



ALL YOU NEED TO KNOW ABOUT YOUR
WASTEWATER TREATMENT PLANT

X-PERCO® C-90



OWNER'S MANUAL

VERSION : 20200505

X-PERCO® C-90

From 5 to 40 PE



Thank you for your trust !

Dear Client,

While acquiring your wastewater treatment plant, you have shown a clear interest in the protection of your environment and, in particular, in the protection of your water, a resource which is especially valuable to us. We thank you for the trust you have placed in us by choosing the **X-Perco® C-90** designed by Eloy Water.

The **X-Perco® C-90** wastewater treatment plant is a trickling organic filter which uses the principle of natural purification of wastewater. Treatment is ensured by a bacteria population that is attached to **the Xylit**, a completely natural organic fibre. It is a “by-product” from the extraction of lignite that we redevelop into a filter medium for our products. By its very nature, this innovative substrate has **far superior filtering properties** than a majority of other substrates that are traditionally used on the market.

The Xylit is a fibre which has until now been considered as an organic waste, derived from wood, carbonaceous and confined in lignite for several million years. With this media, Eloy Water has found an innovative filtering solution that allows **this product to be transposed into a product** which has very interesting **wastewater purification** properties and has **the lowest** replacement intervals **in the market**.

The X-Perco® C-90 has several technical innovations that make it ingenious, efficient, economical and sustainable.

We guarantee that, if the installation is in accordance with the instructions in the installation guide and the operation is in accordance with this owner manual, your **X-Perco® C-90** meets the standards in force at the installation date of your setup.

For an optimal, economical and sustainable use of your **X-Perco® C-90**, we strongly recommend that you read this document which includes “**The Owner Manual**” and “**The Installation Guide**”, and to comply with the operating instructions.

For any additional information, please visit our website www.elaywater.com.

Security Regulations

It is highly recommended that you strictly limit all maintenance on the plant - apart from what we call “adapted monitoring” in our maintenance contracts - to technicians who are certified by our company.

Risk Prevention

People who operate on the plant are required to wear PPE (personal protective equipment) which have been adapted to the work to be carried out.

As a reminder and to be remembered:

- It is compulsory that all workers who deal with the handling of heavy parts and where the feet are likely to be hurt due to a fall must wear **safety shoes**;
- It is compulsory that all workers who handle sharp, cutting, spiky, aggravating, burning or rough objects or products or materials must wear **protective gloves**;
- It is compulsory that all workers who are exposed to splashes of dangerous substances, to projection of particles from sawing and grinding works and exposed to harmful radiations during welding or cutting works must wear **protective glasses**;
- It is compulsory that **appropriate masks** be worn when the ambient air contains dust particles or harmful and dangerous substances;
- **Individual earing protection** is required when loud motors are used.

In terms of security, the main risks linked to a wastewater treatment plant are listed below.

➤ Biological Risks

Wastewater and sludge contain **bacteria** and **pathogenic** viruses.

Whenever possible, all direct contact of the hands (and all other parts of the body) with such substances should be avoided. **Work gloves** and **appropriate clothing** must be worn. As long as a person is in contact with polluted water and that he or she has not washed or disinfected their hands, it would be preferable if he or she abstains from drinking, eating, smoking and touching their face with their hands.

In the event of contact with pathogenic substances, one must **wash and disinfect** the parts of the body that have been soiled using specific products and do not reuse the soiled clothing before they have been cleaned and disinfected.

It is also recommended that all tools and objects that have come into contact with the pathogenic substances be **washed and disinfected**.

➤ Mechanical hazards

The trickling filters from Eloy Water are supplied in standard with concrete lids. These are temporary and used to avoid water and dirt to enter inside the tanks during the transportation and the installation. The concrete lids do not support significant loads. It is therefore forbidden to step on it.

After the installation, it is necessary to replace them with appropriate lids, eventually with raisers. These accessories are available as an option from Eloy Water, either in concrete to support traffic loads (<3,5 tons) or in PEHD for pedestrian loads.

The lids can only be left open during the period of time required for the maintenance. Once this is completed, the lids must be closed and locked.

In the event of traffic loads greater than 3,5 tons or in the presence of an embankment height that is greater than 80cm, a load spreading slab must be installed above the tanks.

The dimensions of each spreading slab must be calculated by a consulting engineer who is specialized in stability or by Eloy Water.

➤ Hazards linked to gases

Some gas may cause discomfort or asphyxia. It is **forbidden for a single worker to go down into a structure** containing or having contained wastewater and, generally speaking, to go down into a confined space.

Nevertheless, if it is necessary to enter inside the tanks, they should be ventilated before any access. There must be **a second worker** on site - outside of the confined space – full time during the intervention, to pull out the first worker in the event of faintness and to raise an alert. The second worker should not go down into the tanks under any circumstance (ideally the first worker should wear a harness and the necessary material to pull him/her out of the tank).

In any case, you must comply with the local regulation.

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Owner Manual

X-Perco[®] C- 90 from 5 to 40 PE

Range :

- X-Perco[®] - C-90 – 5 PE – Single tank
- X-Perco[®] - C-90 – 5 PE – Double tank
- X-Perco[®] - C-90 – 10 PE – Double tank
- X-Perco[®] - C-90 – 15 PE – Double tank
- X-Perco[®] - C-90 – 20 PE – Double tank
- X-Perco[®] - C-90 – 25 PE – Triple tank
- X-Perco[®] - C-90 – 30 PE – Triple tank
- X-Perco[®] - C-90 – 40 PE – Triple tank



1. Eloy Water

1.1. Foreword

Eloy Water is a Belgian company specialising in the design, manufacturing, marketing and maintenance of products meant for wastewater and rainwater treatment and reuse.

It is part of the Eloy Group founded in 1965 and specialising in environmental protection and management.

Eloy Water has a complete range of reliable and efficient standard products that are available thru its network of specialised distributors and installers: single dwellings and commercial sewage treatment plants (including trickling filters) and semi-collective, rainwater tanks, oil separators, grease traps and pumping stations.

