

# SEPTIC TANKS

**CE**

EN 12566 - 1



**Installation Site Selection, pg. 5**

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The septic tank complies with the European Union standard for small wastewater treatment plants **EN 12566-1** and is **CE** marked.

#### THE SET CONSISTS OF:

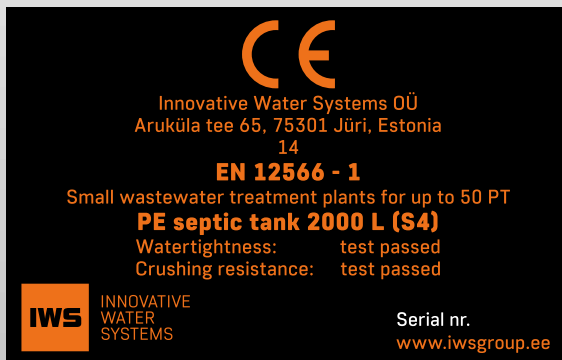
- a three compartment septic tank in which the effluent is cleaned from suspended solids and fats;
- a distribution well for the discharge of waste water into the distribution pipes consisting of absorption pipes;
- wastewater is discharged from perforated absorption pipes, through which pre-treated wastewater is discharged into the ground;
- ventilation pipes at the end of the distribution pipes;
- a geotextile to prevent mixing of different soil fractions.

#### THE PROPER SEPTIC TANK SET INCLUDES:

- strong double-walled three compartment septic tank (not breakable under soil pressure),
- a distribution well,
- special absorption pipes (not drainage pipes),
- complies with EN 12566-1,
- a CE marking (mandatory in EU countries).

Septic tanks 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 tanks has successfully passed the tests and it has been given a CE marking.



#### SEPTIC TANKS WITHOUT CE MARKING CANNOT BE MARKETED 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!

Thank you for taking time review our septic tanks catalogue!

Find out what size septic tank to choose, how to install it, and maintenance tips. In developing the septic tank, we have focused on their long-term durability, ease of installation and safe use.

As a homeowner, you have three options for managing sewage in your own sewage system: directing the wastewater into nature, using a septic tank or other self-treatment plant, and collecting the wastewater in a tank. The selection should be based on population density, local requirements set by the municipality, environmental development plan and ease of use. When choosing a septic tank or a tank, we offer you a durable and reliable solution.

The STRONG septic tank set consists of a three-chamber septic tank, a distribution well and filtering field, which, if properly installed and maintained, will ensure trouble-free operation for many years to come.

Detailed information about all our products is available at the address [www.iwsgroup.ee/en](http://www.iwsgroup.ee/en).

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# THREE COMPARTMENT SEPTIC TANK

All STRONG septic tanks are three compartments.

The septic tank is a closed sediment in which the organic matter contained in the sediment deposited on the bottom is decomposed by anaerobic bacteria. Most suspended solids sink to the bottom of the septic tank, while fats, oils, foam and fermentable bottom sediment rise to the surface.

The septic tank is built in such a way that the water passage in the tank is as long as possible. This ensures good cleaning performance, which in turn extends the working life of the filtering field of the septic tank.

## COMPARTMENT 1

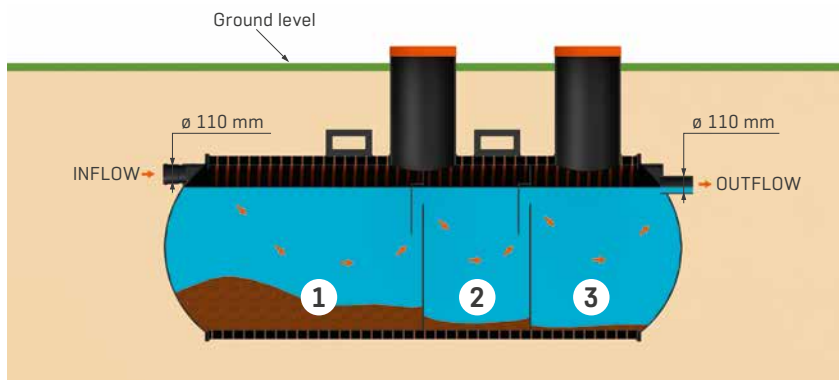
Wastewater enters into compartment 1 supplied with a grease/fat eliminator. The compartment is half the size of the total volume of the septic tank and thanks to the long sedimentation area of the compartment heavier particles will drop onto the bottom and lighter particles will move to the surface.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

