. of PLAN	CM-Y2000-5	Ap
APPROVED:	DATE:	REVISION:	DATE:	

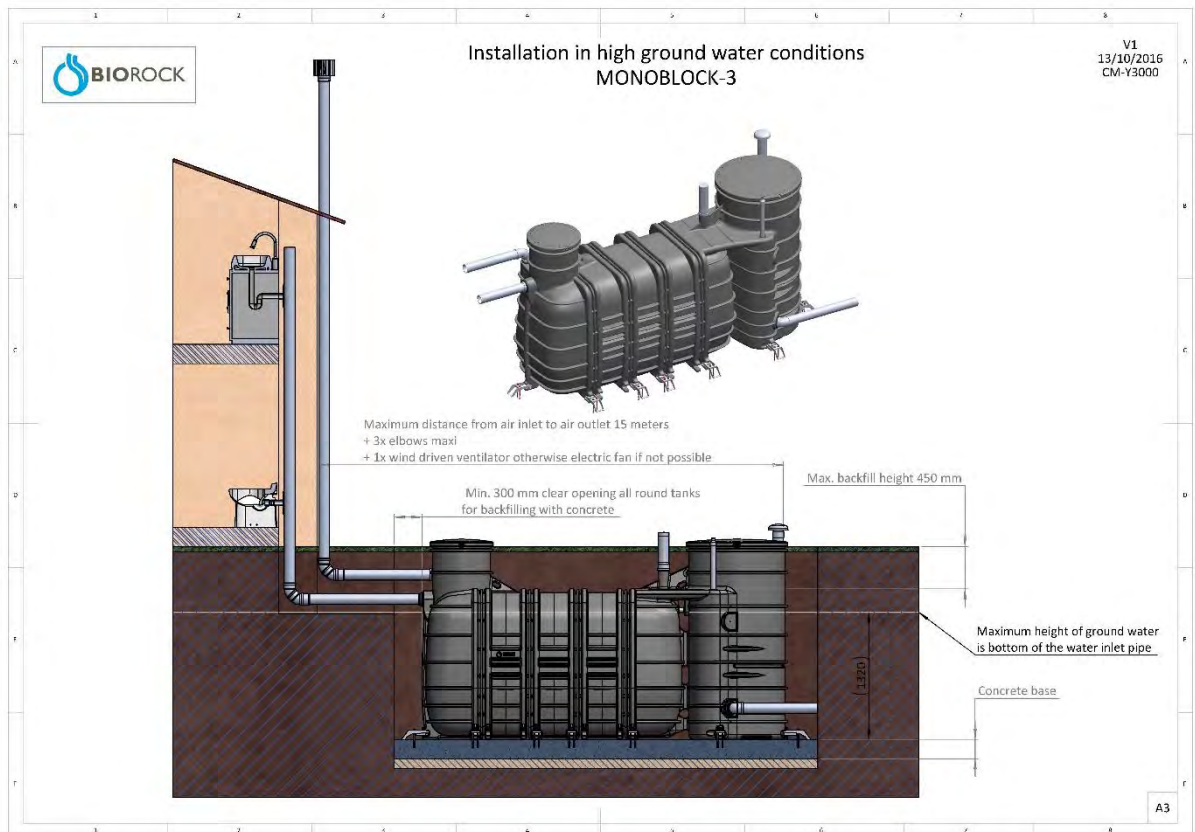
MONOBLOCK-2-900



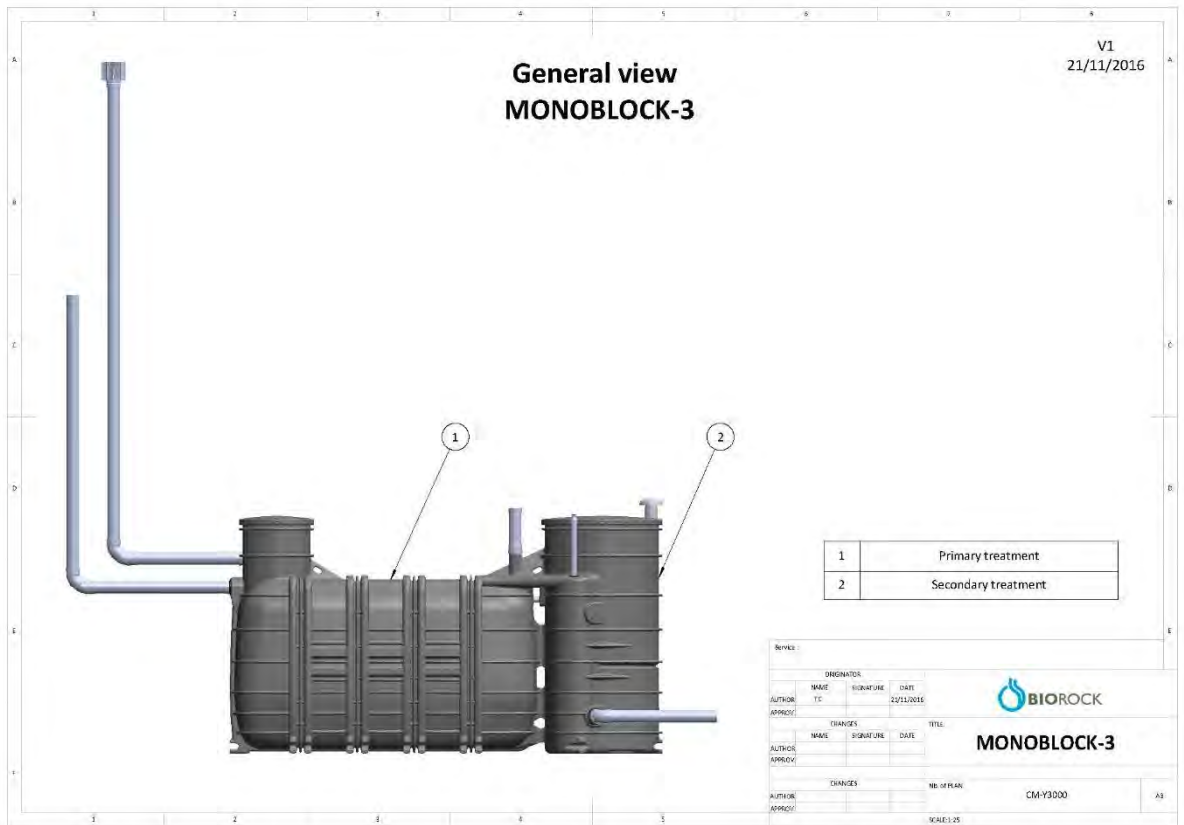
APPENDIX 2
2.1



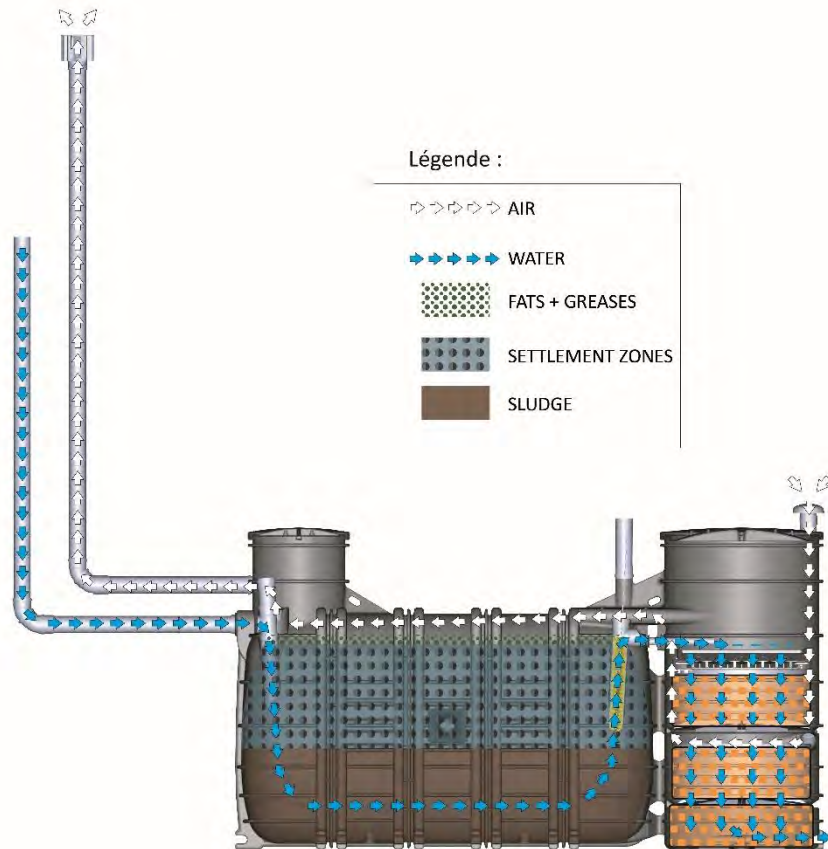
APPENDIX 2
2.2



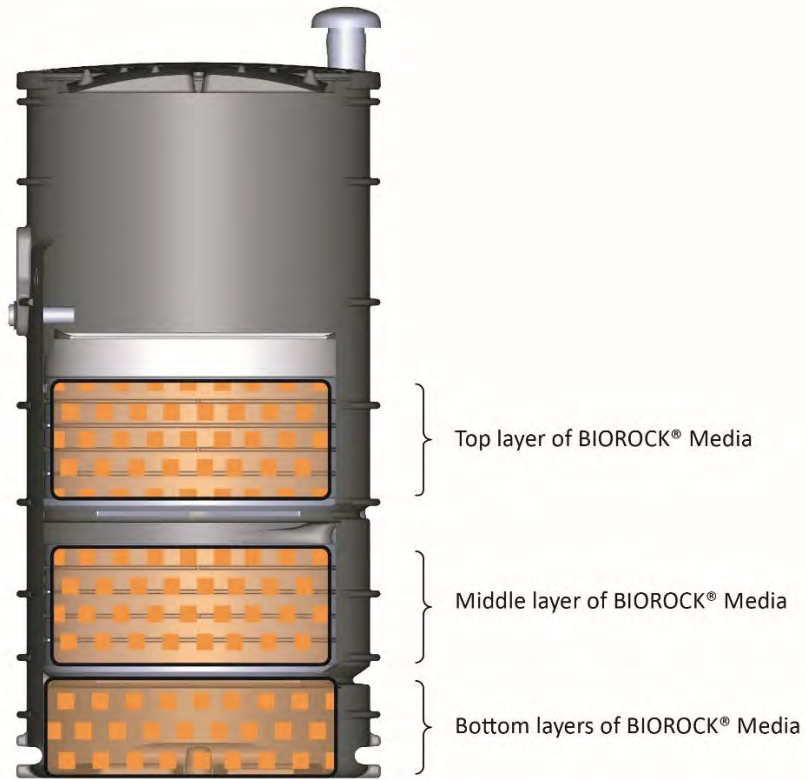
APPENDIX 2
2.3



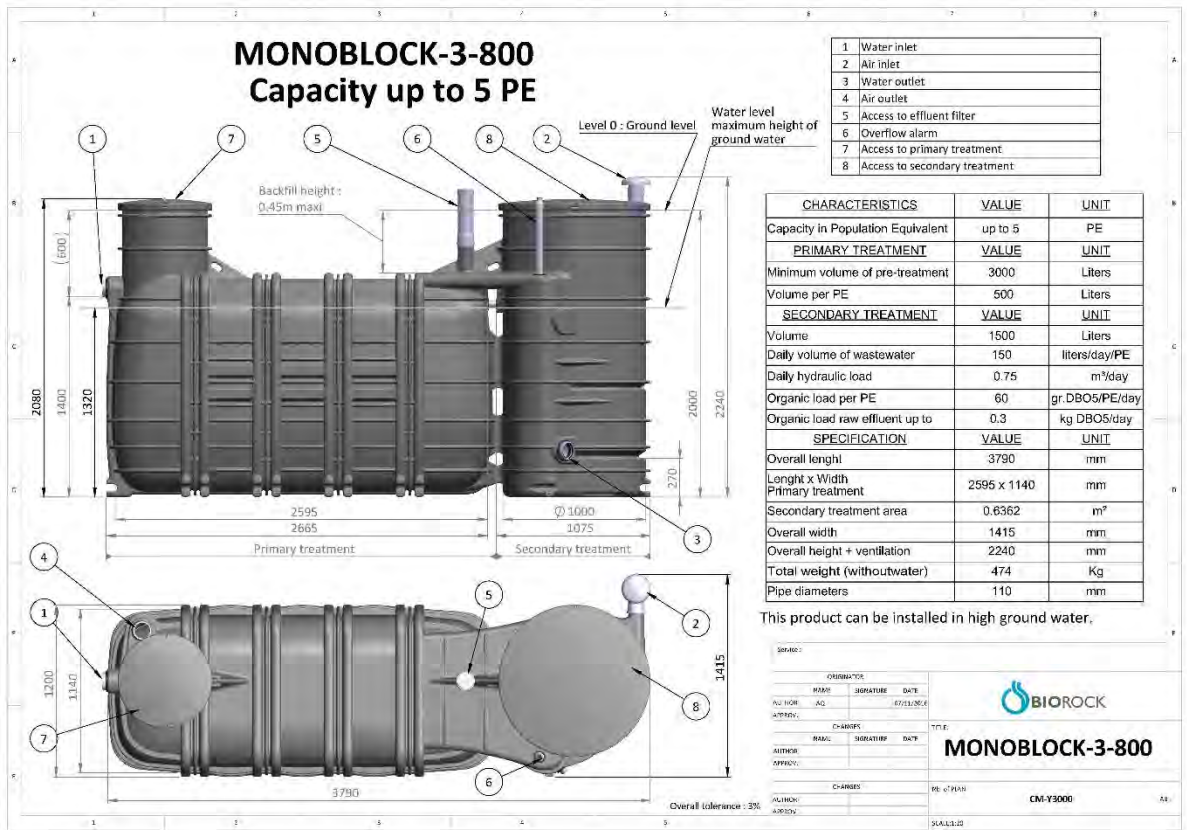
APPENDIX 2
2.4



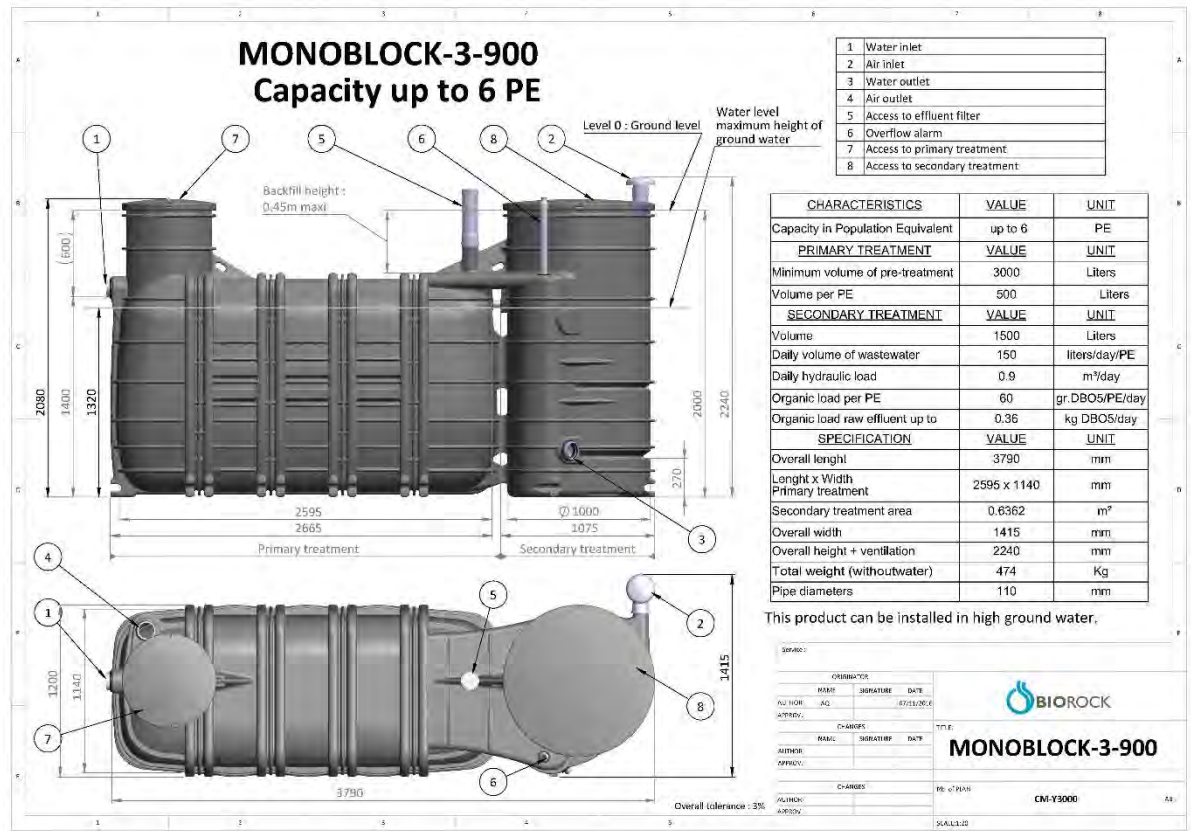
APPENDIX 2
2.5



APPENDIX 2
2.6



APPENDIX 2
2.7



APPENDIX 3

MAINTENANCE AND ACTIONS FORM

To be completed – TO BE KEPT BY THE USER

DATE OF FIRST COMMISSIONING: / /

