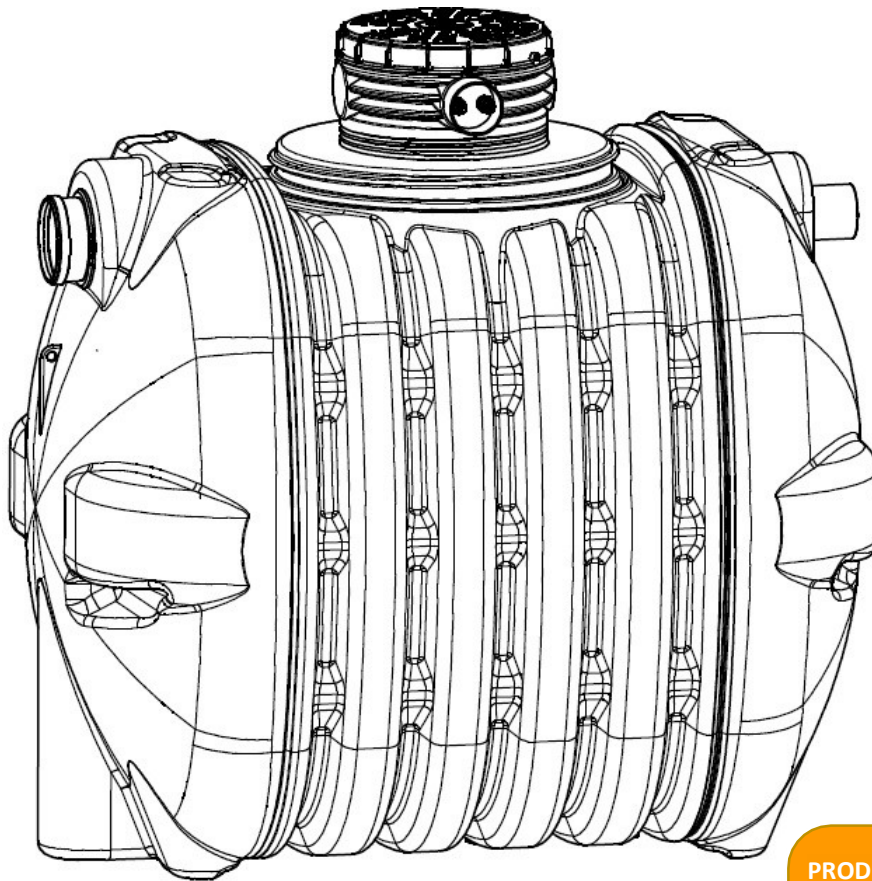


USER'S MANUAL



PRODUCT MARKED



COMPLIANT WITH
EN 12566-3

DOMESTIC BIOLOGICAL TREATMENT PLANT

OPTIMAX VIRO

Introduction

Dear Users,

Thank you for purchasing the *OPTIMAX* domestic sewage treatment plant. Our product has been designed for installation at single-family houses located in dispersed settlements, where it is not economically reasonable to run a collective sewage system.

The construction of a domestic sewage treatment plant is an excellent alternative to a sealed septic tank in terms of convenience. The individual sewage treatment plant is convenient, cheap to operate, environmentally friendly and safe. The expenditure incurred in purchasing and installing the plant, compared to operating a typical sealed septic tank, should pay for itself within a few years of use.

The device you own has been manufactured in Poland. It is characterised by high quality and proven design. The treatment plant set includes a biological reactor operating in SBR technology, a control unit, a blower and other accessories.

In this User's Manual you can find a lot of valuable information, as well as tips necessary for the correct installation and commissioning of the unit. We recommend that you read its contents carefully before proceeding with the installation.

Selected chapters of the User's Manual describe in detail the construction of the sewage treatment plant, the principles of its correct operation and maintenance. It is a collection of valuable information intended for the user, which will be useful in the daily operation of the *OPTIMAX* sewage treatment plant.

We hope that your purchase will meet your expectations and provide years of trouble-free use.

We encourage you to purchase our other products.

Your AQUABIN Team

O Description and design of the device

The *OPTIMAX VIRO* domestic treatment plant is a single-tank biological sewage treatment plant operating on the activated sludge principle using SBR (Sequential Batch Reactor) technology. It was built on the basis of monolithic tanks with capacities of 2000, 3000 and 4000 litres. The tanks were made using extrusion blow moulding technology with high-density HDPE polyethylene. The sewage treatment plant is equipped with a mechanical pump to pump out the sewage processed according to a specific algorithm.

The *OPTIMAX VIRO* sewage treatment plant has an inlet connection with a diameter of $\varnothing 160$ mm, an emergency outlet with a diameter of $\varnothing 110$ mm and an outlet for the mechanical pump with a diameter of $\varnothing 40$. On one of the superstructures there is a connection for the control unit with a diameter of $\varnothing 110$ mm. Inspection hatches located on the treatment plant provide excellent access to the inside of the plant in case of servicing or pumping out heavy sludge. The *OPTIMAX VIRO* treatment plant is equipped with a mechanical pump. The use of the pump in the treatment plant allows the treated sewage to be pumped out under pressure.

Each unit is equipped with an advanced controller implementing the manufacturer's proprietary algorithm. The controller, together with the blower, has been placed in an external box. The treatment plant has been equipped with a holiday mode and programmable timers to monitor maintenance activities.

The treatment plant is characterised by low energy consumption, quiet operation and reliability. Its simple design and easy operation, make it a user-friendly unit.

The *OPTIMAX VIRO* biological treatment plant is CE marked and complies with **EN 12566-3**.



Figure 1: The *OPTIMAX VIRO 5* biological treatment plant (tank 3000 l) – kit: OPTIMAX SBR reactor, cabinet with a controller and a blower.

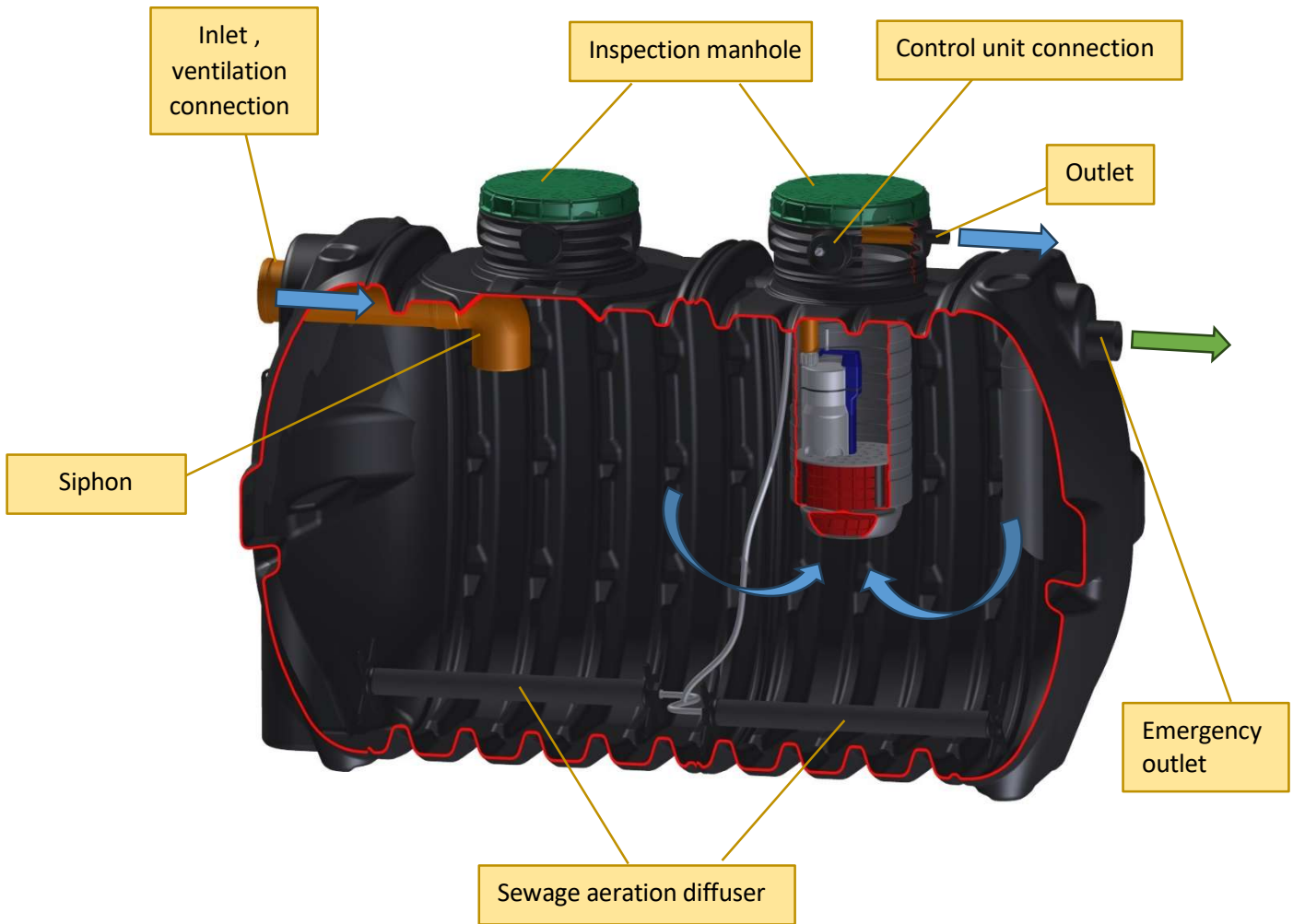


Figure 2: The *OPTIMAX 5 VIRO* biological treatment plant - cross-sectional view

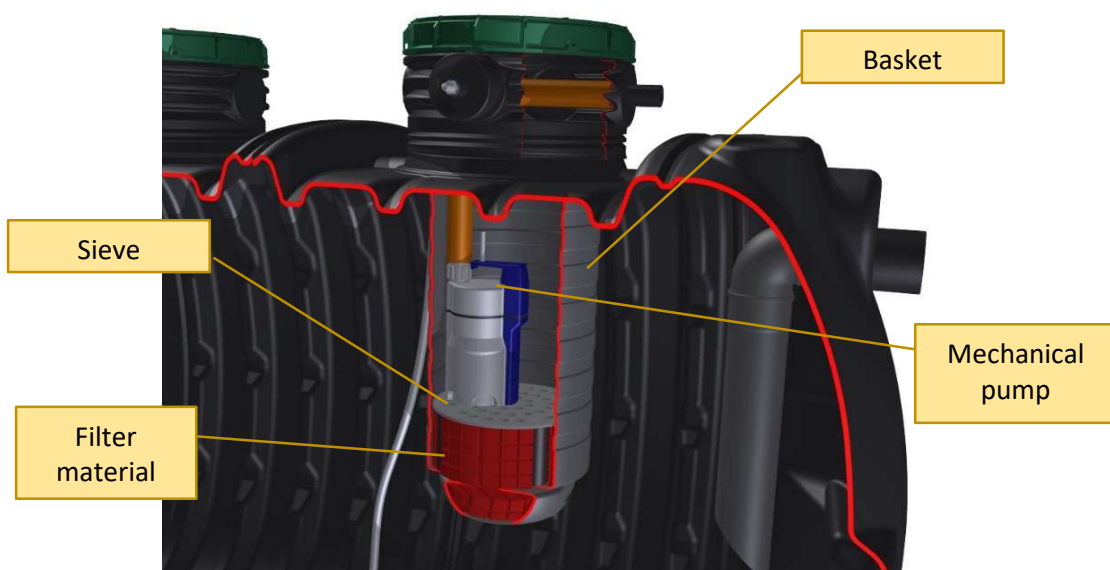


Figure 3: The *OPTIMAX 5 VIRO* biological treatment plant - cross-section through the basket unit.



Figure 4: The *OPTIMAX VIRO* single-tank treatment plant types: from left - *OPTIMAX 5 VIRO* (tank 3000 l), *OPTIMAX 6 VIRO* (tank 4000 l).

