



TANKS

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- STRONG tanks are made of PE-HD (high-density polyethylene) and are suitable for collecting utility, storm, fire-fighting and waste water.
- STRONG tanks are STRONG, made of PE spiral pipe with a double wall, which resists mechanical damages that may occur during installation and use of the system. This is important for preventing wastewater leakage in the soil or soil water penetration in the tank.
- STRONG tanks are light, they are easy to transport and install. A tank has eyebolts and support legs.
- STRONG tanks are long-lasting, weatherproof and resistant to various chemicals.



Dear customer!

Welcome to our tank catalogue! Here you will find information on how to choose a tank and how to install it. Our tank development process focuses mainly on long-term durability, ease of installation and safety of use.

STRONG tanks are intended for collecting waste water, storm water, fire-fighting water, and utility water. The tanks are made of PE (polyethylene), so they are also suitable for storage of various chemicals.

STRONG tanks have sturdy double-walled PE shell. Proper installation ensures smooth operation for many years.

Homeowners have three possibilities for local wastewater handling: collect wastewater into a tank, direct it into nature through a septic tank, or do the same through some other local purification system. Tanks are intended for those, whose dwelling has no sewage system and those, who cannot install a local purification system on their plot due to restrictions imposed by local authority. We offer you a long-lasting and reliable selection of both tanks and septic tanks.

Detailed information about all our products is available on our homepage www.iwsgroup.ee.

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PRODUCT SELECTION

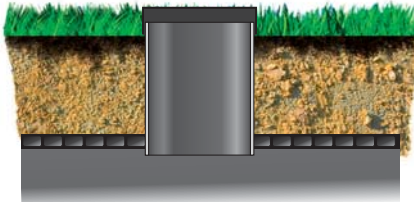
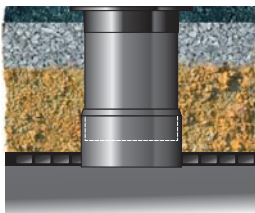
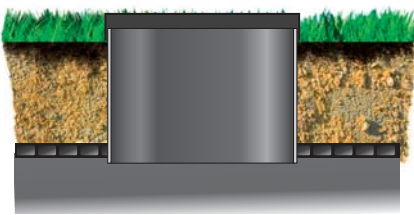
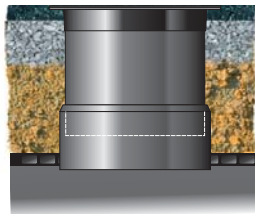
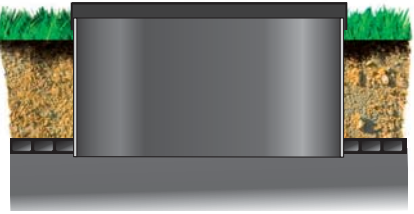
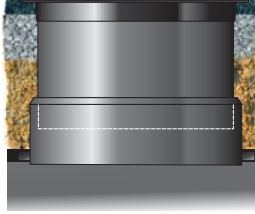
INNER Ø	VOLUME	LENGTH	MANHOLE TYPE	DRAWING
1,000 mm	1–10 m ³	1,550 mm ... 12,550 mm	A	
1,600 mm	10–25 m ³	5,410 mm ... 12,860 mm	A	
2,400 mm	25–60 m ³	6,140 mm ... 13,890 mm	A	

PRODUCT SELECTION

TANK DIMENSIONS

VOLUME (m³)	PRODUCT CODE	ø 1,000 mm/ LENGTH (mm)	PRODUCT CODE	ø 1,600 mm/ LENGTH (mm)	PRODUCT CODE	ø 2,400 mm/ LENGTH (mm)
1	501001	1,550				
2	501002	2,800				
3	501003	4,100				
4	501004	5,350				
5	501005	6,650				
6	501006	7,900				
7	501007	9,200				
8	501008	10,450				
9	501009	11,750				
10	501010	12,550	501610	5,410		
12			501612	6,360		
15			501615	7,860		
20			501620	10,360		
25			501625	12,860	502425	6,140
30					502430	7,240
35					502435	8,340
40					502440	9,490
50					502450	11,690
60					502460	13,890

MANHOLE TYPES

FOR A GREEN AREA	FOR A PAVED AREA
<p>A</p> <p>Manhole ø 200 mm, plastic lid</p> 	<p>B</p> <p>Manhole ø 200 mm, telescopic cast-iron lid ø 160 mm</p> 
<p>C</p> <p>Manhole ø 400 mm, plastic lid</p> 	<p>D</p> <p>Manhole ø 400 mm, telescopic cast-iron lid ø 315 mm</p> 
<p>E</p> <p>Manhole ø 760 mm, plastic lid</p> 	<p>F</p> <p>Manhole ø 760 mm, telescopic cast-iron lid ø 630 mm</p> 

