BC bio cleaner

OPERATING INSTRUCTIONS
abridged version

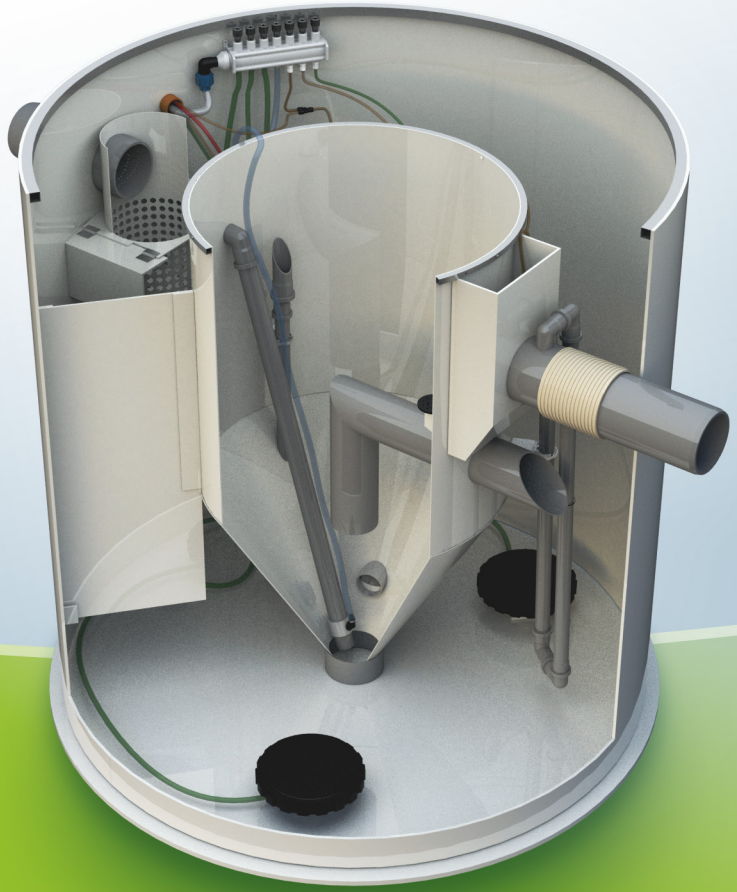
Waste Water Treatment Plant

BC biocleaner 4–12 PP


BASIC


OPTIMA


COMFORT



envi pur

www.envi-pur.cz

This manual contains important directions and safety warnings.
Please, read this manual carefully before using the WWTP.

CE WWTP BC biocleaner is certified

Operating Rules

Identification Data	
WWTP type:	
Locality:	
Investor/Owner:	
Operator:	
Designer:	
Contractor of constructional part:	
Contractor of technological part / Supplier of WWTP:	
Person responsible for WWTP operation:	
Water law authority:	
Water law decision:	
The person appointed to perform technical revision:	

Dates and records	**Commencement**	**Termination**	**Operating Rules approval**		
			Date	**Approved by**	**Valid until**
Trial run:					
Trial run – extended:					
Permanent operation:					
Permanent operation – extended:					

Values determined by the water law decision	BOD_5	COD_{Cr}	SS	$N\text{-}NH_4^+$	N_{total}	P_{total}
permissible value for the analyses of “p” mixed samples (mg/l)						
maximum permissible value for the analyses of “m” common samples (mg/l)						
drained amount (t/year)						

Basic data on recipient		
Name	**Sewerage outlet point**	**Distance from WWTP**
Other data:		

Important phone numbers				
Medical rescue service	Fire brigade	Police	Hygienic station	Autorized dealer
155	150	158		

CONTENT

1. DESIGNATION OF COMPLIANCE ON THE PRODUCT

CE

ENVI-PUR, s.r.o., Na Vlčovce 13/4, 160 00 Praha 6 – Dejvice
ID: 25166077

08

EN 12566-3

Biologically active sewage treatment plant

BIO CLEANER BC .. PP BASIC, BIO CLEANER BC .. PP OPTIMA, BIO CLEANER BC .. PP COMFORT, BIO CLEANER BC .. PP EXCLUSIVE – / UV

BIO CLEANER BC .. K PP BASIC, BIO CLEANER BC .. K PP OPTIMA, BIO CLEANER BC .. K PP COMFORT, BIO CLEANER BC .. K PP EXCLUSIVE – / UV

BIO CLEANER BC .. PE BASIC, BIO CLEANER BC .. PE OPTIMA, BIO CLEANER BC .. PE COMFORT, BIO CLEANER BC .. PE EXCLUSIVE – / UV

BIO CLEANER BC .. SL BASIC, BIO CLEANER BC .. SL OPTIMA, BIO CLEANER BC .. SL COMFORT, BIO CLEANER BC .. SL EXCLUSIVE – / UV

BIO CLEANER BC .. K SL BASIC, BIO CLEANER BC .. K SL OPTIMA, BIO CLEANER BC .. K SL COMFORT, BIO CLEANER BC .. K SL EXCLUSIVE – / UV

BIO CLEANER BC .. B BASIC, BIO CLEANER BC .. B OPTIMA, BIO CLEANER BC .. B COMFORT, BIO CLEANER BC .. B EXCLUSIVE – / UV

BIO CLEANER BC .. PP N BASIC, BIO CLEANER BC .. PP N OPTIMA, BIO CLEANER BC .. PP N COMFORT, BIO CLEANER BC .. PP N EXCLUSIVE – / UV

BIO CLEANER BC .. B N BASIC, BIO CLEANER BC .. B N OPTIMA, BIO CLEANER BC .. B N COMFORT, BIO CLEANER BC .. B N EXCLUSIVE – / UV

Rated daily flow rate (m^3/day):	0.6; 0.9; 1.2; 1.5; 1.8; 2.25; 2.4; 3.0; 3.75; 4.5; 5.25; 6.0; 6.75; 7.5 *
Rated organic daily load (kg of BSK_5/day)	0.24; 0.36; 0.48; 0.60; 0.72; 0.90; 0.96; 1.20; 1.50; 1.80; 2.10; 2.40; 2.70; 3.00 *
Material:	PP, PE, stainless steel, concrete *
Water tightness (water test):	it met the standard
Compressive strength (at the failure limit):	it met the calculation
Durability:	it met the standard
Fire resistance:	F
Impact of hazardous substances:	NPD

Cleaning efficiency during the test according to EN 12566-3 with the organic daily load of BOD_5 = 0.208 kg/d and with 0.306 kg/d:

Index	Values at the outlet (mg/l)	Efficiency (%)
BOD_5	XX	XX
COD_{Cr}	XX	XX
SS	XX	XX
$N\text{-}NH_4^+$**	XX	XX
N_{total}	XX	XX
P_{total}***	XX	XX
Enteroccoci	XX (KTJ/100ml)	XX
Escherichia coli	XX (KTJ/100ml)	XX
Fek. kolif. bakt.	XX (KTJ/100ml)	XX
Coliform bacteria	XX (KTJ/100ml)	XX
Somatic coliphage	XX (PTJ/ml)	XX

*) Depending on the WWTP size and variant
**) At the mixed liquor temperatures above 12°C
***) With P-Less (phosphorus precipitation equipment)
XX) According to WWTP type with the specified additional equipment (phosphorus precipitation, UV disinfection, etc.), see chapter 23 Technical specification – parameters of cleaned water

MANUFACTURER	SERVICE
ENVI-PUR, s.r.o. Na Vlčovce 13/4, 160 00 Praha 6 – Dejvice +420 381 203 211 info@envi-pur.cz	It is carried out by authorized dealers according to the list on the website www.envi-pur.cz and also by the manufacturer, the company ENVI-PUR, s.r.o. office Wilsonova 420, 392 01 Soběslav.

2. INTRODUCTION

2.1. GENERAL

This manual should allow you to thoroughly familiarize yourself with the treatment plant and its safe and trouble-free operation.

By following these instructions, it is ensured that the rules of safe use will be followed when using the treatment plant at a level corresponding at the same time to the safety standards, regulations and correct technical procedures in force.

It is necessary to be familiarized with this manual before using the WWTP.

2.2. LINK TO THE FULL MANUAL

This operating and maintenance manual is a short, simplified, non-literal version of the full manual. Only the full manual contains all important information and it is necessary to familiarize yourself with it thoroughly.

The full manual can be found on the website of ENVI-PUR, s.r.o., under the link:

https://www.envi-pur.cz/en/dokumentace/

If you have any problems viewing it, please contact ENVI-PUR, s.r.o. by phone at +420 381 203 211 or by e-mail: info@envi-pur.cz.

3. AUTORIZED DEALERS

Retail sales, installation and service of wastewater treatment plants are provided for ENVI-PUR, s.r.o. by a network of authorized dealers who are professionally trained by ENVI-PUR, s.r.o.

In case of problems with the WWTP or if you need service, please contact the authorized dealer from whom you purchased the WWTP. Alternatively, you can contact the manufacturer, ENVI-PUR, s.r.o. directly.

