



**SELF-ANCHORING PE WELL Ø 1500 mm – “ESTER”**

**INSTALLATION AND MAINTENANCE INSTRUCTIONS**

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*We thank you for purchasing a product manufactured by Eccua, and we hope that the product meets your expectations!*

## **1. WARRANTY**

The warranty period for wells sold by Eccua is 24 months. Eccua shall assume the elimination of any equipment failure under the following conditions:

- The failure is caused by a flaw in the structure or material or the incorrect processing thereof
- A sales representative of Eccua has been notified of the failure within the warranty period
- The product has been used according to the **installation and maintenance** instructions specified in the current instruction manual, and the product has been in use in the intended area of application
- In case it becomes necessary to excavate the product in order to identify the failure, the process must be carried out in the presence of the representative of the manufacturer
- Only original ECCUA spare parts and accessories are used

The warranty does not cover failures which have been caused by insufficient maintenance, incorrect installation, incorrectly performed repair, or as a result of normal wear and tear.

## **2. GENERAL INFORMATION**

Eccua wells are delivered fully assembled and ready to use. The shells of the wells are made of PE plastic by using the method of rotational moulding. The resistance of the wells to various installation depths has been tested by using the vacuum method. A 1.25-fold reserve factor has been taken into consideration for the allowed installation depths.

The self-anchoring PE plastic well Ø 1500 mm with the product name "Ester" is used for manufacturing various final products – oil separator, grease separator, water meter well, air separator well, well for gate valves, hydrant well, waste water pumping station, pressure boosting well, etc. The current maintenance and installation instructions apply to all the products where the shell of an Ester well has been used.

## **3. PRODUCT HANDLING AND INSTALLATION**

- The Ester well must be handled with care, and the product must be firmly secured when transported.
- All possible damages inflicted on the well during transportation must be examined as soon as the well has been lifted off the means of transportation.
- The maximum installation depth of the standard Ester is 4 m up to the bottom edge of the well. A well with a reinforced structure must be ordered in case of a deeper installation.

- The shell of a well in normal conditions does not require additional anchoring if the installation depth exceeds 2.1 m. Additional anchoring must be used in case of a shallower installation and high surface water. Read about the details in point 4.
- A load-balancing plate must be used on top of the well in case it is installed in areas with traffic.

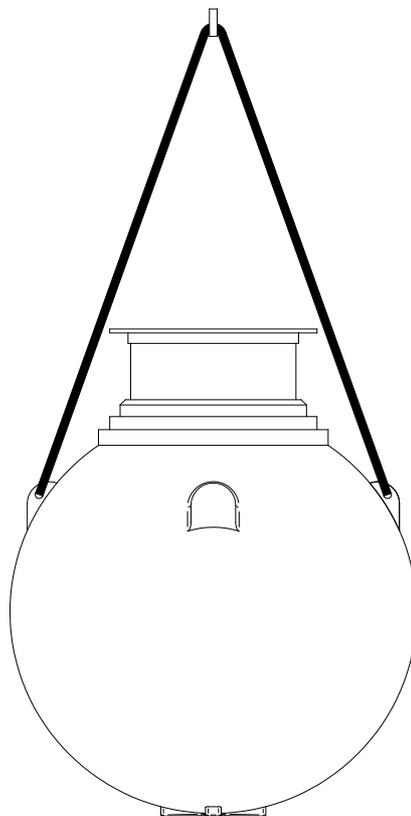
#### 4. INSTALLATION OF SELF-ANCHORING WELL

The well is self-anchoring due to its round shape which ensures that, on proper installation, the forces exerted by the ground on the well (the weight of the ground, the gravitation exerted on the inclined plane, and the force of friction exerted on the walls of the well) exceed the lift force exerted by the groundwater by at least 1.45 times. The above-mentioned force is not transferred to the pipework connected to the well due to it being firmly secured in the ground.

##### 4.1. Lifting of well

Use hoisting slings to lift the well. No steel wires or chains can be fixed around the well. Use all the existing lifting positions or those marked on the well. Use steering cables to steer the well when suspended in the air.

**BE SURE TO USE BOTH EYELETS WHEN LIFTING.** The well may become loose due to its weight when only one eyelet is used for lifting. See figure.



## 4.2. Requirements for installation components

NB! The best filling material is gravel or crushed stone. In wet installation sites, including temporarily wet areas, the surface water may wash away the sand around the shell of the well, as a result of which the forces exerted on the walls of the well become uneven, which, in turn, may bring about deformation. The easy installation of crushed stone and gravel and achieving a solid supporting surface with minimum compaction make these materials ideal for filling. The material must be unmixed, sorted, free-flowing and cannot contain any ice, snow, clay, organic materials, or large and heavy objects which could damage the well while falling into the trench. Minimum bulk density is 1,500 kg/m<sup>3</sup>.