TECHNICAL PROPERTIES

- STRONG tanks are made of PE-HD (high-density polyethylene) and are suitable for collecting utility, storm, fire-fighting and waste water.
- STRONG tanks are STRONG, made of PE spiral pipe with a double wall, which resists mechanical damages that may occur when installing or using the system. This is important for preventing wastewater leakage in the soil or soil water penetration in the tank.
- STRONG tanks are light, they are easy to transport and install. A tank has eyebolts and support legs.
- STRONG tanks are made of PE (polyethylene), which is an elastic and durable type of plastic. Thus, PE is a common material used for manufacturing septic tanks, tanks, wells, pump stations and pressure pipes, because it is particularly durable in Nordic climate. STRONG-tanks have minimum circular strength of SN2 (2kN/m²). In addition to that, the tank shell has double wall, which makes it completely leak-tight.



GLASS-REINFORCED PLASTIC AS A TANK MATERIAL

Glass-reinforced plastic (GRP) is a very brittle material, highly sensitive to mechanical damage. GRP can easily break during installation and afterwards, if the ground shifts (when freezing and melting).

Tanks and wells (EN13592-2) must have a circular strength of at least SN2 (i.e. 2 kN/m²). To ensure that, GRP tanks and wells should have a wall thickness exceeding 10 mm for DN1000, and e.g. more than 20 mm for DN1600. Many producers actually ignore this and make products with half the wall thickness. That is the reason for

common occurrences of a GRP tank breaking or collapsing during installation or later in the soil.

The German standard DIN 19565 sets out the following wall thicknesses for GRP wells installed underground:

- DN1000 14.1 mm
- DN1200 16.6 mm
- DN1400 19.2 mm
- DN1600 21.8 mm
- DN1800 24.3 mm
- DN2000 27.0 mm

We always recommend checking the wall thickness with the manufacturer of a GRP tank or well. Otherwise, you may buy a product in good faith, only to find that it does not suit your needs.

TRANSPORTATION

To lift the tanks, use the eyebolts on the tank and straps. Always use two life points. Make sure the straps do not damage the tank's protruding parts. Do not attach steel cables or chains around the tank to lift it.



INSTALLATION

REQUIREMENTS FOR FILLER

Sand, gravel, and crushed stone are suitable filler materials. The filler must be clean, freely flowing, and must not contain ice, snow, clay, organic substances, or too large or heavy objects that may damage the tank when falling onto it. Minimum required bulk density is $1,500 \text{ kg/m}^3$.

Gravel

Gravel particle size must not be less than 3 mm or more than 20 mm.

Crushed stone

Crushed stone particle size must not be less than 3 mm or more than 16 mm.

Sand

The particle size must not exceed 3 mm.

Sand/gravel mixtures

Sand and gravel mixtures can be used if the components comply with the above requirements for gravel, crushed stone, and sand. Sand and gravel mixtures must be compacted as instructed below. The requisite filler is gravel or crushed stone. Their ease of positioning and minimum need for compaction make them ideal fillers.

INSTALLING A TANK

1. The pit for the tank must be 1–1.2 metres longer and wider than the tank's dimensions. This leaves 0.5–0.6 m of space around the tank in order to allow compacting the filler material.
2. The tank's installation depth is measured according to the depth of the sewer pipe exiting the building. The decline of the sewer pipe between the building and the tank must be 1–2 cm/m.
3. The pit's bottom is covered with a 300 mm thick sand layer and compacted.
4. If the tank needs to be anchored, follow the instructions in chapter: Anchoring. In usual conditions (soil water level not rising above 0.5 m from the tank's bottom) the tank will be sufficiently secured in place by a topsoil layer with thickness equal to 0.7 times the tank's diameter. Thinner topsoil or higher soil water level requires the tank to be anchored into soil.
5. Lower the tank into the pit and make sure it is level and fully supported by

the base layer along its full length.

Make small indents under the tank's support legs, so that they will not provide any support to the tank later on.

6. Then start the backfilling the tank's pit as described in the chapter: Backfill.
7. When backfill has reached the height of influx pipe, connect the tank to the sewer pipe and compact the ground around the pipe.
8. When backfill reaches the final height, cut the manhole to required height and install a plastic lid or a telescopic cast-iron lid.



A tank installed without full backfilled topsoil layer may shift due to the impact of soil water. For this reason, the tank must be filled with water if backfilling works are interrupted!



INSTALLATION

ANCHORING

In order to neutralise the soil water's buoyancy and to ensure that the tank remains securely in place, the tank must be anchored. Calculated counterweight depends on maximum soil water level (the safest bet is to consider soil water level up to the ground surface as the maximum level) and the weight of an

empty tank. Then the buoyancy equals to the tank volume.

Anchoring can be done by using a concrete slab or blocks.

Use non-metallic anchoring belts (nylon, etc.) to anchor the tank. The belts must be resistant to soil conditions and the

tank's buoyancy. The metal anchoring points of the concrete blocks and the slab must be corrosion-resistant.



The distance between anchoring belts must not exceed 1.5 m and at least two belts must be used.

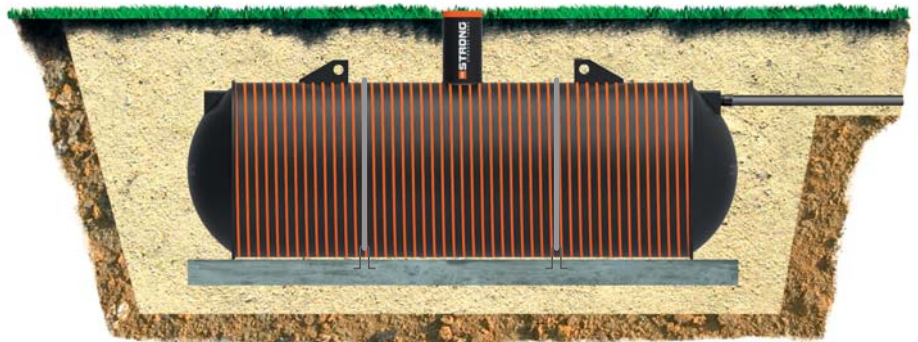
ANCHORING BY BLOCKS

Anchoring by blocks requires using at least 2 blocks outside the tank's dimensions. The blocks must be large

enough to hinder the tank from lifting up. Every block must be connected to the tank by at least two anchoring points.



End view.



Side view.

ANCHORING BY CONCRETE SLAB

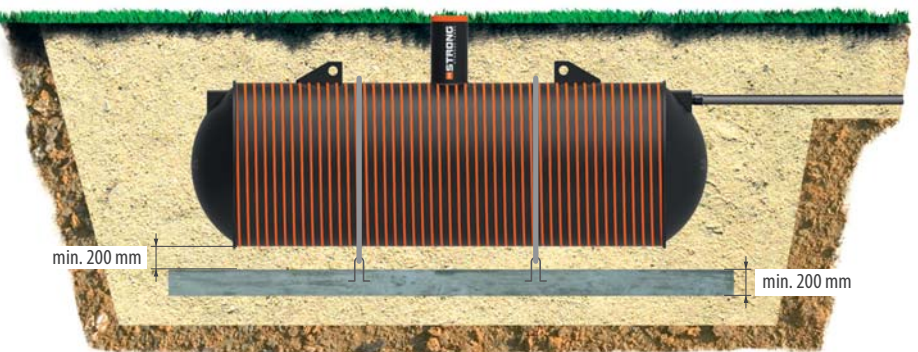
Anchoring with concrete slab requires using a 200 mm thick base slab made of reinforced concrete. The base plate must be installed on a 300 mm thick level sand base, which is mechanically compacted

to at least 95% of standard density. A sulphate resisting slab must be used if so required by soil conditions. The base slab must extend at least 300 mm beyond the tank edge and its minimum length must

equal to tank's length. When anchoring with a concrete slab, the tank and the base slab must be separated by a compacted sand layer of at least 200 mm in thickness.



End view.



Side view.