4. SAFETY INSTRUCTIONS

4.1. COMPETENCE REQUIREMENTS OF PERSONS (COMPANIES)

To ensure the adequate safety level of people and trouble-free operation, activities related to the operation, maintenance and servicing of the WWTP must be carried out only by persons (companies) with the appropriate competence.

Operation and maintenance of the WWTP to the extent described in these instructions may only be performed by persons over 18 years of age who are physically and mentally capable of performing the described activities and are familiar with these instructions.

Only a trained authorized dealer, or the company ENVI-PUR, s.r.o., may perform the service.

Any intervention in the electrical parts of the WWTP may only be carried out by persons with appropriate electrical technical qualifications. Pregnant (breastfeeding) women and children must not operate and maintain the WWTP.

4.2. PRINCIPLES OF SAFE USE

- **Read this manual thoroughly before using the WWTP.**
- **Do not carry out any activities in connection with the use of the WWTP that do not follow from this manual.**
- **Strictly follow the measures to protect against the dangers described in this manual.**
- **Always use prescribed personal protective equipment.**

4.3. PREVENTION AGAINST POSSIBLE DANGER

4.3.1. General

Although the WWTP was designed in accordance with the currently valid safety standards, regulations and correct technical procedures, during its construction it was not possible to exclude the dangers described below, which arise from the nature and purpose of use of the WWTP.

4.3.2. Contact with wastewater

Wastewater in the treatment plant, sludge, substances and objects trapped in the primary sedimentation area can be a source of various infections, so try to avoid direct contact with them during operation and maintenance.

- **While working pay extra attention, do not eat, drink or smoke.**
- **Wear appropriate work clothes and rubber gloves.**
- **Used tools and equipment wash thoroughly with water.**
- **Store used work clothes, gloves, tools and accessories in a suitable place.**
- **After work, wash your hands thoroughly with at least soap and warm water.**

4.3.3. Falling into the tank

After opening (removing) the cover it is possible to fall into the tank.

- **Pay extra attention while working.**
- **Do no leave the tank of the WWTP open without supervision.**
- **Do not enter the tank area (the WWTP is designed in such a way that all usual activities can be carried out from the outside area without the need to enter).**

In case of emergency events in which it is necessary to enter the tank, follow all generally valid safety principles and regulations for entering underground structures.

- **The internal parts of the tank are not intended as walking surfaces or elements.**
- **In case of installing the tank into a greater depth, it is necessary to solve the entrance to the tank as part of the project in accordance with the relevant safety regulations.**

4.3.4. Other dangers

Other dangers and protection against them are highlighted in the relevant sections of this manual, where necessary.

4.4. HANDLING THE WASTE

During the operation of the WWTP, waste (sludge, rakes) is generated, which must be disposed of separately in an appropriate manner.

Rakes are disposed of together with other waste by taking them to a municipal waste dump.

Excess sludge can be pumped out using a fecal truck and disposed of at a larger WWTP with a sludge terminal.

In the case of a small residential wastewater treatment plant (BC 4 or BC 6), it is also possible to store the pumped-out excess sludge in an own compost. With this method of disposal, it is recommended to sprinkle the layer of sludge with lime and then cover it with a layer of some other material (e.g. leaves, grass, etc.). Sludge should not be stored only as a top layer. The pumped-out excess sludge must not be stored in such a way that it affects the quality of underground and surface water.

Sludge, rakes and water drained from the treatment plant are considered waste and must be disposed of in accordance with applicable legal regulations. The operator of the WWTP is responsible for the waste disposal.

5. PROHIBITED SUBSTANCES IN WASTEWATER

Given that biological processes take place in the treatment plant, for the correct functioning of the treatment plant, it is necessary to prevent the introduction of substances into the treatment plant that can cause the death of living microorganisms.

It is prohibited to feed the following into the waste pipe connected to the treatment plant and into the treatment plant's own tank:

- fats in higher concentration,
- regeneration solutions from household softeners,
- washing water from the filters of the domestic water treatment plant,
- paints, varnishes and thinners,
- plastics, rubber, textiles,
- sanitary needs (pads, tampons), diapers, condoms,
- wet wipes and tissues,
- strong disinfectants, acids and alkalis,
- waste water from condensing boilers (low pH),
- rainwater.

The quality of waste water treatment is negatively affected by the presence of a large amounts of detergents and tensides. We recommend not doing laundry too frequently in a short period of time (e.g. washing several loads during the weekend). The negative effect is manifested by an increase in the pH value and a worse transfer of oxygen into the water, which are factors affecting the activity of microorganisms. It is more suitable to wash clothes at intervals of several days.

In the connected compound we recommend detergents and disinfectants that do not contain chlorine compounds (sodium hypochlorite).

However, during normal household operation, the usually used amount of cleaning agents should not affect the operation of the WWTP.

Coarse and floating dirt is captured in the denitrification area, which can cause blockage of the subsequent areas of the treatment plant.

6. GENERAL DESCRIPTIONS OF THE WWTP

6.1. THE PRINCIPLE OF OPERATION OF THE WWTP

BC biocleaner ® is a biological WWTP that works the principle of low-loaded activation with complete aerobic stabilization of the sludge. The wastewater treatment plant receives wastewater from the waste pipes. The wastewater flows through an inlet filter basket, where coarse impurities are captured. The contents of the basket are grinded from below using an aeration element that produces coarse air bubbles. The wastewater from the denitrification zone (where nitrogenous substances are removed in the absence of atmospheric oxygen) flows under the bore walls into the nitrification zone.

Fine bubble aeration elements are installed in the nitrification zone to maintain a high oxygen concentration. Ammoniacal nitrogen is removed by oxidation. The wastewater contains a mixture of water and activated sludge. Activated sludge is microorganisms that feed on organic pollution and consume oxygen.

The water with activated sludge flows into the settling zone, where the sludge settles at the bottom. The treated wastewater accumulates in the upper part of the settling zone. The treated water flows out of the treatment plant by gravity through the outlet box.

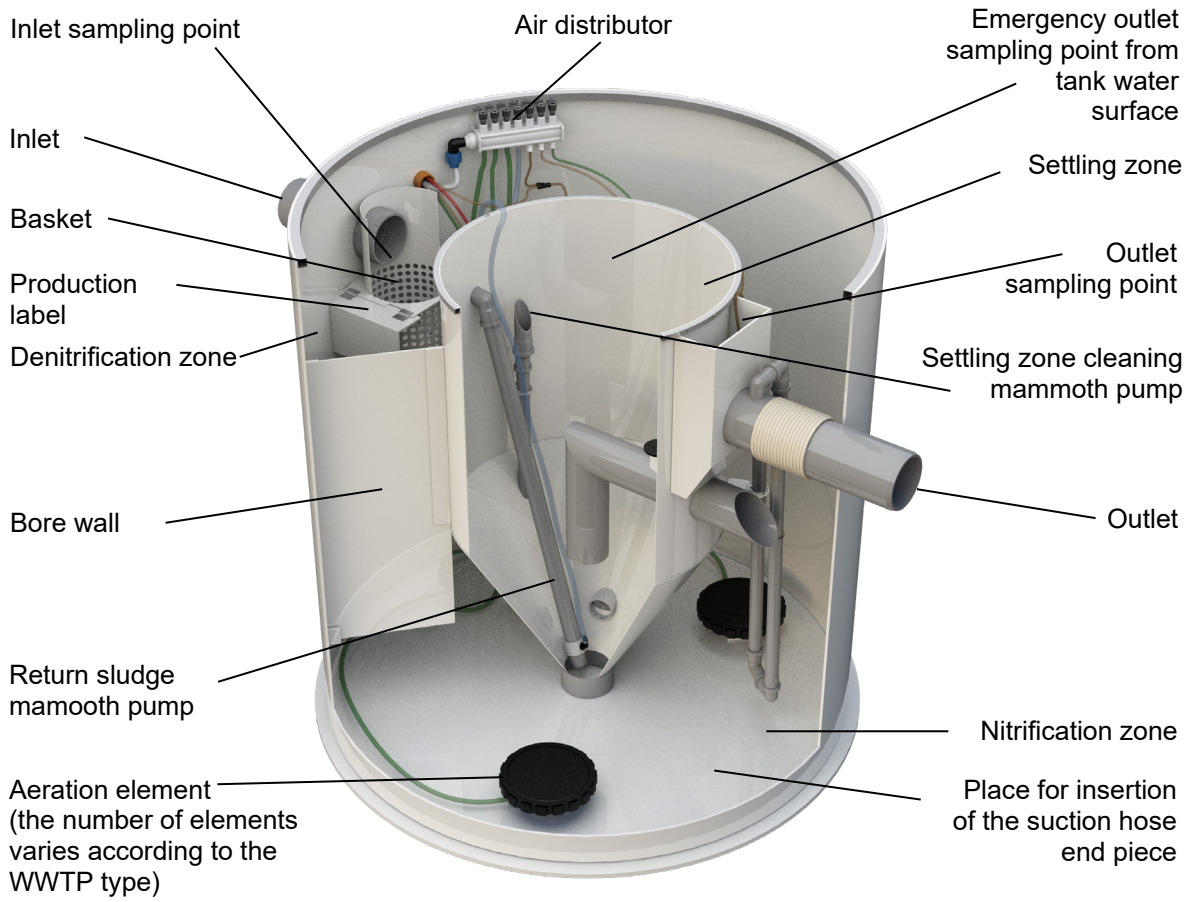
An integral part of the WWTP is a control unit and a blower. The control unit controls the wastewater treatment process, influences the operating time and interruption of the blower switching. The blower blows air into the air distributor inside the WWTP tank using PVC hoses. Hoses and tubes leading to individual points in the tank, such as aeration elements and hydropneumatic pumps (so-called “mammoth pumps”), are led out of the air distributor.

