



# Rainwater harvesting solutions



RAINWATER HARVESTING   INFILTRATION  
RETENTION CISTERNS   DRINKING WATER RESERVOIRS



Production site at Dachstein (France)



Production site at Teningen (Germany) near Freiburg

## GRAF – Setting standards in quality

For over 45 years, Otto Graf GmbH has been offering highclass plastic products to its customers. In 1974 GRAF developed its first pioneering range of rainwater harvesting products. We are the market leader in Germany and Europe for plastic rainwater collectors.

### High Quality Manufacturing

GRAF has invested more than € 20 million in a new production site specially set up for the new Carat range. The new facility has an approximate surface area of 155 000 m<sup>2</sup> - that is the same as 31 football pitches - one of the most modern production facilities for plastic products in the world.

Our choice of Germany for the new production site was easy. On the one hand we feel an obligation to the site because of our history. On the other, we would like to offer our customers products of the highest quality.

### Quality is at the forefront

What you need most to ensure consistent, high product quality are optimised production processes and outstanding quality management. Every individual tank at the new production site in Teningen is checked for dimensional accuracy, wall thickness and weight. All production parameters, e.g. material composition, all machine settings and also the staff involved in the production process, are documented for each individual product.

### Our goal: your satisfaction

More than 100.000 satisfied customers are already benefiting from the advantages of GRAF rainwater harvesting systems.





**DOWNPIPE FILTERS**



**RAINWATER HARVESTING OVERGROUND**

**WASTEWATER TREATMENT**



**RAINWATER HARVESTING UNDERGROUND**

**WATER EXTRACTION**



COMPOSTERS

HORTICULTURE & VITICULTURE

STORMWATER MANAGEMENT



	Harvest rainwater, save drinking water - protect the environment	6
Carat S tank	Carat S underground package garden jet	8
	Carat S underground package garden Comfort	9
	Carat S underground package house ECO-Plus	10
	Carat S underground package house Professional and Silentio Press	11
	Carat S complete package for vehicle loading	12

Modular system Carst S / Carat XL tank	Modular system Carat S	14
	Carat S underground tank, an overview of the advantages	16
	Carat S tank	19
	Carat XL tank	21
	Tank cover	22
	Tank filter package	23
	Pump package	24



Rondus tank / complete packages	Rondus underground tank	25
	Rondus filter package	27
	1000 l underground tank	27

Herkules-Tank®	Herkules-Tank®	28
	Herkules-Tank garden & house package	29



Filter technology	Filter systems	30
	<b>Internal filter technology</b>	32
	Universal-Filter 3, Optimax-Pro, Minimax-Filter®	
	<b>External filter technology</b>	
	Optimax-Industrial Filter, Universal-Industrial Filter 3	35
	Optimax-Filter external, Minimax-Filter® external	36
Universal-Filter 3 external, Pot filter	37	

Domestic waterworks and pumps	Overview Domestic waterworks	38
	Drinking water feeding console	40
	Aqua-Center-Silentio system control	41
	Pumps and accessories	42

Accessories	Accessories for rainwater harvesting	44
-------------	--------------------------------------	----



Stormwater management	Overview Stormwater management	48
	Rain bloc / Rain bloc Inspect	50
	Infiltration Tunnel 300	52
	infiltration planning and sizing	54
	Infiltration shaft system	55
	Shaft system DN 400	56
	Shaft system DN 600	57
	Carat S retention cisterns	58

Drinking water reservoirs	Carat S drinking water reservoir, spring water shaft	59
---------------------------	--	----



www.graf.info

Q **Webcode** G1202

**The Webcode will lead you directly to the required information.**

- Installation instructions
- Technical drawings
- Detailed product information
- Downloads

## Symbols in the catalogue

### Load capacity

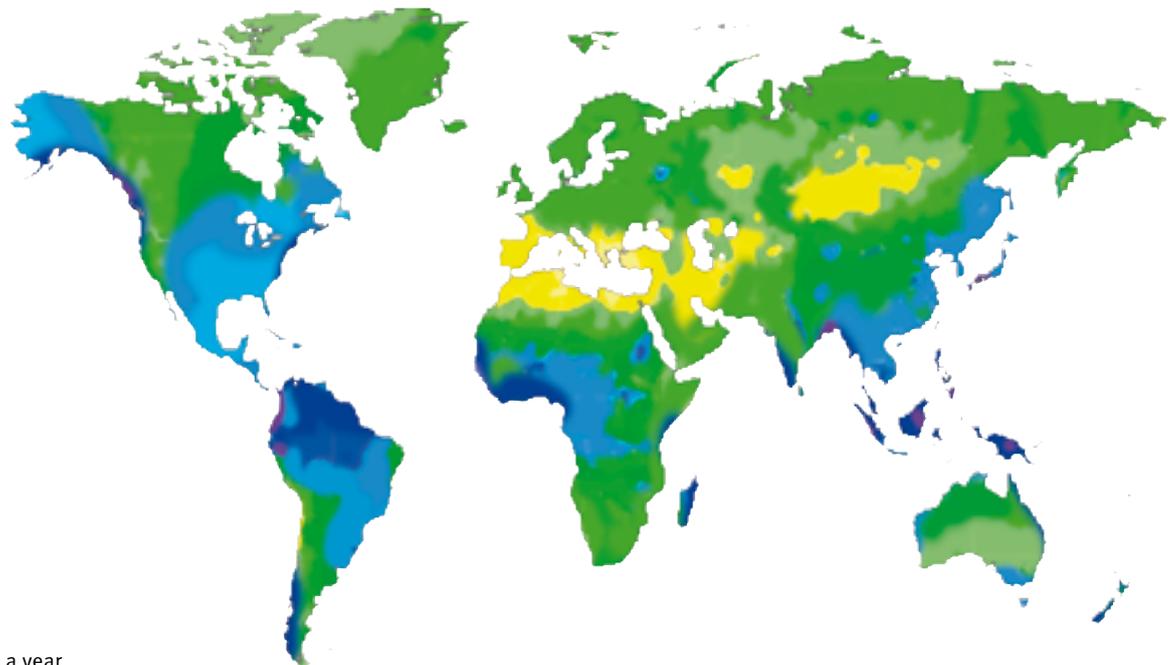
- Suitable for pedestrian loading
- Suitable for vehicle loading
- Lorry-bearing

### Application range

- Watering the garden
- Flushing the toilet
- Washing machine

# Harvest rainwater, save 50 % drinking water – protect the environment

Save drinking water - this is the slogan in times of ever increasing water prices. Rainwater harvesting systems from GRAF are the solution with which you can reduce your drinking water consumption by up to at least 50 %. Thanks to up-to-date technology and complete systems, which meet all your need in terms of convenience and reliability.



Average rainfall in a year (January to December) in mm / month



© GPC 2007/5/10

## Environmentally-friendly

Valuable drinking water is much too expensive for flushing toilets and irrigating gardens.

Therefore, rainwater harvesting is not just sensible, it also has ecological and economical advantages:

- Preserves groundwater supplies
- Reduces effort and costs for water treatment and transport
- Counters rising water and waste water costs
- Relieves sewage treatment systems, as some rain is retained for use later after heavy rainfall and peak loads are reduced for the sewer network.
- The strain on the sewer network is relieved yet further if surplus rainwater, from intensive rainfall and full storage tanks, is collected through a infiltration plant and fed into the sewer network with a time delay, or is percolated into the ground.

## Save up to 50 % of your drinking water by harvesting rainwater

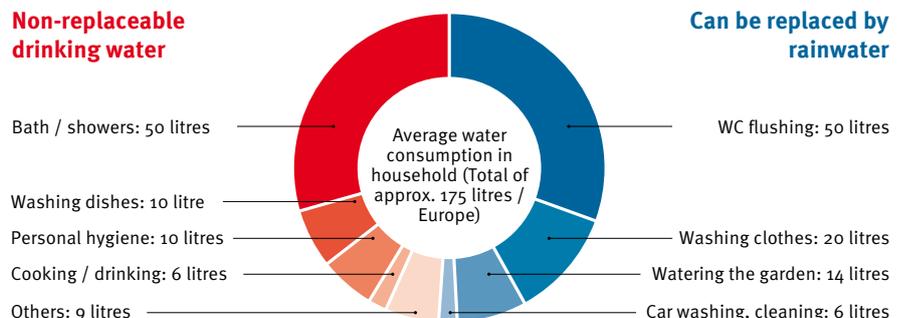
A look at the average consumption of 175 litres (45 US gallons) of drinking water per person per day shows: around 50 % of this can be

replaced by rainwater without any loss of convenience. This starts with flushing toilets, washing clothes and cleaning, right up to garden irrigation.

### Non-replaceable drinking water

- Bath / showers: 50 litres
- Washing dishes: 10 litre
- Personal hygiene: 10 litres
- Cooking / drinking: 6 litres
- Others: 9 litres

### Can be replaced by rainwater



# Water- a valuable resource



Water is our most valuable resource. Factors, such as climate change, wastefulness and the population explosion make water a more and more precious resource. More than two thirds of the earth are covered by water- however, not even one percent can be directly used for the production of drinking water.

A vast amount of water is needed for the production of countless ordinary consumer goods. In the catchment

areas of large rivers, increasingly large amounts of water are used for industrial growth. Even in Germany, where large quantities of water are available thanks to a favourable location, the ground water levels are dropping. In the coming decades, climate change will do the rest to exacerbate the situation. Excessive usage and the consumption of resources have to be balanced out!

## Rainwater harvesting...

- Conserves ground water resources
  - Reduces the energy consumption needed for the purification of drinking water
  - Unburdens wastewater treatment plants and canal networks, since peak levels during strong rain falls can be extenuated or delayed.
- ...is ecologically sound.



# Carat S garden Jet package

The great value complete solution



## Carat S garden Jet package

- The great value complete solution
- Low visual impact
- Integrated filter technology (100 % water yield)
- Easy to install using prepared components

Q Webcode G1201

## Scope of supply

- ① Carat S underground tank
- ② Mini telescopic dome shaft for pedestrian loading with an adjustable PP lid 750 mm - 950 mm (29.5 - 37.4")
- ③ Filter package 2, consisting of
  - Internal Universal Filter 3
  - Inflow stilling system for controlling the water inflow
  - Overflow siphon and rodent guard
  - Spannfix pipe connection sleeve
- ④ Garden Jet pump package, consists of:
  - Garden jet pump 700
  - Water hose connection box
  - Suction set with 12,5 m (39,8 ft) suction pipe

Capacity/litres	US gallons
2,700	700
3,750	1,000
4,800	1,250
6,500	1,700
8,500 <sup>1)</sup>	2,240
10,000 <sup>1)</sup>	2,640
13,000 <sup>2)</sup>	3,400

<sup>1)</sup> Carat XL underground tank

<sup>2)</sup> Set consisting of two Carat S underground tanks



Vehicle loading version available see page 13

PRODUCT-VIDEO  
www.graf.info



# Carat S garden Comfort package

The simple garden solution with submersible pump system



## Carat S garden Comfort package

- Simple to install and use
- Use a simple hose connection socket and pressure sensitive pump for automatic water activation
- Low visual impact
- Reduces electricity consumption by using a pressure drop activation system, so that electricity is only used when required
- Integrated filter technology (100 % water yield)

Q **Webcode** G1202

## Scope of supply

- ① Carat S underground tank
- ② Mini telescopic dome shaft for pedestrian loading with an adjustable PP lid 750 mm - 950 mm (29.5- 37.4")
- ③ Filter package 2, consisting of:
  - Internal Universal Filter 3
  - Inflow stilling system for controlling the water inflow
  - Overflow siphon and rodent guard
  - Spanifix pipe connection sleeve
- ④ Garden Comfort pump package, consists of:
  - Integra INOX Submersible and suction pump, with protection against dry running and automatic start / stop function
  - Floating water extraction unit
  - Water hose connection box
  - 10 m of pressure hose (32.8 ft.)

Capacity/litres	US gallons
2,700	700
3,750	1,000
4,800	1,250
6,500	1,700
8,500 <sup>1)</sup>	2,240
10,000 <sup>1)</sup>	2,640
13,000 <sup>2)</sup>	3,400

<sup>1)</sup> Carat XL underground tank

<sup>2)</sup> Set consisting of two Carat S underground tanks

Vehicle loading version available see page 13



You will find an enquiry form and sizing assistance on our website [www.graf.info](http://www.graf.info)

# Carat S ECO-Plus package

The ideal solution for use in the home and garden



## Carat S ECO-Plus package

- Economic package solution
- Patented filter technology and in-house pump system with automatic switch-over to mains water supply
- Easy to assemble due to modular components
- Float switch controlled
- Low visual impact

Q Webcode G1203

## Scope of supply

- ① Carat S underground tank
- ② Maxi telescopic dome shaft for pedestrian loading with an adjustable PP lid 750 mm - 1,050 mm (29.5 - 41.3")
- ③ Filter package 3, consisting of:
  - Internal Optimax-Pro filter (self-cleaning)
  - Inflow stilling system for controlling the water inflow
  - Overflow siphon with rodent guard function
  - Spanifix pipe connection sleeve
- ④ ECO-Plus pump package consists of:
  - Water supply control unit
  - Floating water extraction unit
  - DN 100 wall duct
  - Labelling set
  - Suction pipe 12 m (39.4 ft.)