INSTALLATION

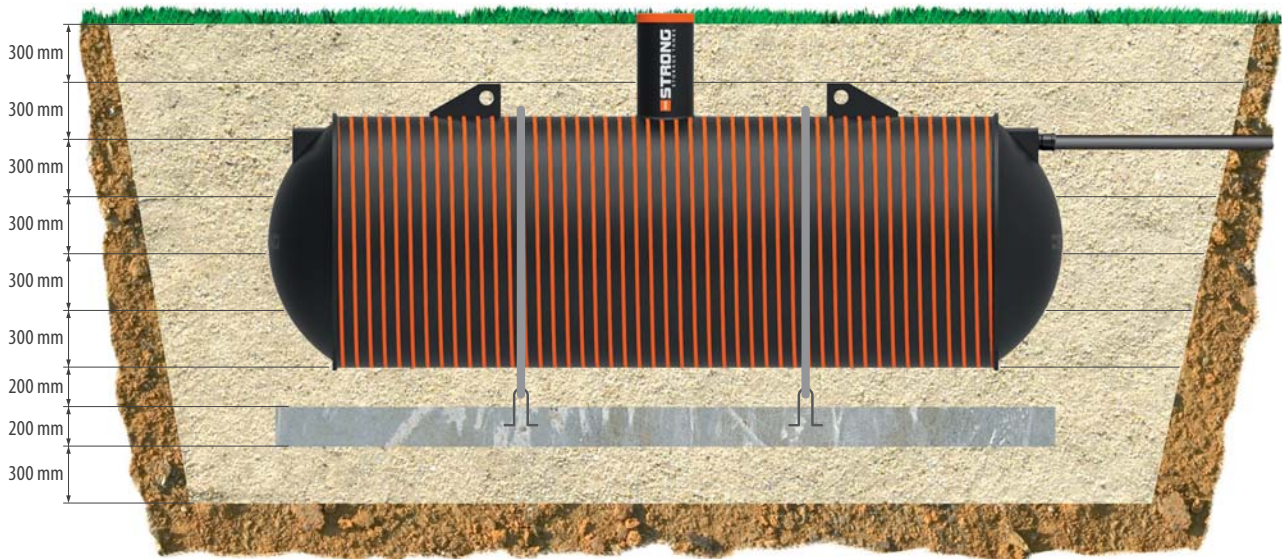
BACKFILLING

The tank pit is filled on all sides in 300 mm thick layers of gravel, crushed stone or sand, compacting each layer to 95% of the soil's natural density.

In case of high soil water level or otherwise wet and heavy soil (e.g. clay soil), use only gravel or crushed stone as

backfill material. During backfill works, keep the tank filled with water to the level of the current backfill layer. Take special care when compacting under sides and near tank ends and pipe connections to avoid any cavities remaining there. After reaching the final

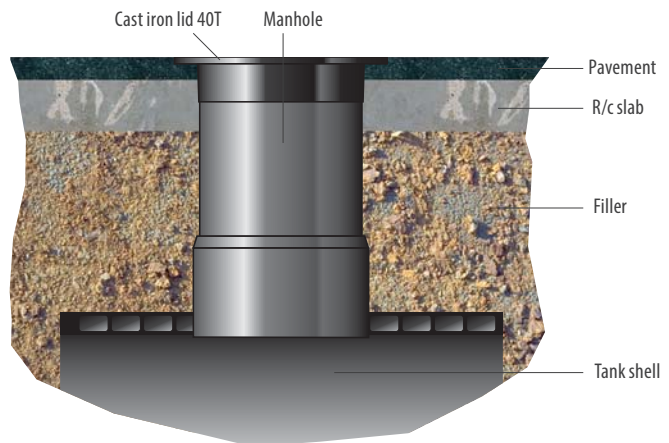
backfill height, cut the tank's manhole to the required length. When installing the tank to a green area, make sure the manhole reaches at least 100 mm above the ground in order to prevent storm water from entering the tank.



INSTALLATION UNDER TRAFFIC AREA

To avoid traffic load on a tank installed under traffic area, the tank must be covered by a load balancing plate. The thickness of filler layer on top of the tank must be at least 500 mm. A 150 mm thick reinforced concrete load balancing plate must be installed onto the filler layer. The plate must extend at least 300 mm beyond the tank in all directions.

All tanks under a traffic area must have a cast iron lid with a telescopic pipe connecting it to the tank's manhole. This prevents traffic load on the manhole.



ACCESSORIES

ALARM DEVICE

We offer an alarm device for the tank as an accessory; it is the wireless level sensor Tank-Check TC-412.

The wireless level sensor Tank-Check TC-412 has two parts:

1. A transmitter installed inside the tank manhole with a sensor monitoring the water level in the tank;
2. A control panel installed to a suitable place in the building.

The level sensor is set to suitable height and it monitors the tank's filling level, sending the data via the transmitter to the control panel. If the water level in the tank is below the set level, the green "OK" indicator lamp is lit on the control board. If the water level in the tank reaches the sensor level, the alarm

activates – the red "FULL" indicator lamp will light up on the control panel and an audible alarm will sound.

When emptying the tank, always check the level sensor as well, and remove the suspended solids, which may hinder the sensor's operation.