The WWTP can be equipped with additional accessories, such as a phosphorus precipitation device (P-LESS), an oxygen probe, a pH probe, etc. The WWTP can be structurally supplemented with, for example, a sump, an accumulation tank for treated wastewater, a filter shaft or an external sludge tank.

The WWTP is covered with a walkable fiberglass cover (load max. 250 kg/m^2).

6.2. WWTP BC 4–12 TANK

The BC biocleaner ® BC 4–12 treatment plants use an uniform technology in the tank, whether it is the BASIC, OPTIMA or COMFORT model. A cross-section of the treatment plant is shown in the following illustration.



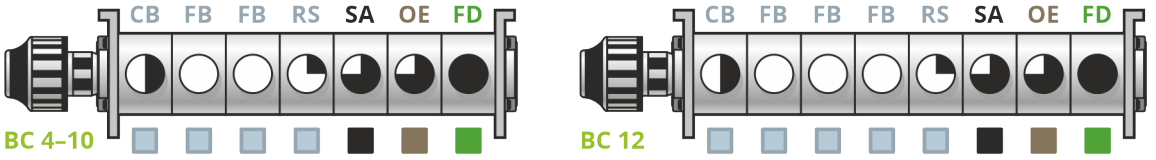
The BASIC, OPTIMA and COMFORT models differ from each other mainly in the type of the control unit, which has a fundamental influence on the comfort of use and the accuracy of cleaning processes setting.

WWTP model	Equipment and operator comfort
BASIC	Equipped with analog timer switch and manually launched removal of floating dirt. Basic economic solution (sizes BC 4 to BC 12).
OPTIMA	Equipped with a more comfortable Optima control unit and manually launched floating dirt removal (sizes BC 4 to BC 12).
COMFORT	Equipped with a comfortable and fully programmable COMFORT+ control unit and automatic removal of floating dirt (sizes BC 4 to BC 12).

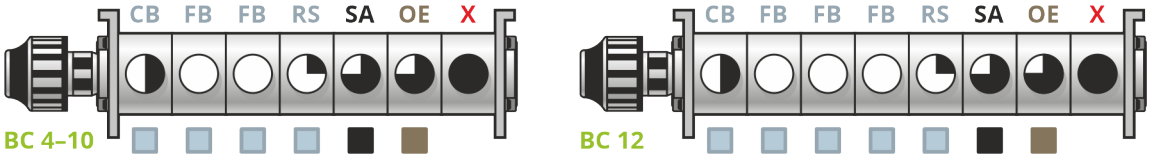
6.3. RECOMMENDED AIR DISTRIBUTOR SETTINGS

The air distribution inside the tank is provided by the air distributor. The air hose from the blower is fed into the air distributor, and from the air distributor, hoses and tubes lead to different places in the tank (aeration elements, hydropneumatic pumps, etc.). The optimal amount of air flow is set by turning the valves counterclockwise.

Type BASIC and OPTIMA



Type COMFORT



CB 180° COARSE-BUBBLE ELEMENT
FB 360° FINE-BUBBLE ELEMENT
RS 270° RETURN SLUDGE MAMMOTH PUMP
SA 90° SETTLING TANK AERATION
OE 90° OVERFLOW EDGE RINSING
TF 180° TERTIARY FILTER BOX DESLUDGING
FD 0° MAMMOTH PUMP FOR FLOATING DIRT REMOVAL
X 0° UNUSED CLOSED VALVE

OPEN CLOSED
TRANSPARENT BRAIDED HOSE BROWN TUBE
BLACK TUBE GREEN TUBE

Set the correct air distribution according to the picture and table below. The white circle indicates a change in rotation of the valves compared to their original position (open state).

CB	Coarse-bubble aeration element	Set to moderate bubbling under the inlet basket – it ensures mixing of return sludge with wastewater and aeration of the coarse mechanical impurities basket in order to grind and break these impurities.
FB	Fine-bubble aeration elements	Open the valves fully – it ensures mixing of the activation mixture in the nitrification zone.
RS	Return sludge mammoth pump	Adjust to such a power that the recirculated activation mixture flows evenly from the pipe and the stream does not splash all the way to the basket – it ensures that the return sludge is pumped from the settling tank back to the denitrification zone.
SA	Settling tank aeration	Slight bubbling is set, and if no surface dirt is formed, it should be closed completely. This aeration element ensures the breaking of the surface dirt.

OE	Overflow edge cleaning	It is used to prevent contamination of the overflow edge on the outlet of the WWTP. Set to moderate aeration
FD	Floating dirt removal mammoth pump	It is used for floating dirt removal from the settling tank into the denitrification zone. This function is usually switched off in the BASIC and OPTIMA type, it switches on by manually opening the relevant valve. After the dirt has been removed, the valve closes again. In the COMFORT type this function is controlled automatically.
X	Unused closed valve	In the COMFORT model, one valve on the air distributor is unused (due to different hose connection into the control unit).

Note: *The setting according to the picture cannot be considered absolute, it may differ for each WWTP installation. The valve is in the closed position if it does not let through any amount of air, but when the valve is turned 5° counterclockwise from this position, air must pass through.*

7. INSTALLATION AND PUTTING INTO OPERATION

Installation and putting into operation of the WWTP is carried out by an authorized dealer. The installation must be carried out in accordance with the project documentation prepared by an authorized person based on the documents of the company ENVI-PUR, s.r.o. After the WWTP has been installed and put into operation, an authorized dealer will train the operator and hand over the WWTP to the owner/operator.

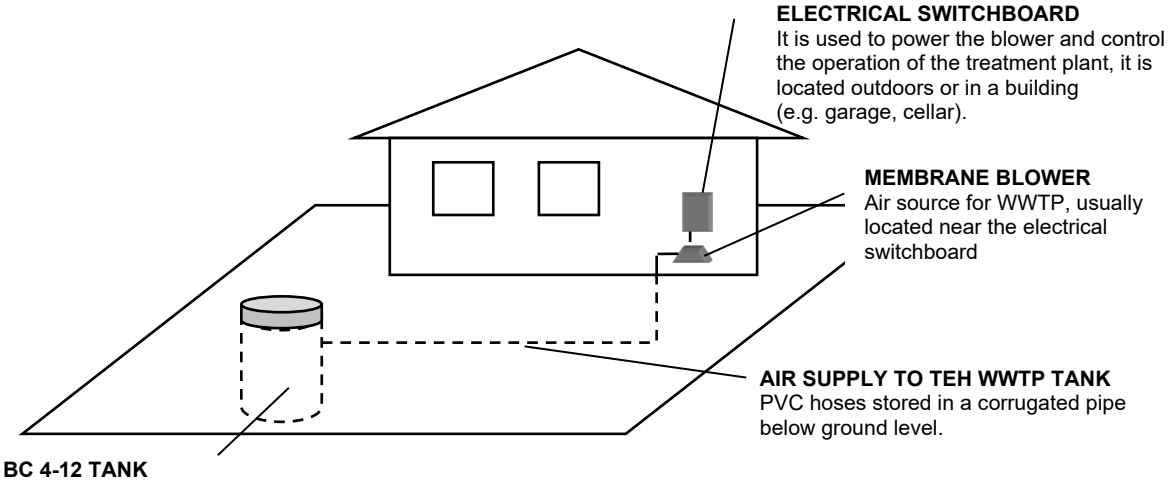
Check whether you have received all the documents – operating instructions, service book, blower operating and maintenance instructions, electrical wiring diagram and optionally the dosing pump or UV disinfection operating and maintenance instructions. Check whether the model and serial number of the treatment plant corresponds to the data in the documents and whether your treatment plant corresponds to the type of treatment plant in the project documentation. If the data does not match, contact ENVI-PUR, s.r.o. and do not operate such a treatment plant.

After installation and putting into operation, the start-up phase of the WWTP begins, which is described in Chapter 9.

7.1. WWTP PLACEMENT

You were informed of the specific placement of your WWTP when it was put into operation; the placement is listed in the service book.
Any changes to the WWTP placement should always be approved in writing by the authorized dealer.

The placement and description of the individual parts is shown in the following figure:



8. WWTP OPERATION CONTROL

The basic parameter for controlling the operation of the WWTP is the intermittent operation of the blower. The blower alternately uses the running time (C1) and the interruption time (C2). The interruption time of the blower operation must never exceed 2 hours.

When the treatment plant was put into operation, the expected optimal setting of the blower operation was carried out. Inappropriate settings may cause the blower to malfunction. If you have problems with the settings, contact an authorized dealer or the manufacturer.

The method of setting up the WWTP operation is different for the BASIC, OPTIMA and COMFORT types of WWTP. All three variants are described in the following sub-chapters.

