

**CE**

EN 12566 - 1



# SEPTICS

**INSTALLATION SITE SELECTION, PG. 5**

**INSTALLATION, PG. 8**

**MAINTENANCE AND WARRANTY, PG. 9**

This septic meets the requirements stipulated in European Union standard **EN 12566-1** for small wastewater treatment plants and it is provided with a **CE** marking.

### **THE SET INCLUDES THE FOLLOWING ITEMS:**

- 3 compartment septic, in which wastewater is cleaned from suspended matter and fats;
- a distribution well via which wastewater is led into the distribution pipes consisting of absorption pipes;
- perforated absorption pipes via which pre-purified wastewater is led into the ground;
- ventilation stand pipes that are located at the end of distribution pipes;
- filter cloth that helps prevent mixing of different fractions of the soil.

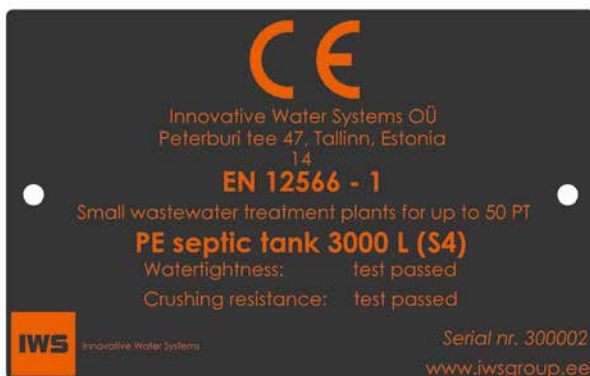
### **A PROPER SEPTIC SET INCLUDES THE FOLLOWING:**

- a strong 3 compartment septic with a double wall (does not break under soil pressure);
- a distribution well;
- special absorption pipes (not drainage pipes)
- conforms to the requirements of standard EN 12566-1;
- a CE marking (mandatory in EU countries).

In general, following water standards is not mandatory, except harmonised standards for building materials. A harmonised standard is mandatory and requires the product to have a CE marking. The requirement of a CE marking for building products is stipulated in European Union directive 89/106/EEC for building materials.

Septics are described in European Union standard EN 12566-1. Following this standard is mandatory and it requires the product to be provided with a CE marking. A CE marking can only be placed on a product that has passed the tests stipulated in the standard performed in the laboratory of a third party.

The STRONG septic has successfully passed the tests and it has been given a CE marking.



### **It is not allowed to market septics without a CE marking in the member states of the European Union!**

A CE marking shows that the building product meets the safety requirements stipulated in the directive. A product provided with a CE marking can be marketed in all member states of the European Union.

## Dear customer,

Welcome to our septic catalogue!  
Here you will find information on how to choose a septic, how to install it, and tips for maintenance.

Our septic development process focuses mainly on reliability, ease of installation and on the safety of our products.

Home owners have three possibilities for local wastewater handling: to direct wastewater into nature through a septic or some other purification system, or to collect it into a tank. The choice depends on the population density, the requirements stipulated by the local municipality, environmental plans and convenience of use. We offer you a long-lasting and reliable solution for choosing the sedimentation system as well as the tank.

A Strong septic set consists of a 3-compartment septic, a distribution well and filtering field, the proper installation and maintenance of which ensures faultless operation for many years.

More information about our all products can be found on our homepage [www.iwsgroup.ee](http://www.iwsgroup.ee).

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# 3-COMPARTMENT SEPTIC

All STRONG septic systems consist of three compartments.

A septic is a closed-top purifier in which the organic matter contained in the sedimentation settled at the bottom of the tank is decomposed by anaerobic bacteria. Most of the suspended matter will drop to the bottom of the septic, while grease, oils, foam and sediments move on the surface. The septic is built in such a way that water must pass through as long a distance as possible inside the tank. This ensures excellent purification capacity, which in turn prolongs the working life of the filtering field of the septic.

## COMPARTMENT 1

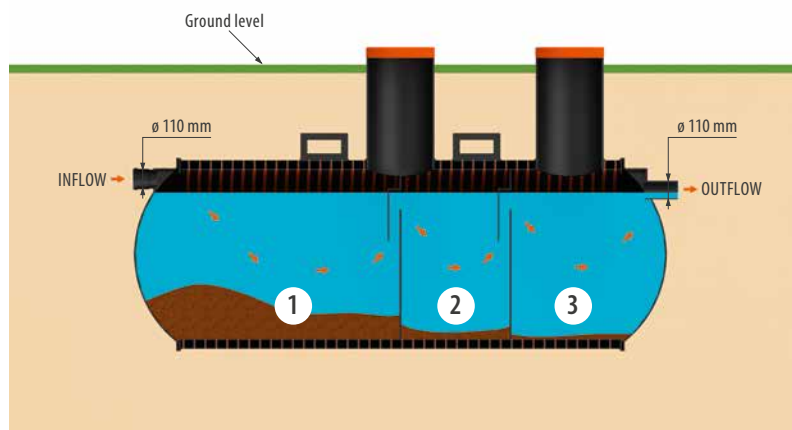
Wastewater enters into compartment 1 supplied with a grease/fat eliminator. The compartment is half the size of the total volume of the septic and thanks to the long sedimentation area of the compartment heavier particles will drop onto the bottom and lighter particles will move to the surface. The majority of solid waste will stay in this compartment.