Capacity/litres	US gallons
3,750	1,000
4,800	1,250
6,500	1,700
8,500 <sup>1)</sup>	2.240
10,000 <sup>1)</sup>	2.640
13,000 <sup>2)</sup>	3,400

<sup>1)</sup> Carat XL underground tank

<sup>2)</sup> Set consisting of two Carat S underground tanks

 Vehicle loading version available see page 13



You will find an enquiry form and sizing assistance on our website [www.graf.info](http://www.graf.info)

# Carat S Professional package

The convenient complete solution for use in the home and garden



## Carat S Professional package

- Patented filter technology and in-house drinking water intake
- Easy to fit using modular technology
- Microprocessor control system
- Digital fill level display
- Automatic rinsing intervals for the intake reservoir and the filter
- Low visual impact

Q Webcode G1204

## Scope of supply

- ① Carat S underground tank
- ② Maxi telescopic dome shaft for pedestrian loading with an adjustable PP lid 750 mm - 1,050 mm (29.5 - 41.3")
- ③ Filter package 3, consisting of:
  - Internal Optimax-Pro filter (self-cleaning)
  - Inflow stilling system for controlling the water inflow
  - Overflow siphon and rodent guard
  - Spannfix pipe connection sleeve
- ④ Pump package Professional consisting of:
  - Drinking water feeding module Aqua-Center-Silentio
  - Floating water extraction unit
  - Wall duct DN 150
  - Automatic filter cleaning unit Opticlean®
  - Reversible flow filter
  - Labelling set, PE suction pipe 12 m

Capacity/litres	US gallons
3,750	1,000
4,800	1,250
6,500	1,700
8,500 <sup>1)</sup>	2,240
10,000 <sup>1)</sup>	2,640
13,000 <sup>2)</sup>	3,400

<sup>1)</sup> Carat XL underground tank

<sup>2)</sup> Set consisting of two Carat S underground tanks



Vehicle loading version available see page 13

## Carat S package Silentio-Press

suitable for pedestrian loading. Ideal for installations >15 m (49.2 ft.) away from the house

Capacity/litres	US gallons
3,750	1,000
4,800	1,250
6,500	1,700
8,500 <sup>1)</sup>	2,240
10,000 <sup>1)</sup>	2,640
13,000 <sup>2)</sup>	3,400

<sup>1)</sup> Carat XL underground tank

<sup>2)</sup> Set consisting of two Carat S underground tanks

# Complete packages for vehicle loading

for use in the home and garden



## Suitable for vehicle loading with cast iron cover

Do you want to install your GRAF complete package in your yard entrance or under your carport? The GRAF complete packages for vehicle loading with the cast iron telescopic dome shaft are extremely robust. They can bear a maximum axle load of 2.2 t. This provides

a certain reserve for larger vehicles. A minimum earth covering of 800 mm is required for these loads. If the axle load is insufficient for your needs, please contact us. GRAF also offers solutions for special requirements!

### Carat S garden Jet package

#### Scope of supply

- ① Carat S underground tank
- ② Telescopic dome shaft cast iron, 800 mm - 1,050 mm (31.4" - 41.3") earth covering, for vehicle loading with class B cast iron cover
- ③ + ④ Filter / pump package identical to package page 8

 **Webcode** G1205

#### Suitable for vehicle loading

Capacity/litres	US gallons
2,700	700
3,750	1,000
4,800	1,250
6,500	1,700
8,500 <sup>1)</sup>	2,240
10,000 <sup>1)</sup>	2,640
13,000 <sup>2)</sup>	3,400

<sup>1)</sup> Carat XL underground tank

<sup>2)</sup> Set consisting of two Carat S underground tanks





### Carat S garden Comfort package

#### Scope of supply

- ① Carat S underground tank
- ② Telescopic dome shaft cast iron, 800 mm - 1,050 mm (31.4" - 41.3") earth covering, for vehicle loading with class B cast iron cover
- ③ + ④ Filter / pump package identical to package page 9

Q **Webcode** G1206

#### Suitable for vehicle loading

Capacity/litres	US gallons
2,700	700
3,750	1,000
4,800	1,250
6,500	1,700
8,500 <sup>1)</sup>	2,240
10,000 <sup>1)</sup>	2,640
13,000 <sup>2)</sup>	3,400

<sup>1)</sup> Carat XL underground tank

<sup>2)</sup> Set consisting of two Carat S underground tanks



### Carat S ECO-Plus package

#### Scope of supply

- ① Carat S underground tank
- ② Telescopic dome shaft cast iron, 800 mm - 1,050 mm (31.4" - 41.3") earth covering, for vehicle loading with class B cast iron cover
- ③ + ④ Filter / pump package identical to package page 10

Q **Webcode** G1207

#### Suitable for vehicle loading

Capacity/litres	US gallons
3,750	1,000
4,800	1,250
6,500	1,700
8,500 <sup>1)</sup>	2,240
10,000 <sup>1)</sup>	2,640
13,000 <sup>2)</sup>	3,400

<sup>1)</sup> Carat XL underground tank

<sup>2)</sup> Set consisting of two Carat S underground tanks



### Carat S Professional package

#### Scope of supply

- ① Carat S underground tank
- ② Telescopic dome shaft cast iron, 800 mm - 1,050 mm (31.4" - 41.3") earth covering, for vehicle loading with class B cast iron cover
- ③ + ④ Filter / pump package identical to package page 11

Q **Webcode** G1208

#### Suitable for vehicle loading

Capacity/litres	US gallons
3,750	1,000
4,800	1,250
6,500	1,700
8,500 <sup>1)</sup>	2,240
10,000 <sup>1)</sup>	2,640
13,000 <sup>2)</sup>	3,400

<sup>1)</sup> Carat XL underground tank

<sup>2)</sup> Set consisting of two Carat S underground tanks



### Carat S Professional package Silentio Press

Ideal for distances  $\geq 15$  mtr to the house

#### Scope of supply

- ① Carat S underground tank
- ② Telescopic dome shaft cast iron, 800 mm - 1,050 mm (31.4" - 41.3") earth covering, for vehicle loading with class B cast iron cover
- ③ + ④ Filter / pump package identical to package page 11

Q **Webcode** G1209

#### Suitable for vehicle loading

Capacity/litres	US gallons
3,750	1,000
4,800	1,250
6,500	1,700
8,500 <sup>1)</sup>	2,240
10,000 <sup>1)</sup>	2,640
13,000 <sup>2)</sup>	3,400

<sup>1)</sup> Carat XL underground tank

<sup>2)</sup> Set consisting of two Carat S underground tanks



# The modular system Carat S / Carat XL

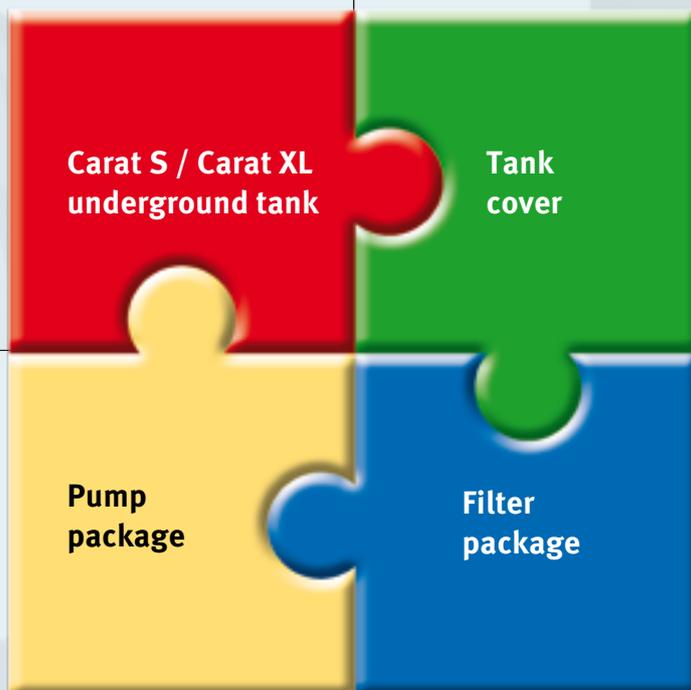
Simply unique

## Carat S / Carat XL underground tank

The underground tank Carat S and Carat XL is the basis for the modular system. It is available in sizes from 2700 to 10 000 litres (700 - 2640 US gallons) and combined up to 13 000 litres (3400 US gallons). Its high-quality makes it suitable for vehicle loading and groundwater-stable (page 16-21).

## Tank cover

Would you like to install your tank in the garden or in a yard entrance with heavy traffic? GRAF offers you the most diverse telescopic tank covers from plastic to cast iron (page 22).



## Pump package

From the simple garden pump to the fully automatic drinking water intake technology. The pump package also includes the accessories needed for installation (page 24).

## Filter package

Are you looking for the best value solution or high-quality, self-cleaning filter technology? The GRAF filter package contains all components needed in the tank (page 23).



# Choose your system

from four different modulars



**Carat S tank**



**Carat S 2700 Litres**  
Order no. 372024

**Carat S 3750 Litres**  
Order no. 372025

**Carat S 4800 Litres**  
Order no. 372026

**Carat S 6500 Litres**  
Order no. 372027



**Tank cover**



**Mini telescopic dome shaft**  
Order no. 371010



**Maxi telescopic dome shaft**  
Order no. 371011



**Telescopic dome shaft cast iron**  
Order no. 371020



**Telescopic dome shaft BEGU**  
Order no. 371021



**Extension**  
Order no. 371003



**Filter package**



**Filter package 1**  
Order no. 342001



**Filter package 2**  
Order no. 342002



**Filter package 3**  
Order no. 342005



**Pump package**



**Pump package Garden Jet**  
Order no. 342010



**Pump package Garden Comfort**  
Order no. 342011



**Pump package house ECO-Plus**  
Order no. 342014



**Pump package house Professional**  
Order no. 342016



**Pump package house Silentio-Press**  
Order no. 342015

  
**Dome shaft Mini for Carat S**  
Order no. 371041

  
**Dome shaft Maxi for Carat S**  
Order no. 371040



**Carat XL 8500 Litres**  
Order no. 370005

**Carat XL 10000 Litres**  
Order no. 370006



# Benefits of the Carat S system

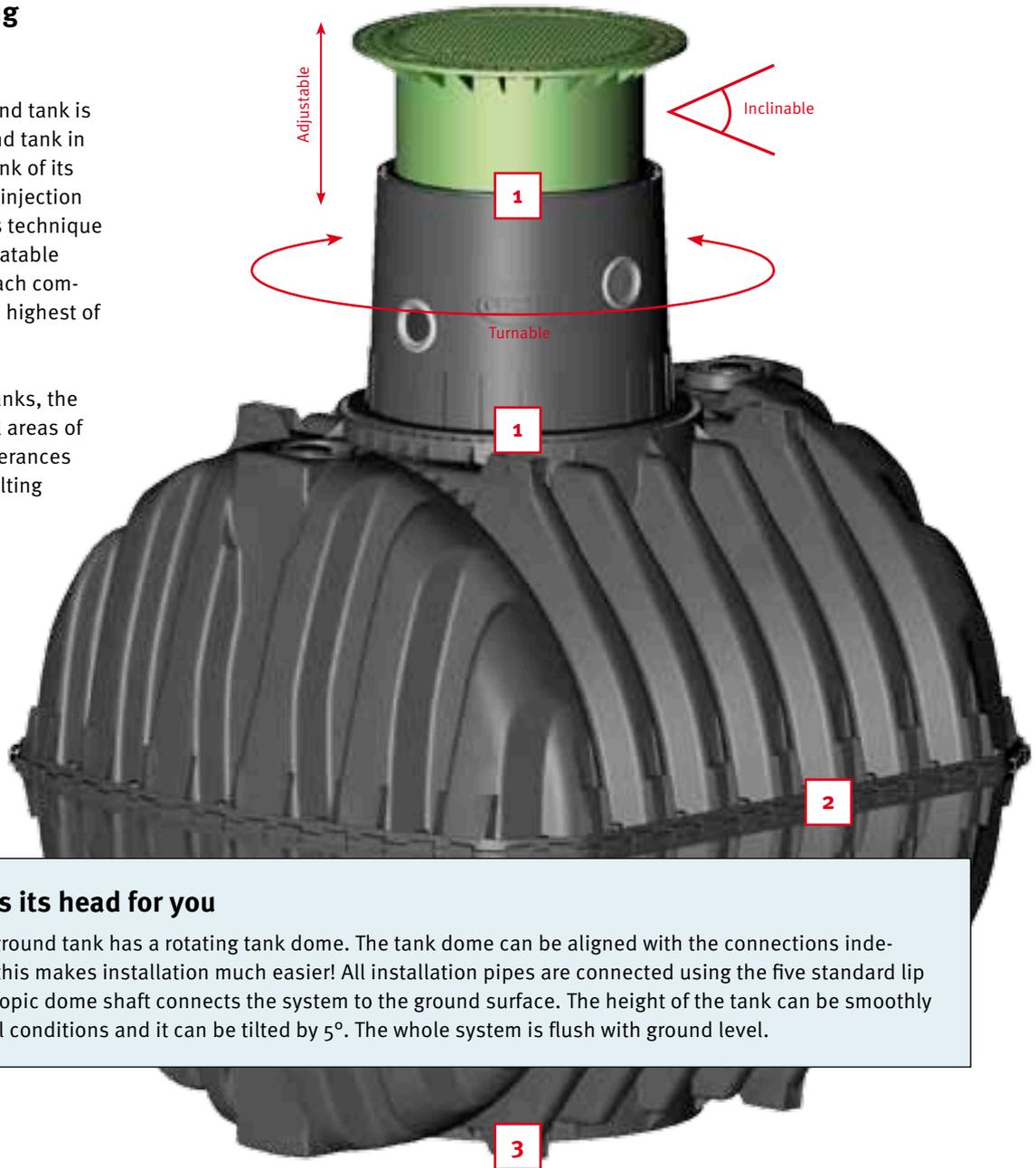
The only rainwater underground tank of its kind!

