

# Installation instructions and maintenance for the GARANTIA Rondus underground tank

**Suitable for light traffic**

**Model No.: 318011  
(2000 L)**

**Model No.: 318001  
(3000 L)**

**HGV 12 t traversable  
areas Rondus – under-  
ground tank**

**Model No.: 318002  
(3000 L)**



The points described in these instructions must be followed correctly. If not correctly observed, any right to claim on the guarantee may be refused. For all additional GARANTIA articles purchased there are separate installation instructions enclosed in the transportation packing.

Any missing instructions must be requested directly from us.

A complete check of all the items/components for possible damage must be carried out before the assembly or installation begins.

The installation must be carried out in a professional manner.

## Contents

<b>1.</b>	<b>General notes</b>	<b>Page 2</b>
1.1	Safety	
1.2	Labelling/Tagging obligation	
<b>2.</b>	<b>Installation requirements</b>	<b>Page 2</b>
2.1	Rondus underground tank – suitable for light traffic	
2.2	Rondus underground tank– HGV 12 t traversable areas	
<b>3.</b>	<b>Technical data</b>	<b>Page 3/4</b>
<b>4.</b>	<b>Installation and assembly</b>	<b>Page 5</b>
4.1	Ground conditions	
4.2	Excavation	
4.2.1	Ground water and cohesive soil	
4.2.2	Gradient location	
4.2.3	Joining multiple vessels	
4.3	Placing and filling	Page 6
4.4	Laying connections	
<b>5.</b>	<b>Telescope installation</b>	
5.1	Telescope pedestrian weight resistant	
5.2	Telescope vehicle load resistant	
5.3	Telescope vehicle load resistant	
5.4	Telescope Cast cement for Heavy goods vehicle load resistant	Page 7
<b>6.</b>	<b>Inspection and servicing</b>	

# 1. GENERAL NOTES

## 1.1 Safety

When working, the appropriate accident prevention regulations (in Germany BGV C22) must be followed. For safety reasons, especially when entering the tank, it is important that a second person is present.

Furthermore, when carrying out assembly and installation work, inspection, maintenance and repairs, all work regulations and norms must be followed. You will find the advice in the appropriate sections of these instructions.

The installation of the system and/or single equipment parts must be carried out by a professional worker.

The complete system must always be out of operation and guarded against unauthorized use when carrying out work on the plant or parts of the system.

The tank cover must always remain closed except when working in the tank, otherwise there exists a very high danger of accidents. **The rain protection cover fitted for the delivery is only a temporary transport protection and is not suitable for pedestrian weight and not child proof, it must be replaced with a suitable cover directly after the delivery** (the plastic double walled cover or telescopic attachment with the appropriate cover) Only original covers from the GRAF company or covers with a written authorisation consent from the GRAF company may be used.

The GRAF company offers an extensive range of accessories that are all compatible with one another and may be used to construct a complete system. The use of other manufacturers accessories can impair the function of the system and liability for any resulting damages will no longer be covered under the guarantee.

## 1.2 Labelling/Tagging obligation

All pipe work and outlets of the water systems are to be labelled with the words "Not drinking water" either in words or graphically (German norm DIN 1988 Part 2, paragraph 3.3.2.) so that after years of use, an accidental connection to the drinking water system is prevented. Even when correctly labelled it may possibly be mistaken, for example by children. For this reason, all the outlets of the systems process water must be fitted with child safe valves.

# 2. Installation requirements

## 2.1 Rondus underground tank – suitable for light traffic (Colour: Black)

In the case of ground water or slope locations the special installation instructions must be followed (Page 6).

### **Pedestrian weight resistant:**

- If the tanks are installed in a green area not traversed by traffic, the earth covering over the tank must be not less than 600 mm and no more than 1200 mm.

### **Suitable for light traffic**

- Through the use of the telescopic attachment and the cast iron cover Class B or the Telescope with cast cement cover according to DIN EN 124 the tank may be installed in park areas traversed by light traffic (passenger cars) (under no circumstances are the tanks to be installed in areas traversed by heavy goods vehicles or machinery, the maximum axel load is 2.2 t).
- The areas driven by light traffic must have a compacted earth covering of not less than 800 mm and a maximum of 1200 mm.