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



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



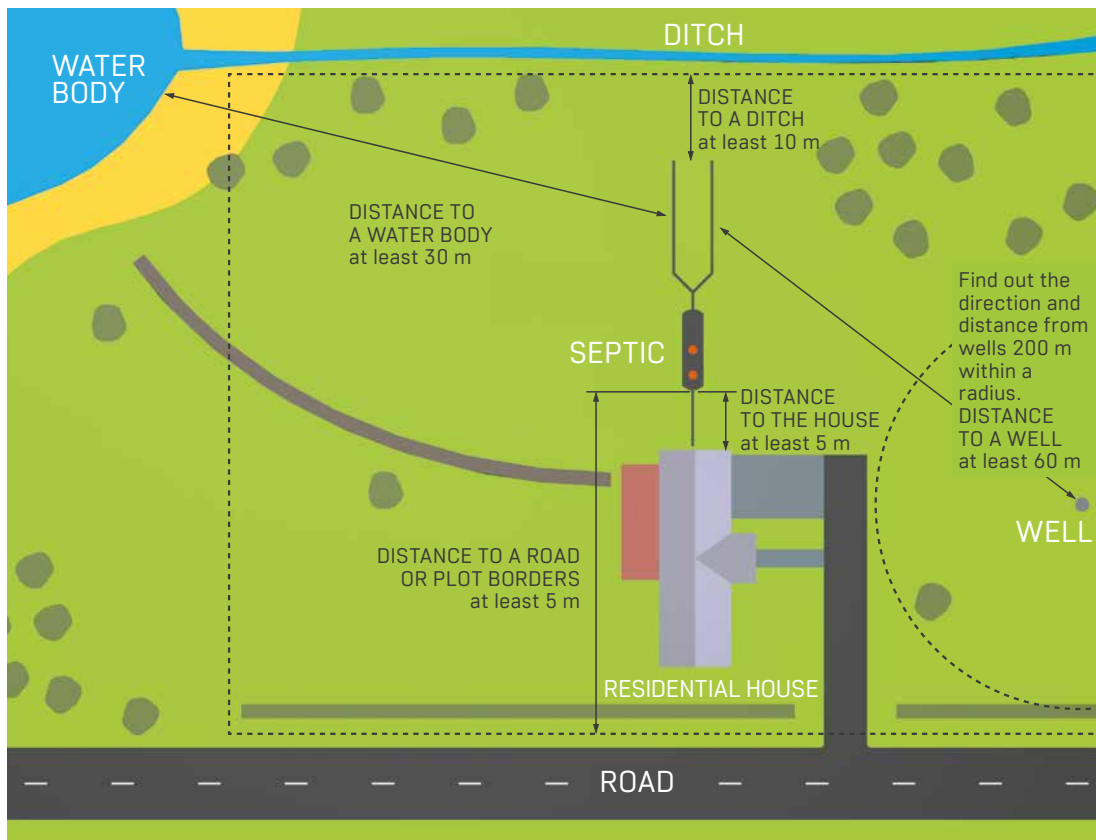
**3 000 L septic is suitable for 6...7-member families.**



**5 000 L septic is suitable for 8...10-member families.**

- STRONG septic tanks 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 tanks are light, they are easy to transport and install. A septic tank is provided with hoisting eyes and supporting feet.
- STRONG septic tanks 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 ring stiffness of our STRONG septic tanks is always at least SN2 (2 kN/m<sup>2</sup>). Moreover, the tank cylinder of the septic tank always has a double wall, which ensures absolute leak-tightness.

# INSTALLATION SITE SELECTION



**It is necessary to ensure access to sewerage emptying truck!**

## LOCATION

When choosing a location for the septic tank, the following factors must be taken into consideration: type of ground, relief, groundwater level, borders of the plot and distances to body of water. 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 necessary, use the assistance of a designer. When choosing a location, accessibility by the sewerage emptying truck must be kept in mind. The use of transportation on the septic tank 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 septic 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 PIPES

Wastewater pipes coming from the building to the septic tank and from the septic tank 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 septic tank is mounted farther from the building (>20 m), it is reasonable to install an inspection pipe or well on the wastewater pipe. 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 lubricant 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 tank, 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 tank is absorbed into the ground or is led into a trench, a drainage system or straight into a body of water. 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 tank 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 bodies of water, 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 geotextile and the trench will be smoothed to the same level as the subsoil and ground are.

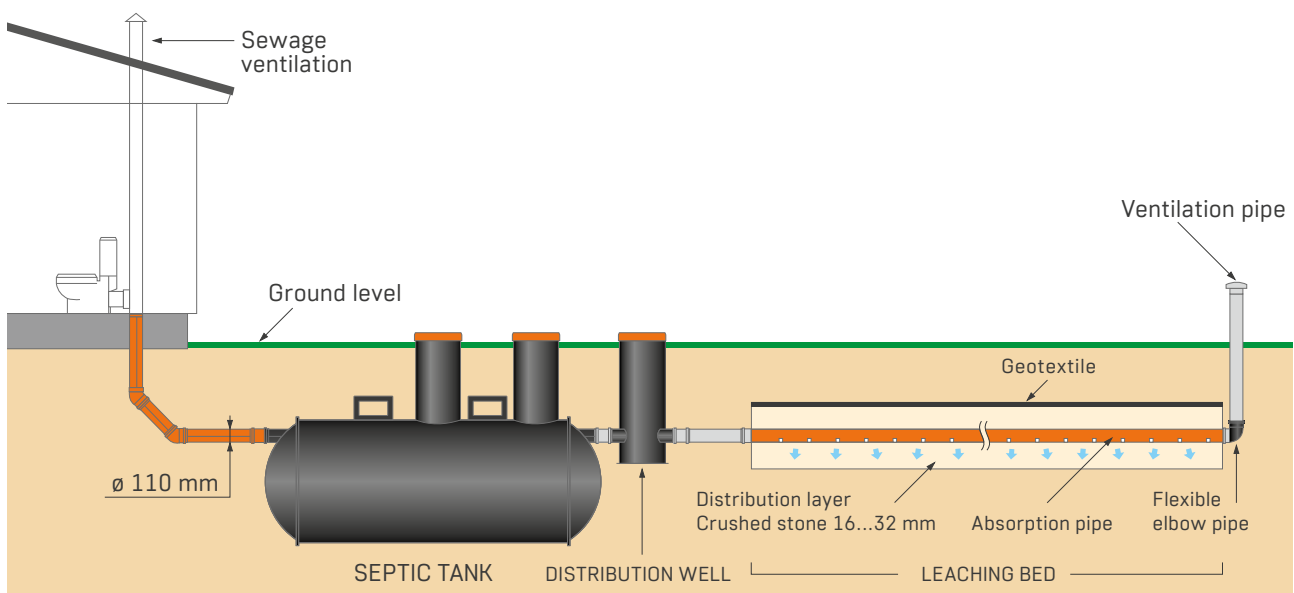


Fig. 1

### 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 designed for rainwater and holes in the drainage pipes clog quickly because of wastewater!**