The various treatment procedures developed by the company are integrated into the high performance fibre reinforced concrete tanks, into the fibre glass reinforced polyester tanks or in the polyethylene tanks that are specially designed for this purpose.

For more information about Eloy Water and it's products, please visit the website at: www.elaywater.com.



Fig-1 : Eloy Group Site

1.2. Context

1.2.1. Preamble

In order to preserve the quality and the cleanliness of our environment and to limit health hazards, wastewater from homes must be drained away, purified then returned into the natural environment.

It is therefore necessary to treat the pollutants carried by wastewater (essentially organic matter, nitrogen and phosphorus) in order to limit their impact on the aquatic environment.


The self-contained drainage system is the technical and economical solution that is best suited for rural areas. This type of sanitation is meant for individual houses or small communities that are not connected to a public wastewater collection system.

The self-contained drainage system is recognised as a full-fledged alternative to the public collection system and is as effective, with an environmental impact of discharges that is reduced in rural areas.


1.2.2. Function of the User Guide

Long considered as an interim solution for the connection to collective sanitation (sewage), the self-contained drainage system is nonetheless a technically efficient and economically sustainable solution. This system must be adequately sized, properly installed and regularly maintained. This is precisely the purpose of this guide.

This guide concerns the Eloy Water System, model “X-Perco® C-90” that receives domestic wastewater from between 5 to 40 PE.

 Eloy Water must be informed in advance of all changes in the use of your dwelling or all modifications to your household wastewater treatment plant (addition of main parts, increase in the number of occupants, ...). Otherwise, the X-Perco® C-90 trickling filter may not function properly and lose its performance guarantee.

In addition, the Eloy Water “Support” department could offer you useful advice on the usage of your wastewater treatment plant.

 The concentration of grease that enters into your trickling filter mat not exceed 20 mg/litre. Otherwise, the X-Perco® C-90 trickling filter could also be subject to a serious breakdown and lose its performance guarantee.

1.3. Warranties

Eloy Water guarantees that your X-Perco® C-90, when used in normal conditions as described in this guide and combined with proper maintenance, is designed to purify wastewater in accordance with the regulatory requirements in effect at the time of its installation.

This warranty applies when the trickling filter:

- was correctly designed (characterization of the influent);
- was properly installed, connected and commissioned;
- is used normally;
- is regularly maintained in accordance with the manufacturer’s requirements.

The warranties are as follows:

- 10 years on the concrete tank or tanks (outer casing);
- 10 years on the filtering media, on the division system and on the repartition system (excepted the rotating bucket);
- 2 years on the other equipment (excluding accessories: pumps, raisers, lids,...).

1.3.1. Register now !

To ensure an optimal monitoring and to enable the warranty of your product and the reliability of its performances over time, register your installation within the 6 months following the commissioning via the website www.elaywater.com, or send the ID card to your local dealer.

2. General description of your X-Perco® C-90

The **X-Perco® C-90** trickling filter is a biological filter which uses the principle of natural purification of wastewater. This technology does not require any energy input. The treatment is ensured by a bacteria population that is attached to a ventilated fibre called the “Xylit”.

2.1. Characteristics

The X-Perco® C-90 includes several technical innovations which makes it both clever, efficient, economical and sustainable.

These characteristics are as follows:

- ✓ No electricity consumption
- ✓ Minimal footprint
- ✓ Compact
- ✓ Absence of noise (0 dB)
- ✓ Easy access to all components
- ✓ Durable substrate (estimated lifespan: 10 years) and 100% organic
- ✓ Higher purification rate at 95%

2.2. Operating Principle

Your X-Perco® C-90 is based on a technique called “trickling filter” that is ideally adapted for users. **This filter is both suitable for a permanent (main house) and/or intermittent (secondary house) sewage supply line for your dwelling.**

⚠ Rainwater cannot flow through the filter in any case.

Your wastewater treatment plant comes in the shape of one or several concrete tanks, arranged in two compartments:

A. Primary settling tank :

The wastewater arrive in the primary settling tank (1) and the suspended solids will settle in the lower section to be « pretreated », digested and liquified by anaerobic bacteria (which do not need oxygen to live). The primary settling tank also acts as a degreaser.

After a certain time of use, a « cap » made of grease, cellulose,... will appear on the surface of the water. In order to avoid this obstacle, the incoming wastewater flows in an immerse and ventilated Tee (2) which leads it directly under the « cap ». This Tee also calms the inflow, which has two additional benefits :

- the anaerobic bacteria's work is not disrupted by a sudden and unexpected inflow of wastewater.
- the motion imposed on the influent enhance its first decantation.



Fig-2 : Primary settling tank

At the outlet, one or two effluent filters (3), depending on the capacity of your plant, block the way to suspended solids so that they do not flow to the filter.

Vent concept: during the anaerobic degradation of the raw material present in the wastewater, there is an emission of gas (H_2S , CH_4 ...) which requires significant ventilation (see chapter 1.8 of the Installer's Guide).

Filter :

The « pretreated » water flows by gravity into one or two Xylit filters. In each one of them, it flows into the distribution system (4) which is fed by a rotating bucket. This device fills with water and tilts as soon as the water volume is high enough, to disperse the water all over the Xylit surface via a piping network. Therefore, the complete surface of the media is used.

An integrated level is supplied to make sure that the device is properly adjusted. Adjustments can be carried out easily.

The « pretreated » water flows through the Xylit (5), where a population of aerobic bacteria has developed and is attached. The supply of oxygen via fresh air, which is necessary for the bacterie to live, is ensured by a 110mm pipe with slots, which goes from the outside to the bottom of the tank (6).

The treated water is then discharged into the receiving environment by gravity (7).

In case of clogging of the output pipe, the water level will raise into the tank and contact a level probe located in the aeration pipe. The receiver, which can be located inside the house or outside, emits a sound and triggers a light (8).