### *Gravel*

The filling material may pass through a sieve with 2.4 mm holes only up to the extent of 3%. The material must be round gravel, similar to peas, and the size of the components cannot be less than 3 mm and more than 20 mm. That is with a fraction of 4...20.

### *Stone chippings*

The size of the stone chippings cannot be less than 3 mm and more than 16 mm, and the material may pass through a sieve with 2.4 mm holes only up to the extent of 3%.

### *Sand*

The sand must be properly sorted, and the material may pass through a sieve with 75 mm holes only up to the extent of 8%. The size of the biggest component cannot exceed 3 mm. Fraction 0...3.

### *Sand/gravel mixtures*

Sand and gravel mixtures can only be used provided that the components comply with the requirements set for gravel, crushed stone, and sand.

## 4.3. Anchoring

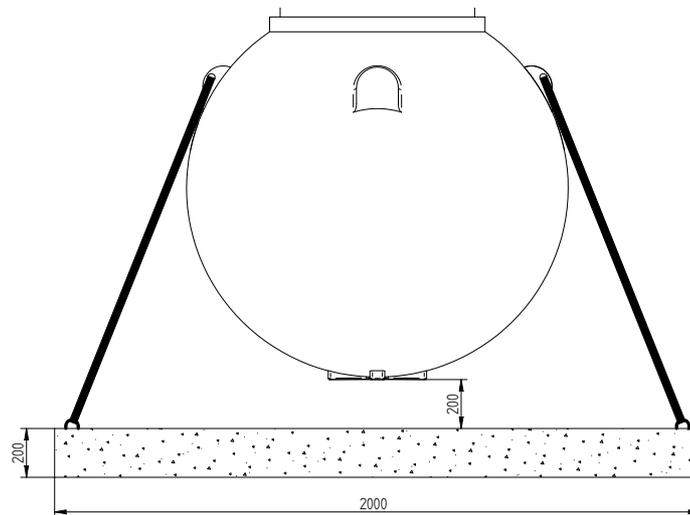
Ester does not generally require anchoring in order to avoid raising the surface water. There are certain conditions where the self-anchoring of the ground is not sufficient, and the well may require additional anchoring. That applies to the following instances:

- the level of surface water (including temporary) is closer to the ground than 1 m;
- the total installation depth of the well is less than 2.1 m;
- the ground is not very permeable, and in case of abundant precipitation, the water may collect in the installation trench surrounding the well;
- the ground naturally has poor load-bearing properties.

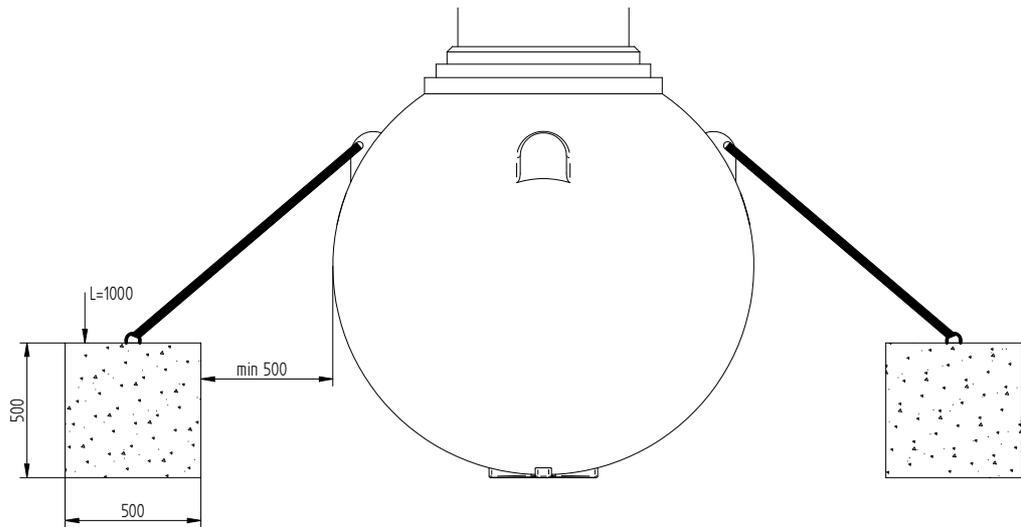
Different means of anchoring may be used for anchoring, such as an anchoring boat, anchoring blocks, or deep-impregnated beams. The installer may select a suitable means for them from among the various options.

The concrete anchoring boat must have a minimum thickness of at least 200 mm and extend over the well gauge on all sides by at least 200 mm. In case of a well diameter of 1,500 mm, the concrete plate used must have the minimum dimensions of 1.9 x 1.9 x 0.2 m.

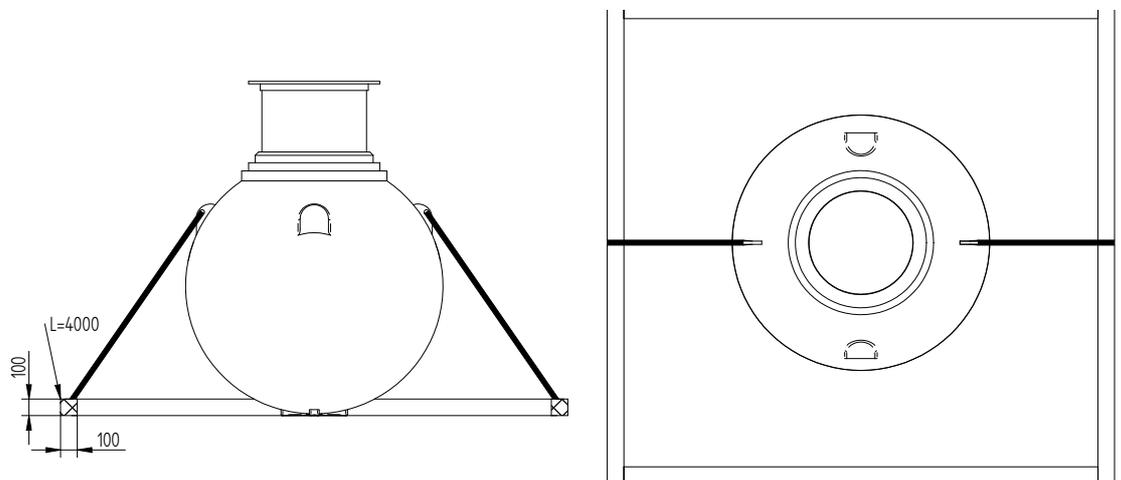
A layer of compacted sand or crushed stone of at least 200 mm must be installed between the well and the concrete plate. In case there is a risk that the flowing water may wash off the sand, we recommend using crushed stone. See figure below.



Another option is to use two concrete blocks with the dimensions of 0.5 x 0.5 x 1.0 m. The concrete blocks must be flush with the bottom of the well, and there must be compacted filling material of at least 500 mm between the block and the well. The well is secured to the blocks with securing straps in the places indicated in the figure. See figure below.



As a third option, deep-impregnated beams with the dimensions of 100 x 100 x 2000 mm can be used for anchoring and constructing a square-shaped frame. The frame is installed around the well and secured to the eyelets of the well with the help of securing straps. The frame must remain fully in the compacted ground. The space between the frame and the well cannot be less than 500 mm. See figure below.



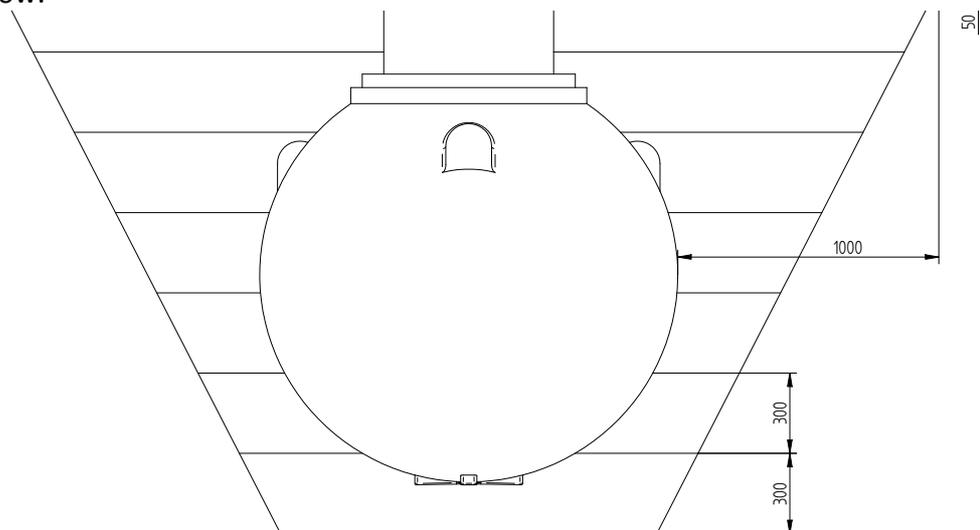
Non-stretching polyester straps with a width of 25 mm and a load-bearing capacity of 2,000 kg are used for anchoring.