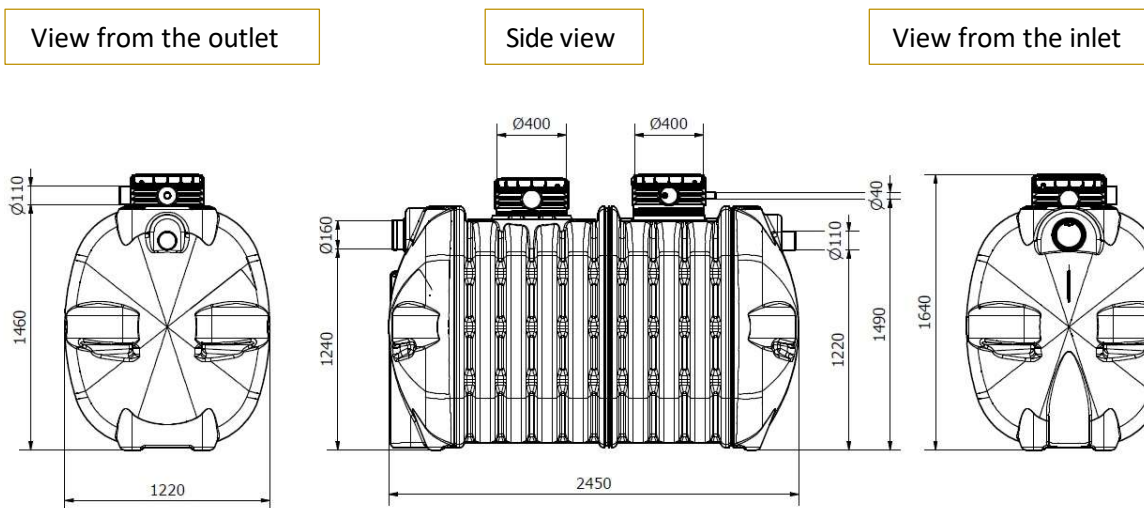


Figure 5: The *OPTIMAX 5 VIRO* biological treatment plant - characteristic dimensions

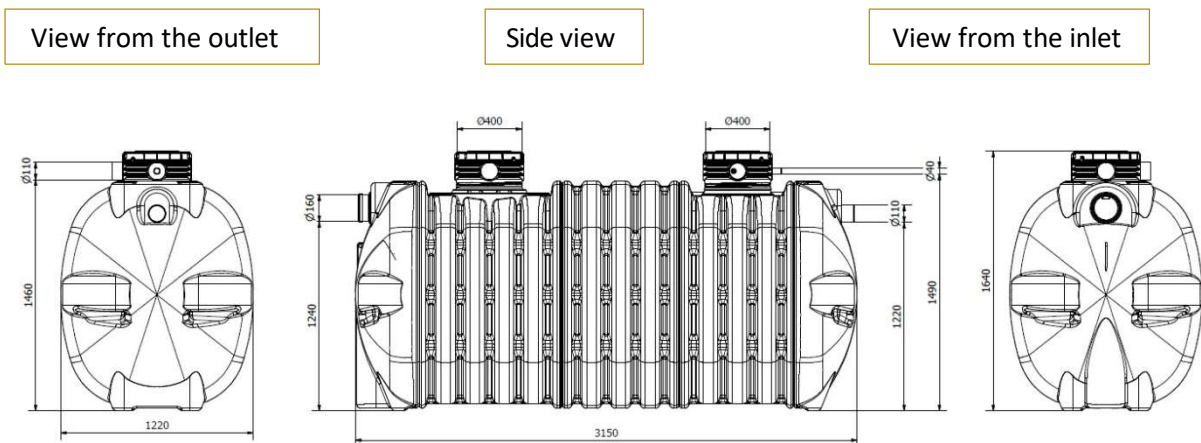


Figure 6: The *OPTIMAX 6* biological treatment plant - characteristic dimensions

Table 1: Technical data of the *OPTIMAX VIRO* biological treatment plants

Name of treatment plant	System volume [l]	Inlet diameter [mm]	Outlet diameter [mm]	Length [mm]	Width [mm]	Overall height [mm]	Height to inlet [mm]	Height to outlet [mm]	Manhole covers [mm]	Tank weight [kg]
<i>OPTIMAX 5 VIRO</i>	3000	160	40	2450	1220	1640	1240	1490	2x400	105
<i>OPTIMAX 6 VIRO</i>	4000	160	40	3150	1220	1640	1240	1490	2x400	130

Table 2: Operating parameters of the *OPTIMAX VIRO* biological treatment plant.

Name of treatment plant	Number of users [p.e.]	Nominal daily flow [m ³ /day]	Maximum daily flow [m ³ /day]	Energy consumption [kWh/day] Normal operating mode	Energy consumption [kWh/year] Normal operating mode	Energy consumption [kWh/day] Holiday mode
<i>OPTIMAX 5 VIRO</i>	3-5	0,75	0,75	0,55	201	0,24
<i>OPTIMAX 6 VIRO</i>	5-6	0,90	0,90	0,64	231	0,24

The *OPTIMAX VIRO* biological treatment plant is manufactured in accordance with **EN 12566-3**.

Table 3: Blower types in *OPTIMAX VIRO* biological treatment plants.

Treatment plant name	<i>OPTIMAX VIRO 5</i>	<i>OPTIMAX VIRO 6</i>
Blower type	80l/min	80l/min

The *OPTIMAX VIRO* biological treatment plants are, as a standard, equipped with a dedicated 110mm diameter emergency outlet connection. An additional sewage infiltration system should be connected to the emergency outlet, enabling use of the unit in the event of a breakdown or power failure.

O Operating principle

The *OPTIMAX* domestic sewage treatment plant with activated sludge works according to a manufacturer-determined algorithm, implementing the treatment process, based on the principle of activated sludge in SBR (Sequential Batch Reactor) technology. A complete cycle of operation consists of three consecutive phases described below and lasts 8 hours. The cycles are run according to strictly defined times.

The treatment plant also has the option of operating in a holiday mode lasting no less than 14 days. In the holiday mode, the treatment plant's task is to maintain the bacterial flora by only aerating the sewage. After ending the holiday mode, the treatment plant automatically returns to normal operation. In holiday mode, the treatment plant consumes approximately 75% less electricity than in normal mode.

From the moment of commissioning, the *OPTIMAX* biological sewage treatment plant needs approximately three to four weeks of time to build up the necessary bacterial flora and achieve optimum performance.

The sewage treatment process takes place in a single-chamber tank, the SBR reactor, which is also designed to:

- Storage of domestic wastewater,
- Create a buffer for incoming wastewater,
- Reduce fluctuations in incoming wastewater loads,
- Retain heavy sediment and suspended solids.

There is also a sampling area in the treatment plant tank. Samples are taken from a basket located in the tank. This activity is performed after the sedimentation phase, which enables a simple and convenient way of obtaining the wastewater for the relevant treatment quality test.

FIRST PHASE - Sewage aeration

During this phase, the sewage is aerated and agitated by the application of air that escapes through a diffuser resting on the bottom of the tank. During the mixing process, any solid impurities in the wastewater are also broken down. Aeration follows a well-defined operating algorithm.



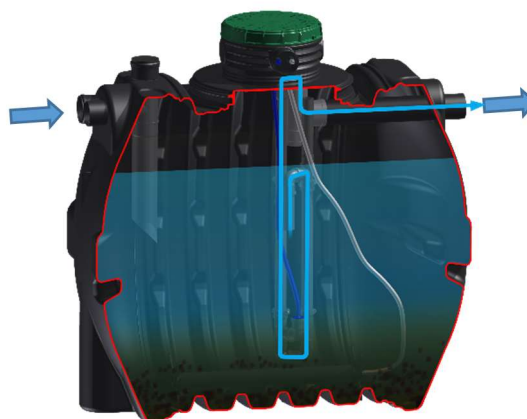
SECOND PHASE - Sedimentation

During this phase, the treatment plant remains at rest, the surplus sludge sinks to the bottom of the tank and flotation fractions accumulate on the surface. A layer of treated sewage forms at the top of the tank. The aeration process is discontinued.



THIRD PHASE - Decanting - Drainage of treated sewage

During this phase, the treated sewage is pumped out of the treatment plant via a specially designed pump. The design of the pump prevents the flotation fraction from being pumped out, the surplus sludge from being lifted, and allows the correct level of sewage in the reactor to be maintained, which is necessary for the growth of the bacterial flora and the implementation of the sewage treatment process. Once the wastewater has been pumped out, the treatment plant is ready to start the next treatment cycle.



Installation of treatment plants

When selecting a site for the sewage treatment plant, it is important to ensure that none of the pollutants will seep into the groundwater and other facilities located in the vicinity (for example, wells, rivers, ponds). Planning the installation of a sewage treatment plant is not limited to determining whether it will fit on a specific plot of land. Its location is determined not only by the size of its individual components and the requirements for their installation in relation to each other, but above all by the possibility of maintaining appropriate distances from other objects that may be affected. In order to correctly locate the sewage treatment plant, it is necessary to follow the principles of correct installation outlined below.

Location of treatment plant - manufacturer's recommendations:

- Distance from buildings - minimum 5 metres, maximum 10 metres,
- Distance from plot boundaries - minimum 2 metres,
- Distance from trees and shrubs - minimum 3 metres,
- Distance from water intakes - minimum 30 metres.

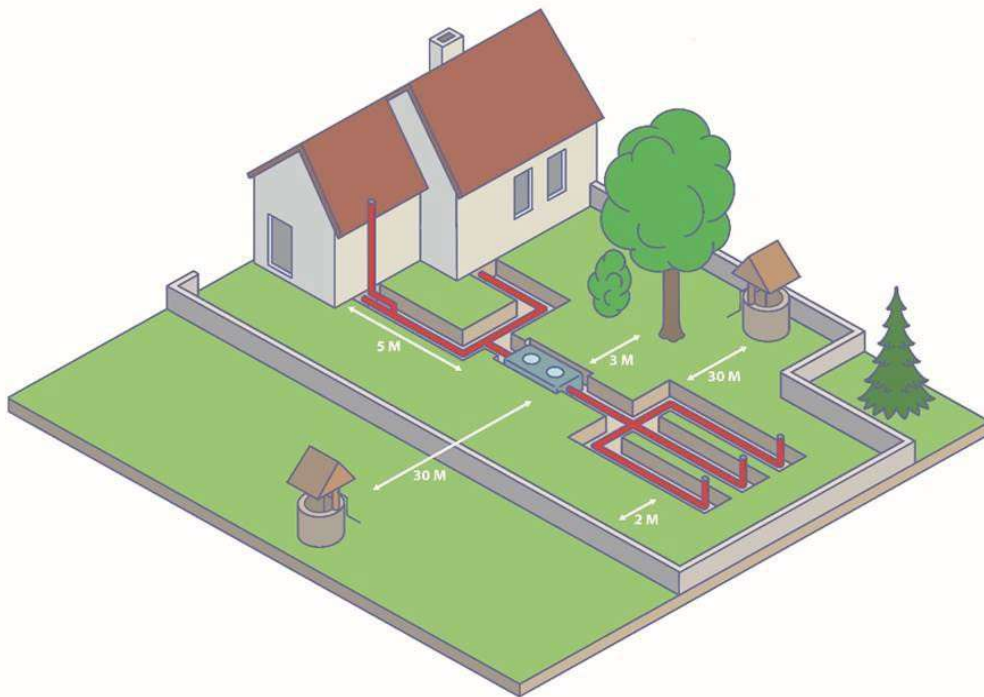


Figure 7: Installation of the *OPTIMAX VIRO* sewage treatment system - location of the plant

The infiltration system (drainage pipes or infiltration tunnels) should be located below the surface of the ground, at a depth of no more than 40-100 cm. The deeper the sewage infiltration system is buried in the ground, the less atmospheric oxygen required for sewage treatment will reach it. The SBR reactor should not be buried too deep. The optimum depth is considered to be around 20-60 cm below ground level.

The maximum foundation depth of the tank is approximately 60 cm. Install the SBR reactor using lean concrete (1m³ sand mixed dry with 200kg cement). The pipe carrying wastewater from the building to the settling tank should maintain a 2-3% slope.

The control unit located in the external box should be installed in a shaded area. There should be safe and easy access to all components located in the control box. The LED indicating the operating states located on the door of the box should be visible to users. The maximum distance of the control unit from the *OPTIMAX* treatment plant tank is 10 metres. If this distance is increased, another, larger blower of the blower range should be used to compensate for the pressure drop. For instructions on how to assemble as well as connect the control unit to the SBR reactor, see: control unit.