## Unique manufacturing process

The GRAF Carat S underground tank is unlike any other underground tank in the world. It is the largest tank of its kind to be manufactured by injection compression moulding. This technique provides the tank with unbeatable stability and ensures that each component is produced with the highest of accuracy.

Unlike other underground tanks, the wall thickness is equal in all areas of the tank. The production tolerances are kept to a minimum, resulting in a product of the highest quality, which is strong, accurate, reliable and extremely user-friendly.

To manufacture the Carat S range, one of the worlds largest injection moulding systems had to be developed.



## The tank that turns its head for you

The GRAF Carat S underground tank has a rotating tank dome. The tank dome can be aligned with the connections independently of the tank – this makes installation much easier! All installation pipes are connected using the five standard lip seals. The Carat S telescopic dome shaft connects the system to the ground surface. The height of the tank can be smoothly adjusted to suit the local conditions and it can be tilted by 5°. The whole system is flush with ground level.



The Carat S underground tank is made from Duralen®, a high-quality material that is extremely rigid and impact resistant, therefore ideally suited for

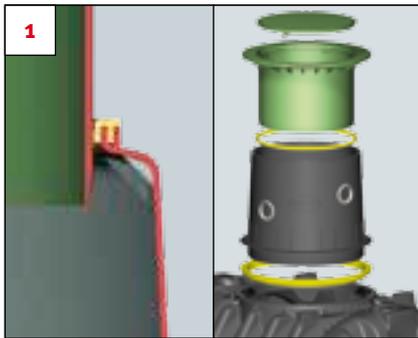
producing underground tanks. With very low warping characteristics and high stiffness, this material provides high stability and an unique life expectancy.

Duralen® can also be easily recycled which reduces waste and environmental impact.



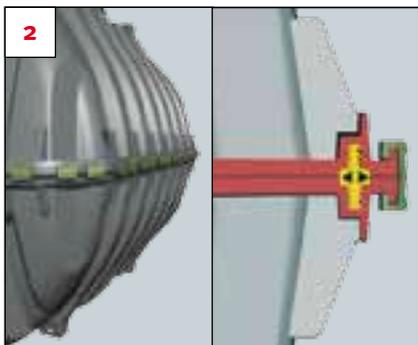
# Benefits of the Carat S system

Sealed, stable, unique



## Flush with ground level (2 seals)

The Carat S underground tank has numerous seals to effectively stop dirt getting into the tank. This means that seepage water cannot get into the tank and, thus, dirt particles cannot contaminate the rainwater. The seals are in the intersection between the tank and the tank dome and between the tank dome and the telescopic dome shaft. All supply pipes connected to the tank dome are also sealed with five lip seals as standard.



## Encircling stabilisation ring in unique H profile

The Carat S underground tank has an unique profile for more stability and security. Thanks to the additional ribbing, the Carat S underground tank suffers no significant warping even under extreme loads. Therefore, the Carat S underground tank is suitable for vehicle loading in principle up to a total weight of 3.5 t, groundwater-stable up to the middle of the tank and can be installed with an earth covering up to 1.2 m. Additionally, the encircling H profile acts as a convenient carry handle for transport and as a tread when fitting the tank dome. Please follow our installation instructions for this (can also be downloaded at [www.graf.info](http://www.graf.info)).



## Ribbed tank base

The tank base of the Carat S underground tank is extremely stable thanks to the numerous ribs. These enable the Carat S to be installed in groundwater up to the middle of the tank. Furthermore, the stable base means the tank is very robust for transportation to site. The tank base has already proven its excellent rigidity in numerous computer simulations during the development process. Please follow our installation instructions for this purpose (can also be downloaded at [www.graf.info](http://www.graf.info)).

## An overview of further advantages

- Highest stability thanks to modern production methods
- Unique fit accuracy of the components thanks to new production processes
- Consistent quality through TÜV safety testing and production monitoring
- Suitable for vehicle loading (when combined with the telescopic cast iron page 22)
- Groundwater-stable up to the middle of the tank thanks to the extremely stable construction
- Easy to transport due to low weight and encircling H profile
- Investment security thanks to 15-year warranty — compare it!
- Can be expanded as often as required



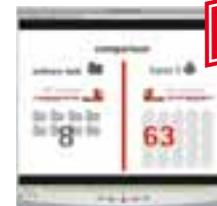
# Benefits of the Carat S system

Flexible, stackable, user-friendly



## An overview of advantages

- Tank consisting of two half-shells
- 5 – 9 tanks per pallet
- This allows up to 8 times more tank volume to be shipped thanks to this unique product design
- High stability
- Long-lasting tightness thanks to circumferential profile gasket
- Groundwater stable
- Suitable for vehicle loading



**PRODUCT-VIDEO**  
[www.graf.info](http://www.graf.info)



You will find an enquiry form and sizing assistance on our website [www.graf.info](http://www.graf.info)



## Logistical advantages of the Carat S

The Carat S tank consists of two half shells which can be stacked on top of each other, allowing multiple tanks to be stacked on a single pallet for shipping. For example, it is possible to stack five 6500 litre (1700 US gallon) or nine 2700 litre (700 US gallon) Carat S tanks on a single pallet. This allows a standard 40 ft. shipping container to house a total tank volume of up to 170 000 l (44 855 US gallons). The tanks unique stacking feature directly reduces transport costs and environmental impact from vehicle emissions, whilst allowing shipments to any destination in the world.



## Easy and safe assembly

- The patented quick connection (illustrated in green), allows the Carat S tank to be assembled without screws in only few minutes. Disassembly is possible at any time.
- The first-class EPDM material used in the profile sealings (illustrated in yellow), has been laboratory tested to last more than 25 years.
- The centering bolt (illustrated in orange) assures the accurate and easy assembly of the two half shells preventing any leaks.





# The modular system Carat S

Choose your tank size



## Carat S underground tank for vehicle loading

Size 2700 – 6500 litres (700 – 1700 US gallons). Designed to be used in conjunction with the vehicle loading telescopic dome shaft. The access dome is designed in accordance to DIN testing.

Illustration shows 4800 litre (1250 US gallon) tank with telescopic dome shaft for pedestrian loading

### Volume

Capacity/litres	US gallons	Order no.
2700	700	372024
3750	1000	372025
4800	1250	372026
6500	1700	372027



Dome shaft Maxi  
Order no. 371040



Dome shaft Mini  
Order no. 371041



## Technical data

Dimensions / weight	2700 litres 700 US gallons	3750 litres 1000 US gallons	4800 litres 1250 US gallons	6500 litres 1700 US gallons
Length	2080 mm (81.9")	2280 mm (89.8")	2280 mm (89.8")	2390 mm (94.1")
Width	1565 mm (61.6")	1755 mm (69.1")	1985 mm (78.2")	2190 mm (86.2")
Height (including tank dome)	2010 mm (79.1")	2200 mm (86.6")	2430 mm (95.7")	2710 mm (106.7")
Height of tank dome	610 mm (24.0")			
Internal Ø tank dome	800 mm (31.5")			
Weight	120 kg (265 lbs.)	150 kg (331 lbs.)	185 kg (408 lbs.)	220 kg (485 lbs.)
<b>Load</b>				
Max. axle load	Suitable for vehicle loading			
Earth covering	800 - 1200 mm (31.5 - 47.2")			
<b>Groundwater</b>				
Groundwater-stable	Up to the middle of the tank			
Earth covering	800 mm - 1000 mm (31.5" - 39.4")			



# The modular system Carat S

Choose your tank extension



## Technical data

Dimensions / weight	2700 litres 700 US gallons	3750 litres 1000 US gallons	4800 litres 1250 US gallons	6500 litres 1700 US gallons	7500 litres 2000 US gallons	9600 litres 2500 US gallons	13000 litres 3400 US gallons
Order no.	372011	372012	372013	372014	Tank sets		
Length	2080 mm (81.9")	2280 mm (89.8")	2280 mm (89.8")	2390 mm (94.1")			
Width	1565 mm (61.6")	1755 mm (69.1")	1985 mm (78.2")	2190 mm (86.2")	For dimensions, refer to 3750 L tank	For dimensions, refer to 4800 L tank	For dimensions, refer to 6500 L tank
Height	1400 mm (55.12")	1590 mm (62.6")	1820 mm (71.65")	2100 mm (82.68")			
Height of tank dome	610 mm (24.0")						
Internal Ø tank dome	800 mm (31.5")						
Weight	120 kg (265 lbs.)	150 kg (331 lbs.)	185 kg (408 lbs.)	220 kg (485 lbs.)			

## Load

Max. axle load	Suitable for vehicle loading
Earth covering	800 - 1200 mm (31.5 - 47.2")

## Groundwater

Groundwater-stable	Up to the middle of the tank
Earth covering	800 mm - 1000 mm (31.5" - 39.4")

## Accessories

Extension filter	Order no. 371005
Drill DN 100	Order no. 332001
Special seal 100	Order no. 332033
Special seal 150	Order no. 332035

Filter can be placed in the first tank to clean the water between the tanks.





# The modular system Carat XL

underground tank 8500 and 10000 Litres



**Carat XL underground tank suitable for vehicle loading / lorry bearing<sup>1)</sup>**



**8500 Litres**

Order no. 370005

**10000 Litres**

Order no. 370006

**Webcode G1103**

Illustration shows 10.000 litre tank with Telescopic dome shaft with cast iron lid, suitable for vehicle loading.



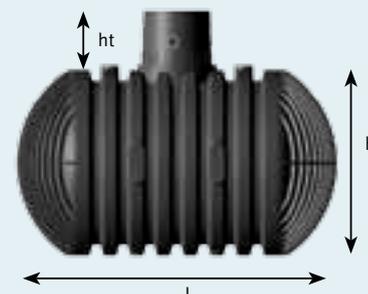
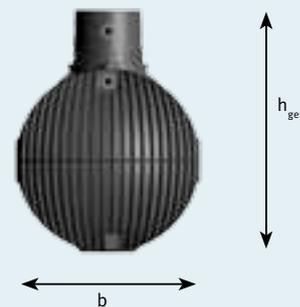
You will find an enquiry form and sizing assistance on our website [www.graf.info](http://www.graf.info)

## Technical data

Volume	Width	Length l	Height h	Height h <sub>ges</sub>	Height Dome shaft ht	Internal Ø Dome shaft	Weight
8500 litres 2245 US gallons	2040 mm 80,31"	3500 mm 137,79"	2085 mm 82,08"	2695 mm 106,10"	610 mm 24,01"	650 mm 25,59"	380 kg
10000 litres 2641 US gallons	2240 mm 88,18"	3520 mm 138,58"	2285 mm 89,96"	2895 mm 113,97"	610 mm 24,01"	650 mm 25,59"	456 kg

## Technical data

Max. earth covering (without groundwater vehicle loading)	1500 mm
Max. axle load	8 t
Max. total weight	12 t with telescopic dome shaft BEGU
Earth covering required for vehicle loading	800-1200 mm
Groundwater stability	until middle of the tank
Earth covering required for groundwater stability	800-1200 mm
Connection	5 x DN 100



<sup>1)</sup> With cover suitable for vehicle loading / lorry bearing



# The modular system Carat S

Select your desired tank cover

## Mini telescopic dome shaft with PP lid, suitable for pedestrian loading

Infinitely adjustable from 750 mm - 950 mm (29.5" - 37.4") earth covering above the tank, can be tilted by 5°. Including PP cover with childproof lock. Colour: Grass green. Length: 360 mm (14.2"), Ø inner: 600 mm (23.6"), Ø outer: 778 mm

(30.6"), weight 6 kg. The well thought-out cover for the Carat S underground tank. Ideal for garden use.

Order no. 371010



## Maxi telescopic dome shaft with PP lid, suitable for pedestrian loading

Infinitely variable from 750 mm - 1050 mm (29.5 - 41.3") earth covering above the back of the tank. Including PP cover with childproof lock. Colour: Grass green Length: 476 mm (18.7"), Ø inner: 600 mm (23.6"), Ø outer: 850 mm

(33.5"), weight 13 kg. The sturdy cover for the Carat S underground tank. Ideal for household use.

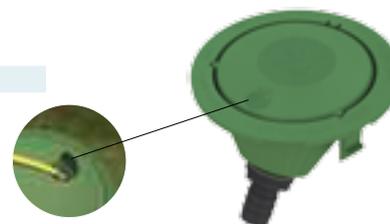
Order no. 371011



## Water connection box internal

Drain water directly from the tank. Easy retrofitting for telescope dome shaft Mini or Maxi, hose connection 1"

Order no. 375119



## Telescopic dome shaft with cast iron lid, suitable for vehicle loading

For vehicle loading - with class B cast iron cover. Infinitely variable from 800 mm - 1050 mm (31.4" - 41.3") earth covering over the tank. Length: 476 mm (18.7"), Ø inner: 600 mm (23.6"),

Ø outer: 850 mm (33.5"). For use in the home and garden. The tank is flush with the ground.

Order no. 371003



## Telescopic dome shaft BEGU for concrete rings

Suitable for vehicle loading / lorry bearing- for standard concrete rings/ concrete castings. (Has to be provided by client). Infinitely adjustable from 750 -1050 mm (29.5"-41.3") earth covering above the tank, can be tilted by 5°.

Length: 460 mm, Internal: 600 mm, Outer: 855 mm. For garden and household use. The tank is flush with ground level. Ideal for asphaltic areas.

Order no. 371021



Has to be provided by client

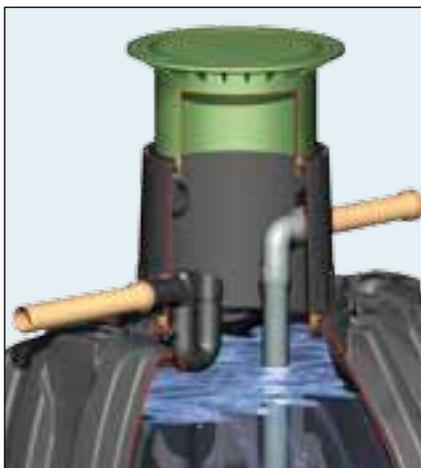
## Extension

Length: 400 mm (19.7"), Ø 680 mm (27.6"). An earth covering of max. 1200 mm (59.1") can be implemented using the extension and the telescopic dome shaft. For use with the basic Carat

S tank with an earth covering of 1 m. Follow the installation instruction.

Order no. 371003





## Filter package 1

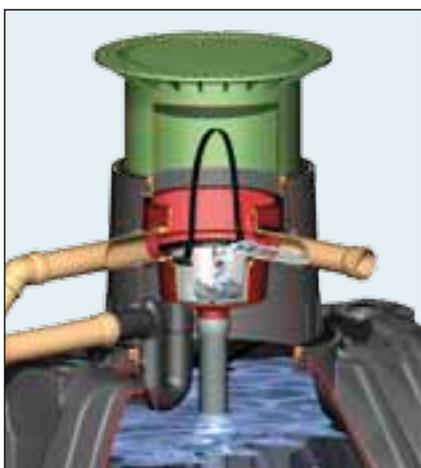
Garden use - for improving the water quality

### Scope of supply:

- Inflow stilling system for controlling the water inflow
- Overflow siphon
- Rodent guard

With filter package 1, the basic Carat S tank (with external filter) can also be used for household applications (WC and washing machine).

Order no. 342001



## Filter package 2

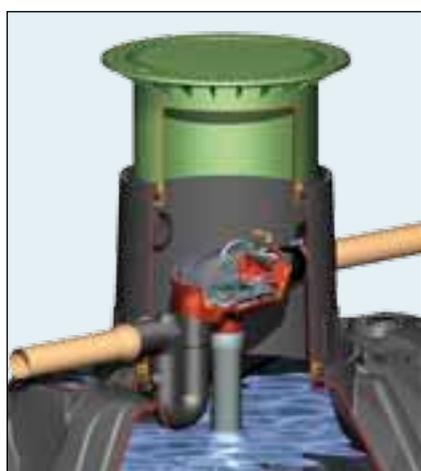
For use in the home and garden - 100 % water yield

### Scope of supply:

- Internal Universal Filter 3
- Inflow stilling system for controlling the water inflow
- Overflow siphon and rodent guard
- Spannfix pipe connection sleeve

Universal-Filter 3 integrated in the basic Carat S tank with 100 % water yield. Filter package 2 is ideal if you need a water yield of 100 %, or if the tank's overflow is connected to an infiltration plant rather than the sewer network.

Order no. 342002



## Filter package 3

For use in the home and garden - the self-cleaning design

### Scope of supply:

- Internal Optimax-Pro (self cleaning) filter
- Inflow stilling system for controlling the water inflow
- Overflow siphon with rodent guard function
- Spannfix pipe connection sleeve

The self-cleaning Optimax-Pro Filter can be integrated into the basic Carat S tank. The convenient, low maintenance solution with self-cleaning filter and > 95 % water yield. Can also be fitted with Opticlean® cleaning unit. Tank and filter overflow are connected to the sewer network with this filter package.

Order no. 342005

Cleaning unit Opticlean® without hose

Order no. 340040



# The modular system Carat S

Select your desired pump package

## Pump package Garden Jet

The good value complete solution.



- Garden Jet pump 700 (page 42)
- Suction set with 12,5 m (39,8 ft) suction hose
- Water hose connection box internal and external

Order no. 342010

## Pump package Garden Comfort

Improved operating convenience through automatic pump control.

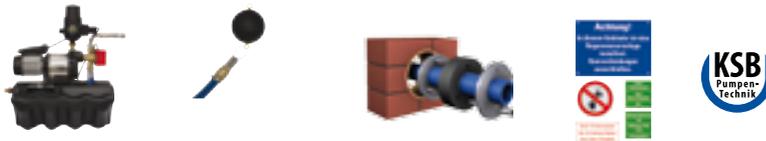


- Integra INOX Submersible and suction pump (page 43)
- Floating water extraction unit
- PE pressure pipe 10 m (32,8 ft) (not shown)
- Water hose connection box internal and external

Order no. 342011

## Pump package house ECO-Plus

The good value complete solution.



- Drinking water feeding console including domestic waterworks KSB Superinox 15/4 (page 43)
- Floating water extraction unit
- Wall duct DN 100
- Labelling set
- PE suction pipe 12 m (39.4 ft.) (not shown)

Order no. 342014

## Pump package house Professional

In-house drinking water feeding using the latest modular technology with microprocessor control and digital fill level display.



- Drinking water feeding module Aqua-Center-Silentio including domestic waterworks KSB-Superinox 15/4 (43)
- Floating water extraction unit
- Cleaning unit Opticlean® (not shown)
- Automatic filter cleaning unit (not shown)
- Reversible flow filter
- Wall duct DN 150
- Labelling set
- PE suction pipe 12 m (39.4 ft.) (not shown)

Order no. 342016

## Pump package house Silentio-Press

In-house drinking water intake with submersible pump. Ideal when there are larger distances (15 m/ 49.2 ft.) between the tank and the domestic waterworks.



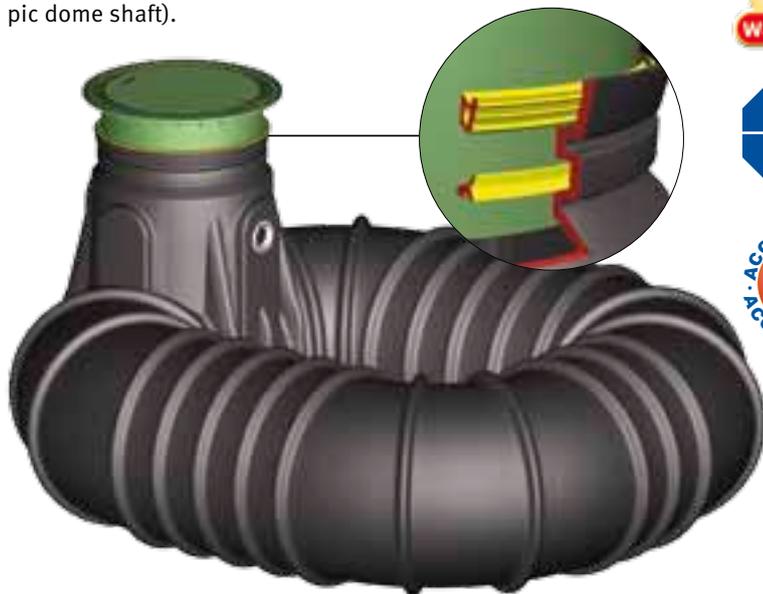
- Drinking water feeding module Aqua-Center-Silentio Press including domestic waterworks and submersible pump 300 A (page 43)
- Cleaning unit Opticlean® (not shown)
- Automatic filter cleaning unit (not shown)
- Reversible flow filter
- Wall duct DN 150
- Labelling set

Order no. 342015

# Rondus underground tank

The flat all-rounder

- Can be installed in ground water and stratum water, as well as cohesive soils (e.g. loam).
- In general, should be installed in a frost-free area through a tank dome 500 mm (in conjunction with telescopic dome shaft).
- Adjustable installation depth through telescopic dome shaft!
- Trouble-free assembly due to slight excavation.



**Rondus underground tank**  
Suitable for vehicle loading  
(without tank covering)

Litres	US gallons	Order no.
2000	528,35	318011
3000	792,53	318001

Tanks can be extended in any way



**Rondus Plus underground tank**  
Lorry-bearing (without tank covering)

Litres	US gallons	Order no.
3000	792,53	318002

Tanks can be extended in any way

**Anti-buoyancy measure for installation in ground water**

comprising GRAF-Tex 200 geotextile, 2.5 x 2.5 m suitable for Rondus 2000 litres and 3000 litres

Order no. 231006

## Adaptable: the Rondus tank coverings

Tank covering	Load capacity	Telescopic**	Order no.
PE cover, with double walls	suitable for pedestrian loading	–	381500
Mini telescopic dome shaft	suitable for pedestrian loading	650 - 850 mm	381505
Cast iron telescopic dome shaft	Suitable for vehicle loading	650 - 950 mm	381504
BEGU telescopic dome shaft	lorry-bearing*	650 - 950 mm	381503

\* only in conjunction with Rondus Plus concrete rings and BEGU cover, to be provided by the customer

\*\* earth covering over back of tank

## Technical data

	2000 litres	3000 litres
Length	2190 mm	2880 mm
Width	2010 mm	2480 mm
Height	1300 mm	1400 mm
Inner Ø tank dome	650 mm	650 mm
Weight Rondus	115 kg	165 kg
Weight Rondus Plus	-	190 kg



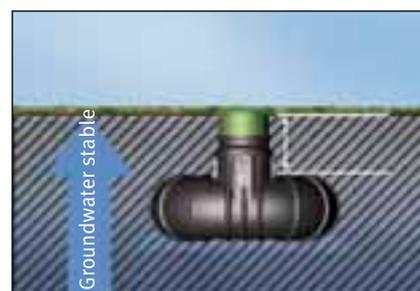
### Flat design

The flat design of the Rondus ensures a sensationally low installation depth and less earth therefore needs excavating. Compared with a classic rainwater tank, the amount of earth excavated is reduced by around 40 %. But if combined with the telescopic dome shaft, all parts carrying water are still in the frost-free area.



### Lorry-bearing

Do you want to fit the Rondus underground tank in your courtyard entrance? When combined with the cast telescopic dome shaft, the Rondus is suitable for vehicle loading – the Rondus plus can even be lorry-bearing with an axle load of max. 8 t (if combined with the BEGU telescopic dome shaft).