Product N° of tank: (see page 9 in the user's guide)

Warning:

Please keep sludge emptying documents and proofs validated by the contractor.

DATE	WORK CARRIED OUT	CONTRACTOR'S NAME	COMMENTS

If you have not subscribed to any maintenance agreement, please ask a trained, professional contractor to provide maintenance and any work required on your sewage treatment plant.



APPENDIX 5

ACTIVATION OF THE WARRANTY

(see our conditions)

Important information: If this form isn't returned to BIOROCK within 120 days the installation of the system, there will be no warranty on the system

INSTALLATION FORM FOR A MONOBLOCK SYSTEM

This form must be completed and returned to:

*BIOROCK S.a.r.l.
4-5 Z.A.E. Le Triangle Vert
L-5691 ELLANGE (Luxembourg) or by e-mail : info@biorock.com
PLEASE KEEP ONE COPY FOR YOURSELVES.*

DISTRIBUTOR :
NAME :
ADDRESS :
.....

Type of installation:

- MONOBLOCK-2-700 MONOBLOCK-3-800
 MONOBLOCK-2-800 MONOBLOCK-3-900
 MONOBLOCK-2-900

Other:

Installation date :

Commissioning date:

Installer

NAME.....
INITIALS.....
Address

TEL:.....

E-mail.....

OWNER

Name.....
Initials.....
Address

.....

Tel.....

E-mail.....

New built home Existing home

Address of the installation if different than owner

Name.....
Initials.....
Address

.....

Tel.....

E-mail.....

New built home Existing home

Please indicate:

- + Nature of building: + Number of rooms: + Number of occupants:
- Soil conditions: Dry High ground water Difficult On a slope Other:
- Discharge: Infiltration Water course Re-use Other:

Type & Capacity of the Tank: Serial number:

- Ventilation: Winddriven ventilator Electric
- Discharge: Gravity Pumped

Declaration :

The MONOBLOCK system is installed and commissioned in accordance with:

- The current legislations stating the technical requirements applicable to domestic sewage treatment plants in the territory where the system has been installed
- Installation, use and maintenance requirements of the Primary Compartment and its Effluent Filter, indicated in the Instruction Manual as provided by your supplier
- Current installation, use and maintenance requirements of the MONOBLOCK System

Signed at : on

Signatures :

The Owner :

Name of the responsible Authority:
(if applicable)

The installer:

