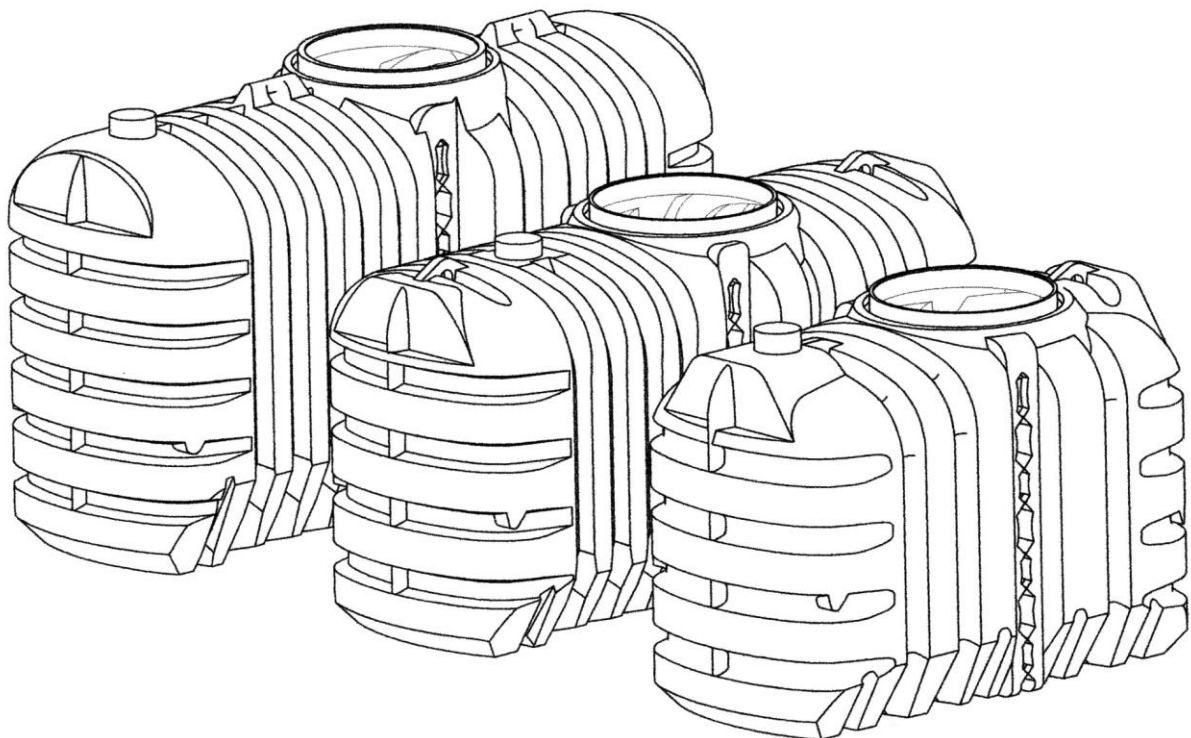


# Technical documentation Underground container MONOLITH II

ML 3512 / ML 4512 / ML 6012



Dear customers,

Thank you for choosing a REWATEC underground container. Our MONOLITH underground containers are appropriate even for challenging locations such as high ground water levels or high traffic loads. So that we can guarantee decades of lifespan under such conditions, it is important that you understand the contents of these installation instructions and follow them. The more difficult the ground conditions are, observing the following points, becomes more important.

- the quality of the backfilling material
- the degree of compaction during the backfilling of the excavation pit
- the need for a dry excavation pit at the installation

Best regards

PREMIER TECH AQUA GmbH

**Another hint: Please fill in the last page of this document!!**

## 1. Ground conditions

For the installation of the container the surrounding soil conditions are detailed below.

### 1.1 Soil types (A1 from figure 1 on)

#### 1.1.1 Non-cohesive ground, e.g. sand and gravel

Non-cohesive ground, such as sand and gravel, only have a small amount of grains smaller than 0.06 mm ("fine grain" ""); the amount of fine grain in sand and gravel, for example, is less than 5 % of the weight.

*Simple test: Squeeze a small sample of soil and throw it in the air. If it crumbles the soil is non-cohesive.*

Non-cohesive ground guarantees a good loading capacity and a good water permeability. It is very stable and can be used as filling material as long as it corresponds to the criteria of points 2.1 and 2.2.

#### 1.1.2 Cohesive ground without organic components, e.g. loam and clay

Cohesive ground without organic components such as loam and clay consists of more than 5% of fine grains.

*Simple test: Squeezed sample of soil does not crumble when it is thrown in the air.*

These types of ground are also stable, but may have negative properties making them unsuitable. Loam in layers is usually almost watertight. This characteristic can, with rain or surface water, result in a „bathtub effect“ causing the container to stand in water for a long time (see also point 1.2.1).

Note: Entering of fine grain into the filling material can be avoided by coating the excavation pit with filter fleece.

#### 1.1.3 Cohesive ground with organic components e.g. topsoil

Cohesive ground with organic components such as topsoil are not stable and thereby unsuitable for backfilling. They can only be used in the upper area of the excavation pit.

## 1.2 Further influencing ground factors

### 1.2.1 Ground water, resp. surface water:

Ground water resp. surface water should generally not be higher than the upper side of the container

**Important advice:** Check necessity of bouyancy protection! (See installation manual DOKK7302)

If the ground water level possibly lies **above** the container top, a watertightness between tank and shaft system should be produced by a factory-provided welded joint (if necessary on-side).

Alternatively the cone / spacer ring 800 can be sealed by the installation of a rubber seal (KKDS0075).

Before and during the installation ground / surface water has to be pumped out of the pit, so that the installation can be carried out in a dry situation.