### Groundwater stable

Thanks to its special design the Rondus underground tank is so stable that it can be fully fitted in groundwater, stratum water and cohesive soils (e.g. loam) (in combination with anti-buoyancy measure). The maximum ground water level corresponds to the top edge of ground.

# Rondus underground tank

Examples of use for garden irrigation



## Rondus Garden package

The perfect solution for irrigating your garden

- Rainwater falls down the eaves gutter and is filtered by the external pot filter
- Can be fitted in groundwater, stratum water and cohesive soils (e.g. loam)
- Simple installation and convenient water extraction through water connection box (prepared for Gardena® irrigation system)
- 100 % water yield
- Just one cover visible at the surface
- Integrated filter technology

## Rondus ECO-Plus package

The complete solution for house and garden



# Rondus filter package and 1000 litres underground tank

## Space-saving: internal filter technology for Rondus tank



### Filter package 3

- Low maintenance as self-cleaning
- More than 95 % water yield
- Transparent cover simplifies maintenance
- Filter for inspecting tank can be removed without any tools
- Available with Opticlean cleaning unit as option
- Maximum 350 m<sup>2</sup> roof surface

### Scope of supply:

- Internal Optimax-Pro (self cleaning) filter
- Inflow stilling system for controlling the water inflow
- Overflow siphon with rodent guard function
- Spannfix pipe connection sleeve

Order no. 342005



### Rondus Garden filter package

- 100 % water yield
- Filter for inspecting tank can be removed without any tools
- Best suited to downstream infiltration
- Maximum 350 m<sup>2</sup> roof surface

### Scope of supply:

- Rondus internal basket filter
- Overflow siphon
- Rodent guard

Order no. 342008

## 1000 litres underground tank

Underground tank suitable for pedestrian loading, 1000 litres produced in one without seams, incl. 260 mm high tank dome and PE cover.

Order no. 319039

Q **Webcode** G1303

### Dimensions:

Length 1750 mm  
Width 930 mm  
Height 1190 mm



### Shaft extension

for 1000 litres tank, Ø 630 mm, 560 mm high, can be shorted

Order no. 319516



# Herkules-Tank®

For overground and underground installation

The tank with the incomparable price-performance ratio for overground installation in the garden or cellar or for underground fitting (with support pipe). Due to its strong design and the fibreglass-reinforced material, the tank can be safely installed in areas of high groundwater, provided the appropriate installation instructions are strictly followed. Patent no. in Europe 0870877 and USA no. 5878

## Technical data

Capacity 1600 Litres

Max Ø 1350 mm (53")

Height 1600 mm (63")

Material fibre-glass reinforced PP  
(UV stable and 100% recyclable)

Weight approx. 60 kgs

Connections: each 2 x DN 70, DN 100 and DN 200 for standard KG pipes



N.B. Protect tanks from frost when installed above ground

## Herkules-Tank®

1600 litres (421 US gallons)

Order no. 320001

[Q Webcode G1301](#)

## Accessories

The tank interconnecting pipe set consists of special seals, which remain sealed even with slight tank misalignment. Connection pipes are standard pipes DN 70 or DN 100.

## Interconnect Pipe Set

(without cut-out tool)

DN 70 Order no. 202029

DN 100 Order no. 202028

## Cut-out tool (with pilot drill)

DN 70 Order no. 202002

DN 100 Order no. 202003

## Tank dome

(with telescopic end 1 metre (3.3 ft.) to be cut on demand)

DN 200 Order no. 322026

## Suction pipe (floating)

Order no. 202001

## Support pipe

(for underground installation)

Order no. 322014

## Garden hose connection box external

(incl. Garden two-way valve and connection 1")

Order no. 330156

## Practical advantages of Herkules and Top-Tank

### Ease of transport

Each half of the Herkules-Tank® only weighs 30 kg. Each half of the Top®-Tank only weighs 15 kg. This allows ease of transport and manual installation. The tank halves fit through any doorway (80 cm width and above).



### Easy to install



### Several tanks can be combined



# Herkules-Tank®

Examples of use for garden irrigation



## Herkules underground garden irrigation

- ① Rainwater falls down the eaves gutter and is filtered by the external pot filter (see page 37)
- ② Clean rainwater is collected in the Herkules-Tank®(s)
- ③ The tank volume can be extended as desired by using one or more extension sets (required when installing 2 tanks or more)
- ④ Water is pumped from the tank to the garden hose connection box
- ⑤ Support pipe(s) provide(s) stability for underground installation
- ⑥ Tank dome(s) enable(s) easy access to the tank
- ⑦ Garden hose connection box for garden irrigation
- ⑧ Delivery hose conducts water to the garden hose connection box

Order no. 342008

Q Webcode G1234

## Herkules underground home irrigation



Q Webcode G1235

# Filter technology



## Internal filter

For use in the tank

Properties	Universal-Filter 3	Optimax-Pro Filter	Minimax-Filter with curved outlet	Minimax-Filter with straight outlet
Installed in	Tank dome	Tank dome	Tank dome	Tank dome
Low maintenance, self-cleaning		•	•	•
Cleaning unit as an option		•	•	•
Max. roof area	350 m <sup>2</sup>	350 m <sup>2</sup>	350 m <sup>2</sup>	350 m <sup>2</sup>
Material of filter insert	Plastic	Stainless steel	Stainless steel	Stainless steel
Mesh width	0,35 mm	0,35 mm	0,5 mm	0,5 mm
Water yield with normal rain	100%	99%	99%	99%
with heavy rain	100%	Over 95%	Over 95%	Over 95%
<b>Measurements</b>				
Offset height between inlet and outlet	275 mm	165 mm	80 mm	10 mm
Length	570 mm	480 mm	545 mm	495 mm
Width	570 mm	260 mm	260 mm	260 mm
Height	485 mm	320 mm	370 mm	370 mm
Connections	DN 100	DN 100	DN 100	DN 100
Weight	4,3 kg	3,0 kg	2,5 kg	2,5 kg

# The ideal filter for every solution



## External filter

in plastic shaft

Properties	Optimax-Industrial-Filter external	Universal-Industrial-Filter 3 external	Optimax-Filter external	Minimax-Filter external	Universal-Filter 3 external	Pot filter
Installed in	Ground	Ground	Ground	Ground	Ground	Ground
Loading capacity	pedestrian loading	•	•	•	•	•
	vehicle loading	•	•	•	•	•
Low maintenance, self-cleaning	•	•	•	•	•	•
Cleaning unit as an option	•	•	•	•	•	•
Max. roof area	750-1500 m <sup>2</sup>	750-1200 m <sup>2</sup>	350-750 m <sup>2</sup>	350 m <sup>2</sup>	350-500 m <sup>2</sup>	175 m <sup>2</sup>
Material of filter insert	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Plastic	Filter mat
Mesh width	0,35 mm	0,75 mm	0,35 mm	0,5 mm	0,35 mm	–
Water yield with	normal rain	99%	100%	99%	99%	100%
	with heavy rain	Over 95%	100%	Over 95%	Over 95%	100%
<b>Measurements</b>						
Offset height between inlet and outlet	224 mm	229 mm	200 mm	100 mm	270 mm	290 mm
Length over connection	1180 mm	1140 mm	860 mm	510 mm	760 mm	595 mm
Diameter	850 mm	850 mm	550 mm	550 mm	550 mm	560 mm
Height	733-1320 mm	703-1270 mm	580-1050 mm	485-955 mm	600-1050 mm	340 mm
Weight pedestrian loading version	37 kg	37 kg	14 kg	11 kg	11 kg	8,5 kg
	vehicle loading version	77 kg	77 kg	40 kg	37 kg	–
Page in catalogue	Page 35	Page 35	Page 36	Page 36	Page 37	Page 37

## Downpipe filters

Perfect solution for rainwater butts and above-ground tanks



Properties	Speedy	Regendieb de luxe	Quattro	Foliage guard
Installed in	Downpipe	Downpipe	Downpipe	Downpipe
Suitable for downpipe sizes	70-100 mm	70-100 mm	–	70-100 mm
Overflow stop function	•	•	•	•
Max. roof area	80 m <sup>2</sup>	100 m <sup>2</sup>	50 m <sup>2</sup>	80 m <sup>2</sup>
Filter cartridge plastic sieve	•	•	•	•
	Stainless steel sieve	•	•	•
Water yield	approx. 90%	approx. 90%	approx. 90%	–
Summer/winter operation	•	•	•	•
	through turning the filter insert	•	•	•
	through change over on the filter body	•	•	•
	through removal of the filter insert	•	•	•
<b>Measurements</b>				
Depth	130 mm	–	133 mm	180 mm
Width	–	–	103 mm	110 mm
Height	90 mm	315 mm	119 mm	350 mm
Diameter	60 mm	175 mm	–	–
Rainwater butt connection	32 mm (1 1/4")	DN 70 / DN 50 / 32 mm (1 1/4")	19 mm (3/4")	–
<b>Colors</b>				
anthracite	•	•	•	•
grey	•	•	•	•
brown	•	•	•	•
beige	•	•	•	•

# Internal filter technology

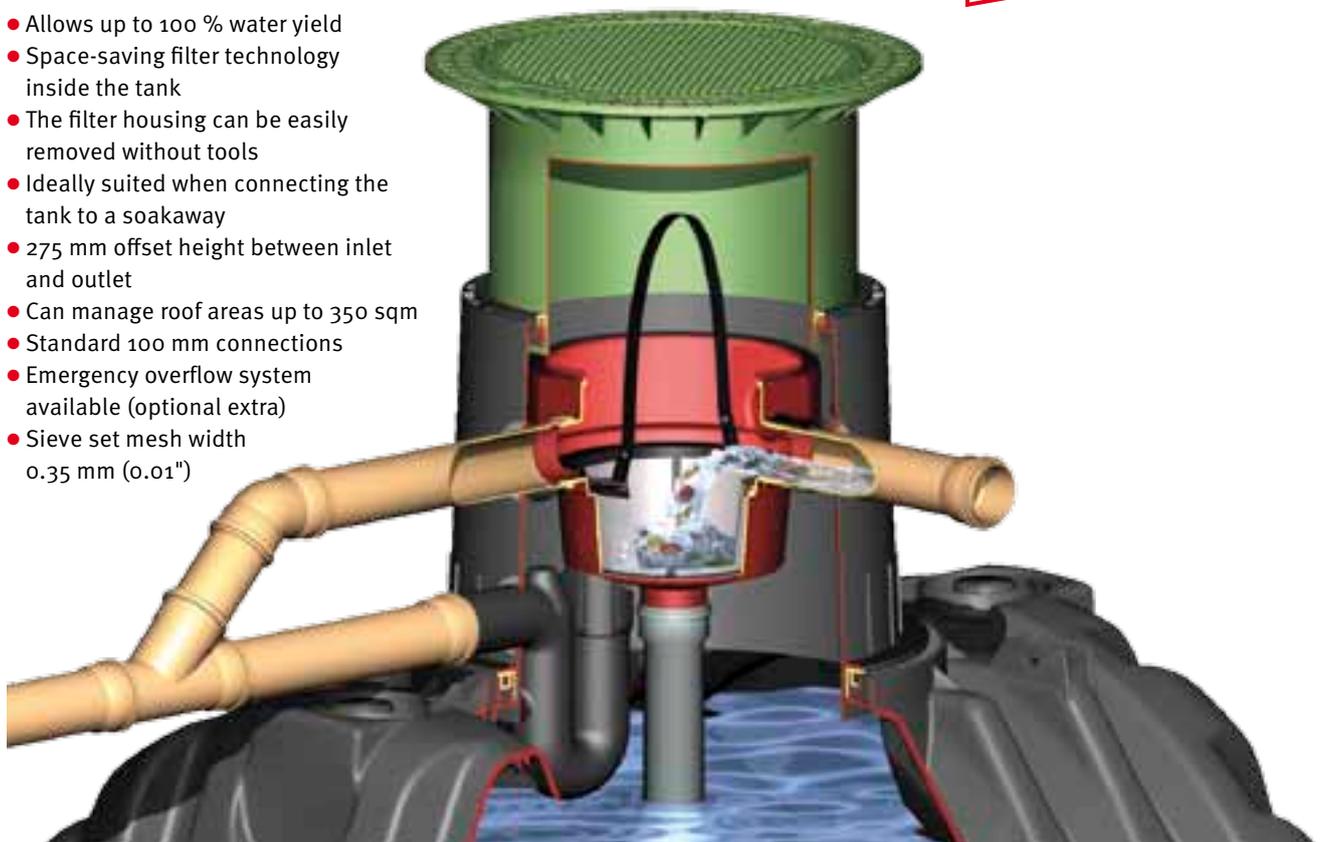
Universal-Filter 3



**100 % WATER YIELD**

## Advantages

- Allows up to 100 % water yield
- Space-saving filter technology inside the tank
- The filter housing can be easily removed without tools
- Ideally suited when connecting the tank to a soakaway
- 275 mm offset height between inlet and outlet
- Can manage roof areas up to 350 sqm
- Standard 100 mm connections
- Emergency overflow system available (optional extra)
- Sieve set mesh width 0.35 mm (0.01")