All types of control units must be protected from moisture during operation.

8.1. ANALOG TIMER SWITCHER BASIC

The intermittent operation of the blower is provided by a timer switch, into which the blower mains cord is connected. The basic interval setting is **C1/C2 – 15/15** (i.e. 15 min. operation and 15 min. interruption). This setting is only applicable for the start-up period of the WWTP. Then, a time mode is set to ensure optimal WWTP function (most often C1/C2 – 15/30 mode). During night hours or hours when there is no inflow to the WWTP (e.g. you are at work, at school, etc.), it is possible to set the C1/C2 – 15/45 operation.

Please note, this setting will probably not be sufficient on weekends or holidays spent at home. Insufficient aeration time will result in incorrect function or an odor from the WWTP.

Current time setting:
Turn the rotary ring with the pins in the direction of the arrow until the pointer on the central part of the device points to the current time. By plugging the device into the socket, the timer starts.

Setting the switching program:
The timer switch has a pin ring of blue or gray color. By flipping one or more pins inside the circle, the device is set to switch on in the given time period.

8.2. OPTIMA CONTROL UNIT

The intermittent operation of the blower is ensured by a simple OPTIMA control unit with 10 preset programs. Using the control unit, it is possible to set one of the interval programs of running time (i.e. phase **C1**) and interruption time (i.e. phase **C2**).

Mode	**Code**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**
P1 _ _	**C1** (min)	10	10	10	10	10	15	20	30	40	60
	C2 (min)	120	30	20	15	10	10	10	10	10	5
Wastewater production		Holiday	**Low wastewater production**			**Normal wastewater production**			**High wastewater production**		

The display of the device alternately shows the selected program and the time in minutes remaining until the end of the running time; or interruption of the connected blower. The glowing dot behind the right digit indicates that the blower is running.

Maximum permissible socket load: 230V / 2.5A.

Each time you press some of the device's keys, the program will be switched by one step, and at the same time, the dot behind the letter P will light up, which signals the device's setting mode. After 3 seconds from the last pressing of the keyboard, the last selected program is stored in memory. The selected program remains stored in the device even after a power failure.

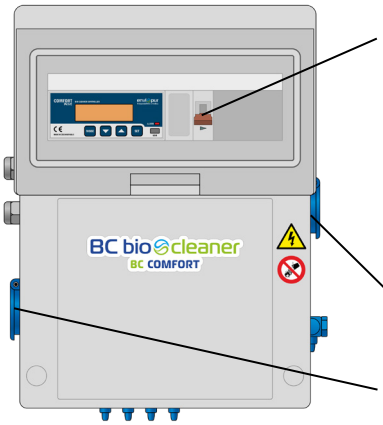
If necessary, replace the fuse as follows:

- Before replacing a fuse, always pull the mains supply cord of the device from the socket.
- Unscrew the fuse cap and replace the fuse with the prescribed type (T250V / 0.1 A).
- Screw the cap with the new fuse back into the device and only then plug the mains cord into the socket.

The fuse is located here (T250V / 0,1A)

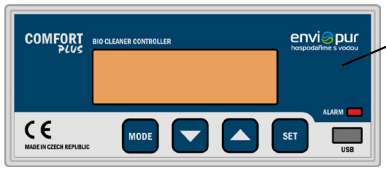
8.3. COMFORT CONTROL UNIT

The electrical switchboard contains electrical elements and parts that are used to turn the blower on and off and to open and close the air supply to selected parts of the treatment plant. On the front part of the electrical switchboard there is a circuit breaker for turning off/on all electrical parts of the treatment plant and the control panel of the control unit. On the lateral side of the electrical switchboard there is a socket to plug in the blower, dosing pump, UV lamp, etc...



Circuit breaker on / off

Removable control panel of the control unit



There is the CR2032 backup battery under the control unit panel, is.

Socket for the membrane blower

Socket for the dosing pump (P-LESS)

The control unit is used to control the WWTP operation (for gradual execution of phases C1 to C9. Using the control panel, it is possible to monitor and possibly change the functions described below. The control unit can operate in two operation modes:

- Control mode (viz 8.3.1.),
- Setting mode (viz 8.3.2.).

8.3.1. Control mode

This is the normal operating state in which the unit is always after the circuit breaker has been switched on; and after exiting the setting mode. The mode is indicated by displaying the current phase **C1** to **C9** on the display and the **number of minutes** remaining until its end (the minutes are counting down).

Description of the control unit phases, parameters C1 to C6:

Parameter	Description
C1	blower ON
C2	blower OFF
C3	cleaning of the reactors' settling zone – pumping out part of the treated water to lower the water level – blower ON
C4	cleaning of the reactors' settling zone – clearing of the surface with air with the simultaneous first pumping out of impurities from the surface – blower ON
C5	cleaning of the reactors' settling zone – water calming break – blower OFF
C6	cleaning of the reactors' settling zone – second pumping out of impurities from the surface – blower ON

8.3.2. Setting mode

Setting is carried out using the buttons on the control unit panel by selecting the appropriate mode and parameter. The selected mode and parameters are shown on the display. Both mode and parameter can be changed. The changed parameter is darkly shaded.

Functions of the individual buttons of the control unit:

MODE	ARROW DOWN ▽	ARROW UP △	SET
mode selection	changing the set parameter; end of action in START mode		confirmation of the selected mode or the value of the set parameter

If no button is pressed, the unit automatically switches to Control Mode after 30 seconds.

Control unit menu:

Comfort+ control unit modes	
Diagnostics	Displaying and entering information about the operation of the WWTP (settling test, desludging, sampling, equipment service, ...)
P1	Setting the time intervals of phases C1 (blower ON), C2 (blower OFF)
Mixing	Setting the mixing interval of the nitrification zone
P2	Setting the daily start time of stages C3 to C6 (cleaning of the reactors' settling zone)
P3	Setting the frequency (interval) of starting phases C3 to C6 (cleaning of the reactors' settling zone)
P4	Secondary mode – setting night and weekend operation
P5	Secondary mode – setting the time intervals of phases C1, C2 (Blower ON / OFF)
P6	Setting the operation of the dosing pump (running time / repetition interval)
Current time	Correction of the control unit's current time
New password	Entering a password for access to editing the settings of the control unit
Modem	Sending and receiving data from the web server
Identification	Control unit parameters for communication with the web server

Blower failure evaluation. The control unit is equipped with an input for connecting a pressure switch at the blower outlet. A switch is required to be connected, which is **open when there is no pressure and closed when there is operating pressure**.

Failure signaling and siren outputs. The control unit has two outputs for failure signaling, LED signaling on the panel (ALARM) and, in the version with a GSM module, sending an SMS message about the failure. The fault is simultaneously signaled on the unit's display and by the intermittent light of the LED diode marked ALARM. Siren failure signaling can be temporarily disabled by pressing the **SET** button. The signaling on the display will remain active. If the malfunction is not removed within 10 days, the siren signaling will be automatically restored.

P1 – Setting the time intervals for Phases C1, C2 (blower ON/OFF):

- Select mode **P1** with the **MODE** button and confirm with the **SET** button. The current settings are displayed. Use the arrows to change the **code C1, C2** according to the following table and confirm with the **SET** button.

Mode	**Code**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
P1	**C1** (min)	10	10	10	10	10	10	10	10	15	20	30	40	60
	C2 (min)	120	60	50	40	30	20	15	10	10	10	10	10	5
Wastewater production		Holiday	Low wastewater production				Normal wastewater production				High wastewater production			

- Code 0 to 12 is only used for time management of the treatment plant. By choosing the **oxygen probe** code, the operation of the treatment plant is controlled only by means of the oxygen probe (located in the nitrification part of the WWTP).
- When choosing the operation by means of the **oxygen probe**, we set the parameter – **limit and hysteresis** – using the arrows.
- Using the arrows keys and the **SET** button, set the parameters – **limit and hysteresis** – to the required values (basic values are already preset), limit 1.5 mg/l and hysteresis 0.5 mg/l. The blower turns on when the amount of dissolved oxygen falls below 1.5 mg/l and turns off when it exceeds 2 mg/l.
- After selecting and conforming the mode, parameters can be changed using the **UP** and **DOWN ARROW KEYS**. After selecting the desired parameter, confirm with the **SET** button and confirm by pressing the **SET** button again to return to **MODE** selection.
- Using the arrow keys and the **SET** button, continue to set the **AERATION** parameter and set it to values of 20 seconds (blower operation) and 10 minutes (pause). Setting of these parameters is in operation, regardless the amount of dissolved oxygen.
- After selecting and conforming the mode, parameters can be changed using the **UP** and **DOWN ARROW KEYS**. After selecting the desired parameter, confirm with the **SET** button and confirm by pressing the **SET** button again to return to **MODE** selection.
- Using **THE ARROW KEYS** and the **SET** button, continue to set the **DENITRIFICATION** parameter. Set it to a value of 40 minutes (blower operation blocking) and 120 minutes (regular repetition period). NOTE: The regular aeration function remains active even during the blocking time.