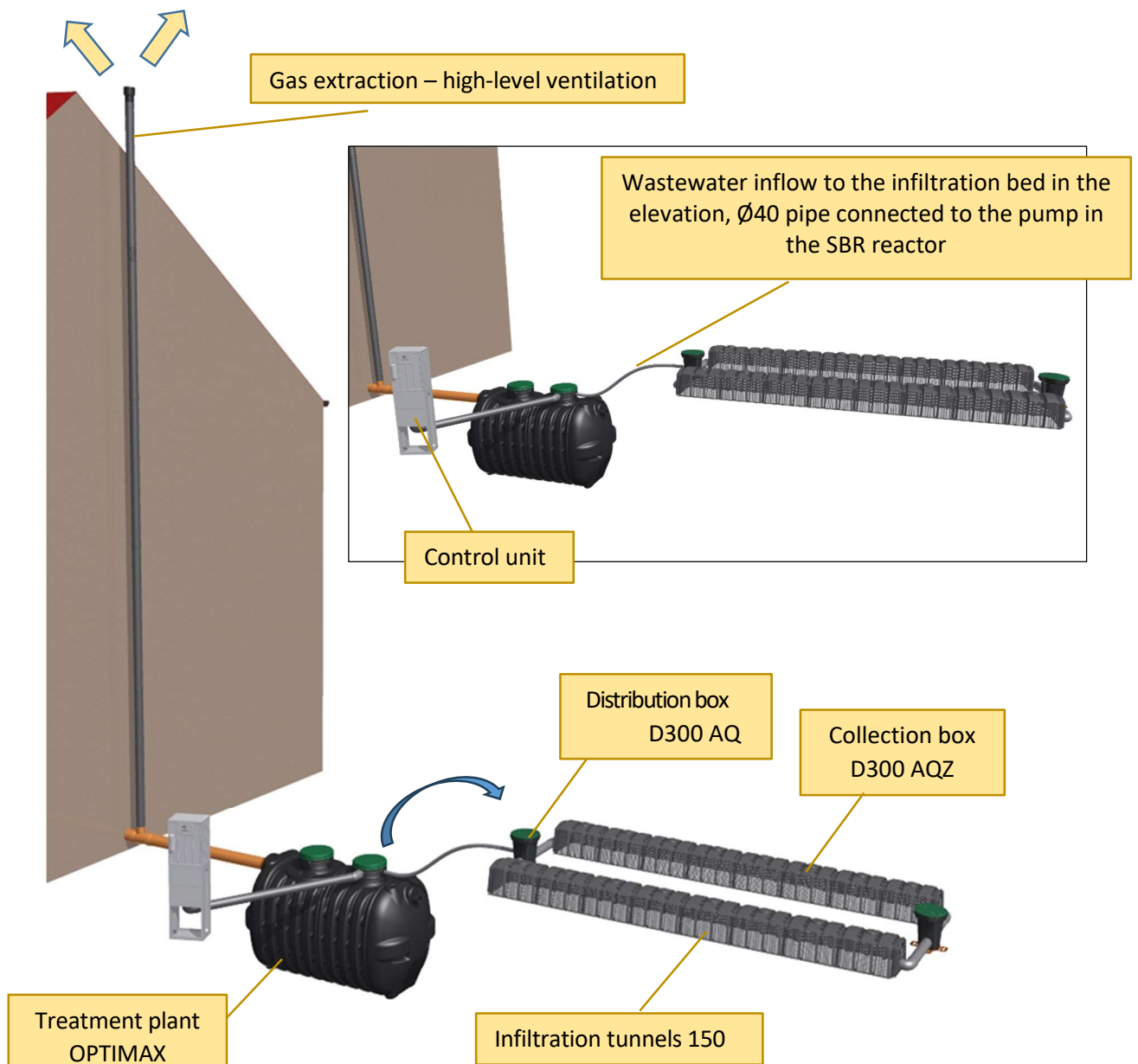


Figure 8: Assembly of the *OPTIMAX* sewage treatment plant with the infiltration system made up of infiltration tunnels 150, distribution box D300 AQR and collection box D300 AQZ.

Step-by-step installation of the treatment plant:

- Collect the humus for use on completion of the works,
- Carry out the excavation. The dimensions of the excavation (length, width) should be larger than the dimensions of the tank by approximately 50 cm (25 cm on each side of the tank),
- Spread a minimum 10 cm layer of lean concrete sub-base (1 m³ sand mixed dry with 200 kg cement) on the bottom of the trench,
- Place the SBR reactor on the ballast bed and level it carefully, maintaining the direction of wastewater flow. Around the perimeter of the tank, make an approx. 25 cm thick lean concrete backfill to the level of the upper edge of the service hatches. The backfilling should be

compacted by pouring water over it,

- **Perform backfilling of the excavation gradually with simultaneous filling of the tank with water in order to balance the pressure forces. The water level in the tank should be about 10 cm higher than the backfilling level,**
- The unit should be installed so that service hatch covers are visible and accessible for servicing. In the case of deeper foundation of the unit, additional superstructures should be used for the tank and service hatch,
- The plant should be connected to a high level ventilation system in order to properly extract the gases from the treatment plant.

NOTE: Do not drain the unit in the first month after installation in the ground.

NOTE: Instructions for the installation of a pipe-built infiltration drain are described in the section - complementary accessories.

NOTE: Instructions for installing a drainage system built on the basis of drainage tunnels are described in the next section - Supplementary accessories.

NOTE: The sewage treatment plant must be equipped with a system for the discharge of gases generated during the fermentation of the wastewater. The system consists of high-level ventilation as well as low-level ventilation.

The OPTIMAX plants have an opening at the top of the inlet siphon, through which the gases generated during the fermentation of the wastewater are discharged into the sewage riser. The opening is located above the sewage level in the tank. If there is no sewage riser above the roof ridge, a tee should be installed in front of the settling tank to connect a dedicated high level ventilation riser.

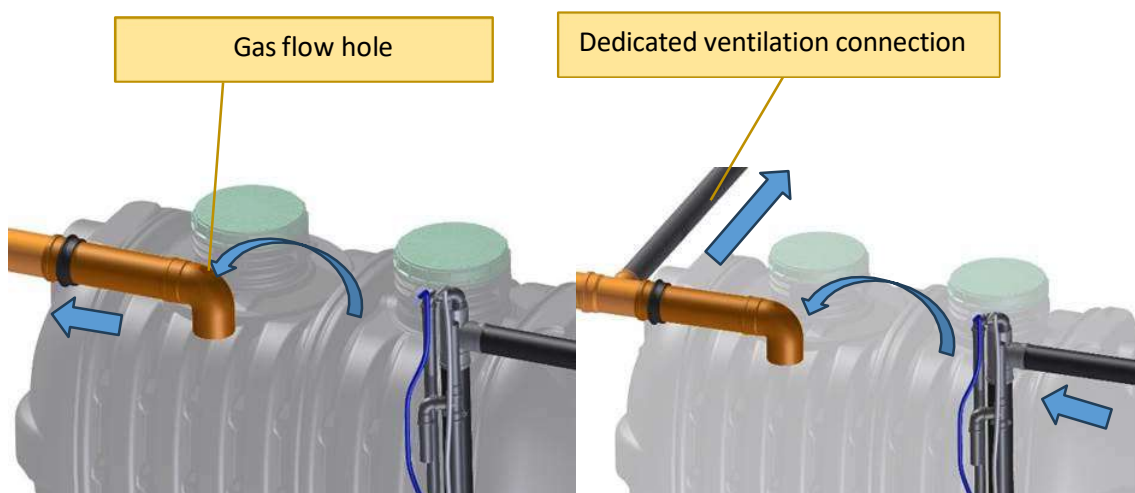


Figure 9: Gas discharge in OPTIMAX treatment plants: left, using a sewer riser, right, with dedicated high-pressure ventilation connectio

Emergency overflow

All OPTIMAX VIRO treatment plants are equipped with a dedicated emergency outlet connection with a diameter of $\varnothing 110$ mm. An additional sewage infiltration system should be connected to the emergency outlet to allow the use of the treatment plant in case of power failure or the failure of the mechanical pump.

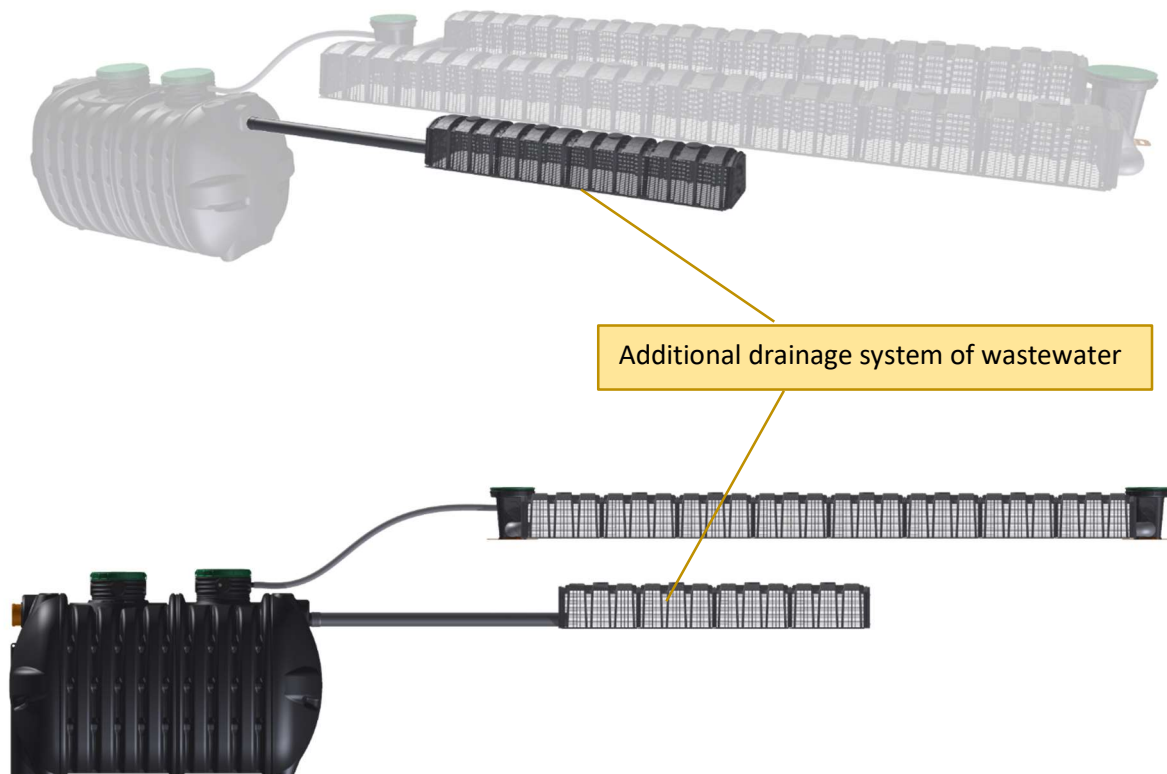
The manufacturer of the unit recommends the use of AQUABIN 150 or 300 litre infiltration tunnels for the construction of an additional infiltration system. It is recommended to build a system with 150 litres of tunnel capacity per user using the treatment plant.

Example calculation:

The OPTIMAX 5 VIRO wastewater treatment plant - 4 users - 600 litre system - which gives:

- 4 tunnels 150 litres
- 2 tunnels 300 litres

NOTE: The additional sewage infiltration system should not be used when the treatment plant is in normal operation and functioning properly.



Rysunek 10: Additional drainage system of wastewater at the OPTIMAX VIRO treatment plant.

Pump unit

The OPTIMAX VIRO treatment plant is equipped with a TOP 2 VORTEX pump by Pedrollo. The use of the pump at the outlet of the treatment plant allows for pressure pumping of the treated sewage to remote infiltration systems and systems located in elevations (embankments, mounds).