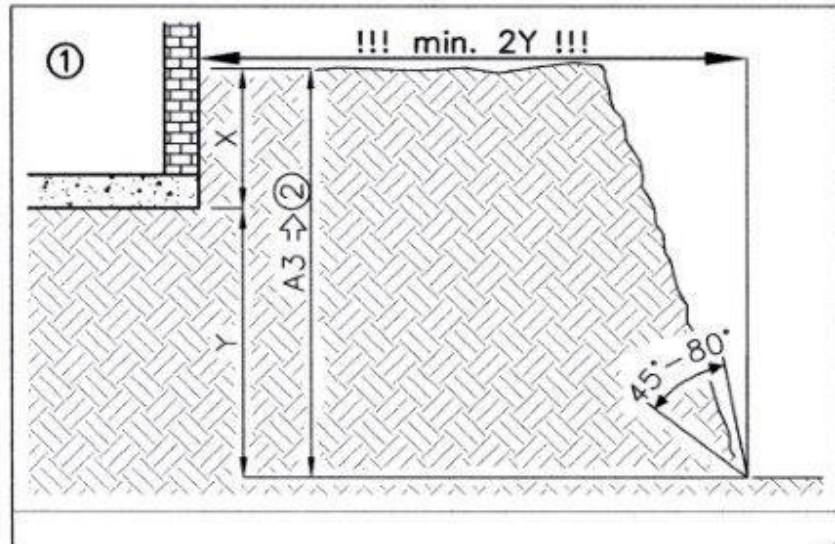
### 1.2.2 Hillside situation

The soil in the area has to be checked (DIN 1054, E DIN 4084, local authority) and if necessary secure with a supporting structure.

### 1.3 Buildings

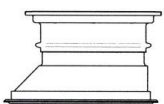
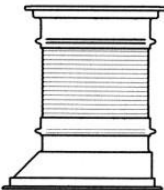
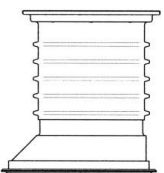
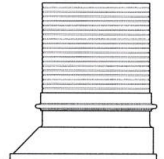
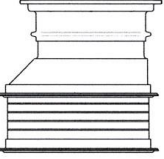
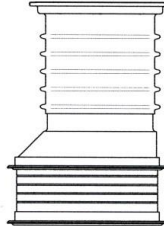
The tank may only be built over when the occurring loads are not higher than the traffic loads. Uneven and selective loads are to be avoided.

The least distance to buildings is to be kept if the excavation pit floor lies deeper than a cellar floor (DIN 4123).



## 1.4 Traffic loads/ Excavation pit

This chart gives an overview of the standard traffic loads for which the container system is designed and the resulting sizes of excavation pit. Please contact us for further traffic loads.

						
<b>Shaft elements</b>	<b>Cone with VS 20</b> (standard scope of delivery)	<b>Cone with spacer ring 600 and VS 20</b>	<b>Cone with BS 60</b> (same size as VS 60)	<b>Cone with spacer ring</b>	<b>Spacer ring 800 with cone and VS 20</b>	<b>Spacer ring 800 with cone and VS60/BS60</b>
<b>Version</b>	Walk-on version	Deeper installation	Car driveable (BS60) resp. for a deeper installation	Preparation lorry driveable*	Spacious shaft, deeper installation	Spacious shaft, deeper installation
<b>Load/Cover (Axle load)</b>	Pedestrians, cyclists / A15 (-)	Pedestrians, cyclists / A15 (-)	Car, minibus on parking areas, driveways / B125 (2,2 to)	Small lorries on parking areas, company grounds D400(11,5 to)	Pedestrians, cyclists / A15 (-)	Pedestrians, cyclists / A15 (-)

### Sizes for ML3512 and ML4512

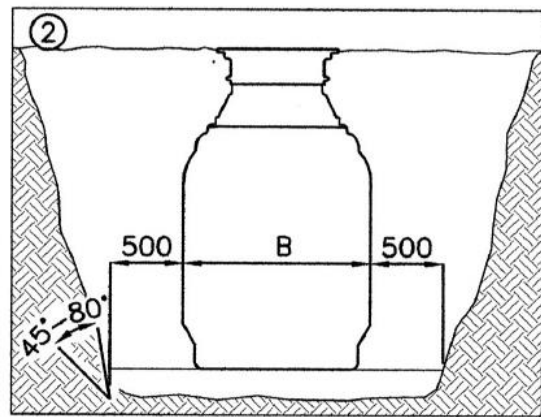
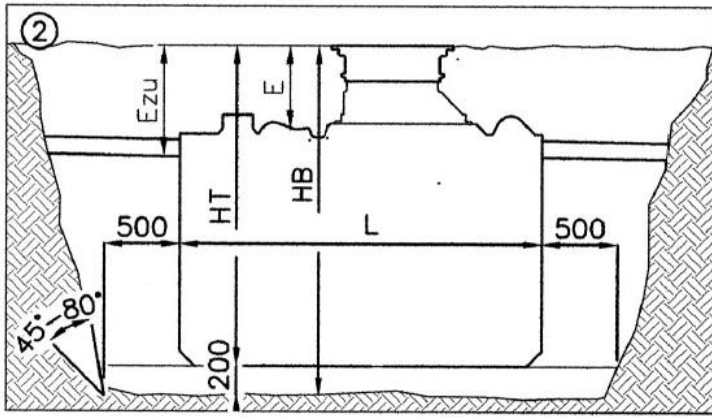
<b>EZu</b>	610 – 750	1130 -1320	1010 - 1150	950 – 1650*	920 - 1060	1320 – 1460
<b>HT</b>	2060 - 2200	2580 – 2770	2460 - 2600	2400 – 3100*	2370 - 2510	2770 – 2910
<b>HB</b>	2260 - 2400	2780 – 2970	2660 - 2800	2600 – 3300*	2570 - 2710	2970 – 3110
<b>E</b>	460 - 600	980 - 1170	860 - 1000	830 – 1500*	770 – 910	1170 – 1310

### Sizes for ML6012

<b>EZu</b>	620 - 760	1180 – 1370	1020 - 1160	990 – 1660*	930 - 1070	1330 bis 1470
<b>HT</b>	2300 - 2440	2820 - 3010	2700 - 2840	2640 – 3340*	2610 -2750	3010 - 3150
<b>HB</b>	2500 - 2640	3020 - 3210	2900 - 3040	2840 – 3540*	2810 - 2950	3210 - 3350
<b>E</b>	460 - 600	980 - 1170	860 - 1000	800 – 1500*	770 - 910	1170 - 1310

\*Additional concrete covers and rings by customer. The maximum values show the upper limit of the static load.