## COMPARTMENT 2

Cleared wastewater enters this compartment via an opening in the partition wall. Thanks to the position of the opening only the water interlayer enters into the compartment, after this all particles that are heavier or lighter than water will fall out.

## COMPARTMENT 3

In the last compartment particles with a specific weight almost equivalent to that of wastewater will be separated. From this compartment the cleanest interlayer will be lead via a distribution well to absorption pipes, meaning a filtration system.



## SELECTION OF A SEPTIC

When selecting the size of a septic, it is important to consider the amount of wastewater passing through the septic. To assure normal purification capacity, the size of the septic must be 400...500 litres per person.

A 2,000 L septic is suitable for 4...5-member families.

A 3,000 L septic is suitable for 6...7-member families.

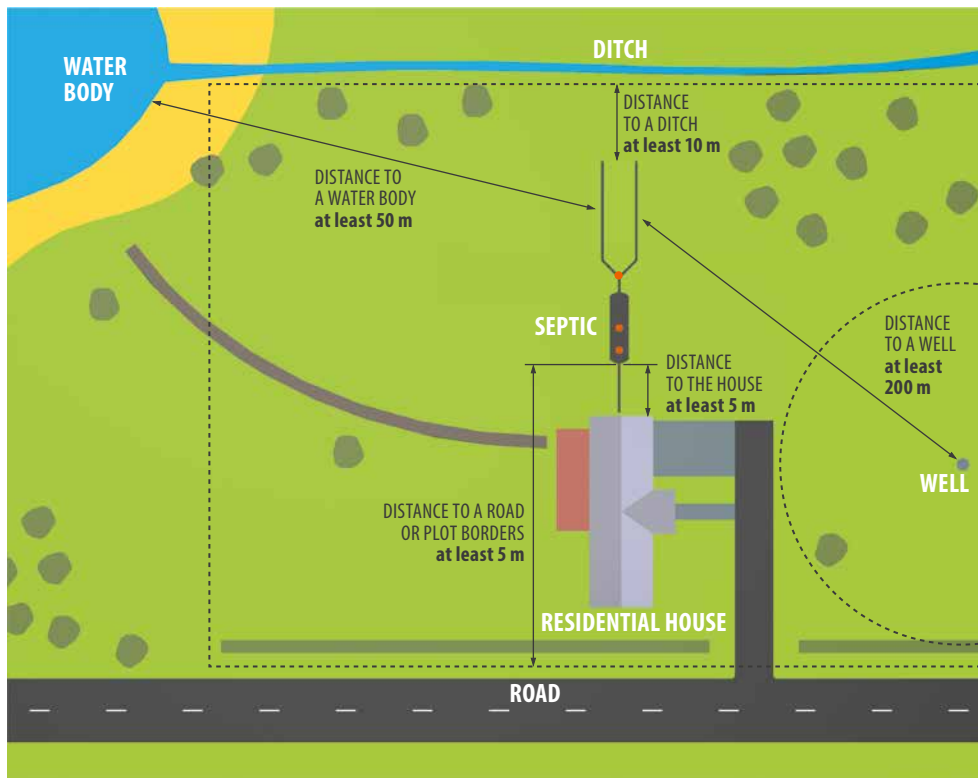
- STRONG septic systems are manufactured from PE spiral pipe with a double wall, which resists mechanical damage that may occur during installation as well as use of the system. This is important for preventing wastewater leaking in the soil or groundwater penetrating into the tank.
- STRONG septic systems are light, they are easy to transport and install. A septic is provided with hoisting eyes and supporting feet.
- STRONG septic systems are made of an elastic and durable plastic PE (polyethylene). That is why nowadays most of the sedimentation systems, tanks, wells, pumping stations and pressure pipes are made of PE, which is especially resistant to the Nordic climate. The circumferential force of our STRONG septic systems is always at least SN2 (2 kN/m<sup>2</sup>). Moreover, the housing of the septic always has a double wall, which ensures absolute leak-tightness.



## GLASS-REINFORCED PLASTIC AS A MATERIAL FOR A SEPTIC

By nature glass-reinforced plastic (GRP) is a fragile material and very sensitive towards mechanical damage. Glass-reinforced plastic can easily break during installation and after installation because of ground displacement (frost heaves and downthrow).

# INSTALLATION SITE SELECTION



Access to the sewage suction truck has to be ensured.

## LOCATION

When choosing a location for the septic, the following factors must be taken into consideration: type of ground, relief, groundwater level, borders of the plot and distances to water bodies. When choosing the location, the guidelines and precepts of local municipalities must be followed. The environmental official of the rural municipality will help solve problems related to choosing the location and survey issues.

If needed, use a designer.

When choosing a position, accessibility by the sewage suction truck must be kept in mind. The use of transportation on the septic and filtering field is prohibited. It is recommended to prepare an installation sketch with dimensions. This will help avoid damaging the installed systems later during yard work.

## INSTALLATION

Carefully performed installation assures that the system will operate in the specified manner.

Installing the tank and pipes following these instructions and general good practice in construction will guarantee wastewater moving through the system in the planned way and allows for smooth operation. It prolongs the discharging intervals of the tank and reduces the need for possible maintenance.

## WASTEWATER DRAINS

Wastewater drains coming from the building to the septic and from the septic to the distribution well  $\varnothing 110$  are mounted on a stone free compressed surface (sand) with an inclination of 1–2%. This means a drop of 1–2 cm per meter.

For installing pipes, a spirit level or another levelling device must be used. If the tank is mounted farther from the building ( $>20$  m), it is reasonable to install an inspection tube or manhole on the wastewater drain.

Sewage is freely vented via the roof on the building side. It is not permitted to use an under pressure valve. Installation of pipes provided with seals is easier when grease is used.

# THE CHOICE OF A FILTRATION SYSTEM

There are two different kinds of filtration systems: an absorption system and a filtration system. Both include a septic, distribution well and pipes. In addition a filtration system also has a drainage system and a discharge well. The purification technology is very simple: wastewater that is mechanically purified in the septic is absorbed into the ground or is led into a trench, a drainage system or straight into a water body. During the expected service life of a purification system, which is 15–20 years, the pores of the soil get clogged. An underloaded filtration system will last up to twice as long. Rainwater or groundwater cannot get in the septic or filtration system.

The selection of the system depends on the quantity of wastewater, the relief of the plot – how close are the buildings and water bodies, drain capacity and water permeability of the soil and groundwater depth?

## ABSORPTION SYSTEM (Figure 1)

Water is conducted from the distributing well into the distribution layer of the filtration field, which will distribute water evenly all over the filtering soil layer. Absorption pipes installed into the distributing layer (crushed stone layer) will be connected with each other using sleeves included in the set. The slope of absorption pipes is 0.5–1 cm/m and pipes are installed “holes downward”. The crushed stone layer must be level and horizontal and it may not be compressed. Thanks to this, water reaching this layer will be absorbed evenly and freely into the

soil. The total thickness of the crushed stone layer is 30–40 cm and granularity is 16–32 mm. Absorption pipes with an inclination of 0.5–1 cm/m will be installed in the horizontal crushed stone layer. There may be one trench for several parallel absorption pipes, but also separate trenches may be dug for each pipe. A pipe for collecting samples will be dug beside the leaching bed, downstream in relation to the groundwater flow. Each absorption pipe branch must be provided with a ventilation pipe for ventilating the leaching bed and the entire system. The

ventilation pipes must be long enough to remain above the ground and snow level in winter. When the pipes and crushed stone bed are ready, the leaching bed will be covered with filter cloth and the trench will be smoothed to the same level as the subsoil and ground are.