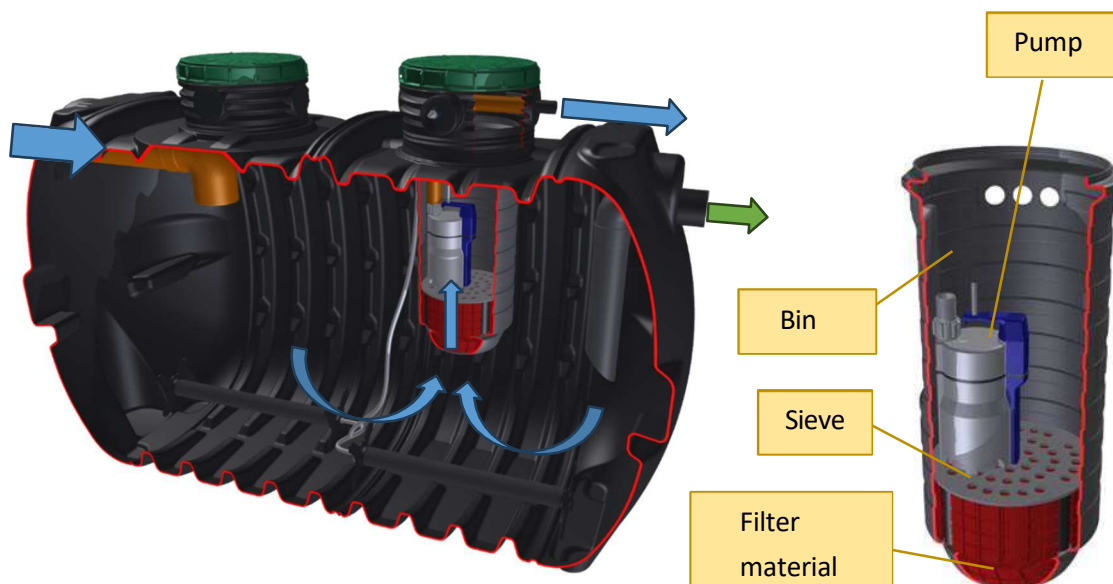


Figure 11: Mechanical pump assembly

The pump is fixed to the wall of the basket. The space between the strainer-platform and the bottom of the basket is filled with filter material made of polyethylene fittings. The filter constructed in this way is intended to protect the pump from an influx of impurities that could affect its service life or directly damage it. The pump is connected to the outlet by a flexible hose. The entire pump assembly (basket, filter, pump, platform) is easily removable from the tank, making it easy to clean the filter, as well as to service and inspect the pump.

The TOP 2 VORTEX pump is suitable for use with dirty water that is not chemically aggressive to the pump materials. Due to the design solutions adopted, such as motor cooling and a double-sealed shaft, these pumps are easy to operate and reliable. They are suitable for applications such as disposal of dirty water, emptying of tanks, discharge of domestic wastewater and emptying of collection traps containing suspended solids with a maximum diameter of 25 mm.

Pump data

- Capacity: 20 - 180 l/min
- Head: 6.5 - 1.5 metres
- Power: 0.37 kW
- Voltage: Single-phase (230 V)



O Control unit

The *OPTIMAX* sewage treatment plant controller is responsible for the correct functioning of the plant. It monitors the operation of the blower, valves and informs about upcoming services. In the event of a malfunction, the indicator light located on the door of the control cabinet will turn red. The corresponding information about the type of fault will be displayed on the control unit.

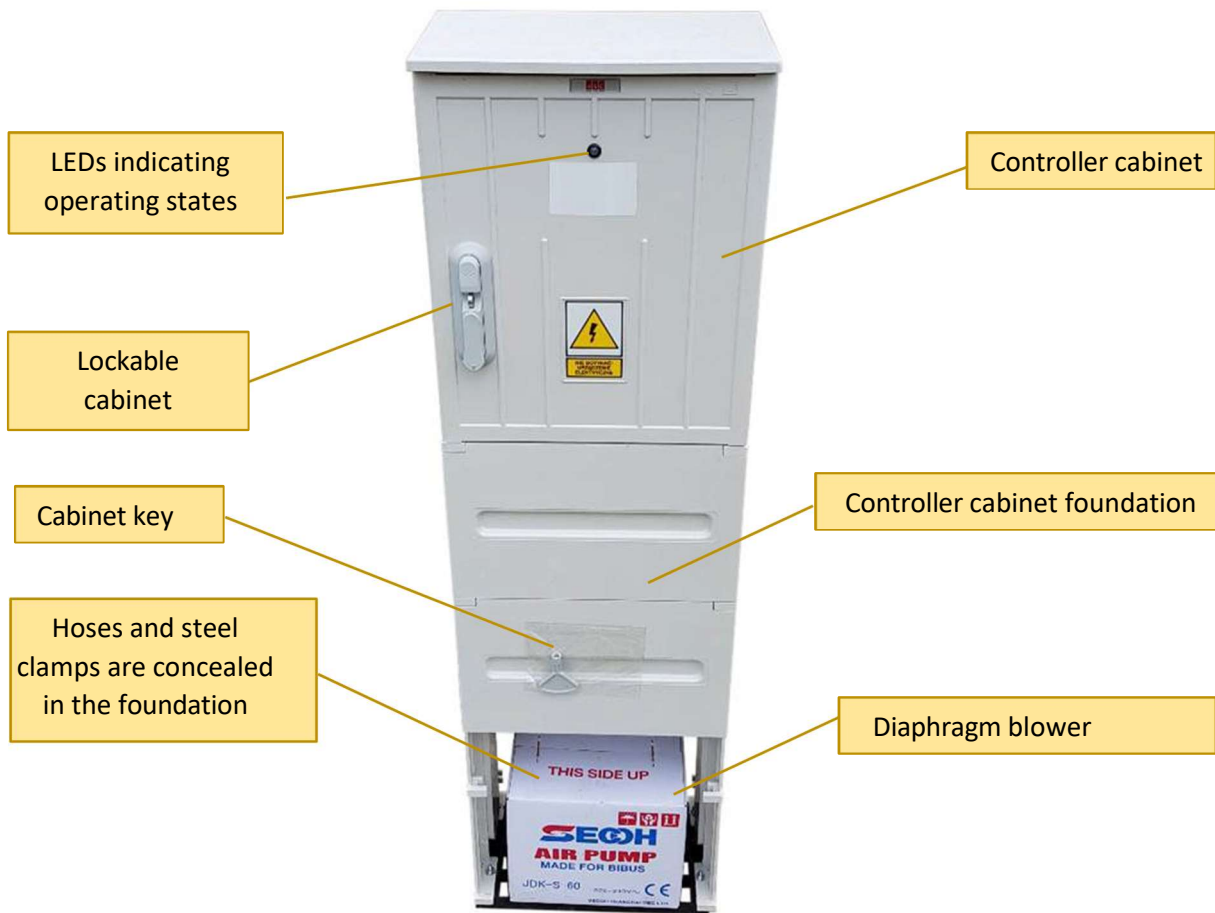


Figure 12: Control unit of the *OPTIMAX* treatment plant

The controller has two air connections, one is the air supply input from the blower and the other is the air output to the diffusers. A wastewater aeration blower should be connected to the input. The 230V plug from the blower should be connected to the socket coming out of the controller (designation: DMUCHAWA/BLOWER). An additional 230V plug is used to connect the mechanical pump located in the treatment plant (designation POMPA/PUMP).

The controller must also be connected to a 230 V mains supply using a residual current protection device. The power supply must be connected to the socket located in the controller cabinet. After connecting the power supply, plug the controller plug into the socket. The controller will be started up at this point.

The controller has one, colour-coded white connection for $\varnothing 12$ mm hose. The same connection is located on the superstructure attached to the tank and is marked with the same colour. These

connection is used to connect the tank to the control unit.

Included with the treatment plant is hose, 5 metres long, marked with coloured white marker and INOX steel clamps. These is used to connect the control unit to the SBR reactor.

Lay the hose and the cable power the pump between the control unit and the tank in a $\varnothing 110$ mm casing pipe so that no kinks or creases occur. After connecting the hose, check for leaks as well as correct installation.

The maximum distance of the control unit from the **OPTIMAX VIRO** treatment plant tank is **10 metres**. If this distance is increased, the next larger blower in the range should be used to compensate for the pressure drop. A 80 l/min blower should be changed to an 100 l/min blower. By changing to a larger blower, the control unit can be positioned up to 30 metres from the SBR tank. The power cable for the mechanical pump has a standard length of 5 metres. For control unit installations beyond this distance, the pump cable must be extended, observing all safety regulations.

Once the hose have been connected, **they** should be **checked for leaks** (soapy water can be used for this), as well as the **correct connection** to the individual assemblies in the SBR reactor.

- Connection number one - white - responsible for supplying air to the diffuser located at the bottom of the tank,
- Cable - power supply to the pump. The pump starts when the power supply is connected as well as when the pump float detects a high sewage level.

Use the **manual mode** function to check the correct connection of the hose in the controller.



Figure 13: MicroSBR controller of the *OPTIMAX VIRO* treatment plant

After checking the correct connection of the hose, it is also important to **set the correct date and time on the controller**. The starting times of the plant cycles are strictly defined. Incorrect timing on the sewage treatment plant clock will cause individual phases of sewage treatment to start at different times than those set by the manufacturer. This may result in a decrease in the efficiency of sewage treatment by the treatment plants. Incorrect settings of the timer, can also affect the comfort of the plant.

Table 4: Technical data of the *OPTIMAX* treatment plant controller

Controller specifications	
Supply voltage	230 V AC 50Hz
Standby power consumption	1.5 W
Maximum blower power	150 VA
IP rating	IP54
Operating temperature	- 25° C to + 50 C°
Alarm output	3-colour LED
Timer	RTC with battery back-up
Protection of the controller and output circuits	20mm fuse rated at 3A
Overvoltage protection	275 V AC

Operation of the treatment plant controller

The operation of the controller is very intuitive. This is done using a keypad with three buttons: **SET** select, **ESC** return, **↑** (scroll). The pressing of each button is indicated by a beep, all messages are displayed on the controller screen.



Figure 14: Controller of the OPTIMAX VIRO treatment plant

- Button **SET** is used to confirm a selection, to set a value.
- Button **ESC** is used to move back a level in the controller menu, exit to the initial screen.
- Button **↑** is used to navigate through the menu of the controller, to set the required value.



Figure 15: Keypad and LEDs indicating the operating states of individual controller outputs

If the screen remains in the menu without user intervention, after 10 minutes it automatically exits the menu returning to the main window without saving the changes made. The LCD backlight runs for 2 minutes after each click. The controller performs an initialisation of the consumers at least once a day, checks the status and connection of the blower and valves and performs an internal simulation of the correct operation. Each entry of a value or parameter in the service menu is signalled by flashing the parameter - value to be changed.

The audible alarm signalling, when activated, signals malfunctions between 8 a.m. and 8 p.m. By pressing any button, the external signalling will be silenced for the next 24 hours if there is still a problem. The controller has a summer/winter time change function. The controller of the treatment plant has an energy-saving valve island, i.e. energy is only consumed at the time of opening/closing the respective section. The holiday and start-up modes switch off automatically after a suitable period of time. The menu layout may vary depending on the respective controller version.

The operation of each valve is indicated by a diode on the controller. The diode also indicates the blower operation status. When the respective valve or blower is activated, the diode on the controller starts glowing green.

To enter the controller menu, press the SET button. You will then enter the user menu of the MicroSBR controller. Navigating through the menu is intuitive and should not cause any problems for the user.

Menu layout of the treatment plant controller

Table 5: Layout of the menu of the treatment plant controller with description of the messages

Communication	Communication	Description of operation
Manual mode		Allows you to check the operation of blower and valves
	Valve 1	Opens the respective valve and blower
	Pump	Opens the mechanical pump
Date Time		Allows you to set the time and date
	Date: dd.mm.yy	Date setting
	Time: mm:hh	Time setting
Error history		Allows you to check the error history
Working time		Allows you to check the operating time of system components
Another maintenance T365D B07000H		Maintenance timers: treatment plant 365 days, blower 7000 operating hours
Audible alarm		Enable or disable the controller's acoustic signal
Overfill alarm		Activate or deactivate the overfill alarm signal
Information on product		Information about the driver software version
Service menu		Entering the service menu after entering a special code

Modes of operation

The *OPTIMAX VIRO* sewage treatment plant implements two basic modes of operation and has a manual mode:

- Normal operating mode
- Holiday mode

Holiday mode can be activated by the user by **holding down the button for more than 3 seconds** **ESC** and then confirming the selected holiday time with the **SET** button. Exiting the holiday mode can be done automatically at the end of its time or manually by pressing any button on the keypad.