The soil coverage E should **not be more than 1.2 m**, otherwise maintenance of the sewage treatment systems cannot be carried out.



45°-80°: Angle of slope according to DIN 4124  
 500: Working width according to DIN 4124

In standard one container plants there is a drop of 100 mm between inlet and outlet.

Container Type	L (mm)	B (mm)
ML3512	2400	1240
ML4512	3070	1220
ML6012	3400	1220

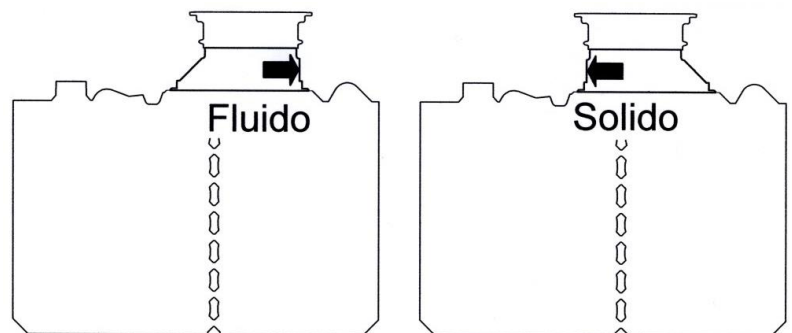
The depth of the excavation pit is to be designed according to the following points:

- Location of the existing resp. planned pipes
- Tank height (see chart above and point 4)
- The allowed/necessary soil coverage above the tank (standard max. 1,50 meter, depend also on the traffic loads, see point 1.4)
- Outflow resp. overflow possibilities

## 2. Installation

**IMPORTANT: Please consider the correct adjustment of the cone:**

- **System SOLIDO:** the flat side facing the inflow of the tank
- **System FLUIDO:** the flat side facing the outflow of the tank



All following figures show exemplarily the adjustment for SOLIDO!

Due to transport conditions the cone could be fixed already to the container by screws.

**The installation may only be carried out when the ground in the excavation pit is dry, if necessary a ground water has to be pumped out.**

### 2.1 Backfill material at the tank

(Backfill (A3) and bedding (A2) see chapter 3 from figure 3 onwards)

**General:** The backfill material has to be well compactable and permeable to water, free of sharp objects as well as frost proof to achieve a compact backfill and avoiding damage to the surface of the tank. If the filling material contains sharp or sharp-edged components, the wall of the tank has to be protected by a sandy coating.

**Sand - gravel mixtures** (SW and GW to German Institute for Standardization 18196 and ENV 1046) are the most favourable filling materials, because they have a grain line which consists of several grain sizes and only a small amount of fine granules (under  $\varnothing$  0.06mm). The first number described gives the mesh width (simplified  $\varnothing$ ) of the smallest grain and the second one the biggest grain: e.g., 0/32; 2/16; 2/8; 2/32; 4/16. Available mixtures depend on the regional supplies.

**Concrete gravel, or treated concrete rubble**, with a particle size of 0/32 mm is particularly well suited for use in clay/loam soil conditions with ground water and a high water table. When ground water and a high water table are present, it is particularly important to ensure good compaction, especially at hard to reach places.

**Stone Chippings** - crushed rock particles between 2/32 mm in size and is primarily suited as a filling material; however due to its sharp edges, the tank must be protected against damage, for example using a sand coating

**Soil, loam** or other cohesive soil conditions are not suitable for the backfilling.

## 2.2 Filling beyond the backfill (A4 at point 3 from figure 7 on)

**General:** Excavated soil or other material can be used if this is stable and permeable.

**The backfilling and compaction methods to be used** are described in Section 3 (Installation instructions)

**Methods that are not to be used** include in particular adding water. Adequate compaction is not achieved and the mixture of particle sizes combine in such a way that the compaction is unstable.

**2.3 Base layer** (drivable versions, see point 1.4 and notes in point 3 figure 12). Gravel of the grain size range 2/45 is to be used.