After selecting and confirming the mode, parameters can be changed using the **UP** and **DOWN ARROW KEYS**. After selecting the desired parameter, confirm with the **SET** button and confirm by pressing the **SET** button again to return to **MODE** selection.

Mixing:

- This function is used to mix the sludge in activation with a longer aeration delay than 10 min.
  - Using **THE ARROW KEYS** choose the desired parameter, confirm with the **SET** button and confirm by pressing the **SET** button again to return to **MODE** selection. Recommended setting – mix for 10 seconds every 10 minutes of the rest period.

Setting the parameters of phases C3 to C6 (cleaning the settling zone of the reactor):

P2 – startup of C3–C6 (setting the hour when cleaning starts)

- Using the **MODE** button and the **ARROW KEYS** choose mode **P2** and confirm with the **SET** button. The mode will appear on the display along with the current time at which cleaning will begin.
- Example: P2, 23 o'clock means that Phase C3 is to be activated at 11 p.m.
- Using **THE ARROW KEYS** choose the desired hour, confirm with the **SET** button and confirm by pressing the **SET** button again to return to **MODE** selection.

P3 – frequency of C3–C6 (setting the cleaning repeat period)

- Using the **MODE** button and the **ARROW KEYS** select **P3** mode and confirm with the **SET** button. The mode appears on the display along with the parameter setting (1, 2, 3 hours to 24 hours or the START parameter.).
- Example: E.g. code "12" means starting phases **C3–C6** after 12 hours.
- Using **THE ARROW KEYS** select the desired period length and confirm with the **SET** button, then confirm by pressing the **SET** button again to return to **MODE** selection.
- The **START** option is used to test the operation of individual phases C1–C6. The previous settings remain unchanged. Use the arrow keys to skip through the individual phases.

Setting the night and weekend operation (secondary timing):

P4 – secondary mode

- Using the **MODE** and **ARROW KEYS** select mode **P4** and confirm with the **SET** button. The current mode appears on the display.

Parameter P4	Meaning
0	Secondary mode is OFF
1	Secondary timing mode daily from 23:00 to 5:00
2	Secondary timing mode from Saturday 0:00 to Monday 0:00
3	Combination 1 + 2 (night and weekend)
4	Secondary timing mode when DV4 input is active

- Use the **ARROW KEYS** to select the desired parameter 1–4 and confirm with the **SET** button. Press the **SET** button again to return to the **MODE** selection.

P5 – C1, C2 in secondary mode (Setting time intervals C1, C2 in secondary mode)

- Using the **MODE** button and **THE ARROW KEYS** select mode **P5** and confirm with the **SET** button. Current mode will appear on the display along with the code of the set parameter according to the following table:

Mode	Code	0	1	2	3	4	5	6	7	8	9	10	11	12	Oxygen probe
P1	C1 (min)	10	10	10	10	10	10	10	10	15	20	30	40	60	The blower operation is controlled by an oxygen probe – not by time
	C2 (min)	120	60	50	40	30	20	15	10	10	10	10	10	5	

- Select the desired code and confirm with the **SET** button, then confirm by pressing the **SET** button again to return to **MODE** selection.

P6 – dosing (dosing pump operation setting – dosing of phosphorus precipitation chemicals)

- The switching time in seconds (dose size) and the repetition period in hours are adjustable. Setting either time to 0 disables the dosing function. The first switching of the dosing relay happens one minute after the control unit is switched on; or after the parameter settings are changed.
- Using the **MODE** button and **THE ARROW KEYS** select mode **P6** and confirm with the **SET** button. The mode appears on the display along with the set current dosing time (in seconds) and the set current delay time for switching the dosing pump (in hours).
- Using **THE ARROW KEYS** select the desired code and confirm with the **SET** button, then confirm by pressing the **SET** button again to return to **MODE** selection.

Current time (setting and correcting the current time of the control unit)

- Using the **MODE** button and **THE ARROW KEYS** select mode Current time and confirm with the **SET** button. Mode appears on the display in the order DAY, MONTH, YEAR, HOURS and MINUTES.
- Using the **SET** button select the parameter that is to be set. Using the arrow keys set the desired parameter and confirm with the **SET** button. Continue this way to the current setting of the selected time and date.
- After selecting and confirming the mode, parameters can be changed using **THE UP AND DOWN ARROW KEYS**. After selecting the desired parameter, confirm with the **SET** button, then confirm by pressing the **SET** button again to return to the MODE selection.

9. FIRST OPERATION OF THE WWTP (START-UP PERIOD)

The treatment plant will only reach the required level of wastewater treatment after a certain period of regular operation of the WWTP with the designed load and multiplication of microorganisms. The start-up period, i.e. the time from putting into operation to achieving full treatment efficiency, takes approximately 3 to 8 weeks. During the start-up period, the settings, operation (phase C1) and interruption (phase C2) times are different from normal operation of the treatment plant. During the start-up period, it is necessary to supply a larger amount of air to the treatment plant than during normal operation. A sign of a successful start-up is the achievement of a sludge concentration of 25–30 % (the concentration gradually increases).

The biological process can be implemented in two ways:

a) By gradual inflow of wastewater and constant loading even above the set technological parameters.
b) By importing activated sludge from another well-functioning biological WWTP, the so-called inoculation sludge, in an amount of approximately ¼ of the treatment plant volume.

If the treatment is not started-up within 8 weeks of operation, contact an authorized dealer.

10. OPERATING THE WWTP

10.1. GENERAL

The treatment plant is designed for continuous operation. Wastewater may only be supplied to the treatment plant in the quantity and quality specified in the relevant wastewater discharge permit.

For proper operation, the treatment plant must be permanently switched on. If the quantity or quality of the incoming wastewater has changed compared to the original project documentation, contact an authorized dealer or ENVI-PUR, s.r.o. for further instructions.

Operating the WWTP includes activities that will allow the treatment plant to operate reliably and without failures so that the parameters of the treated discharged water are constantly maintained. The operation of the WWTP includes:

- Switching the WWTP ON / OFF,
- setting and checking functions using the control unit,
- checking and cleaning individual parts of the WWTP tank,
- maintenance of the membrane blower,
- ensuring the disposal of waste generated during the operation of the WWTP,
- keeping documentation on the operation of the WWTP,
- securing the WWTP in case of emergency operating conditions.

10.2. SWITCHING THE WWTP ON / OFF

BASIC	Switch on (off) by plugging in (pulling out) the plug of the blower's mains cord into the socket of the timer switch inserted into the installation socket for the supply of electricity to the WWTP.
OPTIMA	Switch on (off) by plugging (pulling out) the plug of the power cord of the control unit into the installation socket for the supply of electricity to the WWTP.
COMFORT	Switch on (off) using the circuit breaker on the electrical switchboard.

Leave the WWTP permanently switched on. Switch it off only for short periods of time, if necessary, e.g. for maintenance.

10.3. TOOLS REQUIRED FOR THE WWTP OPERATION

For the proper and simple operation and maintenance of the WWTP, you will need the following tools:

- Rubber gloves,
- perforated ladle,
- long-handed brush,
- 1 L measuring cylinder,
- pH papers,
- shovel,
- ladle for activated sludge.

10.4. ACTIVITIES PERFORMED DURING OPERATION

10.4.1. Summary

Interval					Activity	
day	**week**	**month**	**½ year**	**other**	**name**	**procedure**
x					daily check	10.4.2
	x				weekly check	10.4.3
	x				pH measuring	10.4.3
		x			sludge concentration measuring	10.4.4
				3–4 months	blower inspection	10.4.5
			x	or if necessary	sludge removal	10.4.6
				if necessary	water sampling	10.4.7

If the procedures described below are not clear enough, or you would like to learn more details about the activities involved in operating a WWTP, please read the full version of the instructions at www.envi-pur.cz.

10.4.2. Daily check

The purpose of the daily inspection is to verify that the WWTP is running and that there is no mechanical damage to the blower or the electrical switchboard. The inspection is usually only visual, without the need to open the WWTP tank. With the COMFORT model, you can easily detect an alarm using the signaling or error message.

Wait until the WWTP enters phase C1 (blower on). Observe whether the blower has been turned on and whether its noise or temperature has increased unusually. Furthermore, check whether there is any mechanical damage to the electrical switchboard, blower body or its power cable.

10.4.3. Weekly check

As part of the weekly inspection, it is necessary to visually check the condition of the WWTP in addition to the daily inspection. During the inspection, it is necessary to remove the tank cover. Check whether the device is not mechanically damaged and whether any event has occurred that has not occurred before or seems unusual to you.

WWTP part under inspection:	Cause and method of removal
Inlet basket for catching coarse dirt	Check for distinct air bubbles passing through the basket. If this is not the case, slightly increase the air flow under the basket by turning the appropriate valve on the air distributor.
	If there are large pieces of non-biodegradable substances in the basket (plastics, rubber, textiles) or the water level in the basket is higher than the water level in the denitrification zone, clean the basket.
Return sludge mammoth pump	The mammoth pump ensures pumping out of the activated sludge from the settling zone. It must pump out whenever the blower is on. It is necessary to check if it has not been clogged. If it becomes clogged, it can be cleared with air or water pressure. If this does not help, the mammoth pump needs to be dismantled and cleaned mechanically.