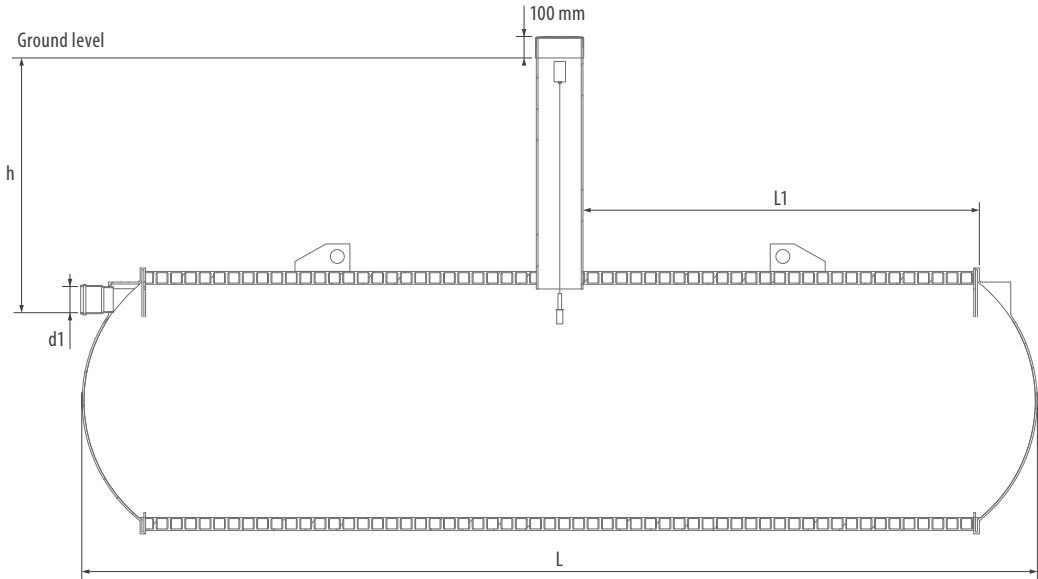


WARRANTY

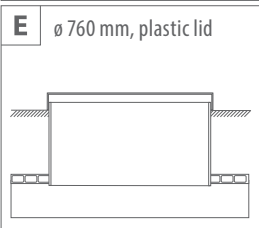
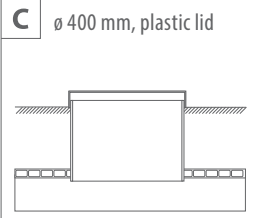
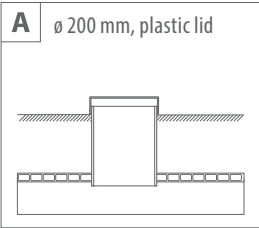
Innovative Water Systems provides the tank with a 10-year warranty on materials and leak-proof operation. The warranty for installation works is provided by the installer.

Shortcomings occurring due to insufficient maintenance, incorrect installation and repairs or normal wear and tear are not covered by the warranty.

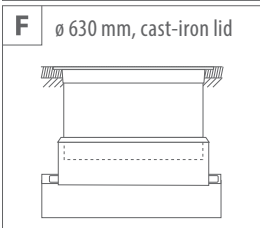
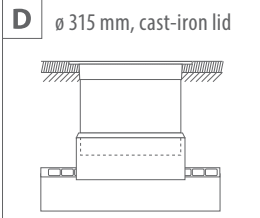
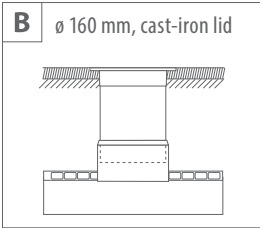
ORDER FORM



IN A GREEN AREA



IN A PAVED AREA



VOLUME (m³)	ø 1,000 mm/ LENGTH (mm)	ø 1,600 mm/ LENGTH (mm)	ø 2,400 mm/ LENGTH (mm)
1	1,550		
2	2,800		
3	4,100		
4	5,350		
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6	7,900		
7	9,200		
8	10,450		
9	11,750		
10	12,550	5,410	
12		6,360	
15		7,860	
20		10,360	
25		12,860	6,140
30			7,240
35			8,340
40			9,490
50			11,690
60			13,890

Internal diameter: 1,000 mm 1,600 mm 2,400 mm

Volume: _____ m³

Manhole height: standard 950 mm or h - _____ mm

Manhole type: A B C D E F

Manhole distance: standard middle or L1 - _____ mm

Inlet pipe diameter: d1 - _____ mm

Alarm device: Yes No



INNOVATIVE WATER SYSTEMS

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