## 2.4 Pipes

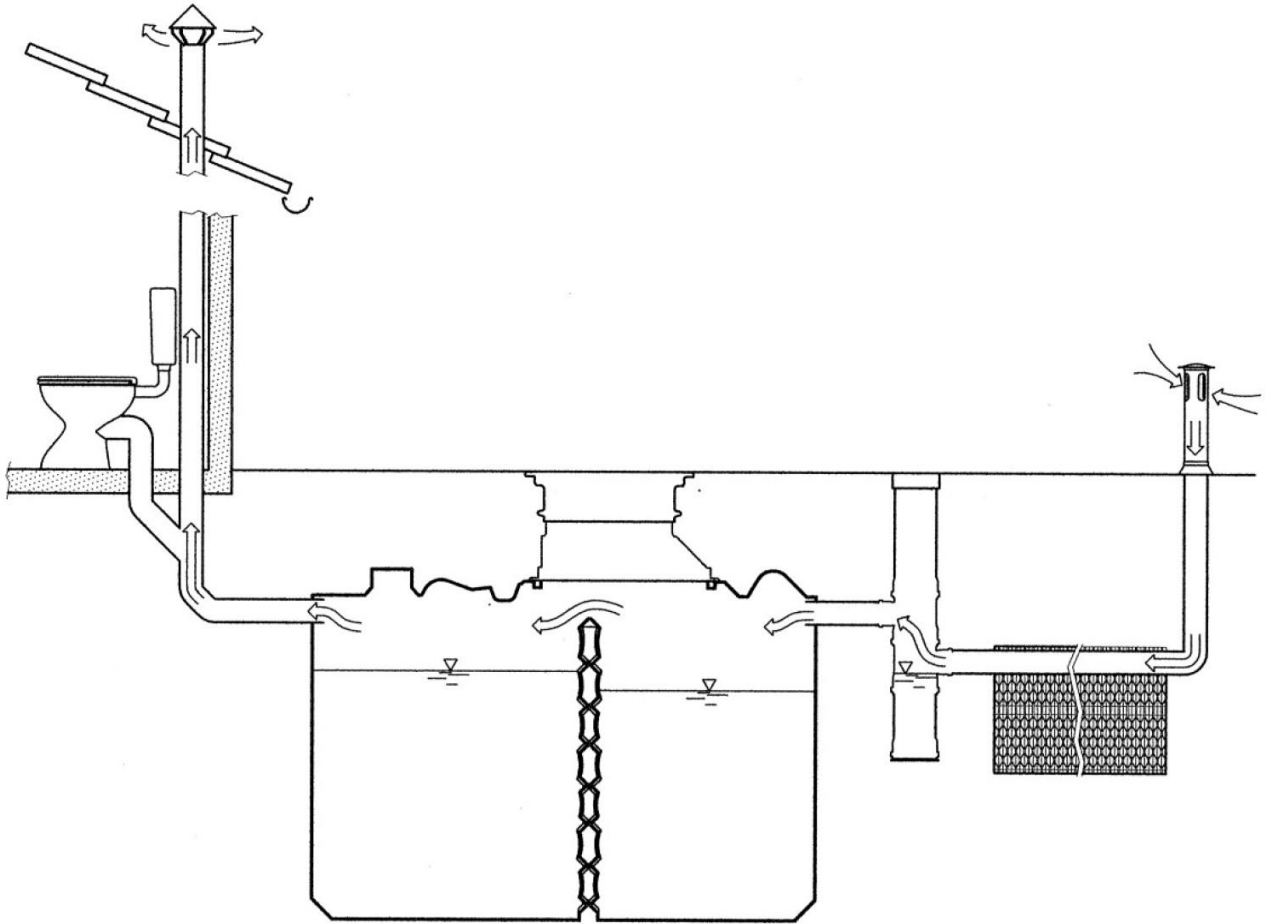
**The feed pipe** should be laid with a fall to the tank (>1%; Installation guide).

**The overflow / drain pipe** should have a deeper fall away from the tank than the fall from the feed pipe to the tank.

**The service pipe** is to be installed to prevent any flooding from the tank entering the service room (e.g. cellar) if the tank is full. This can be achieved, for example, by a high enough incline of the pipe from the house to the tank, or by the installation of a seal to prevent backflow.

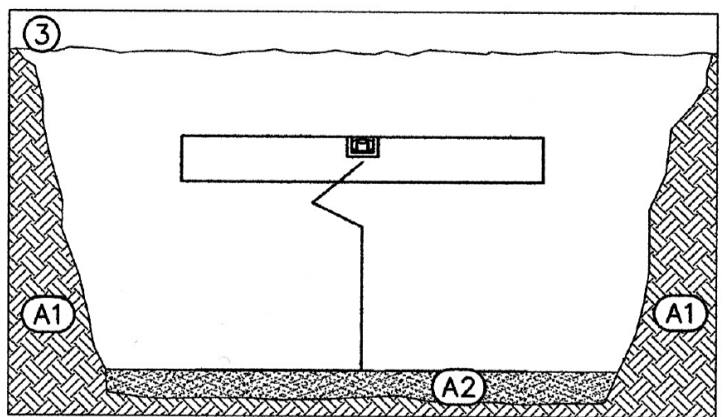
**Avoiding frost damages:** The pipes have to be installed in such a way that frost damage is avoided. This is to be arranged according to the local climatic circumstances, if necessary in co-ordination with the local authorities.

**Ventilation System:** A sufficient ventilation system of the container is necessary. The inlet tube has to be connected to the roof or similar (stack effect). From the outlet side fresh air must have free access to the system (see example in picture).

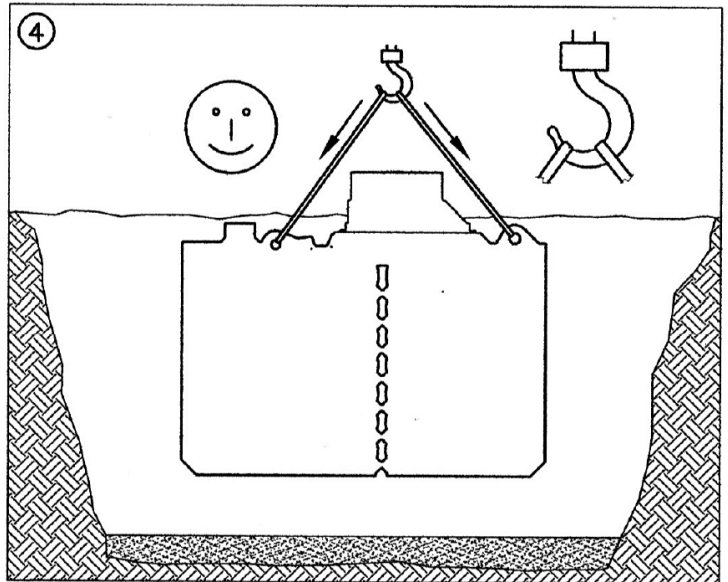


### 3. Installation guide

Dig the excavation pit (location and size see chapter 1) and -when it is sufficiently dry- fill in a 200 mm thick horizontal layer of backfilling material (A2) according to point 2.1, compact this layer well (by machine or with hand stamper in 3 working steps each 100 mm layer).