WWTP part under inspection:	Cause and method of removal
Settling zone	Check the purity of the water surface in the settling zone and, if there is a large amount of dirt, remove the dirt from the surface using a scoop or a ladle and move it to the denitrification zone.
Outlet box	Check whether the overflow edge in the outlet box is clean, or clean it mechanically if necessary. Check that the overflow edge is cleaned with air while the blower is running.
Nitrification zone	Check whether evenly distributed air bubbles are visible on the water surface of the nitrification zone. If not, adjust the air distribution setting.
P-LESS phosphorus precipitation device (if the WWTP is equipped with one)	Check the injection valve of the flocculant dosing tube (PAX) – whether the solution is dosed correctly when the dosing pump is running and whether the solution does not flow spontaneously when the dosing pump is turned off.
pH measuring	The purpose of the inspection is to determine whether the pH value has changed from the optimal range of 6.5 to 8.5 due to biological and chemical processes in the treatment plant or due to changes in the nature of the incoming wastewater. Remove the tank cover and use a ladle to take a sample for inspection from the reactor. You can measure the pH using pH indicator papers or a pH meter (if you have one). The sample is taken from the nitrification zone. If the pH does not correspond to the optimal range, adjust the pH value according to the full instructions.

10.4.4. Sludge concentration measuring (the settling test)

The purpose of the inspection is to determine whether the reactor has the optimal concentration of microorganisms that cause wastewater treatment. These microorganisms occur in the form of flakes dispersed in wastewater and are called activated sludge.

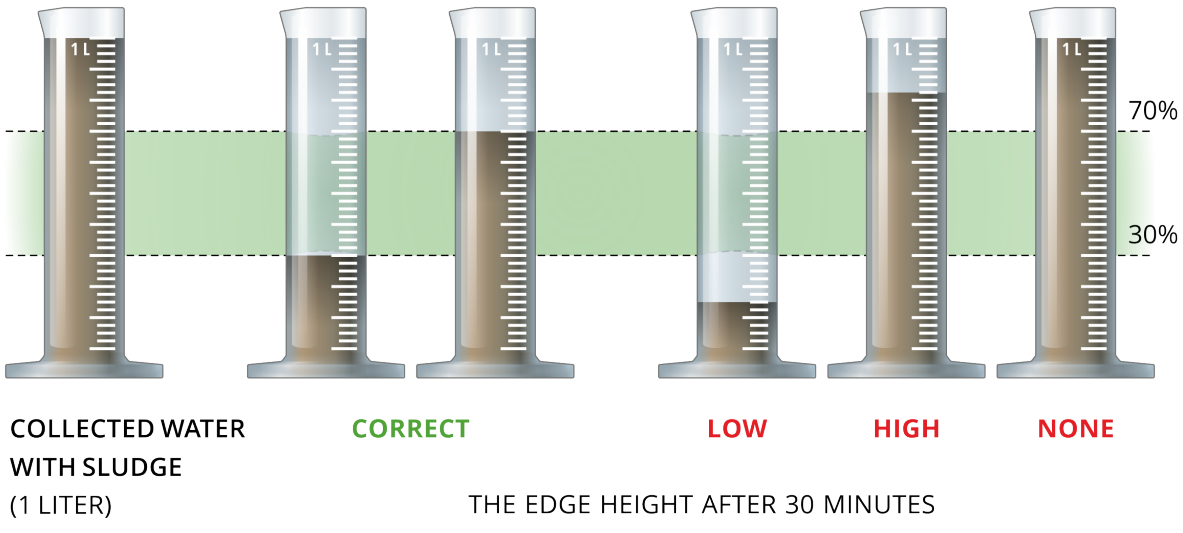
Take water from the nitrification zone into a measuring cylinder or other cylindrical transparent container with a capacity of 1 L while the blower is running (aeration should be running for at least 5 minutes).

Leave the cylinder or container to stand still for 30 minutes in a shaded, level place.

Determine whether a clear boundary line between sludge and clean water has been formed. If this is not the case, proceed as described in the chapter 12.

Measure the sludge height.

Sludge concentration	Control unit setting
0 – 30 %	Low sludge concentration.
30 – 70 %	Ideal sludge concentration.
70 – 100 %	High sludge concentration. Perform desludging of the WWTP – 10.4.6.



10.4.5. Blower check

Before starting work, disconnect the blower's power cable from the electrical network.

When cleaning, follow the blower's operating and maintenance instructions. After finishing work, check the blower's operation during operating phase.

Regularly check the noise level and the temperature of the blower, and that the mains supply is not damaged. The dust filter must be cleaned once every 3 months. (filter hidden under the green cover).

The blower is equipped with a signalization of damaged membrane. In case of a damage, a red light on the outer cover of the blower lights up.

If you need to replace the membranes, please contact an authorized dealer or the company ENVI-PUR, s.r.o.

10.4.6. Pumping out of the sludge – "desludging"

In the course of the WWTP operation, sludge accumulates in the nitrification zone and must be pumped out. The expected sludge removal interval is approximately 2 times a year (depending on the load on the WWTP, the frequency may be lower or higher).

Sludge and water pumped out of the WWTP are considered waste and must be disposed of in accordance with relevant legislation.

During the desludging process, proceed as follows:

- Turn the WWTP into mode C1 or connect the blower to the power socket so that the entire volume of activation is mixed evenly (approx. 1 min).
- Carefully insert the end of the suction hose of the fecal truck or other pumping equipment into the nitrification zone (**Be careful! There are aeration elements attached to the bottom**!).
- Slowly pump about 1/5 to 1/2 of the tank volume.
- **In the process of pumping, the difference between the water level in the nitrification zone and the settling tank must not be greater than 40 cm, otherwise the settling tank may get damaged**.
- Take out the ending of the suction hose of the fecal truck or other pumping equipment.
- Switch on the WWTP.
- To verify, that a sufficient amount of sludge has been pumped out, perform the settling test the very next day.
- If there is no change in the result of the settling test, repeat the same procedure again.

Pay extra attention to the handling of the hose and its ending, so that it does not damage the reactor. Refill the pumped volume immediately after the pumping.

10.4.7. Sampling

The collection of samples and the subsequent analyzes of the waste water will allow to obtain information about the function of the treatment plant. You can do them for your own use or because it is required by the relevant water management authority.

It is the duty of the WWTP operator to collect samples and ensure their analysis based on the decision of the relevant water management authority. Specified sampling and analysis information can be found in the water law decision (may vary according to local legislation).

The collected samples must always be analyzed in a laboratory specialized in waste water analysis

Before taking the samples yourself, always first agree with the laboratory that will perform the analyses, on the number and quantity of samples taken. At the same time, the laboratory should give you sample boxes (special bottles) in which you will transport the samples to the laboratory and detailed instructions for collection

Samples can be taken using a plastic bottle attached to a rod approximately 1.5 meters long. Before taking the sample, rinse the bottle with clean water and let it dry.

Take the outlet samples from the sampling point specified in the project. The outlet sampling point should be placed right after the treatment plant as part of its project solution. If the treatment plant is not equipped with a sampling point, the sample can be taken from the outlet box in the WWTP tank.

10.5. DOSING OF PHOSPHORUS PRECIPITATION AGENT (P-LESS)

If required by the water treatment permit, the WWTP must be equipped with a device for dosing PAX-18 for phosphorus precipitation. The required dose of the precipitant must be set. The initial setting is made by an authorized dealer when the treatment plant is handed over. The dosed amount can be changed according to the instructions for the phosphorus precipitation device.

11. NON-STANDARD OPERATING CONDITIONS

11.1. WINTER OPERATION

The WWTP tank is installed underground and no additional insulation is required for the winter operation. In the winter period, it is necessary to pay extra attention to compliance with health and safety regulations. In particular, it is necessary to ensure that access to operated equipment and objects is kept in a serviceable condition (remove snow and dispose of ice by gritting).

Before the winter season, it is advisable to desludge the WWTP, if necessary. The appropriate amount of sludge for winter operation is approx. 40–50 %. In winter, the temperature of the waste water in the WWTP decreases and thus the activity of bacteria also decreases. The cleaning efficiency is lower during this period and the temperature of the waste water should not fall below 5 °C.

If wastewater is continuously supplied to the WWTP and the blower is in operation, there is no risk of the technology freezing.

However, pay extra attention to checking the blower, if it is placed in a pillar or in another object, e.g. in the ground. We also recommend checking that there is no condensation water on the “discharge pipe” from the blower to prevent freezing.

11.2. SHORT-TERM SHUTDOWN

When the inflow of wastewater into the WWTP tank is stopped for a maximum of 3 weeks (e.g. during a holiday), the operation of the WWTP is not significantly disrupted. During short-term shutdowns, it is advisable to reduce the frequency of the blower operation.

WWTP type	Control unit setting
BASIC	set the time interval of the blower operation (phase C1) to the shortest possible time (e.g. 15 minutes of operation + 75 minutes of blower at standstill)
OPTIMA	set the program 0
COMFORT	set the time intervals for phase C1 and C2 in P1 mode to code 0 on the control unit; turn off the dosing pump for PAX

Never turn off the WWTP during a short-term shutdown.