### Universal-Filter 3 internal

Order no. 340022

### Accessories

**Quick assembly sleeve Spannfix**  
patented (Page 47)

Order no. 340502

### Replacement filter basket

Order no. 340056



### Filter cartridge

Filter basket with practical lift-out device



**Webcode** G2101

### Connecting dimensions

for telescopic dome shaft

Dome shaft	Inlet	Tank overflow	Emergency overflow
Mini [mm]	385-585 mm	660-860 mm	385-585 mm
Mini [inches]	13.5-21.4"	24.4-32.3"	13.5-21.4"
Maxi [mm]	385-685 mm	660-960 mm	385-685 mm
Maxi [inches]	13.5-26.9"	24.4-37.8"	13.5-26.9"

All dimensions are calculated middle of connection until earth top edge

# Internal filter technology

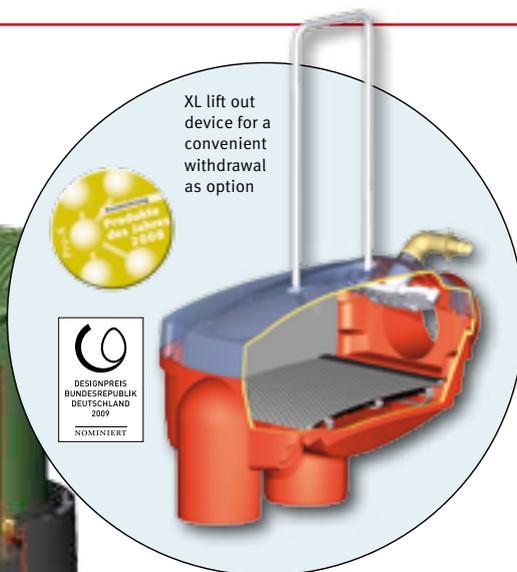
Optimax Pro, self-cleaning Filter



## Advantages

- Provides over 95 % water yield
- Low maintenance (self-cleaning)
- Space-saving filter technology inside the tank
- Filter housing can be easily removed without tools
- Transparent lid for filter visibility
- Can manage roof areas up to 350 sqm
- Standard 100 mm connections
- Self cleaning Opticlean system available as an optional extra
- Low offset height of 165 mm between inlet and outlet

**EFFICIENT CLEANING SYSTEM WITH HIGH WATER YIELD**



### Optimax-Pro Filter internal

Order no. 340037

### Accessories

#### Cleaning unit Opticlean® internal without hose

Order no. 340040

#### Quick assembly sleeve Spannfix patented (Page 47)

Order no. 340502

### XL lift out device

for a convenient withdrawal of filter cover and filter insert, length 505 mm

Order no. 330220

### Cleaning unit Opticlean®

- Very intense water jet for cleaning the filter sieve
- Routine maintenance intervals are kept to a minimum
- An automatic activation of the cleaning unit is carried out together with the automatic filter cleaning unit and the Aqua-Center-Silentio



### Filter cartridge

Very smooth surface and, therefore, max. self cleaning, mesh width 0.35 mm (0,01")

3-layer filter assembly



**Connecting dimensions**  
for telescopic dome shaft

Dome shaft	Tank overflow	Emergency overflow
Mini	495-695 mm	660-860 mm
Mini	19.5-27.4"	25.9-33.9"
Maxi	495-795 mm	660-960 mm
Maxi	19.5-31.3"	25.9-37.8"

All dimensions are calculated middle of connection until earth top edge

Q Webcode G2102

# Internal filter technology

Minimax-Filter® self-cleaning

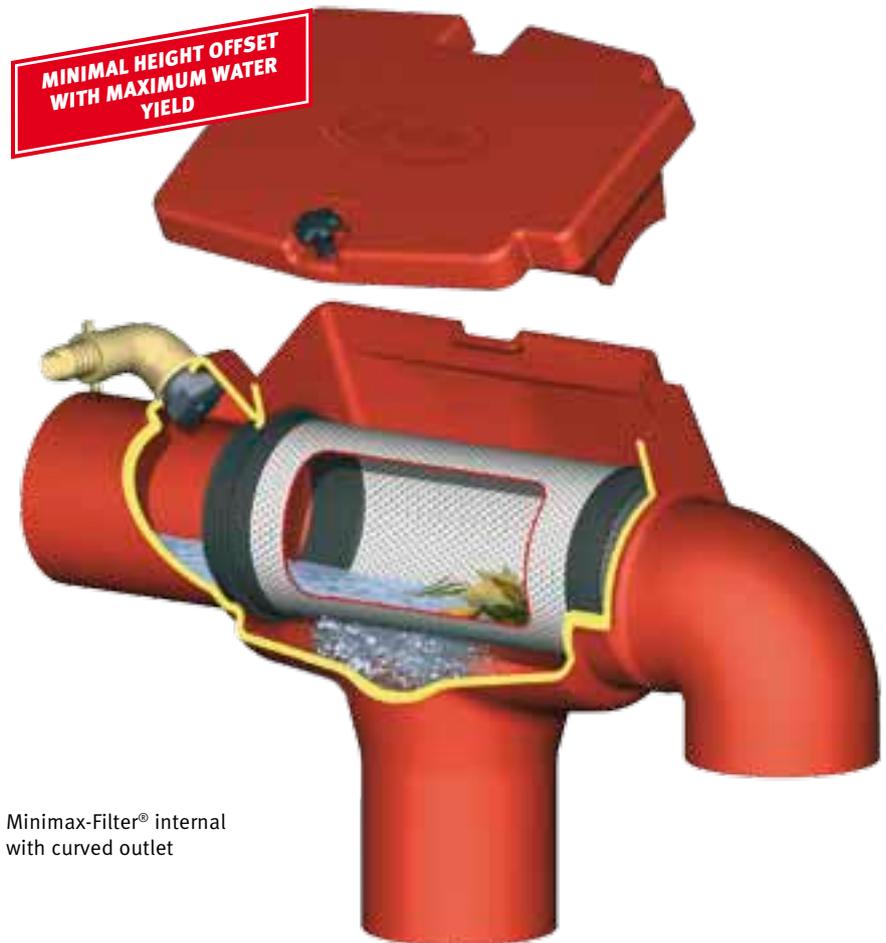


## Advantages

- Provides over 95 % water yield
- Self cleaning filter
- Space-saving filter technology inside the tank
- Can manage roof areas up to 350 sqm
- Standard 100 mm connections
- Optional with cleaning unit Miniclean®
- Sieve insert mesh width 0.35 mm (0.01")



Minimax-Filter® internal with straight outlet



Minimax-Filter® internal with curved outlet

### Minimax-Filter® internal

with curved outlet - only 80 mm (3.2") height offset between the inlet and outlet

Order no. 340060

Q Webcode G2103

### Minimax-Filter® internal

with straight outlet – only 10 mm (0.4") height offset between the inlet and outlet

Order no. 340078

Q Webcode G2104



## Accessories

**Quick assembly sleeve Spannfix** patented (Page 47)

Order no. 340502

**Cleaning unit Miniclean internal** without hose

Order no. 340044

## Cleaning unit Miniclean

- Very intense water jet for cleaning the filter sieve
- Routine maintenance intervals are kept to a minimum
- The cleaning unit is activated automatically in combination with the automatic filter cleaning unit and the Aqua-Center-Silentio

**Connecting dimensions** for telescopic dome shaft

Dome shaft	inlet	Outlet
Mini	325-525 mm	405-605 mm
Maxi	325-625 mm	405-705 mm

All dimensions are calculated middle of connection until earth top edge

# External industrial filter technology

For roof surfaces up to 1,500 sqm



Q Webcode G2201

## Optimax-Industrial filter external

- For roof surfaces up to 1500 sqm  
Patented filter technology
- Smooth installation depths from 733-1320 mm (28.9-51.9") using the telescopic dome shaft
- Maximum roof surface of 750 sqm with connections DN 150 and 1500 sqm with DN 200
- Only 224 mm height offset between the inlet and outlet.

**Optimax-Industrial Filter external**  
suitable for pedestrian loading

Order no. 340035

**Optimax-Industrial Filter external**  
suitable for vehicle loading

Order no. 340036

## Accessories

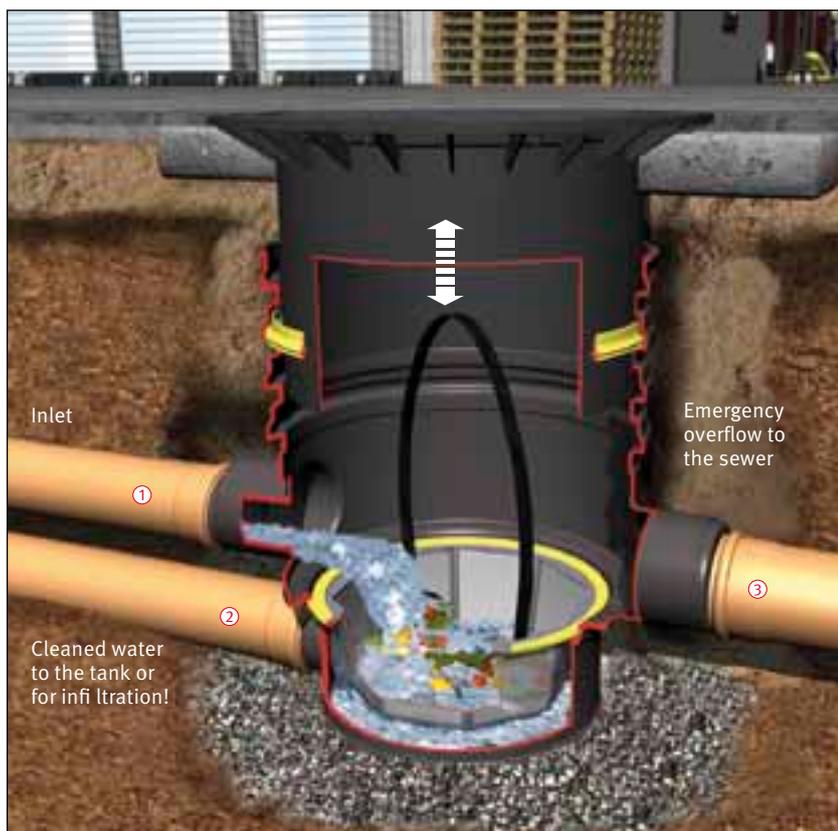
**Cleaning unit Opticlean® external**  
without hose

Order no. 340041

## Connecting dimensions

① Inlet	DN 150/200	430-1017 mm
② Outlet	DN 150	654-1241 mm
③ To the sewer	DN 150/200	654-1241 mm

All dimensions are calculated middle of connection until earth top edge



Q Webcode G2202

## Universal-Industrial filter 3 external

- For roof surfaces up to 1200 sqm
- Continuously variable installation depth of 703-1270 mm (26.7-50.0") using the telescopic dome shaft
- Maximum roof surface area of 750 sqm with connections DN 150 and 1200 sqm with DN 200
- Only 229 mm height offset between the inlet and the outlet

**Universal-Industrial Filter 3 external**  
suitable for pedestrian loading

Order no. 340050

**Universal-Industrial Filter 3 external**  
suitable for vehicle loading

Order no. 340051

## Connecting dimensions

① Inlet	DN 150/200	395- 962 mm
② Outlet	DN 150	624-1191 mm
③ Emergency overflow	DN 150/200	395- 962 mm

All dimensions are calculated middle of connection until earth top edge

# External filter technology

Self-cleaning



## Optimax-Filter external

- Provides over 95 % water yield
- Low maintenance as it is self cleaning
- Continuously variable installation depth of 580 mm - 1,050 mm (22.8 - 41.3") using the telescopic dome shaft
- Minimal height offset (200 mm) between the inlet and outlet
- Maximum roof surface area of 350 sqm with connections DN 100 and 750 sqm with DN 150. Optional with cleaning unit Opticlean®

**Optimax-Filter® external**  
suitable for pedestrian loading  
Order no. 340030

**Optimax-Filter® external**  
suitable for vehicle loading  
Order no. 340031

### Accessories

**Cleaning unit Opticlean® external**  
without hose  
Order no. 340041



Very smooth surface and therefore max. self-cleaning, mesh wide 0.35 mm (0.01"). Optional with cleaning unit Opticlean®