- Manual mode

Manual mode is used to manually protect any unit located in the treatment plant tank. In the *OPTIMAX VIRO* treatment plant, the following can be activated from the manual mode: the diffuser located at the bottom of the tank and the pump responsible for pumping out the treated sewage, which is located

at the outlet of the treatment plant.

NOTE: The controller is equipped with a sensor to check the level of wastewater filling in the tank. If the level of wastewater is higher than the preset safety level, the controller will activate an alarm indicating that the tank may be overfilled - an overflow alarm.

Safety instructions

Both the power supply and output circuit of the controller operate at 230 V AC.

WARNING: Prior to any installation, repair or maintenance work and when carrying out any connection work, it is absolutely necessary to disconnect the mains supply and make sure that terminals and electric wires are not live! All control unit connection work and control unit maintenance may only be carried out by qualified personnel with the necessary knowledge and the legally required electrical authorisation.

WARNING: The controller should be connected to the mains in accordance with the current regulations and standards relating to electrical installations, particularly those concerning protection against electric shock. The controller must not be misused.

WARNING: The controller is not an intrinsically safe device, i.e. during failure it may be the source of a spark or high temperature, which in the environment of flammable gases or dust may cause fire or explosion. Therefore the controller must be isolated from flammable gases and dust, e.g.: by appropriate enclosure.

WARNING: Use only in treatment plants constructed in accordance with current regulations.

WARNING: Under no circumstances should the design of the control unit be modified. Children's access to the control unit must be prevented.

WARNING: Unauthorised modification of the control unit will void the unit warranty.

WARNING: The control unit must be secured against unwanted opening - for this purpose, a dedicated key for the lock in the control box, dealing with the treatment plant.

Connection of the control unit

The connection must be carried out by an authorised person. The appliance is to be connected in accordance with the installation instructions and in compliance with health and safety regulations. The mains supply to the switchgear is to be provided with residual current protection to prevent electric shock and with overcurrent and short-circuit protection.

The end of the electrical installation is to be terminated with a hermetic socket 230 V AC 50Hz with a nominal current of not less than 6A. The power supply to the controller is to be supplied via a three-core cable (L, N, PE) with a cross-section of not less than 1.5 mm².

The controller has one, colour-coded white connection for $\varnothing 12$ mm hose. The same connection are located on the superstructure attached to the tank and are marked with the same colour. These connection is used to connect the tank to the control unit. Included with the treatment plant are one hose, 5 metres long and INOX steel clamps. These are used to connect the control unit to the SBR reactor. There is also a mechanical pump in the SBR reactor, which must be connected to the controller, located in the cabinet.



Insert the hose and cable from the pump into the $\varnothing 110$ mm pipe socket



Connect the hose, secure it with an INOX clamp to prevent it from slipping and unsealing.



Attach the protective tube

NOTE: After connecting the hoses, check that the connections are correct and tight.

NOTE: The controller is equipped with a sensor to check the level of wastewater filling in the tank. If the level of wastewater is higher than the preset safety level, the controller will activate an alarm indicating that the tank may be overfilled - an overflow alarm.



Dig a hole for the foundation of the control cabinet. Route the cable from the pump as well as the air hose in the protective conduit. Feed in the 230 V power cable.



Connect the air supply hose. Connect the supply hose to the socket located on the cabinet. Connect the pumps to the socket coming out of the controller.



Place the blower on the shelf. Connect the blower to the controller. Connect the controller to the power socket.



Install foundation caps. Backfill the foundation up to the top edge, lower foundation slab.

NOTE: After connecting the hoses, check that the connections are correct and tight.

NOTE: Lay the hoses without kinks or creases that may adversely affect air flow.

Disposal of the control unit

In accordance with the legal regulations of DIRECTIVE 2002/96/EG on the disposal of waste electronic equipment and the legal provisions in force in the respective EU Member State, the removal/disposal of this product and its electrical/electronic accessories with household waste is strictly prohibited. The owner of the equipment is responsible for the proper disposal of used equipment, i.e. it must be returned to the appropriate free collection points. Dispose of the packaging and the product at the end of its useful life at a suitable recycling company. Do not dispose of the product with normal waste. Do not burn the product.

Fuse replacement

NOTE: Before replacing the fuse, the controller must be disconnected from the 230 V mains supply.

The controller is fitted with a 20 mm 3A glass fuse as standard.

To replace the fuse, first disconnect the power source from the controller. Then open the control cabinet so that the controller can be accessed as easily as possible. The fuse is located on the right side of the control unit. To replace it, unscrew the fuse link holder. Replace the faulty fuse with a suitable one and unscrew the fuse holder.

Table 6: Messages on the display

Communication	Cause	Solution
FUSE FAILURE	230V AC power surge, short circuit in the control circuit or output of blower or valves	Fuse replacement (20 mm fuse link 3A)
BLOWER FAILURE	Blower disconnected or electrically damaged	Check blower for correct operation, reset error with the "R" button
POWER FAILURE	No power supply for the controller 230V AC 50Hz	Check the 230V AC supply line to the controller
CLEANING MAINTENANCE	The maintenance counter of the treatment plant has counted down the set value	The treatment plant should be serviced in accordance with with the manufacturer's recommendations
BLOWER MAINTENANCE	The blower maintenance counter has counted down the set value	The blower must be serviced in accordance with with the manufacturer's recommendations treatment plants
OVERFILL ALARM	Pump failure, damaged pump delivery hose	Check pump, replace pump, repair delivery hose

RECEIVER FAILURE	A device other than a blower approved by the manufacturer has been connected to the blower socket	The warranty on the controller is lost
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Table 7: Description of the colours of the LED indicating the operating states of the treatment plant

Colour and type signalling	History of events	Cause	Solution
● lights up green	No events		
● flashing red	Fuse failure	230V AC power surge supply, short circuit in the control circuit	Fuse replacement F1 (20 mm fuse link 3A)
● flashing red	Blower failure	Blower disconnected or electrically damaged	Check whether the blower is working properly
● flashing red	Overfill alarm	Disconnected or defective mechanical pump from the controller	Check pumps for correct operation
● flashing blue	Treatment plant service	The plant maintenance counter has counted down the set value	The sewage treatment plant should be serviced in accordance with the recommendations of the manufacturer and the counter should be reset
● flashing blue	Blower maintenance	The blower maintenance counter has counted down the set value	The blower should be serviced in accordance with the recommendations of the sewage treatment plant manufacturer and the counter should be reset

○ Health and safety rules

Work associated with the installation of a domestic sewage treatment plant is classed as particularly hazardous work due to the risk of accidents. These are mainly activities associated with:

- Work with electrical equipment,
- Work carried out below ground level,
- Contact with hazardous biological agents that may be present in wastewater,
- Work to connect the unit to the 230V mains supply.

When carrying out this type of work, it is important to bear in mind the safety requirements of yourself and those present during the work. All work, due to its special nature, should be carried out by teams of at least two people. All tools used, as well as construction equipment, should be in good working order and workers should have the necessary qualifications for the work to be carried out.

O Operation and maintenance

The OPTIMAX biological treatment plant is an almost maintenance-free device. During the operation of the device, the user is only obliged to take care of maintaining the correct bacterial flora in the biological reactor, through regular use of dedicated biological activators and avoiding the use of hazardous substances which may affect the correct functioning of the generated flora. It is also important to remove heavy sludge from the tank on a regular basis, at least once every 2 years and the **manufacturer's recommendation is once every 1 year.**

Essential for the operation of the treatment plant, it is important to carry out inspections of the membrane blower aerating the wastewater. The correct operation of the control unit is essential for the optimal operation of the treatment plant.

Malfunctions of the device are indicated by factors such as:

- Outflow of undecomposed substances outside the reactor,
- Unpleasant odour,
- Tank overfilling.

Should any of the above-mentioned factors occur, it is recommended to completely drain the biological reactor, refill it with clean water and inoculate it with new bacterial flora. In this case, the sewage treatment plant will once again reach optimal operating parameters after a period of approximately three to four weeks.

A malfunction of the control unit, on the other hand, will be indicated by the controller monitoring its operation. **See section: control unit.**

NOTE: The frequency of pumping out heavy sludge is individual to each unit and depends on the intensity of its use by users.

The correct functioning of the *OPTIMAX* sewage treatment plant depends on its operation being controlled by the user, as well as on the performance of maintenance activities. Conducting all work according to a specific schedule guarantees its correct operation.

Daily check

- Check the correct operation of the control unit
- Check the filling level of the treatment plant: the tank is not overfilled

Monthly check

- Visually check the quality of the wastewater,
- Dosing of a biological activator to maintain adequate bacterial flora. The manufacturer recommends the biopreparation **AQUABIN start-up and daily operation** for OPTIMAX treatment plants. See supplementary accessories.

Quarterly check

- Clean the air filter on the blower. The filter is located under the top cover of the blower. Clean the filter or replace it if necessary in accordance with the blower manufacturer's instructions. The instructions are enclosed with the unit.

Annual check

- Pumping out heavy sludge (the procedure for pumping out sludge is described below),
- Checking the air ducts for leaks,
- Checking the correct operation of the control unit.

NOTE: The sewage aeration blower included with the unit has a unique manufacturer-specified service procedure. Please familiarise yourself with its rules. Failure to follow it may be grounds for rejection of a claim in the event of a blower fault.

Sediment sludge pumping should be carried out when the level in the tank reaches approximately 50% of the tank capacity. To check the filling level of the tank you should:

- Take a sample of the sewage during the aeration phase, when there is intensive aeration and mixing of the sewage. The sample must not be less than 1000 ml,
- Place a sample of the sewage in a beaker,
- Subject the sewage to sedimentation for 60 minutes,
- The sample must not be less than 1,000 ml,
- Check the amount of sludge accumulation in the mensurator. If it exceeds 50%, remove the sludge from the treatment plant.

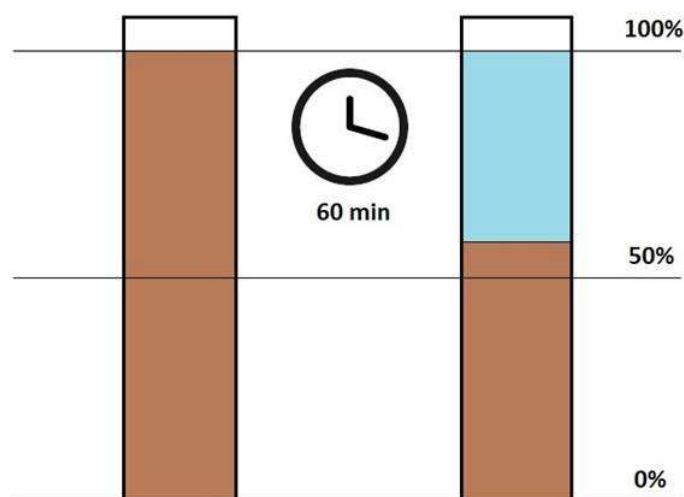


Figure 19: Sediment sludge quantity control at the treatment plant

Procedure to be followed in the event of sediment sludge pumping

The first step is to remove floated substances, i.e. grease and other light substances. Secondly, heavy sludge at the bottom of the tank should be removed. While the work is being carried out, the tank should be topped up successively with clean water. A small amount of sludge should also be left at the bottom of the tank in order to preserve the bacterial flora.

It is recommended, for safety reasons, that the slurry truck be at least 3 metres away from the sewage treatment plant system during sludge disposal.

Pumping out the sludge step by step:

- Remove the service hatch cover,

WARNING: Carry out the operation slowly to allow for the slow drainage of the gases from the fermentation, which are a real danger to those carrying out the maintenance operations, causing the possibility of poisoning, as well as posing an explosion hazard.

- Feed running water into the settling tank,
- Insert the end of the suction line into the tank,
- Vacuum off light impurities,
- Vacuum off heavy sediment,

NOTE: There are diffusers at the bottom of the treatment plant. It is necessary to carry out the service work in such a way as not to damage them. It is recommended that they be removed from the treatment plant before the sludge pump-out procedure. Before placing them back in the tank, it is recommended to clean them with pressurised water.

NOTE: A small, 10-15% layer of sediment should be left at the bottom of the tank to preserve the bacterial flora.

- Remove the suction line from the tank,
- Fill the tank with clean water up to the outlet level,

NOTE: Leaving the tank empty may cause it to crease.