If the inflow of wastewater is stopped for more than 3 weeks, consider completely shutting down the WWTP (see 11.3).

11.3. COMPLETE SHUTDOWN

In case of a complete shutdown, it is necessary to:

- Turn off the power supply completely (switch off the circuit breaker).
- Completely wash the PAX dosing route with clean water (dip the suction basket into clean water and turn on the dosing pump until clean water flows out from the injection valve in the WWTP, clean the suction basket and the injection valve), if WWTP is shut down in the winter season, it is advisable to drain all the water from the dosing route (remove the suction basket from the water, leave it in the air and switch on the pump, until all the water is forced out of the hose), after that you can switch off the dosing pump.
- Completely pump out the entire reactor in the manner consistent to 9.5.7.
- Clean the reactor by rinsing it with clean water and pump the water out again.
- Fill the reactor with clean (non-potable) water.
- When putting the WWTP back into operation, the WWTP must be started-up again – see chapter 9.

12. FAILURES AND TROUBLESHOOTING

Functional or technological malfunctions may occur during the operation of the WWTP. Functional malfunctions usually lead to the immediate shutdown of the treatment plant, technological malfunctions lead to a short-term or long-term deterioration of the cleaning efficiency. Technological malfunctions can be caused by a load on the treatment plant that does not correspond to the project documentation (a large amount of water supplied to the treatment plant, the supply of water with a composition that does not correspond to domestic waste water or a different composition of the supplied industrial water) or neglect of operation and maintenance. If you are unsure how to fix the problem, contact your authorized dealer or the manufacturer. Faults and failures are described in detail in the full manual.

Functional failure	Solution
Fault indication (light or sound) for the blower.	Blower needs service. Contact authorized dealer or manufacturer as soon as possible.
Fault indication on the Comfort+ control unit.	Find a specific solution in the full manual, if necessary, we recommend contacting an authorized dealer or manufacturer.
Malfunction of the WWTP technology.	Identify the problem according to the full operating instructions and contact an authorized dealer or manufacturer as soon as possible.

Technological failure	Cause and solution
Settling test result with sludge amount below 30 %.	This is a normal condition during the start-up period of the WWTP, sludge is gradually formed, this problem will disappear over time. Check again by performing the settling test again after 2 weeks.
	During normal operation this can be affected by sludge poisoning = limit toxic substances fed to the WWTP. Furthermore, it can be caused by excessive sludge removal.
Settling test result with sludge amount over 70 %.	There is an excessive concentration of sludge in the WWTP tank = perform sludge removal.
Settling test result with sludge amount over 70 % after desludging.	Insufficient desludging = repeat desludging.
	High sludge concentration = overgrowth of filamentous bacteria. Contact an authorized dealer or manufacturer.
Presence of white foam on the water surface of the nitrification zone.	This is a normal condition during the start-up period of the WWTP, sludge is gradually formed, this problem will disappear over time.
	During normal operation, this may be caused by excessive sludge removal. White foam is often caused by excessive detergent use, limit its use.
WWTP smells excessively.	The smell of the WWTP is a typical result of a lack of oxygen = check the air system settings. It can also be caused by a high sludge volume = perform desludging if the settling test shows > 70% sludge.

Technological failure	Cause and solution
An increased occurrence of surfaced dirt on the surface of the settling zone.	If the settling test results in amount of sludge exceeding 70 %, perform desludging. Low sludge recirculation by the return sludge mammoth pump or over-oxygenation of the nitrification zone = Increase the air supply to the return sludge mammoth pump or reduce the aeration frequency on the control unit.
An increased occurrence of small flakes in the outlet.	This is a normal situation during the start-up period of the WWTP, and this problem will disappear over time.
	During normal operation, this problem may be caused by a change in the quality of the inflow = reduce toxic substances. The WWTP may be over-aerated = reduce the blower running time on the control unit. Lack of oxygen, gray or black sludge = contact an authorized dealer or manufacturer. The WWTP may be overloaded = reduce the wastewater inflow.

13. KEEPING THE OPERATION DOCUMENTS

Records must be kept of the operation of the WWTP. It is necessary to keep record of the performance of activities to at least the following extent:

Name	Record
Daily check	Malfunctions and unusual events with date of occurrence
Weekly check	Date of execution, malfunctions and unusual events in the event of an occurrence
pH measuring	Date of execution, value
Sludge concentration check	Date of execution, value
Blower check	Date of execution
desludging	Date of execution
sampling	Date of execution

It is also necessary to keep record of:

- Performed service and repairs,
- Date of the WWTP shutdown and putting back to operation.

The WWTP operator is responsible for keeping records.
The records are checked by the relevant Water Management Authority.
In the case of applying for a warranty repair, a complaint may not be recognized without submitting records.

14. ELECTRICAL INSPECTION

It is necessary to ensure that electrical equipment is inspected at regular intervals as required by law.

15. DISMANTLING AND DISPOSAL

There are no special procedures for dismantling and disposal. Carry out this by following the normal procedures used for dismantling and disposal of machinery and equipment and parts of buildings.

16. TECHNICAL SPECIFICATIONS

16.1. PARAMETERS OF TREATED WASTEWATER

Parameters of the treated wastewater WWTP BC 4–12 BASIC, OPTIMA, COMFORT				
Parameter	**BASIC, OPTIMA, COMFORT**		**BASIC P-LESS, OPTIMA P-LESS, COMFORT P-LESS**	
COD	49.0 mg/l	92 %	29.0 mg/l	96 %
BOD_5	5.6 mg/l	98 %	4.0 mg/l	98 %
SS	13.0 mg/l	96 %	10.0 mg/l	97 %
$N\text{-}NH_4^+$	10.0 mg/l	77 %	16.0 mg/l	71 %
N_{total}	–	–	25.0 mg/l	64 %
P_{total}	–	–	1.1 mg/l	94 %

Note: WWTPs with the P-LESS designation are equipped with phosphorus precipitation equipment.

16.2. WWTP CAPACITY AND ITS LOADING

BC biocleaner®	**BC 4 PP**	**BC 6 PP**	**BC 10 PP**	**BC 12 PP**
Number of connected inhabitants (EO)	4	6	10	12
Possible number of connected persons	1–4	3–6	5–10	6–12
Nominal value of wastewater (m^3/day)	0.60	0.90	1.50	1.80
Nominal WWTP loading in BOD_5 (g/day)	240	360	600	720

16.3. HYDROTECHNICAL PARAMETERS

BC biocleaner®	**BC 4 PP**	**BC 6 PP**	**BC 10 PP**	**BC 12 PP**
Denitrification zone volume (m^3)	0.46	0.54	0.92	1.27
Nitrification zone volume (m^3)	0.94	1.27	2.15	2.63
Settling zone volume (m^3)	0.37	0.50	0.97	1.05
Total volume of the reactor (m^3)	1.77	2.31	4.04	4.95
The area of the settling tank (m^2)	0.43	0.68	0.72	0.82
Maximum weight of the tank (kg)	150	165	180	200

16.4. ELECTRICAL INSTALLATION

BC biocleaner®	**BC 4 PP**	**BC 6 PP**	**BC 10 PP**	**BC 12 PP**
Blower type	JDK 60	JDK 80	JDK 120	JDK 150
Installed blower power input	40 W	50 W	95 W	115 W
Voltage	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz
Feeder cable protection	10 A	10 A	10 A	10 A
Feeder cable type	CYKY-J 3x2.5	CYKY-J 3x2.5	CYKY-J 3x2.5	CYKY-J 3x2.5
Noise pollution (noise source – blower)	36 dB	38 dB	45 dB	44 dB
Connection of the WWTP switchboard	Connection using a protected 230 V socket, connected via a circuit breaker.			

16.5. MAXIMUM CAPPING HEIGHT AND MAXIMUM ADMISSIBLE PEDESTRIAN LOAD

BC biocleaner®	**BC 4 to BC 12** (identical for all the types)
Maximum height of the capping	0.0 m The WWTP tank is covered by a cover, which allows access to the entire tank. Therefore, it is not possible to place anything above the WWTP tank.
Maximum acceptable load by pedestrians	2.5 kN/m^2

16.6. STANDARDS AND REGULATIONS

16.6.1. Design standards and regulations

WWTP BC biocleaner® conforms to its design and execution in particular to the following regulations and standards:

- Government Regulation No. 176/2008 Coll. as amended that complies with Directive 2006/42/EC on machinery,
- Government Regulation No. 117/2016 Coll. that complies with Directive 2004/108/EC on electromagnetic compatibility,
- Act No. 100/2013 Coll. on technical requirements for products
- ČSN EN 12566-3+A2,
- ČSN EN ISO 12100,
- ČSN EN 60335-1 ed. 3,
- ČSN EN 61000-6-3 ed. 2,
- ČSN EN 61000-6-1 ed. 2,
- ČSN EN 1992-1-1,
- ČSN 33 2000-4-41 ed. 2.