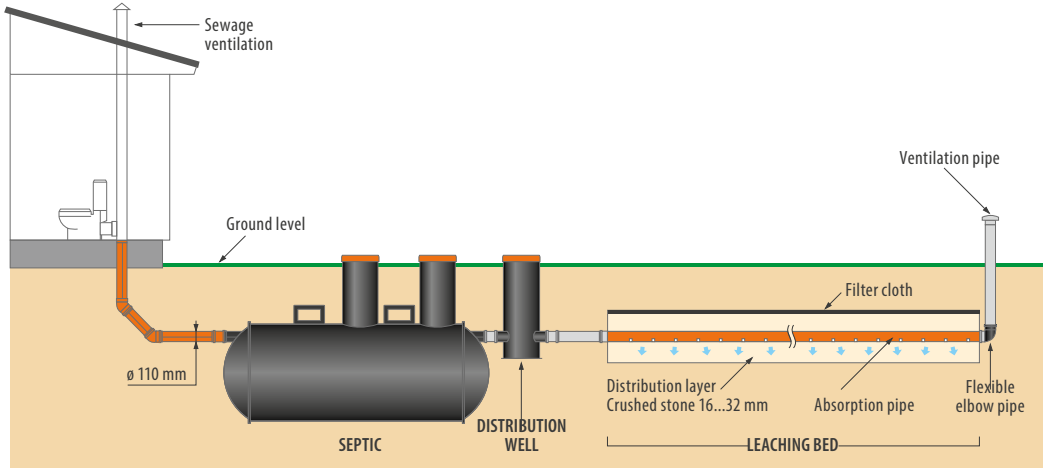


Figure 1

## SOIL FILTRATION SYSTEM (Figure 2)

If soil in the area where the absorption system is installed does not absorb water, a filtration layer penetrating water and at the same time purifying it must be built in addition to the ordinary leaching bed. This situation will happen in case the structure of the soil in the area is so fine that it will not let water drain through properly (clay/loam) or the structure is so coarse that wastewater is

not purified before it is absorbed in the groundwater. A filtration bed is built of sand with the granularity of 0–8 mm. An approximately 80 cm thick sand layer is prepared directly under the crushed stone layer of the leaching bed. A collection layer (crushed stone 8–16 mm) is installed approximately 20 cm above the trench floor. The drainage pipes installed in this layer conduct water into the discharge well after it is diffused through the sand layer and purified. Water will be removed through the discharge pipe into

a ditch, for example. A drainage system and discharge pipe will be installed with an inclination of 1–2 cm/m. A crushed stone layer (“leaching bed”) is laid on the filtration layer as described above.



**The distribution pipes of the filtration system may not be built using drainage pipes. Drainage pipes are designated for rainwater and holes in the drainage pipes clog quickly because of wastewater!**

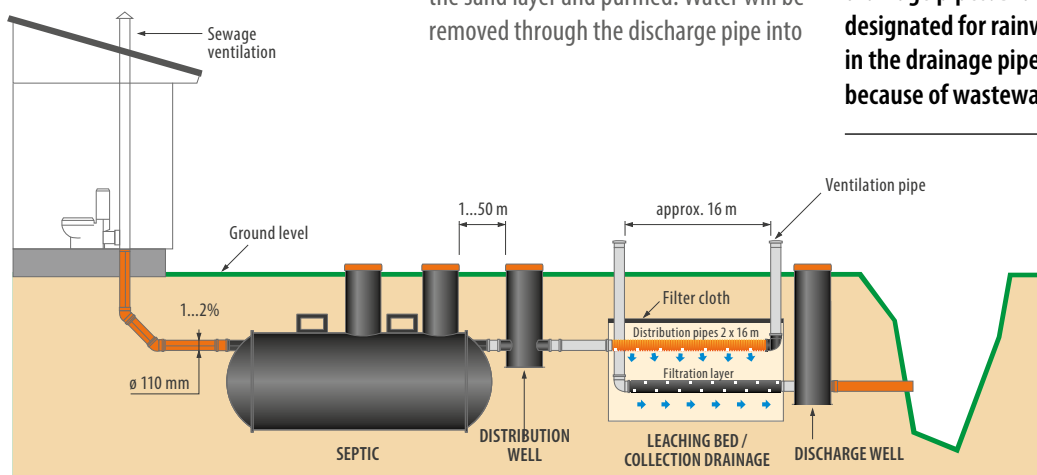


Figure 2

## SOIL FILTRATION SYSTEM WITH A PUMPING STATION (Figure 3)

If the leaching bed must be set up higher than the sewage pipes of the building, wastewater must be pumped into the distribution well. The sewage pipes and septic of the building will be installed in the usual way. After a septic, a small pumping station (STRONG ID700 for

wastewater) and a pressure pipe will be installed. From the pumping system, wastewater is led into the distribution well. A distribution well and a leaching/ filtration bed will be set up as usual. The pumping station is installed on a compressed and level sand base, as are other wells of the system. If the surface water level is high, the pumping station must be anchored firmly in its position. A concrete slab should be used for this.

And also do not forget to anchor the septic! When choosing a pumping station it should also be taken into consideration that the sedimentation volume should be big enough in case maintenance work is needed and that the output capacity of the chosen submersible pump is sufficient for these conditions (sufficient lift height). The pressure system should be installed by a specialist.