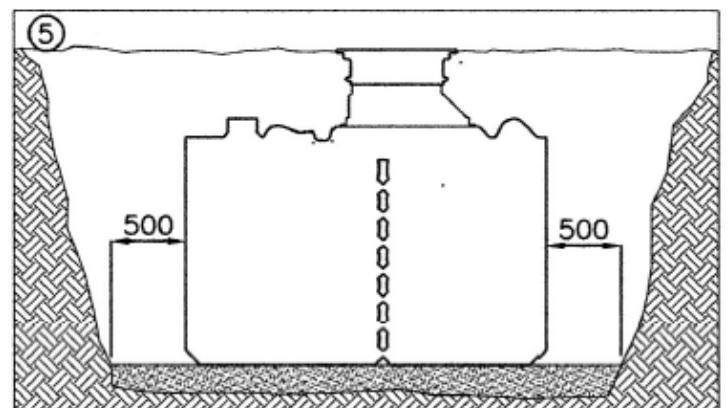


Carefully bring the container into the excavation pit (e.g. hanging in straps)



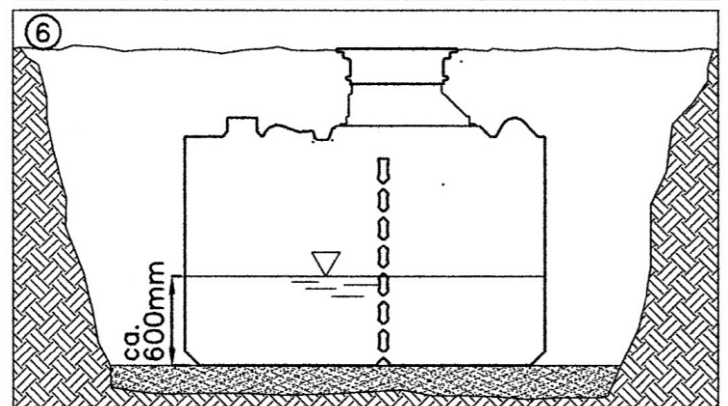
Install the shaft extensions and adjust the container horizontally.

NOTE: Please consider the necessary correct adjustment of the cone for the clarification device see chapter 2.! The cone (or if necessary the spacer ring 800) can now be fixed to the container by screws.  
*Due to transport conditions the cone could be fixed already to the container by screws.*



Fill the container up to approx. 600 mm with water.

Small wastewater treatment plant **SOLIDO**:  
Before filling container with water, fill in water into the lifters, to avoid bouyancy force!

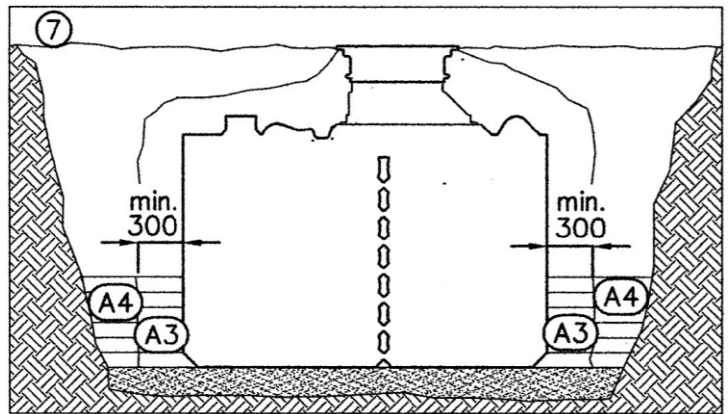




Backfill and compress around the container with the backfilling material A3 (according to point 2.1) min. 300 mm thick and beyond the backfill with other material as for example excavation soil A4 (according to point 2.2) up to the height of the water level.

Notes to the compressing:

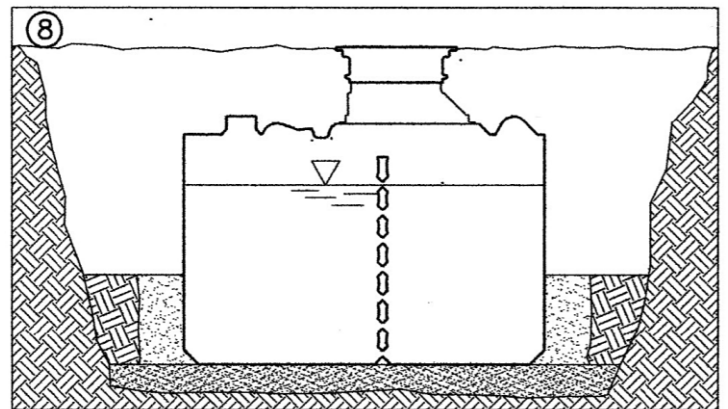
- Tool: Hand stamper, using light machinery is possible; contact with the container wall has to be avoided.
- A stable package can only be ensured, when the compressing is carried out in layers of 100 mm (also when using machinery), see ENV1046.



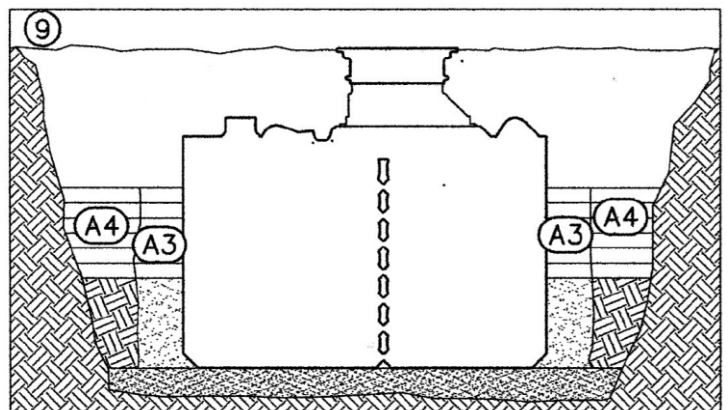
With lower traffic loads (A15 in chapter 1.4) one working step per layer is sufficient.

With higher traffic loads three working steps are necessary (see chapter 1.4). This is also valid for the installation in cohesive ground (see 1.1.2).