#### 4.4. Process of filling

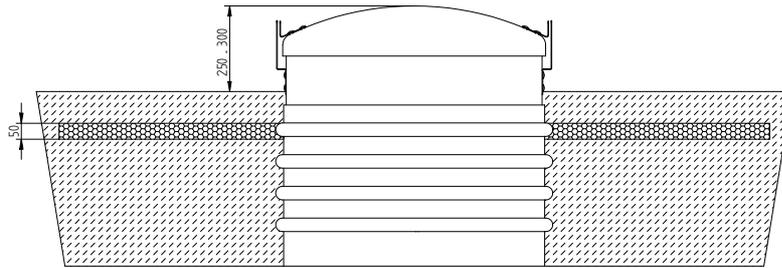
The well is installed in the trench, the bottom of which has been evenly filled with 30 cm of suitable filling material. Layers of filling material with a thickness of 30 cm are cushioned around the well with each layer being compacted to 95% of the natural density of the ground. The area around pipe connectors and the legs of the well must be especially thoroughly compacted in order to prevent any spaces remaining in those areas. Manually shovel the sand around the well. Use a board of 50 mm x 100 mm for pressing down and compacting the filling material. In case of high surface water or generally wet and heavy surface (e. g. clay surface), only use the backfill of gravel or crushed stone. In case of high surface water, the well must be filled with water in order to hold the well stationary.

In order to prevent the ground surrounding the well from freezing, insulation plates extending over the edges of the well by 1 m may be placed under the upper layer of filling. Install the last layer of filling.

See figure below.

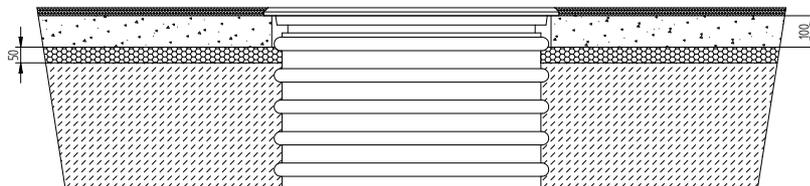


In case of installing the well in a green area, confirm that the hatch of the well extends above the ground by at least 100 mm in order to avoid storm water accessing the well. See figure below.



#### 4.5. Installation in areas heavy with traffic

In order to avoid the load caused by traffic to transfer to the well, it must be ensured that the hatch of the well does not remain supported on the edge of the servicing well. A floating cast iron hatch must be installed in accordance with the installation instructions for cast iron hatches. A reinforced concrete ring, which extends over the edge of the well by at least 300 mm and is supported by a layer of compacted filling material, must be used for supporting the hatch. See figure below.



### 5. Use and maintenance:

#### 5.1. Safety!

The well must be ventilated for at least 5 minutes before entering the well.  
Follow the safety notices and markings in the well!

Only one person at a time can stay on the service ladder of the well, and they are not permitted to carry with them objects that are not lightweight and easily handled. Another person must remain outside of the well to monitor the safety of the person working inside the well and offer them assistance, if needed.

## 5.2. Maintenance works:

The nature of the maintenance works depends on the type of well, whether it is a separator, well for gate valves, water meter well, air separator well, or pumping station.

- Separate maintenance and user instructions are delivered with grease and oil separators.
- Wells for gate valves, water meter wells, air separator wells, and pumping stations must be examined annually to confirm that the stop valve functions properly – in order to do this, the valve must be closed and opened once.
- The maintenance of water meters, pumps, and air separators must be performed in accordance with the maintenance instructions of the specific equipment.
- The non-return valve of the pumping stations must be cleaned of the possible waste and deposit formed there – close the valve gate and open the cover of the non-return valve!
- The interior walls of the pumping station must be cleaned using high-pressure water and the bottom of the pumping station must be cleaned from the deposits formed there every 6 months – the period may be shorter or longer depending on the pumping station and the formed deposits. The deposits must be removed if the volume of the deposits extends to the work station of the pumping station.
- After maintenance has been performed in the pumping station, the pumps must be placed back into the pumping station by using lifting troughs, and the functioning of the pumps in the working situation must be examined. **Use only the lifting chain intended for lifting and lowering the pumps.**
- Clean the floating switches and level sensors from deposits and dirt, examine the condition of the feeder cable of the pump and the earth connections of the metal structures of the pumping station.
- Examine the shell of the wells for leaks or deformations.

**It is categorically forbidden to perform interior works alone!**

**In case the pumps work below the prescribed level of productivity or sounds are heard which were absent when the pumps were in order, we recommend undertaking measures to eliminate the failure in order to prevent further possible deformation of the pumps – inform Eccua OÜ, the supplier of the pumps.**

## Documentation

1. All inspections, operations, and observations made in the well since the installation of the self-anchoring well must be recorded in the maintenance journal.
2. The maintenance personnel of the well must undergo instruction regarding the hazards arising from electricity and toxic combustion gases, and they must be provided with the necessary protective equipment and appliances!

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