- Add a bioactivator to initiate growth of the bacterial flora,
- Place the covers on the service hatches and secure with screws.

It is also recommended that the diffuser at the bottom of the tank, as well as the pump responsible for pumping out the treated sewage, should be flushed with pressurised water while the sewage is being pumped out. If the diffuser is visibly worn, it should be replaced with a new one.

WARNING: The covers of the treatment plant must be secured against opening by unauthorised persons, especially children (risk of poisoning or drowning). It is forbidden to stand or walk on the lids of the treatment plant, as well as to enter its interior.

NOTE: If any damage is found, the Manufacturer's Service must be notified immediately (applies to the warranty period).

NOTE: The area where the sewage treatment plant (settling tank including infiltration drain) is located is for pedestrian traffic only.

Substances that should not be discharged into the sewage treatment plant: paints, cat litter, cigarette butts, disinfectants, ashes, condoms, varnishes, medicines, motor oils, pesticides, sanitary pads, upholstery glue, thinners, cotton buds, nappies, rinses from water treatment plants, condensate from condensing boilers, chlorine-containing cleaners and other substances that affect the correct operation of the sewage treatment plant.

Table 8: Frequency and scope of key OPTIMAX treatment plant maintenance activities

Device	Activity	Frequency		
		Monthly	Quarterly	Yearly
OPTIMAX biological treatment plant	Functional check	•		
	Dosage of biopreparations	•		
	Cleaning the filter material		•	
	Removal of heavy deposits			•

NOTE: Each time the sewage treatment plant is emptied, it should be documented (e.g.: waste disposal bill).

Table 9: Typical problems in the operation of treatment plants as well as their solutions

Problem	Cause	Solution
Waste water level in the tank above normal	<ul style="list-style-type: none"> • Clogged treatment plant outlet • Clogged discharge pump • Blower failure • The air line is not connected to the pump • Check that the drainage system is working properly 	<ul style="list-style-type: none"> • Check the outlet • Unblock the pump • Replace/repair the controller • Replace/repair the blower • Check their line connection • Improve the dissipation system
Treatment plant emits unpleasant odours	<ul style="list-style-type: none"> • Failure of valve number 1 • Blower failure • Check the permeability of the discharge path of gases from the treatment plant 	<ul style="list-style-type: none"> • Replace/repair the controller • Replace/repair the blower • If permeability is restricted, unblock

Each sewage treatment plant is equipped with a security system to prevent the covers from being opened undesirably. This is achieved by holes located on the sides of the cover.

In order to secure the service hatch cover against unwanted opening, a 4.8 mm diameter screw of not less than 32 mm in length should be inserted into the hole located on the cover. The screw, once tightened, will prevent the cover from being opened.



Screw on the cover. Locate the Safety hole.



Place the screw in the hole. Tighten the screw



Check that the hatch is well secured.

O About the warranty

The manufacturer provides a **two-year warranty period**, starting from the date of sale, for the device. The **ten-year warranty period is granted by the** manufacturer, exclusively for the tank. If a manufacturing defect is detected in the device, which has been confirmed by the AQUABIN Claims Department, we will repair the device free of charge or the defective components will be replaced with new ones. Repair of the device or replacement of the defective components will be carried out in the shortest possible time - no longer than 20 working days. All notifications to the manufacturer under the Guarantee should be made by letter or e-mail.

The warranty does not cover:

- Failure by the contractor to observe the rules for the correct installation of the appliance as described in this User's Manual,
- Failure by the user to observe the rules for the correct operation and handling of the device as described in this User's Manual,
- Interference with the design of the device by making arbitrary modifications,
- Mechanical damage resulting from incorrect assembly and transport of the unit,
- Failure to comply with the conditions for selecting the type and size of sewage treatment plant for the number of users and the local soil and water conditions,
- Misuse of the device,
- Higher forces, i.e. the triggering of extraordinary phenomena independent of human will (atmospheric, geological).

O Declaration of performance - biological treatment plant *OPTIMAX VIRO*

The *OPTIMAX VIRO* biological sewage treatment plants are manufactured in accordance with the PN-EN 12566-3:2013 standard. Below you will find the manufacturer's declaration of performance.

DECLARATION OF PERFORMANCE

NR 01/2024



- 1. The name and trade name of the product:**
Biological treatment plant Optimax VIRO
- 2. Unique identification code of the product type:**
Optimax VIRO 4, Optimax VIRO 5, Optimax VIRO 6, Optimax VIRO 10, Optimax VIRO 12
- 3. Intended use(s):**
Domestic waste water treatment plant up to 50 EH (inhabitants)
- 4. Name and address of the manufacturer's head office:**
AQUABIN Michał Stangreciak, ul. Grafitowa 8/5, 05-800 Pruszków
- 5. Name and business address of the authorized representative, if any:**
not applicable
- 6. System of assessment and verification of constancy of performance:**
System 3
- 7. Harmonized standard: PN-EN 12566-3+A2:2013 Small wastewater treatment plants for up to 50 PT Part 3: Packaged and/or site assembled domestic wastewater treatment plants**
Notified body or bodies: INSITUTE FOR TESTING AND CERTIFICATION, Třída Tomáše Bati 299, Louky, 763 02 Zlín, Czech Republic, Certificate number **755200198/2022**
Name of the accredited certification body, accreditation number and certificate number: **1023**, Centre Technique Industriel – notified body CERIB 1164
- 8 Declared performance characteristics:**

Essential features	Performance characteristics			Harmonised technical specification
Treatment efficiency:				
- treatment efficiency ratios, at tested organics daily load BOD5 = 0,24 kg/day	BOD ₅	94%	12,8 mgO ₂ /l	EN 12566-3+A2:2013
	COD	93%	45,8 mgO ₂ /l	
	SS	96%	10,9 mg/l	
	N-TOT	63%	12,1 mg/l	
	P	92%	0,3 mg/l	
Performance:				
- nominal daily load of organic substances (BOD5)	0,25 kg/d (OPTIMAX VIRO 5) 0,30 kg/d (OPTIMAX VIRO 5) 0,36 kg/d (OPTIMAX VIRO 6) 0,60 kg/d (OPTIMAX VIRO 10) 0,72 kg/d (OPTIMAX VIRO 12)			PEN 12566-3+A2:2013
- nominal hydraulic daily flow (Q _n)	0,60 m ³ /d (OPTIMAX VIRO 5) 0,75 m ³ /d (OPTIMAX VIRO 5) 0,90 m ³ /d (OPTIMAX VIRO 6) 1,50 m ³ /d (OPTIMAX VIRO 10) 1,80 m ³ /d (OPTIMAX VIRO 12)			EN 12566-3+A2:2013
Watertightness (water test)	Positive result			EN 12566-3+A2:2013
Crushing strength and maximum deformation load, as:				
Load transfer capacity	Positive result			EN 12566-3+A2:2013

Durability	Positive result	EN 12566-3+A2:2013
Reaction to fire	E	EN 13501-1+A1:2010
Crush resistance	Backfill: 0,8 m WET: 1,45 m	EN 12566-3+A2:2013

9. The performance of the product identified above shall be in conformity with all declared performance characteristics listed in section 8. This declaration of performance is issued in accordance with Regulation (EU) No 305/2011 under the sole responsibility of the manufacturer.

Signed:

Michał Stangreciak, Owner

(name, position)

AQUABIN Michał Stangreciak
05-800 Pruszków, ul. Grafitowa 8/5
NIP : 836-173-12-03 REGON: 101730364
info@aquabin.pl +48 530 777 000
www.aquabin.pl



(Signature)

Pruszków, 02.01.2024

(Place and date)

National Declaration of Performance - INFILTRATION TUNNELS 150

KRAJOWA DEKLARACJA WŁAŚCIWOŚCI UŻYTKOWYCH
NR 3/2023/5

- Nazwa i nazwa handlowa wyrobu budowlanego:
Tunel rozszczepiający 150, Tunel rozszczepiający 300 DUO Dekiel 150
- Oznaczenie typu wyrobu budowlanego:
Złoże rozszczepiające TYCNER
- Zamierzone zastosowanie lub zastosowania:
Roszczenie ścięku podczyszczającego, oczyszczającego i wody deszczowej w gruncie.
- Nazwa i adres siedziby producenta oraz miejsce produkcji wyrobu:
TYCNER Sp. z o.o. ul. Wojska Polskiego 6B, 39-300 Mielec
- Nazwa i adres siedziby upoważnionego przedstawiciela, o ile został ustanowiony: nie dotyczy
- Krajowy system zastosowany do oceny i weryfikacji stałości właściwości użytkowych: System 4
- Krajowa specyfikacja techniczna:
7a. Polska Norma wyrobu: nie dotyczy
Nazwa akredytowanej jednostki certyfikującej, numer akredytacji i numer krajowego certyfikatu lub nazwa akredytowanego laboratorium/laboratoriów i numer akredytacji: nie dotyczy
7b. Krajowa ocena techniczna: ITP-PIB-KOT-2022/0015 wydanie 3
Jednostka oceny technicznej/ Krajowa jednostka oceny technicznej: Instytut Technologiczno-Przyrodniczy – Państwowy Instytut Badawczy
Nazwa akredytowanej jednostki certyfikującej, numer akredytacji i numer certyfikatu: nie dotyczy

8. Deklarowane właściwości użytkowe:

Zasadnicze charakterystyki wyrobu budowlanego do zamierzonego zastosowania	Deklarowane właściwości użytkowe
Wygląd zewnętrzny	Brak uszkodzeń
Barwa	Jednolita
Odporność na uderzenia	Brak pęknięć
Wymiary: Tunel rozszczepiający 150	1200 mm x 500 mm x 360 mm
Wymiary: Tunel rozszczepiający 300 DUO	1200 mm x 500 mm x 720 mm
Wymiary: Dekiel 150	435 mm x 335 mm x 48 mm

9. Właściwości użytkowe określonego powyżej wyrobu są zgodne z wszystkimi wymienionymi w p. 8 deklarowanymi właściwościami użytkowymi. Niniejsza krajowa deklaracja właściwości użytkowych wydana zostaje zgodnie z ustawą z dnia 16 kwietnia 2004 r. o wyrobach budowlanych, na wyłączną odpowiedzialność producenta.

W imieniu producenta podpisali(-a)
WOJCIECH TYCNER - PRZESZARZĄDU
(imię i nazwisko, stanowisko)

(Podpis)
Tycner sp. z o.o.
ul. Wojska Polskiego 6B
39-300 Mielec
tel. +48 17 724 59 00
NIP: 8172205293

Mielec, 17.01.2023
(Miejsce i data wydania)

Tycner sp. z o.o.
Siedziba: PPH Wójczech Tycner
ul. Wojska Polskiego 6B, 39-300 Mielec, Polska
tel. +48 17 724 59 00
biuro@tycner.com.pl

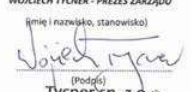
NIP: 8172205293
REGON: 522174664
Sąd Rejonowy w Rzeszowie,
XIV Wydział Gospodarczy KRS: 0000974730
Kapitał zakładowy 1 000 000 zł

National Declaration of Performance - DRAIN PIPES

KRAJOWA DEKLARACJA WŁAŚCIWOŚCI UŻYTKOWYCH
NR 4/2023/5

- Nazwa i nazwa handlowa wyrobu budowlanego:
Rura drenażowa D110 L2000
- Oznaczenie typu wyrobu budowlanego:
Złoże rozszczepiające TYCNER
- Zamierzone zastosowanie lub zastosowania:
Roszczenie ścięku podczyszczającego, oczyszczającego i wody deszczowej w gruncie.
- Nazwa i adres siedziby producenta oraz miejsce produkcji wyrobu:
TYCNER Sp. z o.o. ul. Wojska Polskiego 6B, 39-300 Mielec
- Nazwa i adres siedziby upoważnionego przedstawiciela, o ile został ustanowiony: nie dotyczy
- Krajowy system zastosowany do oceny i weryfikacji stałości właściwości użytkowych: System 4
- Krajowa specyfikacja techniczna:
7a. Polska Norma wyrobu: nie dotyczy
Nazwa akredytowanej jednostki certyfikującej, numer akredytacji i numer krajowego certyfikatu lub nazwa akredytowanego laboratorium/laboratoriów i numer akredytacji: nie dotyczy
7b. Krajowa ocena techniczna: ITP-PIB-KOT-2022/0015 wydanie 3
Jednostka oceny technicznej/ Krajowa jednostka oceny technicznej: Instytut Technologiczno-Przyrodniczy – Państwowy Instytut Badawczy
Nazwa akredytowanej jednostki certyfikującej, numer akredytacji i numer certyfikatu: nie dotyczy

9. Właściwości użytkowe określonego powyżej wyrobu są zgodne z wszystkimi wymienionymi w p. 8 deklarowanymi właściwościami użytkowymi. Niniejsza krajowa deklaracja właściwości użytkowych wydana zostaje zgodnie z ustawą z dnia 16 kwietnia 2004 r. o wyrobach budowlanych, na wyłączną odpowiedzialność producenta.