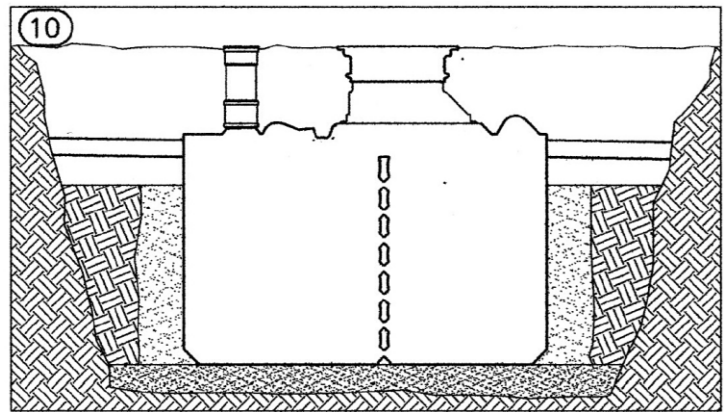
Fill the container with water to approx. 100 mm beneath the outflow / overflow opening.



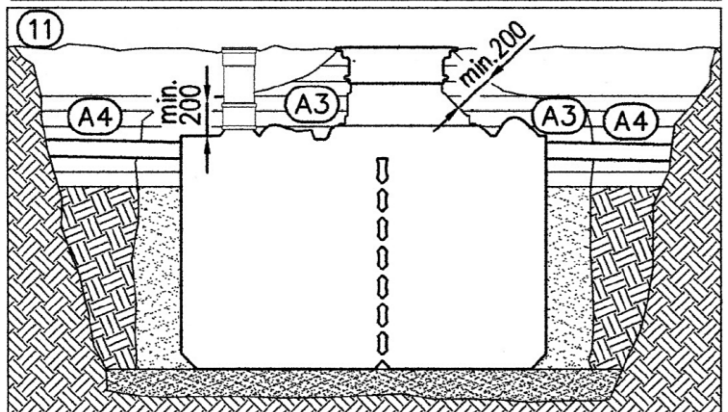
Backfill and compress the area up to the bottom edge of the connections of the container as described in figure 7.



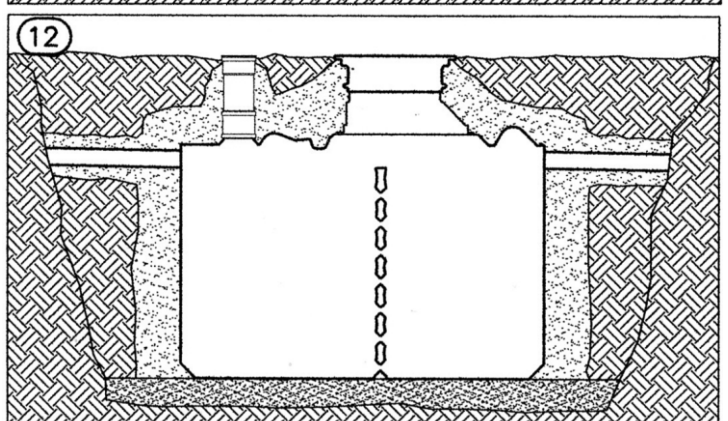
Install the pipes and the shaft for sludge removal (DN 200).



Backfill and compress the upper area of the container as described in figure 7.  
Backfill and compress the shaft system for at least 200 mm.  
From approx. 200 mm above the top of the tank (A4) backfilling can continue without compressing.



This figure shows an installed container - walk-on version.  
Detailed description of the installation for heavier traffic loads can be found in the technical documentation for the car driveable set (DORW2126) and the spacer ring (DORW2127), see also point 1.4).



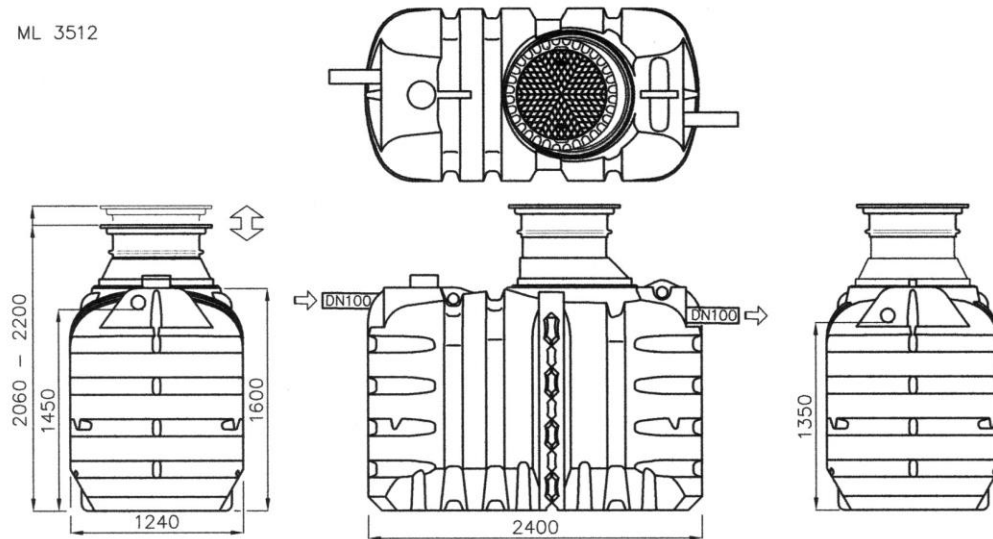
#### Important notes for two container plants:

When installing the two containers in two-container plants, it must be ensured that the containers are positioned at the **same** height.