Note: Legislative regulations and standards undergo amendments and updates. We inform you that:

- Directive 2004/108/ES. revised and replaced by Directive 2014/30/EU,
- Act No.100/2013 revised by Act No. 526/2020,
- ČSN EN 12566-3+A2 replaced by the standard ČSN EN 12566-3,
- ČSN EN 61000-6-1 ed. 2 replaced by the standard ČSN EN IEC 61000-6-1 ed.3,
- ČSN EN 1992-1-1 revised by the standard ČSN EN 1992-1-1 ed. 2,
- ČSN 33 2000-4-41 ed. 2. replaced by the standard ČSN 33 2000-4-41 ed.3.

16.6.2. Operating standards and regulations

When operating the equipment, observe these instructions and the generally applicable regulations and standards relating in particular to:

- The occupational safety and health,
- machine and equipment operation,
- electrical equipment operation.

The instructions in this technical sheet are compiled based on our experience and with the aim of achieving optimal results when using the product. We bear no responsibility for damages caused by incorrect product selection, incorrect use or due to poor quality workmanship. This technical sheet supplements and replaces all previous editions, the manufacturer reserves the right to possible later changes and additions. Only the full manual contains all the important information and a link to it is mentioned at the beginning of this manual.

Declaration of Properties

No:

envi pur
rethinking water

1. Unique product type identification code

Identifier	A			B	C	D	E		F
BIO CLEANER BC*	4	15	35	no marking (circular)	no marking	no marking	BASIC	BASIC DUO	no marking (no phospsorus precipitation)
	6	16	40	K (rectangular)	PE	with a lid	OPTIMA	OPTIMA DUO	P-LESS (with phosphor precipitation)
	8	20	45		PP	with an attachment	COMFORT	COMFORT DUO	
	10	25	50		SL	N (not self-supporting)	EXCLUSIVE	EXCLUSIVE DUO	
	12	30			B		EXCLUSIVE UV	EXCLUSIVE UV DUO	

* according to the specified identifier

2. Type, series or serial number or any other element identifying construction products according to Art. 11, Section 4:
Serial Number: see the number of the Declaration

3. Intended use or intended uses of the construction product in compliance with the relevant harmonized technical specification according to the qualification of the Producer: Biological Activation Wastewater Treatment Plant

4. Name, business or registered trademark and contact address of the Producer according to Art. 11, Section 5:
ENVI-PUR, s.r.o., Na Vlcovce 13/4, 160 00 Prague 6 – Dejvice, Czech Republic

5. Name and contact address of an authorized representative with power of attorney related to the tasks specified in Art. 12, Section 2: -

6. System or systems of assessing and verifying the stability of the properties of construction products as specified in Annex V: 3

7. In case of a declaration of properties regarding a construction product which the harmonized standard applies to:
The Prague Technical and Testing Institute for Construction, Notified Body No. 1020, Prosecka 76, Prague 9, company identification code: 00015679, executed an initial test of the product type according to System 3 and issued a Properties Assessment Report No. 1020 – CPR – 090038112.

8. In case of a declaration of properties regarding a construction product which a European technical assessment has been issued for: -

9. Properties specified in the Declaration

Basic Characteristics	Property	BASIC, OPTIMA, COMFORT	BASIC DUO, OPTIMA DUO, COMFORT DUO	BASIC P-LESS, OPTIMA P-LESS, COMFORT P-LESS	EXCLUSIVE P-LESS	BASIC DUO P-LESS, OPTIMA DUO P-LESS, COMFORT DUO P-LESS	EXCLUSIVE DUO P-LESS	EXCLUSIVE UV P-LESS	EXCLUSIVE UV DUO P-LESS	Harmonized Technical Specifications
Purification efficiency degree	COD (mg/l)	92%	94%	96 % [4]	95 % [4]	97 % [4]	96 % [4]	95 % [4]	96 % [4]	EN 12566-3 + A2:2013
	BOD_5 (mg/l)	98%	99%	98 % [4]	98 % [4]	99 % [4]	98 % [4]	98 % [4]	98 % [4]	
	SS (mg/l)	96%	97%	97 % [4]	95 % [4]	98 % [4]	94 % [4]	95 % [4]	94 % [4]	
	$N\text{-}NH_4^+$ (mg/l) [11]	77%	96%	71 % [4]	73 % [4]	80 % [4]	81 % [4]	73 % [4]	81 % [4]	
	N_{total} (mg/l) 3) [12]	-	51%	64 % [4]	64 % [4]	59 % [4]	59 % [4]	64 % [4]	59 % [4]	
	P_{total} (mg/l) [13]	-	19% [12]	94 % [4]	91 % [4]	95 % [4]	90 % [4]	91 % [4]	90 % [4]	
	Enteroccoci [14]	-	-	-	-	-	-	99,99 %	100 %	
	Escherichia coli [14]	-	-	-	-	-	-	99,99 %	100 %	
	Fecal coliform bacteria [14]	-	-	-	-	-	-	99,99 %	100 %	
	Coliform bacteria [14]	-	-	-	-	-	-	99,99 %	100 %	
	Somatic coliphage [14]	-	-	-	-	-	-	100 %	100 %	
Rated organic daily load	0.24 / 0.36 / 0.48 / 0.60 / 0.72 / 0.90 / 0.96 / 1.20 / 1.50 / 1.80 / 2.10 / 2.40 / 2.70 / 3.00 kg BSK_5/day [6]									
Rated daily flow	0.6 / 0.9 / 1.2 / 1.5 / 1.8 / 2.25 / 2.4 / 3.0 / 3.75 / 4.5 / 5.25 / 6.0 / 6.75 / 7.5 m^3/day [6]									
Water tightness	Passed the water test									
Holding capacity	Passed the calculation for load by hydrostatic pressure, soil (1850 kg/m^3; 36°), DRY / load by hydrostatic pressure, soil (1850 kg/m^3; 36°), DRY/ load by hydrostatic pressure, soil (1800 kg/m^3; 42°), lids (1.5 kN/m^2), DRY/ load by hydrostatic pressure, soil (1800 kg/m^3; 42°), lids (2.5 kN/m^2), DRY/ load by hydrostatic pressure, soil (1800 kg/m^3; 36°), lids (2.5 kN/m^2), DRY/ NPD / NPD / load by hydrostatic pressure, soil (1850 kg/m^3; 42°), lids (2.5 kN/m^2), DRY/load by hydrostatic pressure, soil (1850 kg/m^3; 42°), lids (2.5 kN/m^2), DRY WET 0.5 for version B [7]									
Durability	Passed the test for PP / PE / stainless steel/concrete [8]									
Fire resistance	F									
Effect of dangerous substances	NPD									

Comment: the values mentioned in "Declaration of properties", are achieved according to the EN 12566-3+A2
1) EP = equivalent person is defined pollution value 60 g BOD_5 per day and waste water value 150 l/day
2) WWTP rated polluting mater and hydraulic load must not be exceeded
3) initial load N_{total} max. 11 g/person*d
4) average value from all measured values
5) geometric mean
6) according to Identifier A for 4 / 6 / 8 / 10 / 12 / 15 / 16 / 20 / 25 / 30 / 35 / 40 / 45 / 50
7) according to Identifier A for 4 / A+C pro 6, 8, 10, 12, 16 PP / A+C+D for 4, 6, 8, 12, 15 PE with a lid / A+C+D for 4, 6, 8, 12, 15 PE with an attachment / A+B+C+D for 4, 6, 8, 12, 15 PE with an attachment / A+B+C+D for 16, 20, 25, 30, 40, 50 K PP / A+B+C+D for 16, 20, 25, 30, 40, 50 K PP N (not self-supporting) / A+C for 16, 20, 25, 30, 35 40, 45, 50 PP N (not self-supporting) / C for SL / C for B
8) according to Identifier A for 4 / C for PP / C for PE / C for SL / C for B
11) water temperature on the outlet is not under 12°C
12) T_{min} = 3,4°C; T_{max} = 19,8°C
13) with P-LESS (phosphorus precipitation)
14) with UV disinfection of purified waste water

ENVI-PUR, s.r.o.
Na Vlčovce 13/4, 160 00 Praha 6
Provozovna:
Wilsonova 420, 392 01 Soběslav
Tel.: 381 203 256, fax: 381 251 739
IČO: 25166077 DIČ: CZ25166077

10. The product property specified in Item 1 and 2 is in accordance with the property specified in Item 9.
This Declaration of Properties is issued at the sole responsibility of the Producer specified in Item 4.

Signed for and on behalf of the Producer:

In Soběslav on 15. 11. 2019

Milan Drda
Executive and Technical Director

More than 25 YEARS on the market

ENVI-PUR, s.r.o.
Na Vlčovce 13/4
CZ-160 00 Praha 6
Czech Republic

Reg. no: 251 66 077 ⊖ VAT no: CZ25166077
File number 167596C, registered in the Commercial Register at the Municipal Court in Prague

Head office & Production
Wilsonova 420
CZ-392 01 Soběslav
Czech Republic

+420 381 203 211
info@envi-pur.cz
www.envi-pur.cz

www.envi-pur.cz

ENVI-PUR, s.r.o.

Wilsonova 420
392 01 Soběslav
Czech Republic

+420 381 203 211

servis@envi-pur.cz

www.envi-pur.cz

update: 1/2025