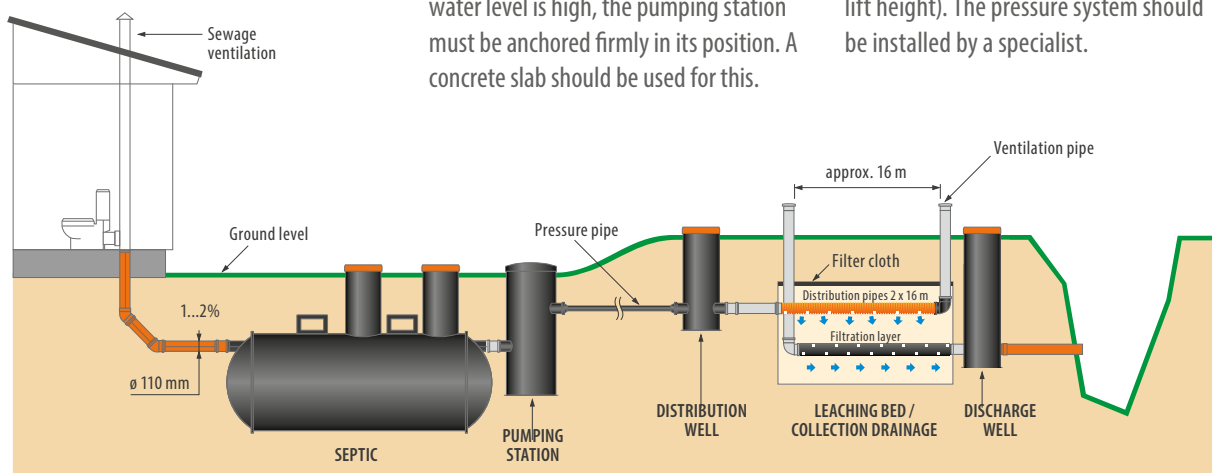


Figure 3



# INSTALLATION

## INSTALLATION OF A SEPTIC

Mechanical damage should be avoided during transportation, storage and installation. For lifting the septic (with a hoist or with belts), use special hoisting eyes available on the tank. The depth of the trench depends on the depth of the sewage pipe coming from the building. The maximum depth of the inlet pipe is 850 mm from the ground. If mounted deeper in the ground, the discharge pipes must be extended. Fill the bottom of the trench with a 300 mm thick layer of compressed sand. If the surface water level is high, the septic must be anchored. For anchoring, a base made of reinforced concrete should be provided or concrete blocks should be installed on both sides of the septic. Use anchoring belts to attach

the septic to the base or concrete blocks. Use non-corrosive fastening elements. Avoid contact between the septic and the anchoring base or blocks. There must be at least 200 mm of compressed sand separating them. Fill the trench with sand in layers so that the total thickness of sand is 300 mm. Each layer must be thoroughly compressed. In conjunction with refill operations the septic must be filled with water in order to prevent the septic from sinking later on and to assure immediate operation. After this procedure, the system is ready for use. If the space between the upper surface of the septic and the ground is less than 500 mm, the septic must be covered with 50 mm thermal insulation

panels to avoid freezing. Cut off the protruding parts of the purification pipes to the correct length considering the ground plan.



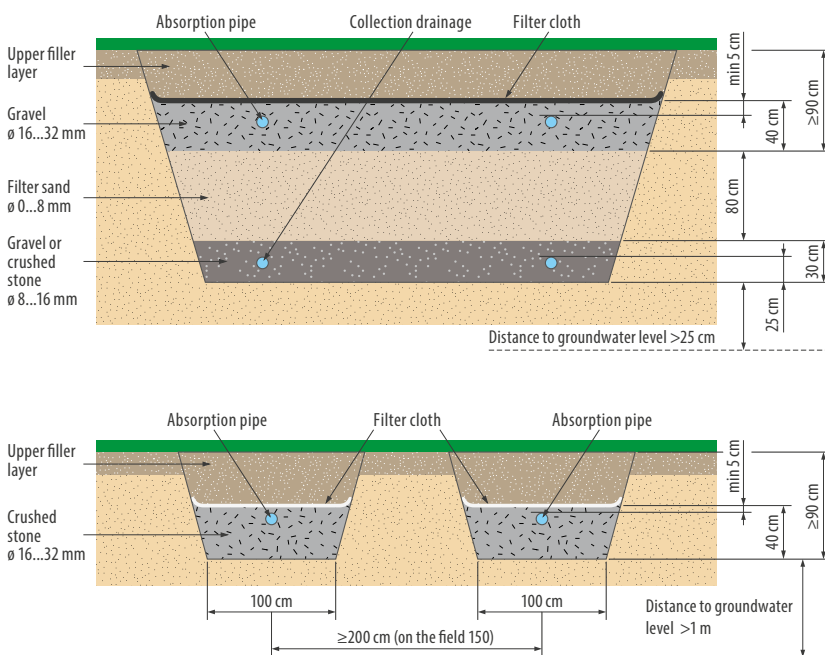
**Do not mount the septic without a distribution well! The distribution well is necessary for maintenance and cleaning procedures that the septic will require later on. If the septic is installed without the distribution well, it will not be possible to detect any obstructions or to eliminate them!**