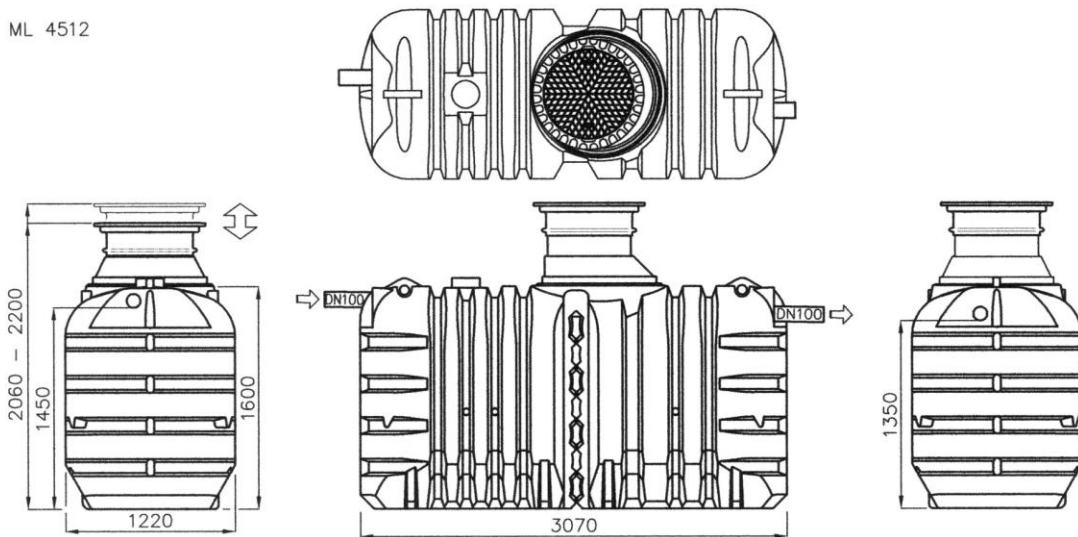
Further advices for installation you will find in the Technical Documentation SOLIDO (DOKK5105E) or FLUIDO (DOKK3101E)

#### 4. Main dimensions, standard connections

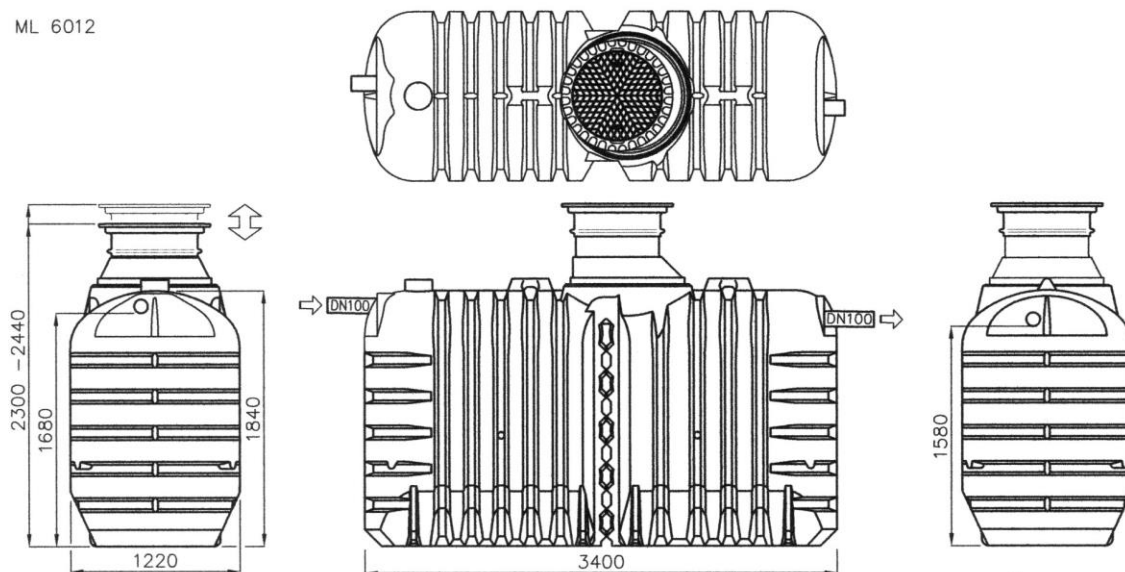
ML 3512



ML 4512



ML 6012



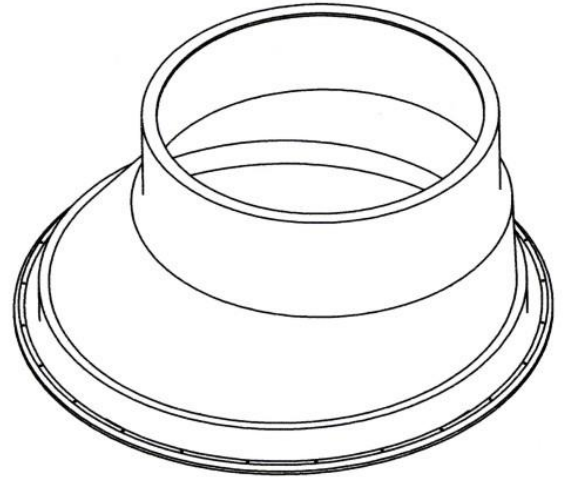
## 5. Standard scope of delivery

### Cone

Top part of the inspection opening 800 or the spacer ring 800:

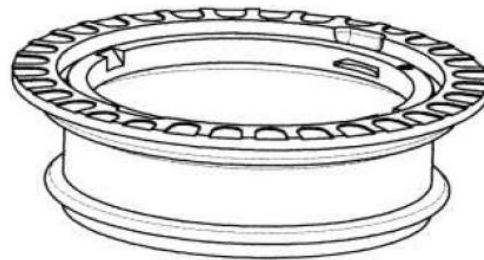
- Fits to the extension shafts VS 60 and VS 20 as well as to the spacer ring 600
- Stepless adjustable in height of VS 60, VS 20 as well as spacer ring 600 about 140 mm
- max. shortening of the cylindrical part of 125 mm
- watertight connection to the inspection opening by a seal (KKDS0075) and screws

**NOTE:** Please always consider the correct adjustment of the cleaning device (SOLIDO / FLUIDO)!

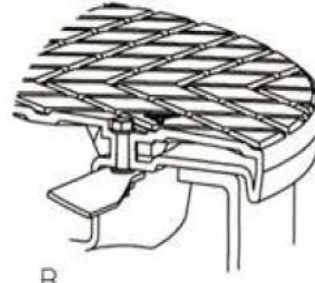
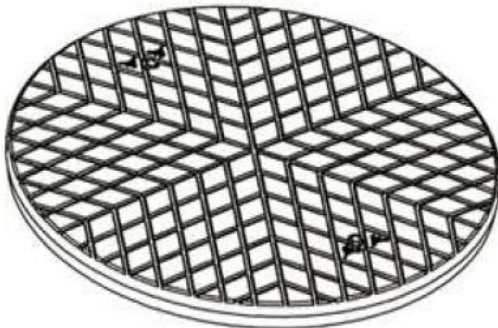