## 2.2 Rondus underground tank– HGV 12 t traversable areas (Colour: Anthracite grey)

- In the case of ground water or slope locations the special installation instructions must be followed (Page 6).

### **Pedestrian weight resistant:**

- If the tanks are installed in a green area not traversed by traffic, the earth covering over the tank must be not less than 600 mm and no more than 1400 mm.

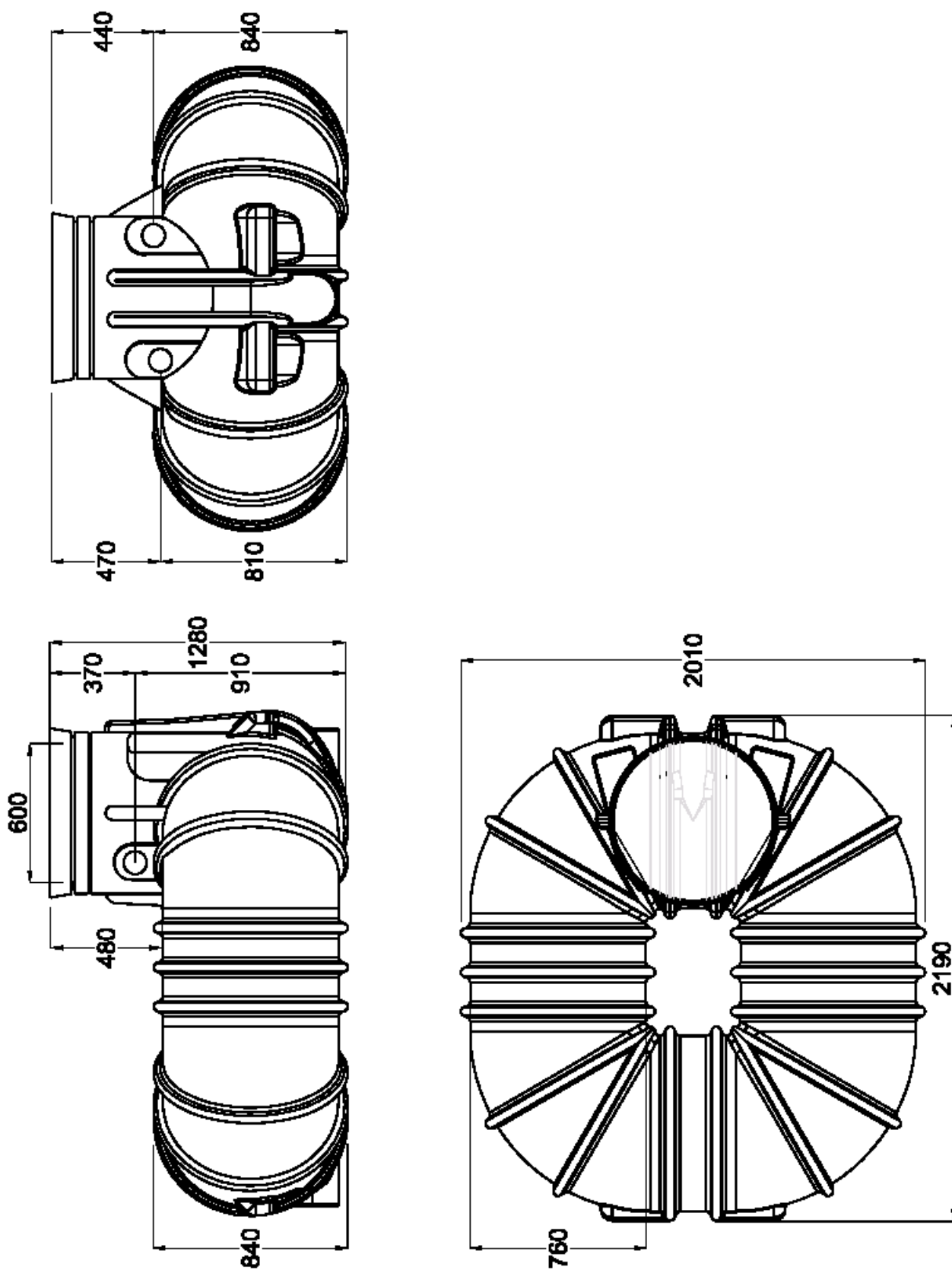
### **Suitable for Heavy goods vehicles**

- Through the use of the telescopic attachment - Telescope cast cement, with an additional load distribution (see Page 7, Point 5.4) and the appropriate cover Class D according to DIN EN 124 the tank may be installed in areas traversed by HGV 12 t traffic (the maximum total weight of the vehicle is 12 t, maximum axel load is 8 t).