## BUILDING OF AN ABSORPTION SYSTEM

The depth of the filtration field remains between 0.8...1.3 m. In case absorption pipes are located in separate trenches, the trench width should be 1.0 m and

the distance between the pipes 2.0 m. If the pipes are installed into one common trench, the distance between the pipes may be 1.5 m and the width of the

trench may be 2.0 m. Fill the trench floor with a 25 cm thick layer of crushed stone (fraction 16–32 mm). Connect absorption pipes via distribution pipes and flexible elbow pipes with the distribution well. Install absorption pipes with the inclination of 0.5...1 cm/m. Connect the other ends of the absorption pipes via flexible elbow pipes with vertical ventilation pipes. Cover the ends of the ventilation pipes remaining on the ground with ventilation nozzles. Fill the trench with crushed stone. Cover the crushed stone layer with filter cloth, which prevents mixing of the soil. In case the depth of the leaching bed is minimal, cover the crushed stone layer with insulation boards, which protect the filtration field from freezing and improve its performance. Finally refill with filler soil. Leave the ground on the filtration field slightly higher, so rainwater will flow away.





# MAINTENANCE AND WARRANTY

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## 1. SEPTIC

Normally a septic should be emptied twice per year. In case only grey water is led in the septic, it is enough to empty the tank once per year. A compartment on the side on the inlet pipe should be emptied first, thereafter the compartment in the middle and finally the compartment leading to the distribution well. The septic should be emptied during a dry period, especially in case the septic is not anchored to protect it against groundwater upheaval. After emptying the tank should immediately be filled with water!

## 2. PUMPING STATION

If the system includes a pumping station, deposits accumulated in it should be discharged at the same time as the septic is emptied. Maintenance work related to the pumping station must be performed in accordance with the instructions of the pump manufacturer.

## 3. DISTRIBUTION WELL

Deposits that have accumulated in the distribution well should be emptied the same time as the septic is emptied.

## 4. COLLECTION WELL (in filtration systems)

The collection well should be inspected at the same time the tank is emptied and accumulated deposits are removed.

## 5. VENTILATION PIPES

Ventilation pipes of the absorption pipes (distribution pipes) must be positioned sufficiently high above the ground (higher than snow in winter). On the building side, the sewage system should be ventilated through the roof. The use of an under pressure valve is not allowed.

## 6. SAMPLE COLLECTION PIPE

A sample collection pipe is installed next to the leaching bed, downstream related to the expected flow direction of groundwater. A sample collection pipe is installed with the aim of giving a possibility to check the water quality coming from the leaching bed. Measures shall be taken to avoid falling of foreign objects in the pipe, which may clog the pipe. The cap covering the pipe must always be in its position.

## 7. OTHER

To assure smooth operation of the system, snow should not be removed from the filtering system during winter. Trees or other plants with longer roots may not be planted on the leaching bed or in its immediate vicinity. Motor vehicles are not permitted to drive over the leaching bed or tanks. Additionally, measures should be taken to avoid surface water accumulating on the leaching bed. To avoid this, the surface above the leaching bed should be made slightly higher.



### THE FOLLOWING MAY NOT BE DISCARDED INTO SEWAGE:

- Petrol, solvents or flammable and explosive substances.
- Fats, oils or substances emitting toxic gases.
- Sand or construction waste.
- Diapers, sanitary towels, condoms, tampons.
- Textile items.
- Wrapping paper or newspaper.
- Household waste like potato peels or vegetable peels, coffee grounds, cigarette butts, etc.

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## WARRANTY

Innovative Water Systems warrants its septic for 10 years against leakage and defects in the material.

Warranty for installation work is given by the installer.

The warranty excludes faults that are caused by insufficient maintenance, incorrect installation and repair or normal wear and tear.

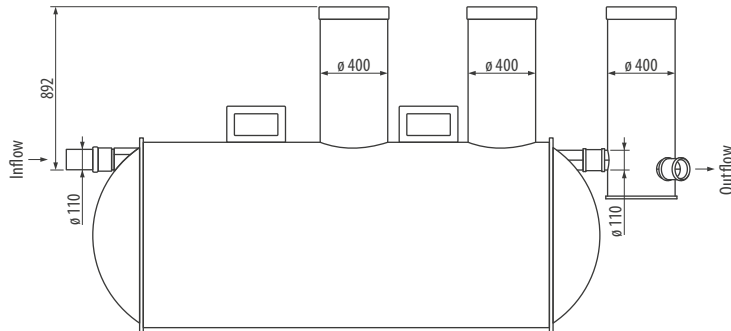
# MEASUREMENTS

A STRONG septic set consists of a 3-compartment septic, a distribution well and filtering field equipment.