Stainless steel fine filter

Diamond pattern as carrying surface

Collector surface

3-layer filter assembly

### Connecting dimensions

① Inlet	330 - 800 mm
② Outlet	530-1000 mm
③ To the sewer	530-1000 mm

All dimensions are calculated middle of connection until earth top edge

Q Webcode G2203



## Minimax-Filter® external

- Only 100 mm height offset between the inlet and outlet
- Sieve insert mesh width 0.35 mm (0.01")
- Continuously variable installation depth of 485 mm - 955 mm (19.1 - 38.2") using the telescopic dome shaft
- Maximum roof surface of 350 sqm
- Standard 100 mm connections
- Optional with cleaning unit Miniclean

**Minimax-Filter® external**  
suitable for pedestrian loading  
Order no. 340061

**Minimax-Filter® external**  
suitable for vehicle loading  
Order no. 340062



Q Webcode G2204

### Accessories

**Cleaning unit Miniclean external**  
Order no. 340045

### Connecting dimensions

① Inlet	330-800 mm
② Outlet	430-900 mm
③ To the sewer	340-810 mm

All dimensions are calculated middle of connection until earth top edge

# External filter technology

Universal-Filter 3 external and Pot filter



## Universal-Filter 3 external

- 100 % water yield: therefore, ideal for smaller roof areas
- Filter insert mesh width 0.35 mm (0.01")
- Continuously variable installation depth of 600 mm - 1,050 mm (22.4 - 41.3") using the telescopic dome shaft
- Lockable, childproof cover
- Flush with ground level
- Minimal height offset (270 mm / 10.6") between the inlet and outlet
- Also suitable for infiltration and pond systems
- Maximum roof surface area of 350 sqm with connections DN 100 and 500 sqm with DN 150

### Connecting dimensions

① Inlet	273-723 mm
② Outlet	544-944 mm
③ Emergency overflow	273-723 mm

All dimensions are calculated middle of connection until earth top edge

Q **Webcode** G2205

Filter insert with practical lift-out device



### Replacement filter basket

Order no. 340524

### Universal-Filter 3 external

suitable for pedestrian loading

Order no. 340020

### Universal-Filter 3 external

suitable for vehicle loading

Order no. 340021



## Pot filter

For installation at ground level (underground tank inflow) before the cistern. Good value alternative - suitable when only used for garden irrigation, ponds or infiltration. Connection: DN 100. Dimensions: 500 mm Ø, 340 mm high

### Connecting dimensions

① Outlet	288 mm
----------	--------

All dimensions are calculated middle of connection until earth top edge

Q **Webcode** G2206

### Pot filter

Order no. 340003

### Accessories

#### Replacement filter mats (2 units)

Order no. 347010

# Domestic waterworks and pumps



# The central system control for your rain water harvesting system



## Feeding console

Properties	Drinking water feeding console		Aqua-Center-Silentio	
	15/4	25/4	15/4	25/4
<b>Pump</b>				
Nominal power	660 W	800 W	660 W	800 W
Operating noise	55 dB(A)	55 dB(A)	49 dB(A)	49 dB(A)
Protection class	IP 44	IP 44	IP 44	IP 44
Operating pressure	3,5 bar	4,3 bar	3,5 bar	4,3 bar
Feed height	35 m	43 m	35 m	43 m
Max. delivery rate	3.600 l/h	4.200 l/h	3.600 l/h	4.200 l/h
Max. suction height	3,0 m	3,0 m	3,0 m	3,0 m
Max. suction length	15 m	15 m	15 m	15 m
Display operating pressure	•	•	•	•
Optionally available as Silentio Press package for distances of >/=15 m to the house	-	-	•	•
<b>Drinking water feeding module</b>				
Capacity	6,3 Litres		6,5 Litres	
Manual switching to drinking water is possible	•		•	
Automatic water exchange basin	-		•	
Overflow corresponds to DIN EN 1717	•		•	
<b>System control</b>				
Via float switch	•			
Via electronic fill level measurement	-		•	
Optional filter cleaning unit	-		•	
Display Operating error	-		LED/Full text	
Adjustable operating parameters	Threshold level drinking water feed via float switch, connection pressure		Threshold level drinking water feeding, interval/duration of feeding basin and filter cleaning, filter cleaning at a fill level increase of more than 2%, suppression of filter flushing in drinking water operation mode	
<b>Measurements</b>				
Width	570 mm		580 mm	
Height	745 mm		530 mm	
Depth	200 mm		295 mm	
Weight	30 kg		34 kg	
Page in catalogue	Page 40		Page 41	

# Drinking water feeding console

The cost-effective solution

The drinking water feeding console controls and regulates the entire water requirement and guarantees outstanding operational safety due to its reliable operation. The drinking water feeding console is safety-tested in accordance with DIN 1988 and EN1717. The floating switch-controlled monitoring of the fill level in the rainwater tank ensures that,

in the event that the water level in the tank drops below the predefined minimum, drinking water is automatically provided from the in-house reservoir as needed. As soon as the cistern refills with rainwater, the drinking water feeding console switches back to rainwater operation.

## Advantages

- Cost-effective in-house internal drinking water intake
- Floating switch-controlled



Display of the operating pressure

The integrated dry running protection prevents damage in the event of water shortage and guarantees safe operation.

High-quality, high-performance KSB centrifugal pump guarantees long, safe system operation

Suction pipe for the rainwater from the tank 25 mm (1")

Currentless, closed three-way valve: reduces the risk of backpressure



Emergency overflow DN 50 in accordance with EN 1717



### Drinking water feeding console

Incl. floating switch with 20 mtr connection cable

Pump	Order no.
15/4	350021
25/4	350022

Q Webcode G3101

# Aqua-Center-Silentio

The convenient control system

The GRAF Aqua-Center-Silentio is the central system control for your rainwater harvesting system. The microelectronics control and regulate the entire system. The pump and processor units are compactly installed with the intake container. The switching valve is sensor-controlled and opens the drinking water intake to the service water network when the water level is low in the cistern. The Aqua-Center-Silentio switches back to rainwater operation after even a brief rain shower. The Aqua-Center-Silentio is safety-tested in accordance

with DIN 1988 and EN 1717 and can be installed above the backpressure level without problems. By connecting a lifting device in accordance with DIN 1988 and EN 1717 to the overflow, installation is also possible below the backpressure level. Please follow the installation instructions. A quiet, multi-stage, self-priming centrifugal pump with professional output works below the attractive soundproof hood. The Aqua-Center-Silentio comes ready to connect – this facilitates a simple and quick start-up.

## Advantages

- With automatic filter cleaning unit as option
- Regular rinsing of the drinking water reservoir prevents microbial contamination
- Digital display of the operating status and the level in the cistern.



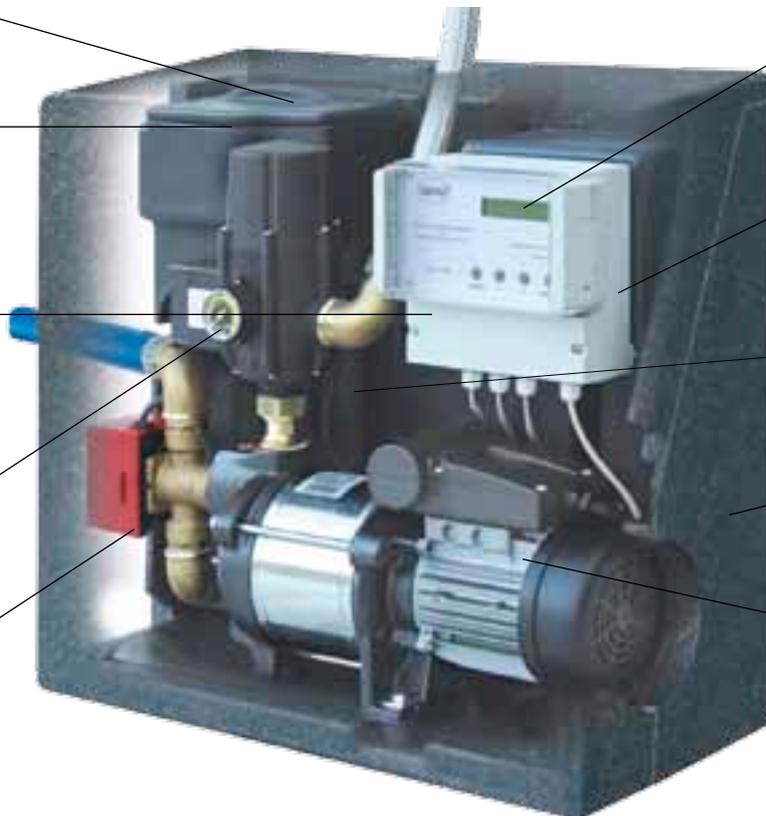
Regular rinsing of the drinking water reservoir prevents microbial contamination

The integrated dry running protection prevents damage in the event of a water shortage and guarantees safe operation

High operating safety thanks to approved microprocessor controls (can be adjusted individually)

Operating pressure display

When required, drinking water is drawn in when the cistern is empty (manual switching is possible)



Digital display of the operating status and the level in the cistern

Automatic control of the Opticlean® filter cleaning unit (page 31), cleaning intervals can be programmed

Integrated emergency overflow corresponds to the new EN 1717 Part 3

Complete soundproofing of all sources of noise for quiet operation

High-quality, high-performance KSB rotary pumps guarantee long, safe system operation



**Aqua-Center-Silentio**  
Incl. switching valve sensor controlled and 20 mtr data line



**Aqua-Center-Silentio Press**  
For greater distances between the tank and the house waterworks (>15 m) including submersible pump 300 A as a pressure pump (Page 43)

## Accessories

**Automatic filter cleaning unit**

Order no. 352038

**Data line 50 m**

2 wire with Cinch plug

Order no. 330699

Pump	Order no.
15/4	350209
25/4	350210

Pump	Order no.
15/4	350211
25/4	350212

Q Webcode G3102

Q Webcode G3103

# Domestic waterworks and pumps



## KSB-Superinox 15/4 and 25/4

- Tried-and-tested domestic waterworks with brand-name quality from Graf
- Stainless steel housing
- Runs very quietly
- 24h service by approx. 80 nationwide pump partners
- Multi-stage, self-priming centrifugal pump with energy-efficient motor
- Pump is automatically switched on and off via pressure and flow monitor
- Integrated dry running protection and reflux prevention
- Motor with life-long lubrication and integrated protection switch
- Protection type IP 44

15/4 Order no. 353032

25/4 Order no. 353046

Q Webcode G3201

Q Webcode G3202



## Kreisel 4/1000

- Domestic waterworks with brand-name quality from Graf
- Low operating noise
- Multi-stage, self-priming centrifugal pump with energy-efficient motor
- Pump is automatically switched on and off via pressure and flow monitor
- Integrated dry running protection and backflow prevention
- Motor with life-long lubrication and integrated protective switch

Order no. 354021

Q Webcode G3203



## Jet 700

- Self-priming Jet pump
- Tried-and-tested pump technology with the brand-name quality from Graf
- Runs very quietly
- Made of oxidation-resistant materials

Order no. 202011

Q Webcode G3204

Performance Data	Superinox 15/4	25/4	Kreisel 4/1000	Jet 700
Motor performance	0,66 kW	0,80 kW	0,8 kW	0,7 kW
Max. feed height	35 m	43 m	48 m	40 m
Max. operating pressure	3,5 bar	4,2 bar	4,8 bar	4,0 bar
Max. delivery rate	3600 L/h	4200 L/h	4800 L/h	3000 L/h
Max. suction height (m)	8		8	8
Max. suction length (m)	18		15	15
Max. submersion depth (m)	–		–	–

Attention: the suction performance values represented in the chart are not valid in combination with drinking water feeding consoles!