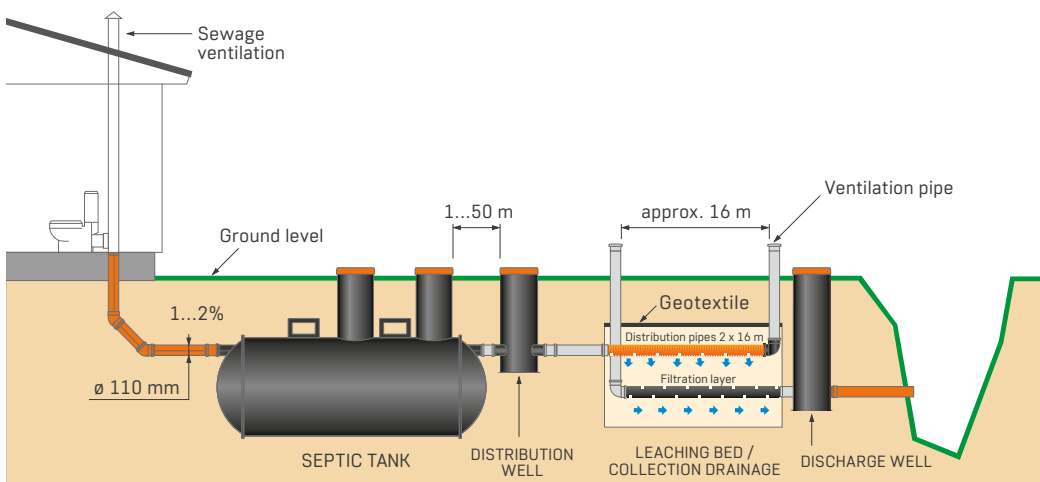


Fig. 2

### 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 tank, 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 small 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 tank! 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.

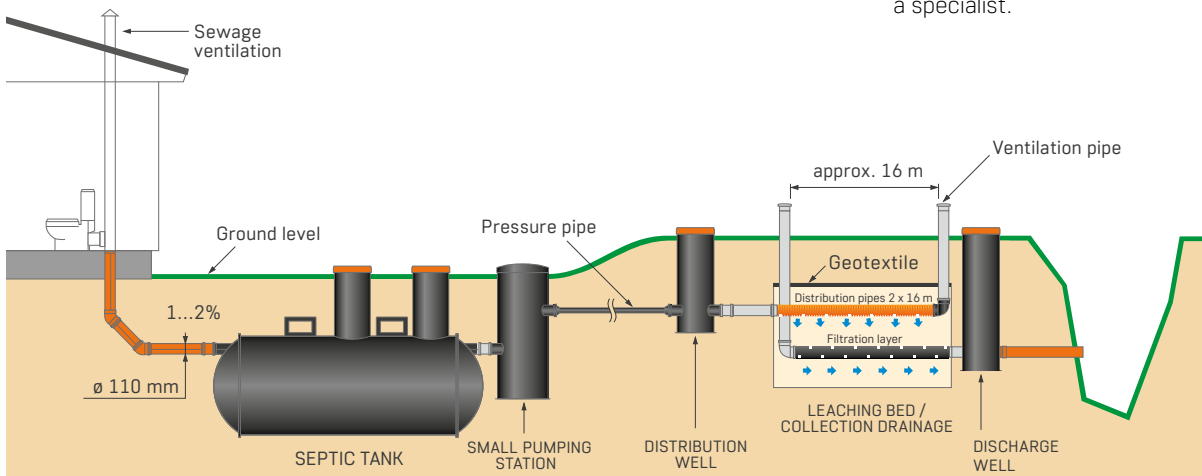


Fig. 3

# INSTALLATION

## INSTALLATION OF A SEPTIC TANK

Mechanical damage should be avoided during transportation, storage and installation. For lifting the septic tank (with a hoist or with belts), use special hoisting eyes available on the septic 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 tank 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 tank. Use anchoring belts to attach

the septic tank to the base or concrete blocks. Use non-corrosive fastening elements. Avoid contact between the septic tank 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 tank must be filled with water in order to prevent the septic tank 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 tank and the ground is less than 500 mm, the septic tank 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.