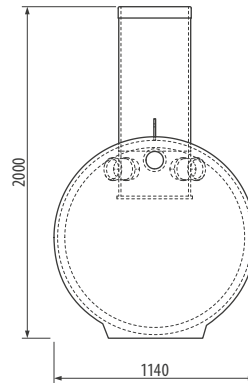
THE SET INCLUDES:	QUANTITY
3-compartment tank 2,000 or 3,000 litres	1 pc
Distribution well $\varnothing$ 400 mm	1 pc
Distribution pipe 3 m, $\varnothing$ 110 mm	2 pc
Absorption pipe 3 m, $\varnothing$ 110 mm	10 pc
Ventilation pipe 1.5 m, $\varnothing$ 110 mm	2 pc
Ventilation nozzle $\varnothing$ 110 mm	2 pc
Flexible elbow pipe $\varnothing$ 110 mm	4 pc
Filter cloth 1,2 $\times$ 15 m	2 pc

## SEPTIC STRONG 2000

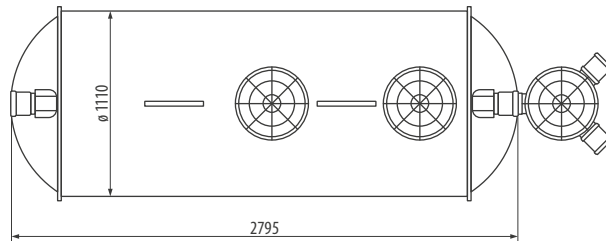
SIDE VIEW



END VIEW

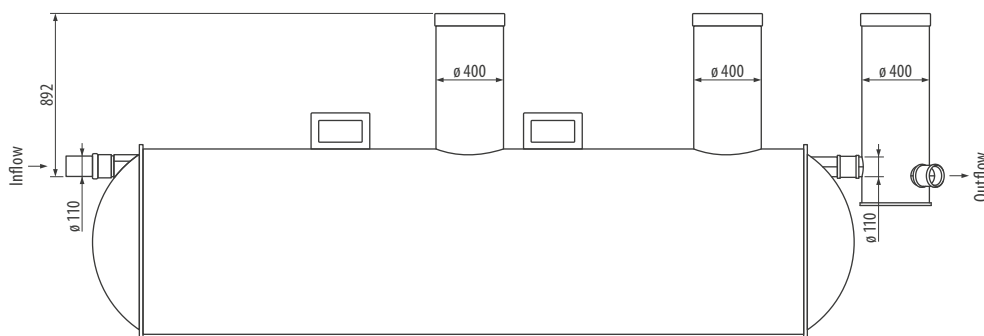


TOP VIEW

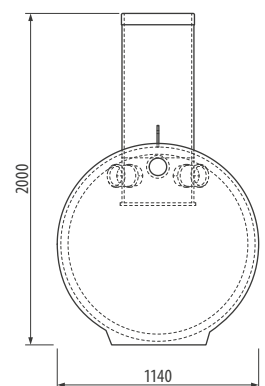


## SEPTIC STRONG 3000

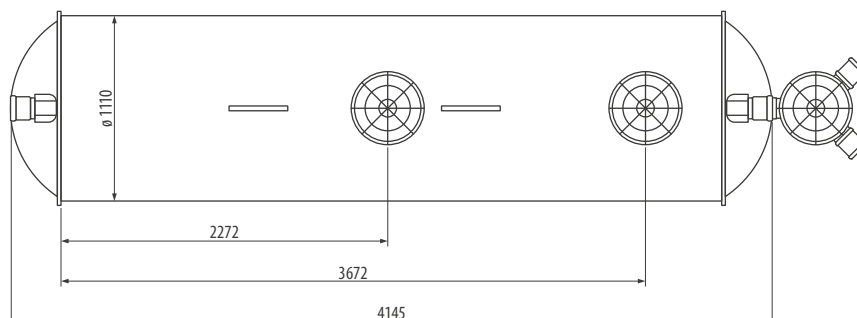
SIDE VIEW



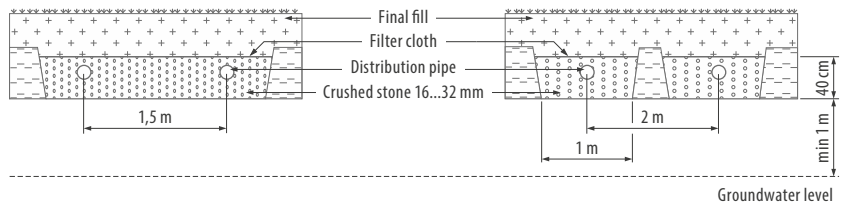
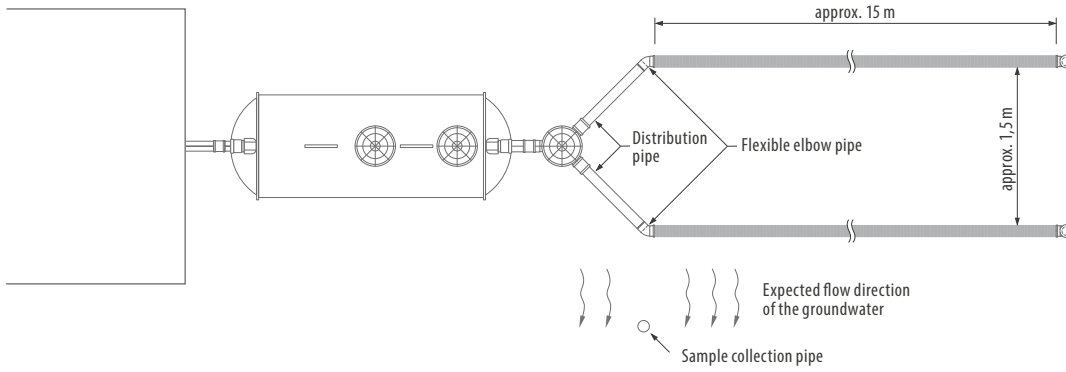