The earth covering above the tank in these traffic areas must be not less than 800 mm and a maximum of 1200 mm.

### 3. TECHNICAL DATA

Rondus 2000 litre

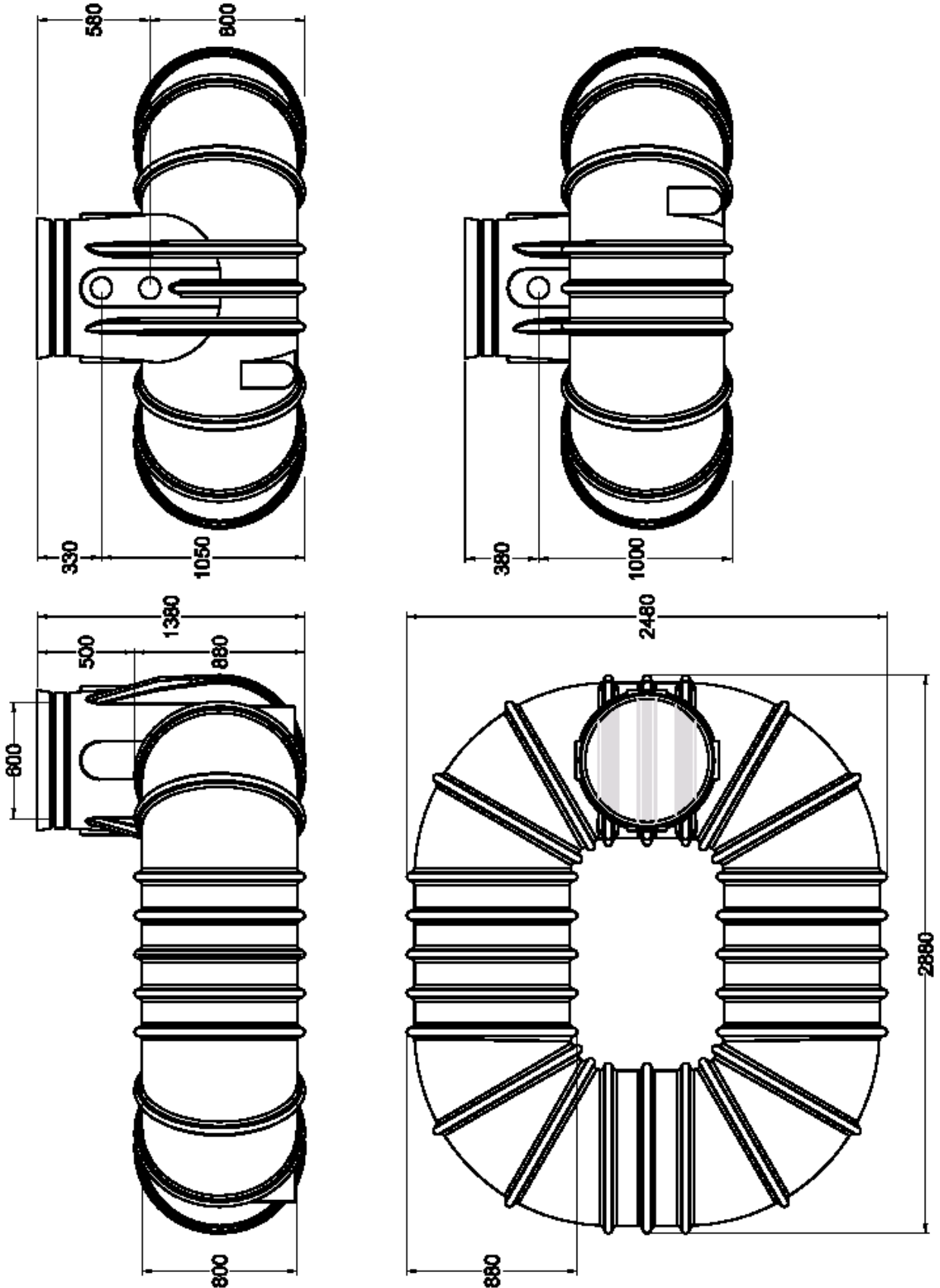


Deutsch

Englisch

### 3. TECHNICAL DATA

Rondus 3000 litre



## 4. Installation and assembly

### 4.1 Ground conditions

Before the installation the following points must be clarified:

- The construction specific compatibility of the sites ground according to DIN 18196
- Maximum occurring ground water levels in relation to the drainage factors of the terrain.
- Occurring load types e.g. types of traffic

To ascertain the physical properties of the terrain, a ground survey report should be requested from the local planning department.