Fig-3 : Xylit filter(s)

2.3. The different components of your X-Perco® C-90.

The X-Perco® C-90 consists in one primary settling tank and one or two filters in concrete, organized as follow:

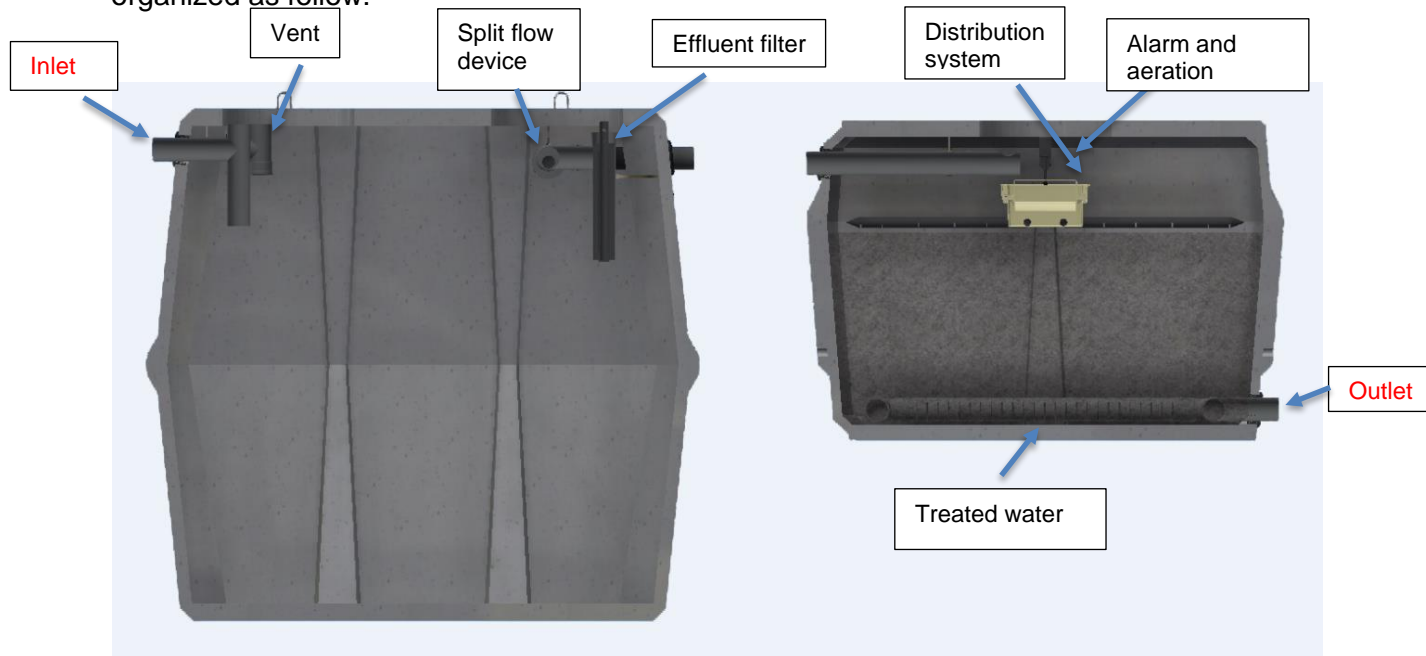


Fig-4 : Main components of the X-Perco® C-90

2.4. Quality of the components

ELOY Water systematically selects materials that prevent all risks of degradation and ensure sustainable and efficient operation of your X-Perco® C-90.

2.4.1. The concrete tanks

The tanks are manufactured with self compacting high performance fiber reinforced concrete. It allows for a higher density and a low absorption rate of wastewater which provides a complete guarantee of tank watertightness as well as a proper resistance to the sulphates that are present in the wastewater. The tank is rectangular to optimise the inflow of raw water and the deposit of primary sludge in the primary settling tank. Access to the components inside the tank is facilitated using Ø620mm manholes.



Fig-5 : X-Perco® C-90 40 PE

Customised extensions (optional) made of precast concrete or polyethylene complete the installation. These must be completely waterproof in order to prevent the inflow of groundwater into your treatment system.

The polyethylene extensions are covered using lids that are also made of polyethylene, whose resistance is studied to withstand pedestrian traffic loads. These parts are waterproof. Cast iron, aluminium, steel or polyurethane lids may also be used based on the requirements for specific loads. These items are not supplied in standard manufacturing.

Depending on the layout, additional provisions may be made for specific loads. An additional study must be carried out by Eloy Water or a qualified engineering firm.

2.4.2. Xylit filter media

The Xylit is an organic fibre is considered as organic waste, derived from wood, carbonaceous and imprisoned in lignite for several million years. During the biological and geochemical processes that occur over several millions of years, the Xylit has developed exceptional properties, notably a high number of concentrated elements that attach nutriments, trace elements and pollutants.



Fig-6 : Xylit fibers

Among these exceptional properties, include:

- A high carbon to nitrogen ratio, synonymous with very slow decomposition;
- a high internal porosity;
- a very large specific surface area that allows for the development of a dense bacterial biofilm much faster than any other filter media currently being used.
- High mechanical resistance of the fibre which assure stability over time due to consistent C-C bonds;
- composed of cellulose, it is hard, flexible and and has high roughness in regards to the mechanical requirements;
- the advantage of not having to scarify it every year;
- an estimated lifespan of 10 years.

2.4.3. Piping and accessories

The pipes are made of PVC pipes that conform to EN 1401-1/Benor sewage standards. The inlet and outlet necks are equipped with SBR rubber seals.

2.4.4. Other components

All the other components are impervious to corrosion (synthetic or stainless steel in accordance with the European Norm 12566-3+A2 standard)

2.4.5. Inlet pipe

In order to ensure the ease of maintenance of the input device for wastewater into the station, the inlet pipe is situated under the first manhole. This configuration facilitates a possible intervention in the event of upstream filling of the station.

2.4.6. The effluent filter

The effluent filter is a polyethylene filament-wound structure mounted on a polyethylene pipe. It is placed in the primary settling tank, on a simple Tee of 110 mm, and is fitted with a handle to ease its removal during cleaning (to be carried out during maintenance). From 20 PE treatment plants included, two effluent filters are necessary.