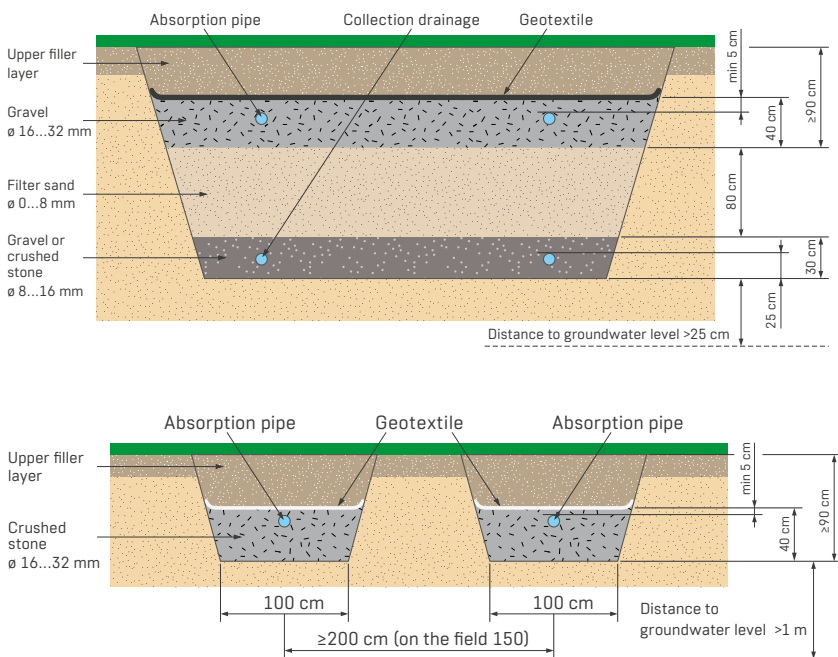
**Do not mount the septic tank without a distribution well! The distribution well is necessary for maintenance and cleaning procedures that the septic tank will require later on. If the septic tank is installed without the distribution ell, it will not be possible to detect any obstructions or to eliminate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

## 1. SEPTIC TANK

Normally a septic tank should be emptied twice per year. In case only grey water is led in the septic tank, it is enough to empty the septic 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 tank should be emptied during a dry period, especially in case the septic tank is not anchored to protect it against groundwater upheaval. After emptying the septic tank should immediately be filled with water!

## 2. SMALL PUMPING STATION

If the system includes a small pumping station, deposits accumulated in it should be discharged at the same time as the septic tank is emptied. Maintenance work related to the small 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 tank is emptied.

## 4. DISCHARGE WELL (in filtration systems)

The discharge well should be inspected at the same time the septic 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 septic 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.

## WARRANTY

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

Warranty for installation work is given by the installer.

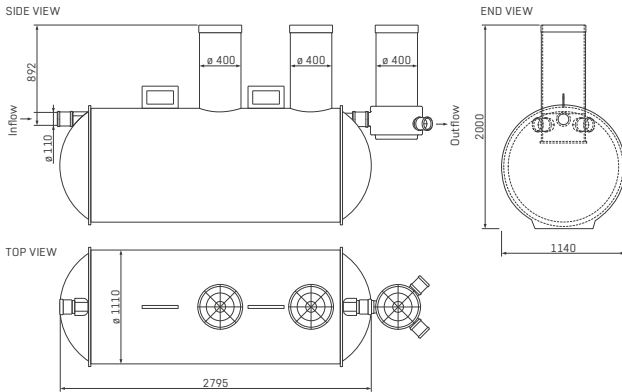
The warranty excludes faults that are caused by insufficient maintenance, incorrect installation and repair or normal wear and tear.