### 4.2 Excavation

So that sufficient working room is available, the surface area of the excavation should exceed the tank dimensions on all sides by approximately 50 cm.

The excavation slope is according to DIN 4124. The ground for setting down must be level and smooth and must provide a sufficient load bearing capacity.

The depth of the excavation must be measured so that the maximum allowable earth covering (see Point 2 – installation requirements) above the tank is not exceeded. For an all year round utilisation of the system it is necessary that the tank and the water supply pipes and equipment are installed in a frost free environment. The depth for a frost free installation is generally around 80 mm, precise data for this should be requested from the appropriate administrative authority.

As an under surface for setting down, a layer of smooth sand with a grain size of 8/16 according to DIN 4226 – 1 with a layer depth of from 15 to 20 cm should be used. When installing in ground that does not poses adequate load bearing capacity it is important to bring in a 10 cm layer of reinforced lean mixed concrete.

#### 4.2.1 Ground water and cohesive (impermeable) soil

Installation in an area with ground water is permissible when a Geo-textile (GRAF-TEX 200) with a minimum of 200 g/m<sup>2</sup> measuring 2.8 m x 2.4 m is laid above the tank.

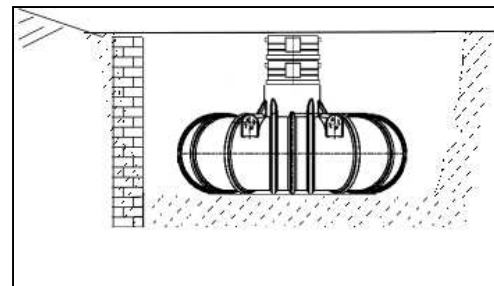
#### Reduced covering earth layer depth in cases of ground water and permeable soil:

Ground water level under terrain surface	40 cm	60 cm
Required earth covering	40 cm	20 cm

When the ground is impermeable a minimum earth covering of 80 cm is required.

#### 4.2.2 Slope and gradient locations etc.

When installing a tank close to (<5 m) a slope, earth mound or embankment, a retaining wall that has been statically calculated must be built to take up any pressure applied by the earth. The retaining wall must over reach the tank dimensions by at least 50 cm in all directions.



#### 4.2.3 Joining multiple vessels

The coupling of two or more tanks is achieved by means of assembly areas moulded into the bases of the tanks, GRAF special seals and canalisation pipes. The openings are only to be undertaken with the special GRAF core drills (hole saw) in the appropriate sizes. It is important to note that the distance between the tanks is minimum 80 cm or 100 cm if the tanks are to be installed side by side. The canalisation pipe must extend into the tank at least 20 cm.

## 4. Installation and assembly

### 4.3 Placing and filling

The tanks are guided and placed into the excavation using suitable equipment and without any knocks.

To avoid deformation of the tank during the embedding/back fill process, it is important to first fill the tank to 1/3 with water and then to begin back filling/embedding and compacting in even layers of no more than 30 cm with smooth sand (grain size 8/16 mm according to DIN 4226-1). Following this the tank must be filled to 2/3 with water and the process of filling in layers of 30 mm repeated until the 2/3 level is reached, each layer must be well compacted with a hand tamper. Repeat the process until the tank is completely embedded. Care must be taken during the embedding to ensure the tank is not damaged. Under no circumstances should powered compacting machines be used. The surrounding back fill must be at least 50 cm wide.

### 4.4 Laying connections

All supply and run off pipes must have a gradient of at least 1% (subsequent settling of the fill materials should be taken into account). The connection is made to the previously cut openings on the tank. If the overflow pipe is connected to the municipal canalisation system, then according to DIN 1986 for combined sewers over a lifting system or when connected to a rainwater canalisation, the system must be protected by a back water gate (non return gate).