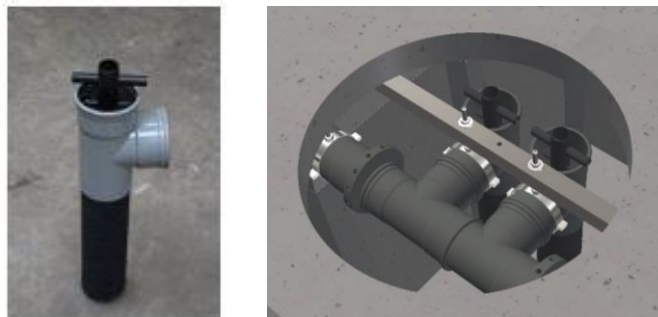


Fig-6 : Effluent filter

2.4.7. Split flow device

A split flow device is provided for:

- the primary settling tank if it is followed by two filters (25; 30; 40 PE products);
- in all the 6.5m³ filters (20 PE)

Model	Number of tanks	Tank model C-90 (m ³)		Number of effluent filters	Number of allocation devices
		Primary Settling Tank	Filter		
X-Perco® C-90 5 PE Single tank	1	6.5		1	0
X-Perco® C-90 5 PE Double tank	2	4.0	3.0	1	0
X-Perco® C-90 10 PE Double tank	2	4.0	4.0	1	0
X-Perco® C-90 15 PE Double tank	2	4.5	6.5	1	1
X-Perco® C-90 20 PE Double tank	2	6.0	6.5	2	1
X-Perco® C-90 25 PE Triple tank	3	10.0	2 x 4.0	2	1
X-Perco® C-90 30 PE Triple tank	3	10.0	2 x 6.5	2	3
X-Perco® C-90 40 PE Triple tank	3	15.0	2 x 6.5	2	3

This device is made entirely from PVC and the settings can be done from the top of the tank using an hexagonal key (supplied with the station).

Once they have been installed, the split flow devices are accessible via the second manhole of the primary settling tank and/or the first manhole of the 6.5m³ treatment tank (filter).

If this device is located in the primary settling tank, it is made up of a Tee located just behind the effluent filters, of two excentric flanges and some output piping.

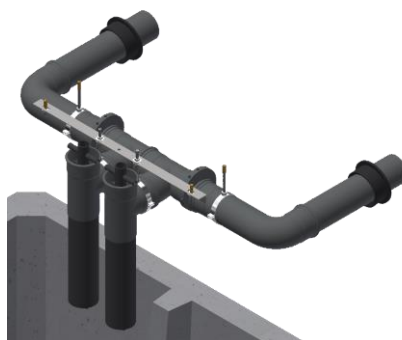


Fig-7: Split flow device and the effluent filters in a primary settling tank

If this device is located in the filter tank, it is made up of a Tee located just behind the inlet pipe, of two excentric flanges and some piping leading to the distribution system.



Fig-8 : Split flow device in a 6.5m³ filter

2.4.8. The distribution system “Rotating bucket Aquacan”

After the primary settling tank, the “pre-treated” water flows by gravity toward the Xylit filters and reaches one or several distribution system. The purpose of these systems is to distribute equally the water all over the surface of Xylit. They are made of a rotating bucket which spills a certain volume of water in a collecting tray every time the water level is sufficient.

Each distribution system is accessible through a manhole. The collecting tray is attached to the tank thanks to an adjustable fixation system which allows to easily set up the level of the tray.

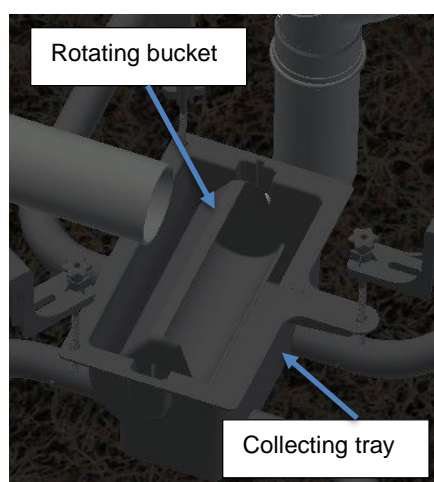


Fig-9 : Distribution system

The water spilled by rotating the bucket flows instantaneously through a piping network via the collecting tray. As this piping network is fastened to the tray, it automatically benefits from the levelling system.



Fig-10 : Piping network

2.4.9. Level/alarm indicator

A level indicator allows to highlight a possible clogging of the filter media and/or a possible clogging of the outlet pipe.

This detector consists of a water level probe connected to an alarm box by a 20m cable. This box runs on batteries.

The probe is immersed inside the filter media through a vertical pipe. This pipe is connected to the drainage/aeration network.



Fig-11: Level probe and alarm box

In case of clogging, the water level rises in the drain and reaches the level probe. It then sends a signal to the alarm box which emits a sound and triggers a LED light.

The box can be easily installed inside or outside close to the wastewater treatment plant, but never in an isolated location so that people may be alerted when the alarm is on.

2.5. Performance

Eloy Water guarantees that, if the installation and the operation of the system is in accordance with the instructions in the User Guide, the X-Perco® C-90 from 5 to 40 PE complies with the local standards in force at the time of the installation, as soon as the bacteria population has been established (4-6 weeks of normal use).

The X-Perco® C-90 product line was designed to treat domestic wastewater from 5 to 40 PE with the following characteristics:

BOD₅ (mg/L)	SS (mg/L)	NTK (mg/L)	P (mg/L)	Fat & oil (mg/L)
400	600	80	17	20

(Settling tank + filter(s))

The X-Perco® C-90 product line meets the normative and regulatory technical provisions in force. The level of treatment required corresponds to the following values:

Parameters	Maximum concentration at treatment output
COD	125mg O ₂ /L on average over 24 hours
BOD ₅	25mg O ₂ /L on average over 24 hours
SS	30 mg/L on average over 24 hours
NH ₄	2 mg/L on average over 24 hours

Assumptions:

- Concentrations measured on an average daily sample.
- For an temperature of incoming water between 12 an 26°C and pH between 6,5 and 9,5.
- Subject to compliance with nominal hydraulic and pollutant loads.

3. Use and maintenance of the X-Perco® C-90

3.1. Operating instructions

In order for your X-Perco® C-90 to give you complete satisfaction, please respect the following requirement. Otherwise, you may loose your warranty on the product.