# MEASUREMENTS

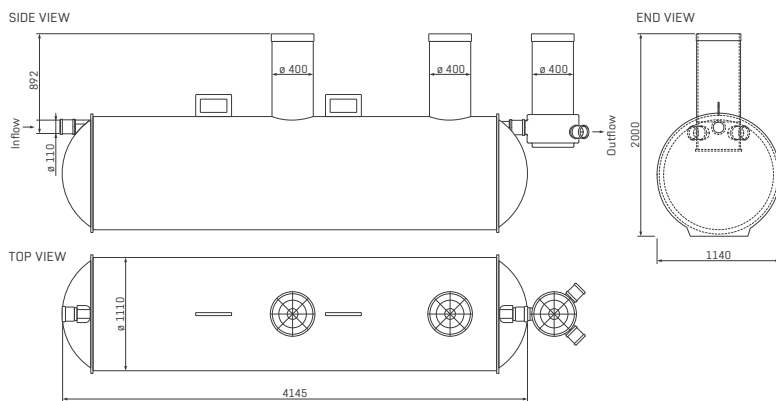
A STRONG septic tank set consists of a 3-compartment septic, a distribution well and filtering field equipment.

THE SET INCLUDES:	QUANTITY
3-compartment tank 2000 or 3000 litres	1 pc
Distribution well $\varnothing$ 400 mm	1 pc
Distribution pipe 3 m, $\varnothing$ 110 mm	2 pcs
Absorption pipe 3 m, $\varnothing$ 110 mm	10 pcs
Ventilation pipe 1.5 m, $\varnothing$ 110 mm	2 pcs
Ventilation nozzle $\varnothing$ 110 mm	2 pcs
Flexible elbow pipe $\varnothing$ 110 mm	4 pcs
Geotextile 1,2 x 15 m	2 pcs