### VS 20

- height 250 mm
- on cone stepless adjustable in height of 140 mm



### TopCover



with child security:    A closed    B opened

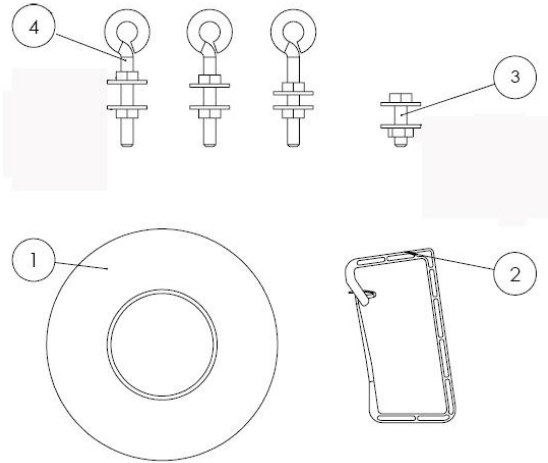
### IMPORTANT NOTE:

Please pay attention to the fact that following any work done at the sewage container the child security of the TopCover has to be closed again!

## Shaft assembly set

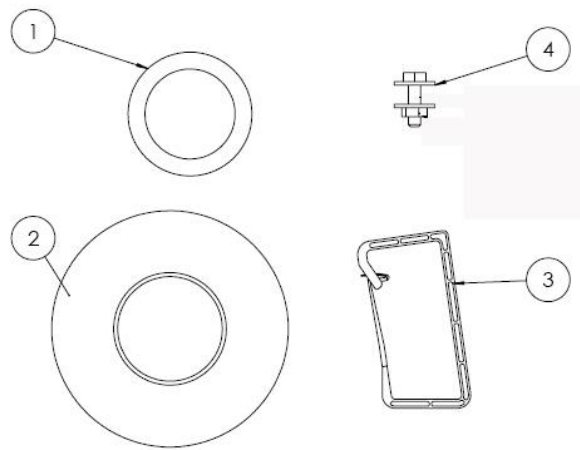
### For Fluido (ROFE0653)

- 1 pcs. Lip seal DN 50 (1)
- 1 pcs. Cable holder (2 + 3)
- 3 pcs. Eye-bolts (4)



### For Solido (ROFE0654)

- 1 pcs. seal DN 40 (1)
- 1 pcs. Lip seal DN 50 (2)
- 1 pcs. Cable holder (3 + 4)



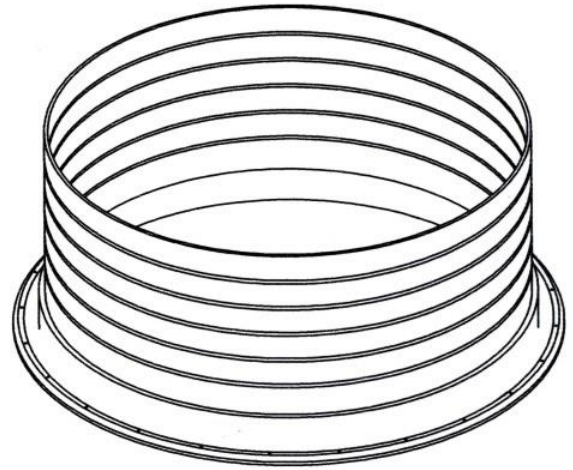
For the installation of the seals appropriate compass saws will be required.

## 6. Accessories

### Spacer ring 800 (KKDS0030)

Top part for the inspection opening 800:

- Increases the distance of the cone to the inspection opening about 380 mm (easier maintenance)
- A watertight connection to the inspection opening is available with a seal (KKDS0075) and screws
- Shortening is possible by cutting the ring (ring markings are at 50 mm intervals)
- Water tightness above the cone can be best achieved by a welded join



### Rubber seal 800 (KKDS0075) for spacer ring 800 and cone



incl. 24 pc. VA-screws (not shown)

### Rubber seal 600 (KKDS0072)

for VS 60 / VS20 / spacer ring



### Factory-provided welded shaft extension (KKDS2010)

- Welding cone / spacer ring 800 on the container
- Welding several shaft elements to each other

### Sludge Removal shaft DN 200 (KKDS0050) not shown

- Allows disposal / maintenance of the preliminary sedimentation without opening the TopCover
- Prevents damages at the clarification device
- Is pushed on the DN 200 nozzle (therefore saw this)

### Extension pipe DN 200, 0,5 m (KKDS0051) not shown

**Further accessories on demand.**

**Notes:**

PREMIER TECH AQUA GmbH March 2015  
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The contents of the technical documentation are a component of the guarantee terms.  
Planning and installation regulations are to be followed, as well as the accident prevention regulations.


## Master sheet for your REWATEC underground container

Please use this sheet to keep a record of the most important technical information concerning your underground container resp. your small sewage treatment plant. With this information your maintenance company or the PREMIER TECH AQUA services can more easily help you at any time. Please note, that this information is necessary if you need to make a warranty claim.

### Basic data

Type of plant:	_____
PREMIER TECH AQUA transaction no. or delivery note no.:	_____
Alternative: Date of delivery:	_____
and name of retailer:	_____

**Hint: Remove label from the underground container and put it here.**  
(Example label)

		Qualitaetskontrolle Bauteil: / Datum: . . . Bearbeiter: Signatur:
→	11061518	
→	RWFT5000	

If it is not possible to put the label here, please note the marked data of your label here.

→ Tank Number: \_\_\_\_\_ (8 digits)

→ Product Number: \_\_\_\_\_ (Letters and Numbers)