1. The purification process of the X-Perco® C-90 uses living organisms. It is therefore totally forbidden to release harmful substances such as the followings into your plant:
 - paints, varnishes, thinners ;
 - chemicals and drugs ;
 - grease and oils ;
 - bleach ;
 - non biodegradable wet tissues ;
 - tampons, sanitary napkins, diapers;
 - wax and resin ;
 - packaging (cardboard - plastic) ;
 - acids ;
 - chemical toilet ;
 - water above 75°C.

However, domestic cleaning products may be used within the limits of use given by the manufacturer. On the other hand, you do not need to add products to stimulate bacterial development.

2. Never connect rain water or pool water to your station. These types of water could disrupt the bacterial flora.
In the event of a storm or heavy rain, a “first flush effect” could also purge the sludge and expel it towards the filter media (risk of premature clogging).
3. Remember to consistently fill the trickling filter’s primary settling tank with clear water before starting and after every draining.
4. Once your X-Perco® C-90 is installed, it is forbidden to carry out any potential works, unless otherwise directed by Eloy Water’s engineering office.

3.2. Maintenance

3.2.1. *Maintenance, a prerequisite for the sustainability of your structure.*

The maintenance of your product is essential to ensure its performance over time. Not only does maintenance allow you to control the proper operation of your product, but it is also used to trigger the desludging at the right moment. Trained technicians, familiar with your product, are also able to diagnose and carry out appropriate repairs.

Each X-Perco® C-90 is identified by a reference number which appears on a identification plate, located on the distribution system (filter compartment).

An identity card for the X-Perco® C-90 is delivered with the product in a plastic sleeve installed in the inlet pipe (red cap). It includes a few information to be filled in before sending it back to your local dealer, who then can register your product in the Eloy Water database.
It is also possible to register your product directly on the website www.elaywater.com.

Your installer should send a proposal for a maintenance contract. If it was not the case, please contact a company able to perform the maintenance, or your local dealer who will help you to find one. Indeed, it is mandatory to sign a maintenance contract. Moreover, the legal frequency for the maintenance is twice a year.

To benefit from the performance guarantee, it is essential to perform the maintenance of your X-Perco® C-90 in accordance with the operations described in chapter 3.2.2 below, and this, every 12 months. In order to ensure this, Eloy Water may ask you to justify that all these maintenance operations were carried out.

After each visit, a maintenance report should be done, including, apart from the general information, recommendations on the proper functioning of the product. It is important that you keep this report.

If the situation so requires, the origin of a problem is specified and if necessary, a quotation for the reparation is prepared.

Eloy Water designed the X-Perco® C-90 with easy and fast maintenance in mind. To take full advantage of this point, **it is essential that access to the manholes is possible at all time along with access to all the different compartments of the X-Perco® C-90.**

3.2.2. Services provided by the maintenance contract

Your local Eloy Water dealer should systematically propose a **maintenance contract**. In this way, Eloy Water has a file (updated in real time) of all X-Perco® C-90 that have been sold and installed.

As part of the maintenance of the **X-Perco® C-90** achieved every 6 months, the following operations are carried out by the company's specialised technicians:

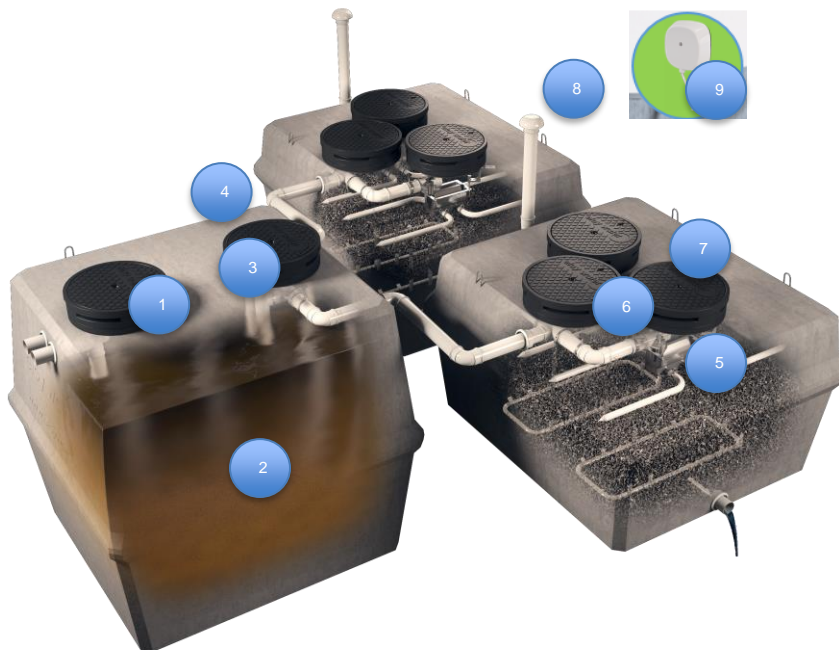


Fig-12 : Maintenance opérations

- ✓ Registration of the number of inhabitants and of the date of the last desludging.
 - ✓ Opening and cleaning of the lids, the accessibility of which must be ensured.
 - ✓ Inspection of the condition of the hydraulic connections and of the ventilation pipe. In case of risk of clogging, clearing of the pipes. **(1)**
 - ✓ Measurement of the sludges height and of the cap in the primary settling tank. If required, planning of the desludging (see chapter 3.3). **(2)**
 - ✓ Cleaning, if necessary, of the effluent filters (see chapter 3.4). * **(3)**
 - ✓ Inspection of the condition of the split flow device(s) and of its (their) proper functioning : equitable distribution of water between the Xylit filters and/or the distribution systems. Cleaning and adjustment if necessary (see chapter 1.13 of the installation guide). **(4)**
 - ✓ Check that the water is freely flowing through the Xylit. Scarification if necessary. **(5)**
 - ✓ Inspection of the condition of the distribution system(s) : tilting of the rotating bucket equitable water distribution over the Xylit surface, horizontality of the piping network. Cleaning and adjustment if necessary (see chapter 1.11 of the installation guide). **(6)**
 - ✓ Check the free passage of fresh air in the aeration duct. Clearing if necessary. **(7)**
 - ✓ Check of the alarm system and inspection of the level probe(see chapter 1.10 of the installation guide). Replacement of the batteries and cleaning of the probe if necessary. **(8)**
 - ✓ Mesurement of pH and oxygen in the water at the outel of the plant.
 - ✓ Encoding the visit report and taking pictures.
- * Depending on the use, it may be necessary to clean the effluent filters with a higher frequency.