W imieniu producenta podpisali(-a)
WOJCIECH TYCNER - PRZESZARZĄDU
(imię i nazwisko, stanowisko)

(Podpis)
Tycner sp. z o.o.
ul. Wojska Polskiego 6B
39-300 Mielec
tel. +48 17 724 59 00
NIP: 8172205293

Mielec, 17.01.2023
(Miejsce i data wydania)

Tycner sp. z o.o.
Siedziba: PPH Wójczech Tycner
ul. Wojska Polskiego 6B, 39-300 Mielec, Polska
tel. +48 17 724 59 00
biuro@tycner.com.pl

NIP: 8172205293
REGON: 522174664
Sąd Rejonowy w Rzeszowie,
XIV Wydział Gospodarczy KRS: 0000974730
Kapitał zakładowy 1 000 000 zł

Zasadnicze charakterystyki wyrobu budowlanego do zamierzonego zastosowania	Deklarowane właściwości użytkowe
Oznaczenie	Rura drenażowa D110 L2000
Wygląd zewnętrzny	Brak uszkodzeń
Wymiary zewnętrzne	Długość: 2070 mm, średnica 110 mm

National Declaration of Performance - DISTRIBUTION AND COLLECTION BOXES

KRAJOWA DEKLARACJA WŁAŚCIWOŚCI UŻYTKOWYCH
NR 1/2023/5

- Nazwa i nazwa handlowa wyrobu budowlanego:
Studzienka rozdzielcza D300 AQZ
Studzienka zamykająca D300 AQZ
Nadbudowa D300 H150 AQ
- Oznaczenie typu wyrobu budowlanego: Złoże rozszczepiające TYCNER
- Zamierzone zastosowanie lub zastosowania:
Roszczenie ścięku podczyszczającego, oczyszczającego i wody deszczowej w gruncie.
- Nazwa i adres siedziby producenta oraz miejsce produkcji wyrobu:
TYCNER Sp. z o.o. ul. Wojska Polskiego 6B, 39-300 Mielec
- Nazwa i adres siedziby upoważnionego przedstawiciela, o ile został ustanowiony: nie dotyczy
- Krajowy system zastosowany do oceny i weryfikacji stałości właściwości użytkowych: System 4
- Krajowa specyfikacja techniczna:
7a. Polska Norma wyrobu: nie dotyczy
Nazwa akredytowanej jednostki certyfikującej, numer akredytacji i numer krajowego certyfikatu lub nazwa akredytowanego laboratorium/laboratoriów i numer akredytacji: nie dotyczy
7b. Krajowa ocena techniczna: ITP-PIB-KOT-2022/0015 wydanie 3
Jednostka oceny technicznej/ Krajowa jednostka oceny technicznej: Instytut Technologiczno-Przyrodniczy – Państwowy Instytut Badawczy
Nazwa akredytowanej jednostki certyfikującej, numer akredytacji i numer certyfikatu: nie dotyczy

8. Deklarowane właściwości użytkowe:

Zasadnicze charakterystyki wyrobu budowlanego do zamierzonego zastosowania	Deklarowane właściwości użytkowe
Wygląd zewnętrzny	Brak uszkodzeń
Barwa	Jednolita
Odporność na uderzenia	Brak pęknięć
Wymiary: Studzienka rozdzielcza D300 AQZ	410 mm x 400 mm x 400 mm
Wymiary: Studzienka zamykająca D300 AQZ	410 mm x 400 mm x 400 mm
Wymiary: Nadbudowa D300 H150 AQ	370 mm x 170 mm x 175 mm

9. Właściwości użytkowe określonego powyżej wyrobu są zgodne z wszystkimi wymienionymi w p. 8 deklarowanymi właściwościami użytkowymi. Niniejsza krajowa deklaracja właściwości użytkowych wydana zostaje zgodnie z ustawą z dnia 16 kwietnia 2004 r. o wyrobach budowlanych, na wyłączną odpowiedzialność producenta.

W imieniu producenta podpisali(-a)
WOJCIECH TYCNER - PRZESZARZĄDU
(imię i nazwisko, stanowisko)

(Podpis)
Tycner sp. z o.o.
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Mielec, 17.01.2023
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XIV Wydział Gospodarczy KRS: 0000974730
Kapitał zakładowy 1 000 000 zł

O Accessories

BIOPREPARATION AQUABIN START-IP AND DAILY OPERATION

Biological activator for domestic sewage treatment plants for start-up and daily operation. Concentrated biological preparation that decomposes organic waste, eliminates unpleasant odours in settling and biological (aerated) sewage treatment plants. Concentrate containing unique, selected and scientifically developed micro-organisms, responsible for the growth and proper maintenance of the bacterial flora in the treatment plant.

Decomposes organic waste, oils, fats, toilet paper. Destroys unwanted bacteria. Eliminates unpleasant odours. Prevents clogging of drainage and infiltration systems. Supports the formation of the desired activated sludge in biological treatment plants.

The pack sufficient for six months.

- Eliminates unpleasant odours
- Quickly and effectively breaks down waste
- Contains natural bacterial strains
- Unclogs the sewer and drainage system
- Suitable for settling tanks from 2,000 to 4,000 litres



Method of use:

Professional biological activator AQUABIN start-up and daily operation, we use to maintain and grow the bacterial flora in septic systems from 2000 to 4000 litres. The formulation is suitable for settling tank treatment plants as well as biological treatment plants.

When starting up or restarting the treatment plant, use the red and silver sachet at the same time. Pour the biological preparation AQUABIN purification into the toilet and then drain. Apply once a month. For larger systems increase the dose proportionally. Do not change the frequency of application of the dose.

In order to ensure optimum operation of the sewage treatment system, regular application of AQUABIN biopreparation is recommended for start-up and daily use.

RISER FOR SL-REHC D400 H200 ONTO THE TANK

The riser are made of high-density polyethylene. The riser is removable and adapted to the tank service hatch. The riser is fitted with a dedicated gasket. The use of additional risers makes it possible:

- Foundation of the unit deeper in the ground,
- Service access to the unit.



Name	Diameter [mm]	Height [mm]
Riser REHC D400 H200	400	200

Figure 19: Riser SL-REHC D400 H200 tank with a gasket

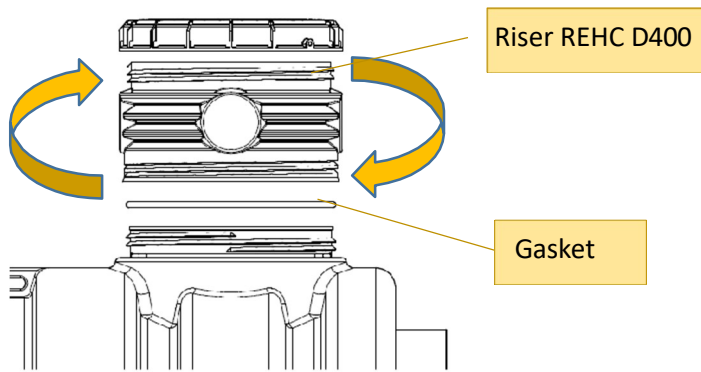
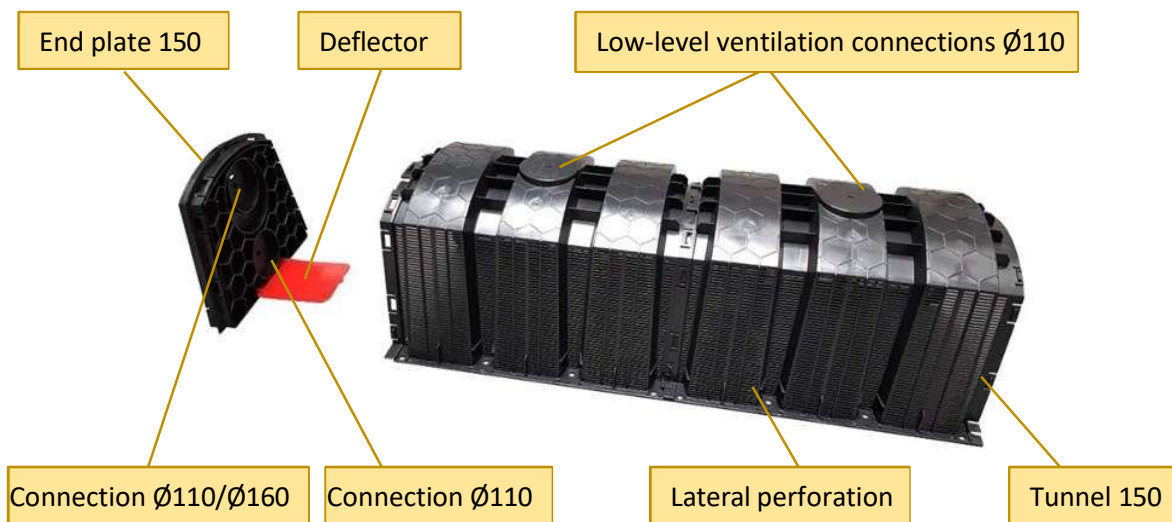


Figure 20: Installation of Riser REHC D400 H200 on tank

NOTE: The use of risers other than the original is tantamount to **voiding the warranty**. The manufacturer recommends a maximum of **two additional risers** per service hatch. The use of more risers and foundation of the tank in the ground deeper than an additional 60 cm will **void the warranty**.

INFILTRATION TUNNEL 150

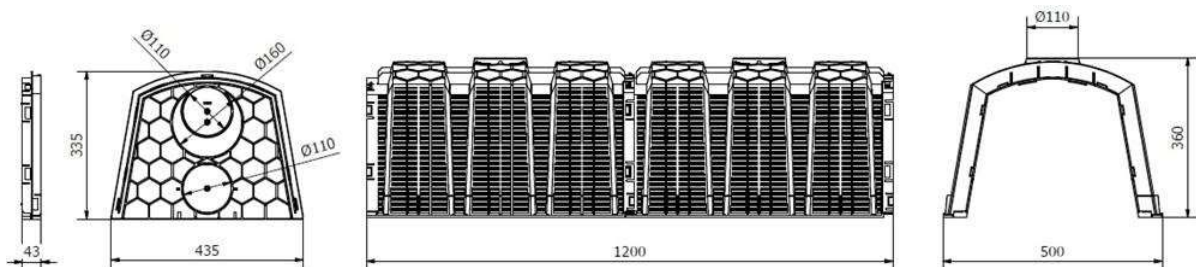
The 150 infiltration tunnels are designed for infiltrating wastewater containing pollutants from industrial processes and households into the ground. The construction of the tunnels also allows them to be used for storing and infiltrating rainwater. The tunnels are laid in the ground to form gravitational infiltration basins. The tunnel has longitudinal slots on the side walls through which sewage and rainwater can be infiltrated into the ground. The 150 infiltration tunnels are made of HDPE (high density polyethylene), using the plastic injection method. The production method used makes it possible to obtain products with a compact and lightweight construction. Each tunnel has ribbing to reinforce the structure. The height of the lateral tunnel perforations is 300 mm. The capacity of a single tunnel is **150 litres**.



Product specifications

Name	Length [mm]	Width [mm]	Height [mm]	Weight [kg]	Drainage area [m ²]			Product code
					bottom	lateral	total	
Tunnel 150	1200	500	360	5	0.6	0.7	1.3	2255
End plate 150	435	335	43	1.2	-	-	-	2256

The dimensions of the tunnels and lids are shown in the table. The tolerance of all parameters for each tunnel is +/- 2%.