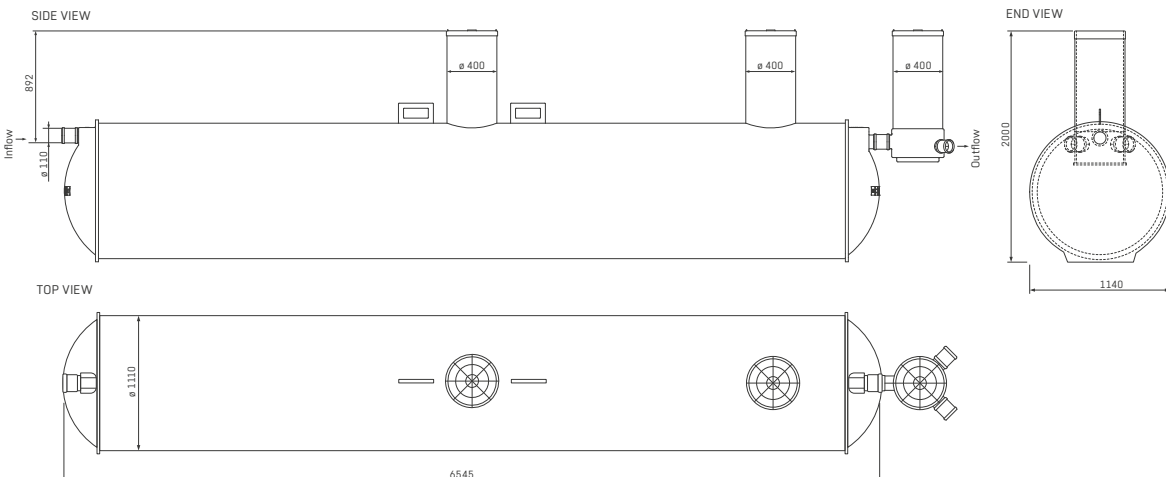
## SEPTIC TANK STRONG 2000



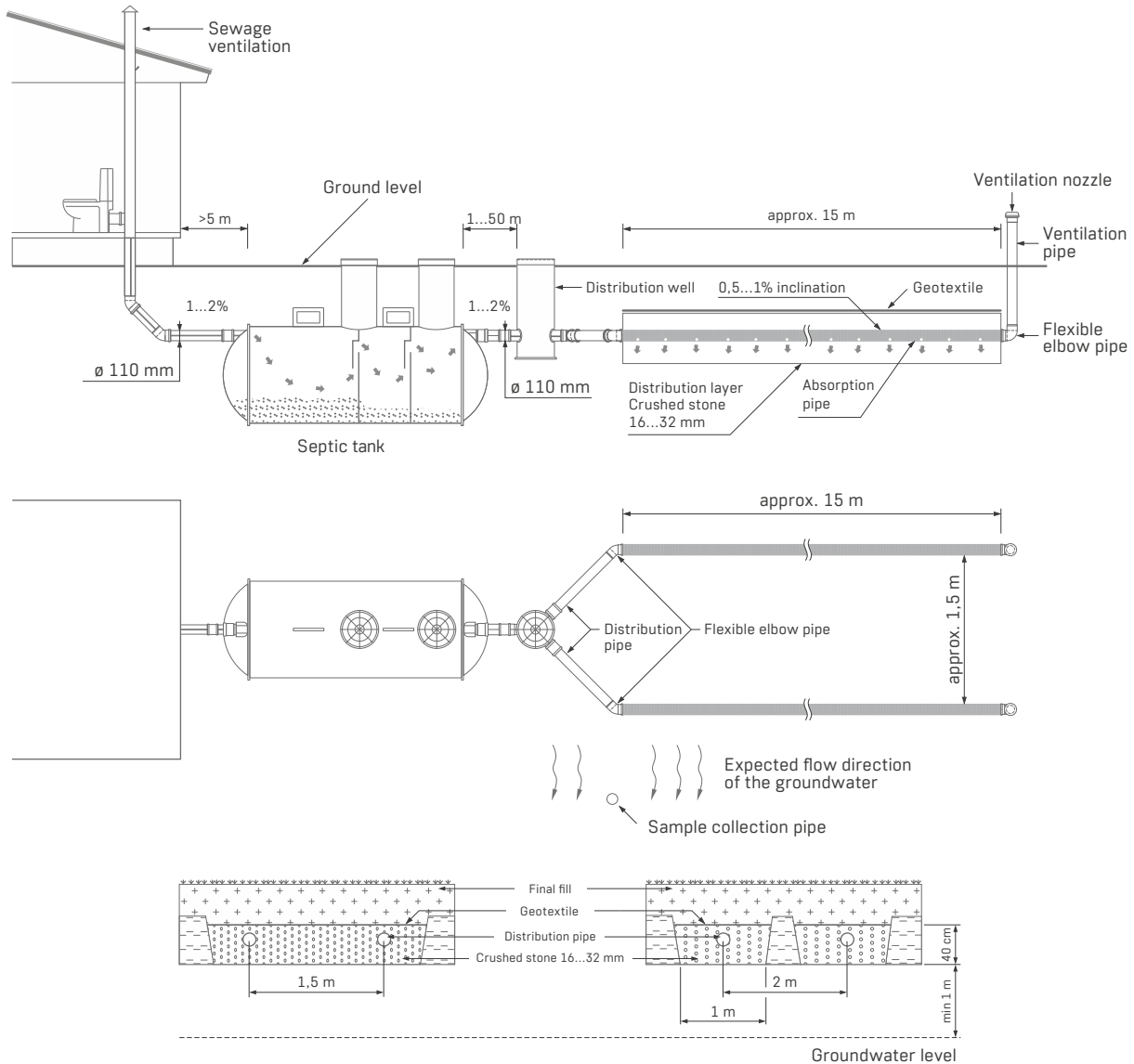
## SEPTIC TANK STRONG 3000



## SEPTIC TANK STRONG 5000



# INSTALLATION SCHEME



## SYSTEM SPECIFICATION

- 3-compartment, 2 m<sup>3</sup>
- 3-compartment, 3 m<sup>3</sup>
- 3-compartment, 5 m<sup>3</sup>
- Other \_\_\_\_\_
- Tank has been anchored

## THERMAL INSULATION

- Septic tank
- 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>

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