3.3. The desludging

The primary settling tank of your X-Perco® C-90 wastewater treatment plant accumulates sludges which are called “primaries” and which are produced by the decantation of suspended solids contained in the raw wastewater. The necessity of desludging depends of the filling rate of the primary settling tank.

As a manufacturer, we recommend to desludge when the height of sludges reaches maximum 70% of the height of the primary settling tank (60% for 5 PE Single Tank, 5 PE Double Tank and 10PE Double Tank) :

Product	Capacity of the plant	Maximum sludges height	Theoretical frequency*	Actual volume of the primary settling tank
	In PE	In cm	In month	In m ³
X-Perco® C-90 5 PE Single tank	5	79	24*	3,00
X-Perco® C-90 5 PE Double tank	5	79	24*	3,03
X-Perco® C-90 10 PE Double tank	10	79	13*	3,03
X-Perco® C-90 15 PE Double tank	15	103	13	4,17
X-Perco® C-90 20 PE Double tank	20	131	13	5,14
X-Perco® C-90 25 PE Triple tank	25	143	17	9,35
X-Perco® C-90 30 PE Triple tank	30	143	15	9,35
X-Perco® C-90 40 PE Triple tank	40	143	15	13,92

The desludging is mandatory to ensure the proper functioning and the purification performance of your system.

The frequencies remain indicative and depend on several parameters such as the characteristics of the raw effluents to be treated, the lifestyle of the users, the annual water consumption, the station’s frequency of maintenance,... Therefore, it is impossible to precisely quantify the desludging frequencies of your station.

In all circumstances, the need for desludging should be evaluated and measured by the technician during his inspection visit.

The company that is chosen to extract the sludge, when necessary, will use the proper material and will operate with all the usual precautions to desludge your X-Perco® C-90. The septic tank cleaners will familiarise themselves with the recommendations described in the **paragraph below**. They will ensure a minimum safety distance of 3 meters between the sewer cleaning truck and the access manhole axle. Only the primary settling tank should be emptied.

Please respect the following procedure:

- a. Suck up the “cap” that is present on the top of the primary settling tank.
- b. Drain the primary settling tank completely.
- c. Fill the primary settling tank with clear water by opening a tap in the house, or with a garden hose or even with the filtered water you just drained (available on some of the new septic tank cleaner trucks) until it flows again to the filter tank(s).

3.4. Cleaning of the effluent filter(s)

The purpose of a prefilter is to limit the amount of suspended particules which travels from the primary settling tank to the treatment tank(s). Over time, this device will clog and the water level will raise in the primary settling tank.

In order to avoid serious malfunctions, it is therefore necessary to clean it (them) regularly. To do this, Eloy Water provides filtration socks that must be installed on the pre-treated water supply pipes to the distribution systems to protect the Xylit during maintenance. The following steps must then be followed:

- Put the sock(s) on the feed pipes. Due to the water level raise in the primary settling tank, the volume of water that will flow can be consequent. It is therefore necessary to install the socks properly;
- Remove the effluent filter(s) using the handle;
- Clean the effluent filter(s) thoroughly with clean water, if possible with pressurized water;
- Once the effluent filter(s) have been cleaned, clean the inside of the pipes;
- Put the effluent filter(s) back into position;
- Remove the sock(s), being careful to recover any material that may have accumulated;
- Rinse your sock(s) above the primary settling tank for later use.

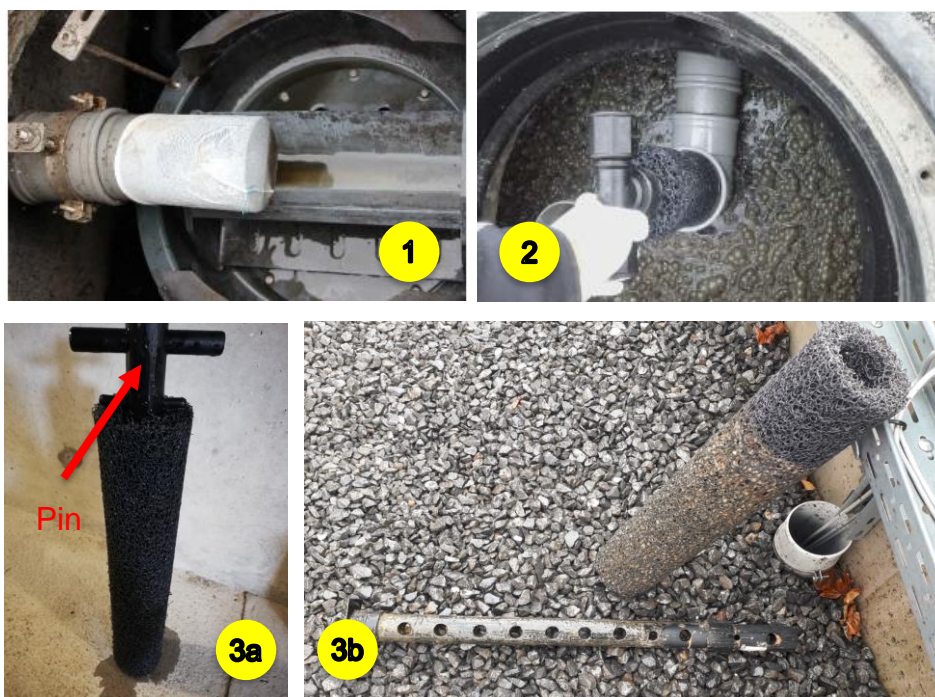




Fig-14 : Cleaning steps
of the effluent filters

⚠ Important remark :

Grease is the enemy of the effluent filters !