All suction, pressure and control pipelines must be installed in a protective pipe that is laid so that it has a falling gradient to the tank, without bending and is as straight/direct as possible. Required elbows should be no more than 30°. The protective pipe should be kept as short as possible.

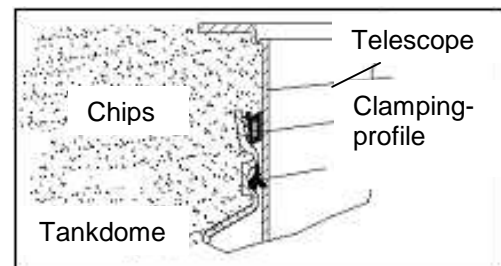
**Important:** The protective pipe must be connected to an opening above the maximum water level.

So that a ventilation of the tank is possible, a 100 mm diameter canalisation pipe is connected to a free opening and is laid in an upward gradient to the venting point. It is not permitted to join the ventilation pipe to other pipes or ventilation systems.

## 5. Telescope installation

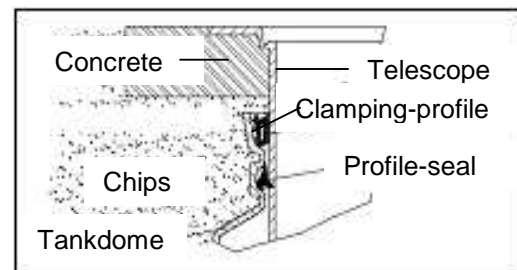
### 5.1 Telescopic access manhole - Pedestrian weight resistant

**Important:** The telescope must be embedded in layers with smooth sand (grain size 8/16) and evenly compacted to prevent the transfer of loads to the tank. It is important to avoid damaging the tank or the telescope during this process. Finally the cover is set in place and made child proof, **the screws in the cover are to be sufficiently tightened so that they may not be opened by a child.**



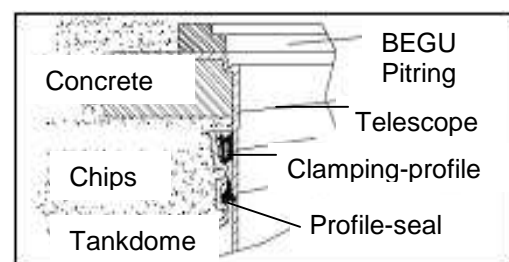
### 5.2 Telescopic access manhole - Traffic load resistant

The telescope is slid into place over the tank dome. It is important that the telescope does not sit directly on the tank body so that no loads are transferred to the tank. Additionally, the telescope must be well embedded and compacted with traffic, then the telescope must be embedded around the collar with lean mixed concrete. The concrete encasement must be uninterrupted, 20 cm wide and approximately 30 cm deep. The minimum earth covering above the tank is 80 cm (maximum 120 cm). **Attention:** It is important to use the cast iron cover.



### 5.3 Telescope man hole well – suitable for traffic – cement ring / cast cement cover – on site installation

The telescope is installed as in Point 5.2. When installing in areas traversed by light traffic, the telescope collar is to be embedded as in Point 5.2. Finally the cement ring and the cast iron cover are set in place (Attention: maximum earth covering of 120 cm).



## 5. Telescope installation

### 5.4 Telescope man hole well – suitable for HGV 12 t – commercial cement ring / cast cement covers – on site installation

When installing in areas traversed by heavy goods vehicles, the telescope collar must be embedded in cement as described above, additionally a cast iron frame must be installed with radial load distribution to carry the cast iron cover (Attention: the earth covering is minimum 80 cm and maximum 120 cm). The cast iron frame must have a bearing surface area of approximately 1 m<sup>2</sup>.

## 6. Inspection and servicing

The complete system is to be inspected at least every 3 months for leakage, cleanliness stability.

A servicing of the complete system should be carried out approximately every 5 years. This involves cleaning and function testing all of the systems parts. For service work the following steps should be taken.

Completely empty the tanks - Remove any solidified sludge etc with a non-metallic scraper - Wash with water all surfaces and equipment - Completely remove any dirt from the tank - Check that all equipment and parts are well attached.



Otto Graf GmbH  
Carl-Zeiss-Straße 2-6  
79331 Teningen  
Tel.: +49(0)7641/589-0  
Fax: +49(0)7641/589-50

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