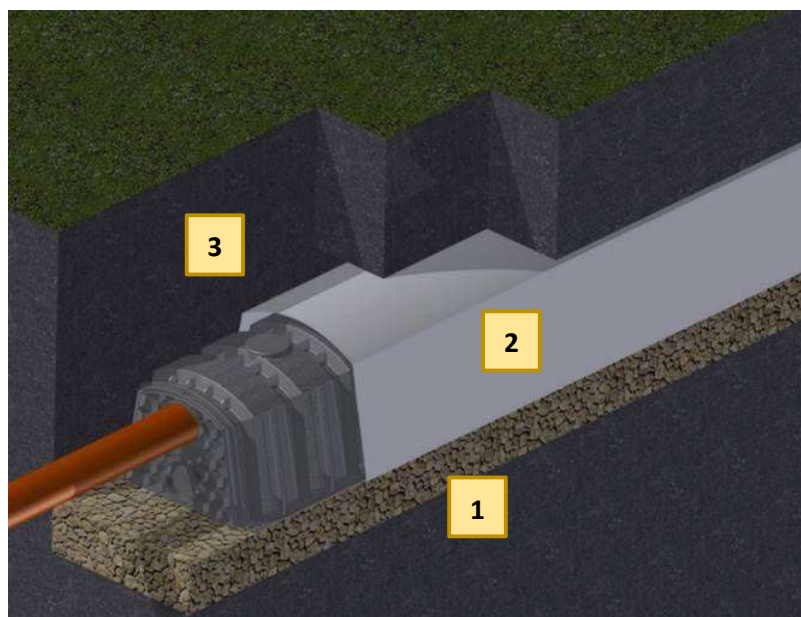
The capacity of a single infiltration tunnel is 150 litres (0.15m³).



At the beginning of the tunnel line, a lid equipped with a deflector is installed. The purpose of the deflector is to absorb the hydraulic impact of the inflowing sewage or water. Through its use under the tunnels, the soil at the point of inflow of wastewater or water is not washed away. The deflector is also installed at the end of the tunnel line. The bed must be equipped with an air supply at the end. This can be done by using one of the two connections located on the top wall of each tunnel or by using the top connection in the end plate. The connections at the top of the tunnel can also be used to revise the tunnel thread.



The minimum width of the deposit excavation should be 0.5 m and the minimum distance between the strands is 1 m. The bottom of the trench should be carefully levelled. On the bottom of the trench, lay a drainage support layer (1) consisting of stones with a 16-32 mm fraction or aggregate (without limestone) with a 32-64 mm fraction, with a thickness of not less than 100 mm. Provided that well permeable soils are present. The support layer may be increased as desired depending on the soil and water conditions. The tunnels should be covered with geotextile (2). Lay the tunnel strands with a gradient of approximately 1%. The tunnels are laid at a maximum depth of 1200 mm from the ground surface to the top edge of the tunnels. The length of a single line of tunnels should not exceed 30 m. Each line of the bed should be equipped with an air supply - low-level ventilation. Backfill with native soil (3). A supporting layer is not required for rainwater infiltration.



Tunnel beds can be installed in traffic areas and under car parks where there is car traffic of up to 3.5 tonnes. In this case, a minimum ground surface of 50 cm must be maintained between the ground surface and the top edge of the tunnels.

Selection guidance - septic tanks and biological treatment plants

The manufacturer recommends a minimum value of tunnels per user when planted in well-permeable soils:

- Septic tanks **3 tunnels per user (p.e.)**
- Aerated sewage treatment plants (biological) **2 tunnels per user (p.e.)**

The number of tunnels as well as the thickness of the support layer should be selected according to the current soil and water conditions.

The manufacturer recommends carrying out periodic inspections of the bed. It is important that the bed strands are evenly loaded with sewage or rainwater. In order to avoid overgrowth of the chambers by roots, the planting of trees and plants with long root systems is prohibited in the close vicinity of the infiltration basin made of 150 tunnels. All foundation conditions of the bed must be in accordance with the manufacturer's recommendations.



1. Prepare tunnels



2. Remove deflector



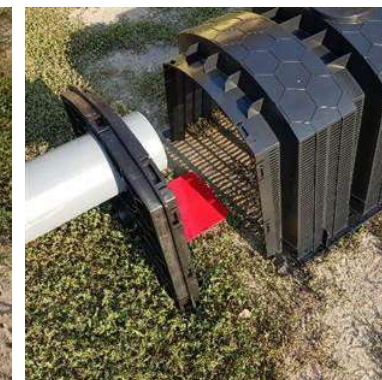
3. Drill a hole



4. Fit the deflector



5. Secure with screw



6. Clip on the lid


7. Check connection

8. Connect the tunnels

9. Fit the end plate

10. Drill a hole on the back

11. Install the vent

12. Check connection

DISTRIBUTION BOX D300 AQR

The D300 AQR distribution box is a device responsible for the distribution of wastewater to the infiltration drainage system or biological bed. The box can also be used for rainwater drainage or have a technical function in various types of installation.

The AQR distribution box is a monolithic cylinder with a height of 410 mm and a service hatch diameter of 300 mm, made of high-density PEHD polyethylene by plastic injection. The distribution box is equipped with a leak-proof (solid) cover $\varnothing 300$ mm. The service hatch can have one inlet and up to three outlets for the infiltration basin. The heights of the inlets and outlets are defined on the distribution box walls. The distribution box are fitted with a screwable polyethylene superstructure. Four sealing gaskets are provided with each service hatch for installation in the sockets on the service hatch. The sockets are blanked off. They can be cut out with a knife or standard hole saw.

Distribution box D300 AQR

Collection box D300 AQZ

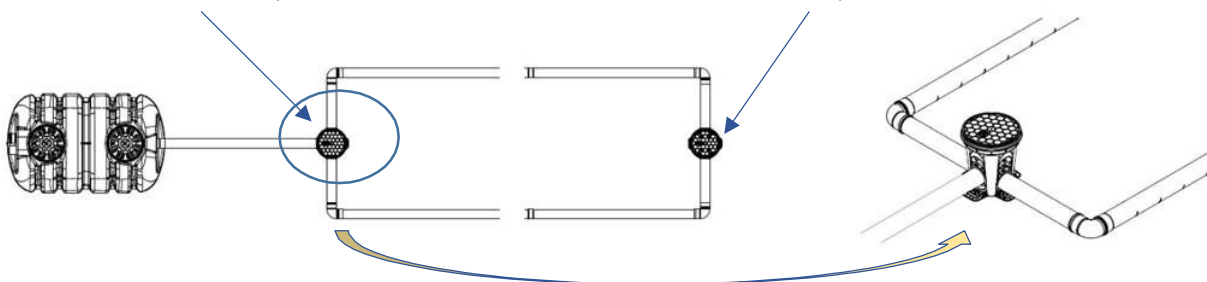
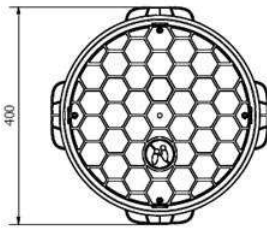
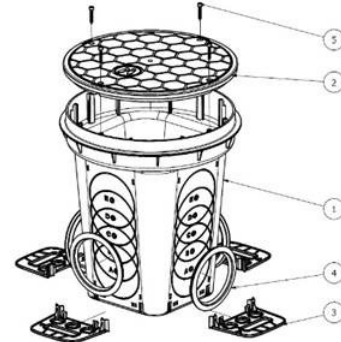
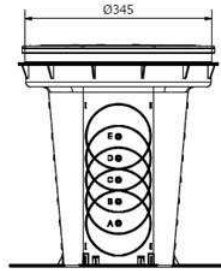
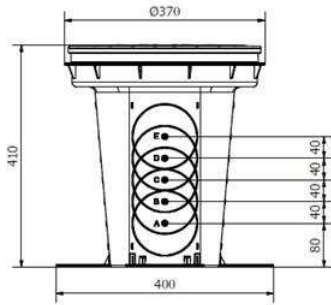


Figure 21: Distribution box D300 AQR - location in the infiltration bed

Length [mm]	Width [mm]	Height [mm]	Weight [kg]	Product code
400	400	410	3	2480



Distribution box D300 AQR		
Number	Name	Quantity [pcs.]
1	Box body	1
2	Cover Ø300	1
3	Stabilisation bracket	4
4	Gasket Ø110 [mm]	4
5	INOX screw	4

The box is installed directly into the ground. Before installation, the inlet and outlet openings should be cut out and the seals installed. The stabilising brackets should be clicked into the prepared sockets in the service hatch body. The purpose of the brackets is to stabilise the service hatch in the excavation and to anchor it to the soil.

COLLECTION BOX D300 AQZ

The D300 AQZ connection box is a device responsible for aerating the wastewater in the infiltration drain line or biological bed. It also performs the service function of the bed. The sump can also be used for rainwater drainage or have a technical function in various types of installation. The AQZ service hatch is a monolithic cylinder with a height of 410 mm and service hatch diameter of 300 mm, made of high-density polyethylene PEHD, using the plastic injection method. The service hatch is equipped with a Ø300 mm perforated cover. Up to four inlets from the infiltration basin can be made in the service hatch. The height of the outlets is defined on the service hatch walls. The service hatches are fitted with a bolted-on superstructure made of polyethylene. Three seals are supplied with each service hatch to fit into the sockets on the service hatch. The sockets are blanked off. They can be cut out with a knife or standard hole saw.

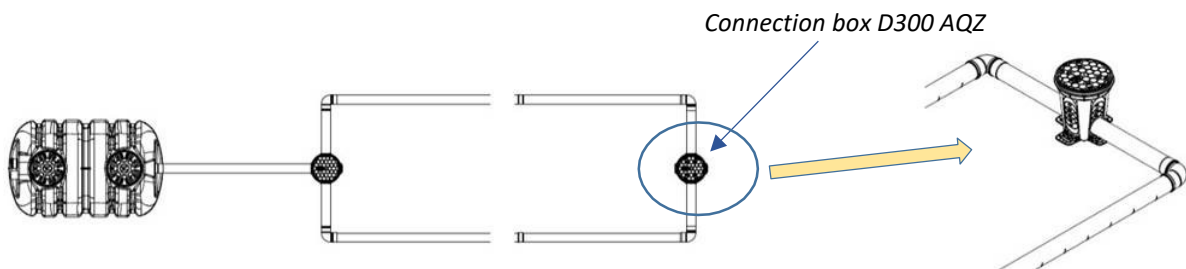
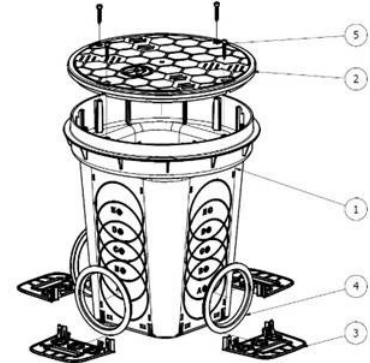
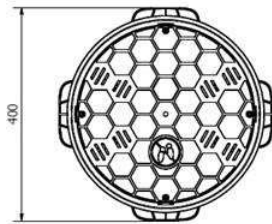
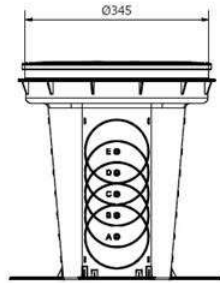
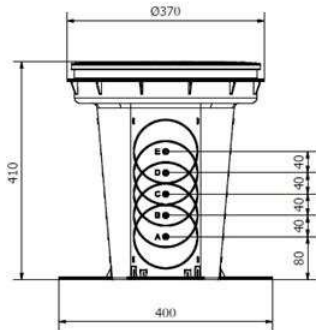


Figure 22: Connection box D300 AQZ - location in the infiltration basin

Length [mm]	Width [mm]	Height [mm]	Weight [kg]	Product code
400	400	410	3	2481



Connection box D300 AQZ

Number	Name	Quantity [pcs.]
1	Box body	1
2	Cover Ø300	1
3	Stabilisation bracket	4
4	Gasket Ø110 [mm]	3
5	INOX screw	4

The service hatch is installed directly into the ground. Before installation, the outlet openings should be cut out and the seals installed. The stabilising brackets should be clicked into the prepared sockets in the service hatch body. The purpose of the brackets is to stabilise the service hatch in the excavation and to anchor it to the soil.

**We recommend the purchase
of other **AQUABIN** products**



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