A grease concentration in the wastewater superior to 20 mg/liter (see chapter 2.5) may lead to premature clogging of the filters.

3.5. Procedure in the event of a malfunction

Eloy Water guarantees that if the installation and the operation of the system is in accordance with the instructions in the User Guide, your X-Perco® C-90 from will not malfunction for a period of 10 years.

Nevertheless, some observations may be interpreted as an alert of malfunction:

- Noticeable odors around the installation or inside the building.
- Discharge of wastewater inside the building is disrupted.
- Backflow of wastewater inside the building.
- Activation of the outlet blocked warning light.
- Poor quality of water output.

If any signs of malfunction were to appear, the first thing to do would be to check that the plant has been properly installed and check if all the equipment are fulfilling their intended purposes.

In fact, an installation that does not comply to Eloy Water's requirements may lead to mechanical as well as hydraulic malfunctions (division of wastewater malfunction, bad levelling of the distribution system, hydraulic drainage malfunctions,...)

Other malfunctions may also be brought to light when the operating instructions are not followed, for example:

- Use of large quantities of toxic substances such as bleach water, detergent, antibiotics,...
- Inadequate maintenance (cleaning of effluent filter, late desludging,...)

In the event that the station malfunctions, please contact your local distributor in order to have a complete diagnosis done. Make sure to give your local distributor the following informations about your station :

- Serial number
- Picture of each chamber/tank
- Date of installation
- Invoice

3.6. Replacement of wear parts

Maintenance operations must be performed by specialized technicians. When a wear part needs to be replaced, please contact your local dealer.

The leadtime for some components depends on the travel time required.

3.6.1. Filter media

Replacement of the Xylit filter media is generally done after an operating period of 10 years.

To replace the filter media, an approved septic tank cleaner will use a vacuum truck to pump the old Xylit. The media is vacuumed through a suction head located at the end of the flexible hose. The old Xylit can then be recycled via composting.

The Xylit is available from stock in our factory or your dealer.
Delivery time: on request.

3.6.2. Distribution system

A replacement of the distribution system may sometimes be necessary after an operational period of 15 years. The old device(s) will be retrieved manually and replaced with new ones.

Note that worn part will be sent to a dump or a recycling centre to be reused or recycled.

Parts are available from stock in our factory or your dealer.
Delivery time: on request.

3.6.3. High level alarm

In the event that there is a blockage at the outlet of the plant, the owner of the X-Perco® C-90 must be notified. This is why a level probe is installed in the wastewater return line under the filter media. Remember to check that it is working properly and if necessary replace the 9V batteries.

3.6.4. Effluent filter

A replacement of the effluent filter(s) may sometimes be necessary after an operational period of 15 years. The old device(s) will be retrieved manually and replaced with new ones.

Note that worn part will be sent to a dump or a recycling centre to be reused or recycled.

Parts are available from stock in our factory or your dealer.
Delivery time: on request.

4. Environmentally responsible development

To create the X-Perco® C-90 trickling filter, the “Research and Development” department of Eloy Water pointed out key challenges of environmentally responsible development.

The X-Perco® C-90 trickling filter:

- does not consume any energy except for the alarm box’s batteries which have an estimated lifetime of 7 years.
- was originally designed from elements and materials that are completely recyclable and reusable (concrete, HDPE, stainless steel, PP,...)
- while operating, does not produce any waste with the exception of organic sludge generated by all biological purification treatments and soiled Xylit.
- promotes a natural by-product, the Xylit, in the form of a filtering mass, which cannot be consumed by the industrial world and hence is equated as a waste.

Actually the Xylit is contained in lignite (coal) that we extract from the earth. It consists of natural wood fibres, not fossilised and whose geological age is estimated to be at several million years. Unusable, these fibres are separated from the lignite and treated as waste. However, the Xylit has demonstrated the distinct feature of having exceptional purification abilities.

Filtration is performed using simple gravity percolation, the X-Perco® C-90 does not require any electromechanical devices and does not consume any energy to treat domestic wastewater.

At its nominal load, the Xylit’s purification capacity remains optimal for 10 years. At the end of this period, the fibres are removed and can be composted at a composting facility. It is replaced with a new filtering mass.

Simple, practical, ecological and economical, the X-Perco® C-90 trickling filter represents a step forward in the field of household sanitation.


5. Intermittence

All the products in the X-Perco® C-90 line can be installed to operate intermittently. The filter’s ability to restart after long periods of very low or no water supply (holiday homes, camping sites, ...) is not surprising. In fact the bacteria adapt to the conditions of the environment; during periods of famine, it slows down it’s metabolism greatly and enters a dormant state - even becomes encysted - to be reactivated when the food (wastewater) returns.

During the downtime, your system does not need any specific intervention. Before restarting, you are advised to carry out a preventive cleaning.

6. Appendixes for the Owner Manual

Appendix 1: Example of a maintenance contract

	CONTRAT D'ENTRETIEN Conditions particulières de vente	
	X-Perco C-90 5 à 30 EH	
Numéro du contrat:		
COORDONNEES DES INTERVENANTS		
1. LE CLIENT		
Nom:	Prénom:	
Adresse:		
N°	Code Postal:	
Localité:		
Pays:		
Tel:	GSM:	
e-Mail:		
Jour de préférence de visite (du lundi au vendredi entre 8 et 15h):		0 Matin 0 Après-midi
2. LIEU D'INSTALLATION DU PRODUIT		
Adresse (si différente):		
N°	Code Postal:	
Localité:		
Pays:		
DETAILS DU CONTRAT		
	Tâche	Entretien de base
Déplacement du technicien		v
Enregistrement du nombre d'habitants et de la date de dernière vidange		v
Ouverture et nettoyage des tampons		v
Vérification de l'écoulement dans le tuyau d'entrée et de la présence de boues		v
Mesure de la hauteur du voile de boue et du chapeau dans le décanteur		v
Nettoyage (si nécessaire) du ou des préfiltre(s) (accès à un point d'eau requis)		v
Contrôle et scarification (si nécessaire) du média filtrant (xylit)		v
Vérification et réglage (si nécessaire) du dispositif d'alimentation des augets.		v
Vérification et réglage (si nécessaire) des augets.		v
Vérification de la ventilation et du système d'alarme		v
Vérification et nettoyage (si nécessaire) de la pompe de relevage (si intégrée à la cuve)		v
Mesure du pH et oxygène sur les eaux de sorties		v
Encodage du rapport de visite et prise de photos		v
Durée		1 an
Nombre de visite(s)		1/an
Tarif HTVA		
TVA		6 % 21 %
Tarif TVAC		
Le client déclare avoir pris connaissance des conditions générales de vente jointes à cette offre. Fait à le		
Signature du client précédée de la mention « lu et approuvé»:		Signature Eloy Water:
v20160303		Validité de l'offre: 31/12/2016