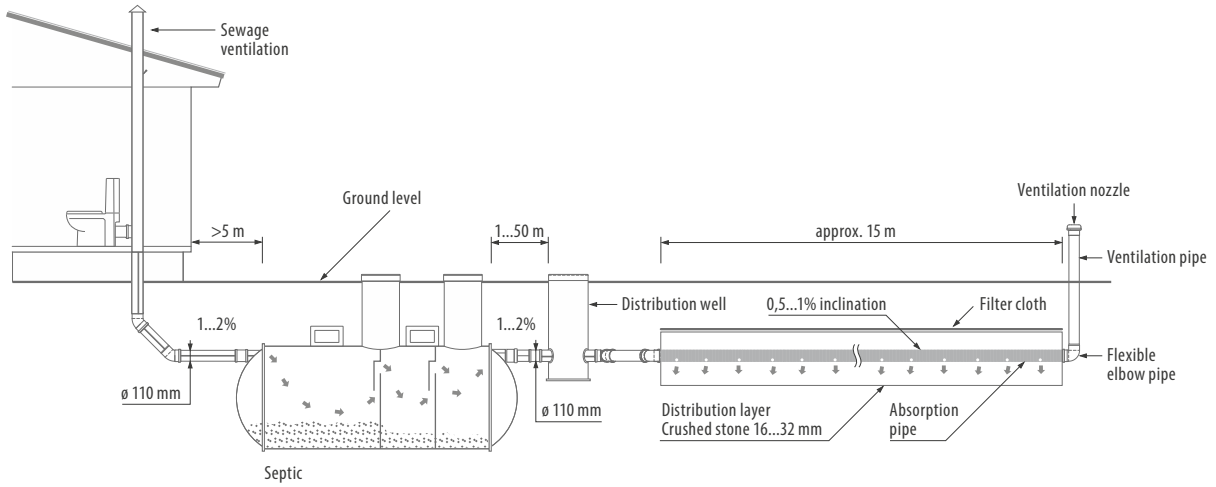
END VIEW



TOP VIEW



# INSTALLATION SCHEME



## SYSTEM SPECIFICATION

- 3-compartment, 2 m<sup>3</sup>
- 3-compartment, 3 m<sup>3</sup>
- Other \_\_\_\_\_
- Tank has been anchored

## THERMAL INSULATION

- Septic
- Absorption pipes

## FILTERING FIELD:

Crushed stone on the distribution layer 16...32 mm \_\_\_\_\_ m<sup>3</sup>

Sand on the leaching bed 0...8 mm \_\_\_\_\_ m<sup>3</sup>

Crushed stone on the collection layer 8...16 mm \_\_\_\_\_ m<sup>3</sup>

Settlement	Notes of the official	Amendments
Address	Content	
Building method	Design area	Job No.
Date and signature	Designer	Draftsman
	Checked by:	Checked by:



**INNOVATIVE WATER SYSTEMS**

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