7. Frequently asked questions

General information about your X-Perco® C-90

➤ **What is a trickling filter?**

The trickling filter is based on the principle of organic filtration, which means that treatment is carried out using a population of aerobic bacteria that are bred on a filtering mass.

➤ **What is the Xylit?**

The Xylit is a fibre derived from wood, carbonaceous and imprisoned in lignite for millions of years. This fibrous and carbonaceous material demonstrates excellent purification capacities, notably a high number of concentrated elements that attach nutrients, trace elements and pollutants.

➤ **Is your X-Perco® C-90 trickling filter certified?**

Eloy Water has several certifications including European certification and accreditation in France and Belgium.

➤ **What is the visual impact of my X-Perco® C-90 trickling filter on my property?**

It is a system that is completely buried so it presents a negligible visual impact.

Implementation and installation

➤ **What are placing requirements to be followed for the ventilation of my primary settling tank?**

The sludge storage body must be fitted with a ventilation system which has a minimum diameter of 100mm, separated from the purified wastewater and rainwater circuits and placed high enough to avoid all olfactory nuisances. (see chapter 1.8 of the Placement Guide for the installer).

➤ **Can I install my trickling filter above ground?**

No. The tank or tanks were not designed to be installed above ground.

➤ **Can I install my trickling filter partially-buried?**

Yes, as long as you batter the circumference of the tank(s) and there is no risk of frost.

➤ **Can we connect rainwater to my wastewater treatment plant?**

No. Rainwater cannot flow through the system in any case.

➤ **What provision should be taken in order to allow the passage of vehicles over my tank?**

The tanks were designed to take the load of B125 light traffic (max 3.5 T). Make sure that heavy machinery does not pass near or above the tanks by posting of a type B13 tonnage limit sign. For heavier vehicles, you are advised to contact an load stability engineering consultant to draw up plans for a load allocation slab above the tank(s).

➤ **What type of extensions are used according to the height of the embankment?**

For embankment heights of between 0 and 50cm, use extensions with a diameter of 600mm so as to ensure easy access to your station's components. When the height of the embankment is between 50 and 80cm, use square 80x80cm extensions.

➤ **I throw my effluent in the drain, how do i protect them?**

Carry out regular maintenance of the station and do not forget to ventilate them.

➤ **There is water in my excavation site during the placing of my station, what do i do?**

See the placement conditions in phreatic water table (chapter 1.16)

➤ **What is the diameter of my protective sheaths?**

It is recommended that you use protective sheaths with a minimum diameter of 63mm.

Use and maintenance

➤ **Is maintenance compulsory?**

The regulations require owners to sign a maintenance contract. This maintenance should be carried out twice a year. Just like your car, your system must be maintained to operate effectively. Fortunately, your X-Perco® C-90 trickling filter requires very little intervention (effluent filter cleaning, distribution system adjustment,...).

➤ **What happens if I do not maintain my trickling filter?**

You will be exposed to more and more recurring technical problems (effluent filter blockage, obstructions of the drains,...). This would reduce the purification yields of your wastewater treatment plant, increase your drainage frequency but also burden your purification station and as such you will have sanitary evacuation problems.

➤ **When should I drain the system?**

You will have to drain your primary settling tank (first compartment) when the maintenance technician indicates it in the inspection report.

We advocate a draining of the sludge at a 70% fill rate.

➤ **How often does the filter media need to be changed?**

It is recommended that the media be changed after 10 years of service at nominal load. In all circumstances, the need for draining should be evaluated by the technician during his inspection visit.

➤ **What are the maintenance operations of the distribution system?**

It is advisable to remove the biofilm on the surface of the system(s) once or twice a year using a water jet. Similarly, the horizontal position must be checked. To do this, place about one litre of clear water in the system and calibrate the horizontality using the 3 adjusting screws (see chapter 1.11 of the installation guide)

➤ **How often does the effluent filter need to be cleaned?**

Annual (or every six months) cleaning of the effluent filter using a water jet. The frequency is adapted based on the use of the product (at least once a year).

➤ **Can we reuse the purified wastewater?**

Without proper additional treatment (UV, reverse osmosis, chlorination,...) it is forbidden to reuse the purified wastewater. In fact, this water still contains many pathogens (virus, bacteria,...).

➤ **Does my trickling filter consume electricity?**

Your X-Perco® C-90 has the distinct advantage of not consuming any electricity for the treatment of wastewater. On the other hand, if the treated wastewater needs to be removed, the use of a pump will require low electricity consumption.

➤ **There are smells around my trickling filter, what should I do?**

Check the watertightness of the buffers then if the ventilation is not obstructed.

➤ **There are smells in my house, what should I do?**

Check that all the household siphons are not disabled and are still in water.

➤ **My sanitary devices are not flushing properly, what should I do?**

Several causes:

1. There is probably an upstream blockage in the primary settling tank and /or the immersing T is clogged. The obstruction must be removed.
2. The primary settling tank is full and therefore needs to be drained.
3. The effluent filter is clogged and is therefore overloading the primary settling tank. It must be removed and cleaned.

➤ **What should I do if the alarm warning light is activated?**

This is intended to signal any abnormal rise in water in the treatment chamber. If this indicator is visible, please contact your local distributor.

➤ **Can I ask anyone to drain out my trickling filter?**

No, it must be carried out by an approved septic tank cleaner.