## Accessories

### Pump wall console

suitable for pumps 1 - 3, rubber mounting brackets reduce noise

Order no. 355020



### Flexible armoured hose

Latex core, stainless steel jacket, length 500 mm, wear-free, rust-free, brass connections R 1"

Order no. 330058



### Controlmatic

Pump switching gear with dry running protection and pressure gauge, completely wired, 1"

Order no. 355022



### Brio

Pump switching gear with dry running protection, completely wired, 1", IP 65

Order no. 355021





### Integra INOX

- Automatic submerged pump with integrated pressure-and flow monitor
- Pump switches on and off automatically
- Tried-and-tested pump technology with the brand-name quality from Graf
- Runs very quietly
- Made of oxidation-resistant materials
- Includes 10 m cable and floating water extraction unit
- Can also be used as a suction pump

Order no. 354018

Q Webcode G3205



### Submerged pump 300 A

- Submerged pump with dry running protection
- Tried-and-tested pump technology with the brand-name quality from Graf
- Runs very quietly
- Made of oxidation-resistant materials
- Incl. 15 m cable

Order no. 354031

Q Webcode G3206



### Submersible pressure pump 1000 A

- Submersible pressure pump with dry running protection and 4 running wheels
- Tried-and-tested pump technology with the brand-name quality from Graf
- Runs very quietly
- Made of oxidation-resistant materials
- Incl. 15 m cable

Order no. 354030

Q Webcode G3207



### Submersible pressure pump 1000 E

- Submersible pressure pump with integrated pressure-and flow monitor
- Pump switches on and off automatically
- Tried-and-tested pump technology with the brand-name quality from Graf
- Runs very quietly
- Made of oxidation-resistant materials
- Incl. 15 m cable

Order no. 354034

Q Webcode G3208

Performance data Integra INOX	Submerged pump 300 A	Submersible pressure pump 1000 A	Submersible pressure pump 1000 E
0,6 kW	0,3 kW	0,9 kW	0,9 kW
40 m	7 m	36 m	36 m
4,0 bar	0,7 bar	3,6 bar	3,6 bar
3000 L/h	7200 L/h	6000 L/h	5600 L/h
8	–	–	–
12	–	–	–
10	3	8	8



### Reversible flow filter

For fine filtering of rainwater after the pump. This is sensible if the water is going to be used for the washing machine. The mesh width of the 0.1 mm fine filter retains the smallest dirt particles. Connections R 1" AG.

DVGW-tested fine filter in accordance with DIN. The

sieve insert cleans easily in a few seconds, the sieve does not need to be replaced.

Note: the rainwater must be fed through a pre-filter (page 30 - 31) before it is fed into the tank.

Order no. 331021

# Accessories



# Water tap and water connection box

Cost-efficient extraction units



## Water filling pillar Rondo, made from plastic

- Made of particularly robust and weather resistant plastic
- For convenient water extraction in the garden
- Connection 19 mm (3/4") external valve in the stand
- includes outlet tap 19 mm (3/4") for convenient water extraction
- Simple mounting- the holes in the base are pre-drilled

Grey	Order no. 356021
Beige Brown	Order no. 356022

Ø column	Ø assembly plate	Height
120 mm	190 mm	900 mm

[Q Webcode G9101](#)



## Water connection box external

For the convenient extraction of rain water in the garden. For jet pump and submersible pump incl. 2-way valve and 1" hose connection



- Made of particularly robust and weather-resistant plastic
- Ideal addition to the complete packages Garden Comfort, Eco Plus and Professional

Order no. 330156

[Q Webcode G9102](#)



## Water connection box internal

Drain water directly from the tank. Easy retrofitting for telescope dome shaft Mini or Maxi, hose connection 25 mm (1").

Order no. 375119

[Q Webcode G9103](#)



# Accessories

For rainwater harvesting

Order no.



## ① Floating water extraction unit

Scope of supply: floating balloon, backpressure valve with stainless steel fine suction basket, suction hose with brass connecting thread R 1" inside thread  
Fine filter nominal width 1.2 mm  
Micro filter nominal width 0.23 mm

333014  
333015



## ② Suction set

Scope of supply: suction basket, backpressure valve made of brass, suction hose with 1" curved hose nozzle, length: 230 cm can be shorted, for Carat S and Rondus tanks

333002



## ③ PE suction pipe,

12 m long, for connecting between the tank connection and pump. With screw connection, 1" outside thread and MS <math>\sphericalangle 90^\circ</math> R 1" outside thread

330082



## ④ Suction set

Suction hose with filter basket and backpressure valve, connection 25 mm (1") outside thread

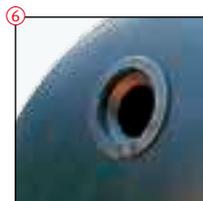
4 m	355012
7 m	355013



## ⑤ Cut-out tool

for pipe DN 50 with pilot drill  $\varnothing$  58 mm  
for pipe DN 70 with pilot drill  $\varnothing$  83 mm  
for pipe DN 100 with pilot drill  $\varnothing$  124 mm  
for pipe DN 150 with pilot drill  $\varnothing$  175 mm

332004
202002
202003
332002



## ⑥ Special seal

for connecting the tanks and further connections

for pipe	$\varnothing$ Borehole	Tank wall thickness	Colour	
DN 32	46 mm	4 - 8 mm	black	332036
DN 19/32	50 mm	1 - 15 mm	black	330313
DN 32/50	58 mm	1 - 15 mm	black	330347
DN 50	58 mm	4 - 8 mm	black	332038
DN 50	58 mm	10 - 18 mm	black	332045
DN 70	83 mm	3 - 5 mm	grey	332041
DN 70	83 mm	4 - 6 mm	green	332039
DN 70	83 mm	9 - 16 mm	black	332040
DN 100	124 mm	4 - 6 mm	green	332031
DN 100	124 mm	9 - 13 mm	black	332033
DN 100	124 mm	14 - 17 mm	red	332032
DN 100	124 mm	17 - 21 mm	blue	332030
DN 150	175 mm	6 - 11 mm	black	332035



## ⑦ Labelling set

for rainwater harvesting systems, consisting of: engraved sign, adhesive foil, 10 m film strip, adhesive label, pipe label

330122

**Order no.**

① **Aqua-Control+** 351021  
 The Aqua-Control+ informs on the exact water level in the tank and switches automatically to drinking water intake as needed. This ensures smooth operation of the entire plant. The pump is also protected against dry running. Digital display and adjustable intake amount in 1 % steps. Regular rinsing of the magnetic valve. 2-year warranty. Price incl. brass magnetic valve and 20 m of data cable.



② **Digital fill level display** 351013  
 Childproof 12-volt technology with 20 m of data line. Digital display in 1 % steps, any tank size up to 3 m high, simple assembly, also for retrofitting existing systems, 2-year warranty.



③ **Wall duct DN 100** 331002  
 1 x 1" + 2 x cable bushing

**Wall duct DN 150** 331003  
 1 x 1" + 1 x 1 1/4" + 2 x cable bushing

Prevents thermal and moisture bridges to the wall ducts using a compression seal. Bushing possibilities for intake pipe (only with DN 150), suction hose, sensor cable and pump or floating switch cable.

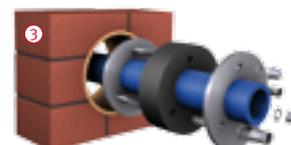


Illustration shows wall duct DN100

④ **Settled inlet basket** 330140  
 So that small dirt particles can settle on the base of the tank, the filtered water is fed to the base of the tank through a steady inflow pot.



⑤ **Overflow siphon** 330108  
 Used as an odour trap and for disposing of the floating layer DN 100

As above but with rodent guard 202030



⑥ **Quick assembly sleeve Spannfix** 340502  
 patented, for connecting 2 DN 100 pipes without sleeve (butt connection), no assembly tools required!



⑦ **Protection against small animals**  
 made of stainless steel for inserting into common KG pipes  
 Prevents small animals getting into the system.

DN 100 331008  
 DN 150 331013



# Infiltration and rainwater detention



The public demand for local stormwater harvesting and management is continually growing due to ever more frequent flood catastrophes. Increasing sealing of areas with buildings, car parks and roads is a particular problem for sewer systems in urban areas and is increasingly raising the risk of flooding. In Germany, an area of approx. 129 hectares or

175 football fields is built on and sealed every day. The consequence is flooding with previously unheard of ecological and economic damage. Additionally, the groundwater level is also sinking due to surface sealing – the natural cycle is broken. GRAF takes this into account with well thought-out infiltration systems. The infiltration modules Rain

Bloc and Infiltration Tunnel combine the requirements of an ecologically-sound approach to rainwater with the chance to save sealing fees. Additionally, sewer systems and purification systems get some relief from local amount of rainwater.



Housing development, West Kempsten (UK)



Logistic center, Raben (PL)



GRAF rain bloc, Warnsveld (NL)



Football stadium, Ried (AT)



SILVAN DIY store, Århus (DK)

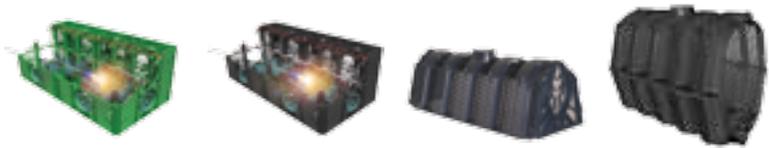


Siemens-VDO, Lindau (DE)

# The ideal infiltration module for every application



## Infiltration modules for infiltration and detention of rainwater



Infiltration module		Rain bloc vehicle loading / inspect	Rain bloc lorry bearing / inspect	Infiltration tunnel	Infiltration tunnel Twin
Capacity		300 L	300 L	300 L	600 L
Available with inspection channel		•	•		
<b>Load</b>					
Load	Short-term	max. 7,5t/m <sup>2</sup>	max. 10t/m <sup>2</sup>	max. 7,5t/m <sup>2</sup>	max. 7,5t/m <sup>2</sup> ,
	Long-term	max. 3,5t/m <sup>2</sup>	max. 5t/m <sup>2</sup>	max. 3,5t/m <sup>2</sup>	max. 3,5t/m <sup>2</sup>
Without traffic load	Max. earth covering	2000 mm	2750 mm	1990 mm	1480 mm
	Min. earth covering	250 mm	250 mm	250 mm	250 mm
	Max. installation depth	3500 mm	5000 mm	2500 mm	2500 mm
	Max. layers	7	10	1	1
Vehicle	Max. earth covering	2000 mm	2750 mm	1990 mm	1480 mm
	Min. earth covering	250 mm	250 mm	500 mm	500 mm
	Max. installation depth	3500 mm	5000 mm	2500 mm	2500 mm
	Max. layers	7	10	1	1
Lorry 12	Max. earth covering	1900 mm	2750 mm	–	–
	Min. earth covering	500 mm	500 mm	–	–
	Max. installation depth	3500 mm	5000 mm	–	–
	Max. layers	7	10	–	–
Lorry 30	Max. earth covering	1800 mm	2500 mm	–	–
	Min. earth covering	500 mm	500 mm	–	–
	Max. installation depth	3200 mm	5000 mm	–	–
	Max. layers	6	10	–	–
Lorry 40	Max. earth covering	1700 mm	2250 mm	–	–
	Min. earth covering	600 mm	500 mm	–	–
	Max. installation depth	3000 mm	5000 mm	–	–
	Max. layers	5	10	–	–
Lorry 60	Max. earth covering	–	2000 mm	–	–
	Min. earth covering	–	500 mm	–	–
	Max. installation depth	–	5000 mm	–	–
	Max. layers	–	10	–	–
<b>Connections frontal</b>					
DN 100	•	•	•	•	
DN 125	•	•			
DN 150	•	•	•	•	
DN 200			•	•	
DN 300			•	•	
<b>Connections on the side</b>					
DN 100	•	•			
DN 125	•	•			
DN 150	• (2x)	• (2x)			
<b>Connections top</b>					
DN 100			•	•	
DN 200			•	•	
<b>Measurements</b>					
Length	1200 mm	1200 mm	1160 mm	1160 mm	
Width	600 mm	600 mm	800 mm	800 mm	
Height	420 mm	420 mm	510 mm	1020 mm	
Weight	16/17 kg	18/19 kg	11 kg	22 kg	

# GRAF Rain Bloc / Rain Bloc inspect

Infiltration and harvesting from one mould



The flexible, high-performance Rain Bloc is ideal for use in public and industrial areas. There are no limits on the use and design of the surface above the system thanks to its extreme load-capacity. Whether it is a parking space, works entrance or storage area – everything is possible.

## High-performance

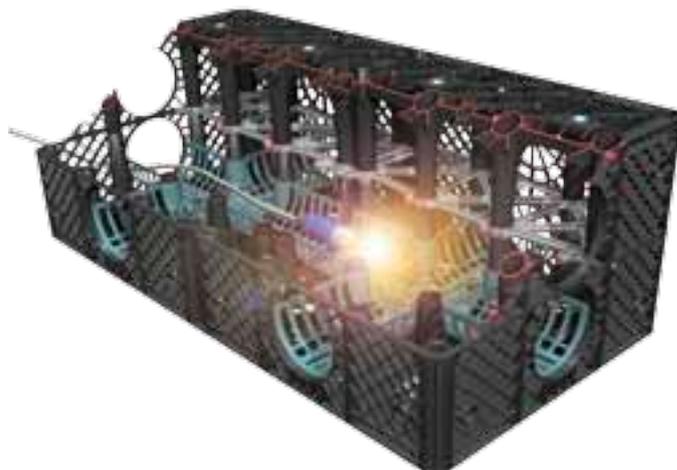
The lorry-bearing design guarantees extreme load capacity thanks to its stable column structure. It facilitates SLW 60-bearability with an 500 mm (19.7") covering. The vehicle loading design can bear a long-term load of approx. 3.5 t per m<sup>2</sup>. There are no limits on the use and design of the surface over the system.

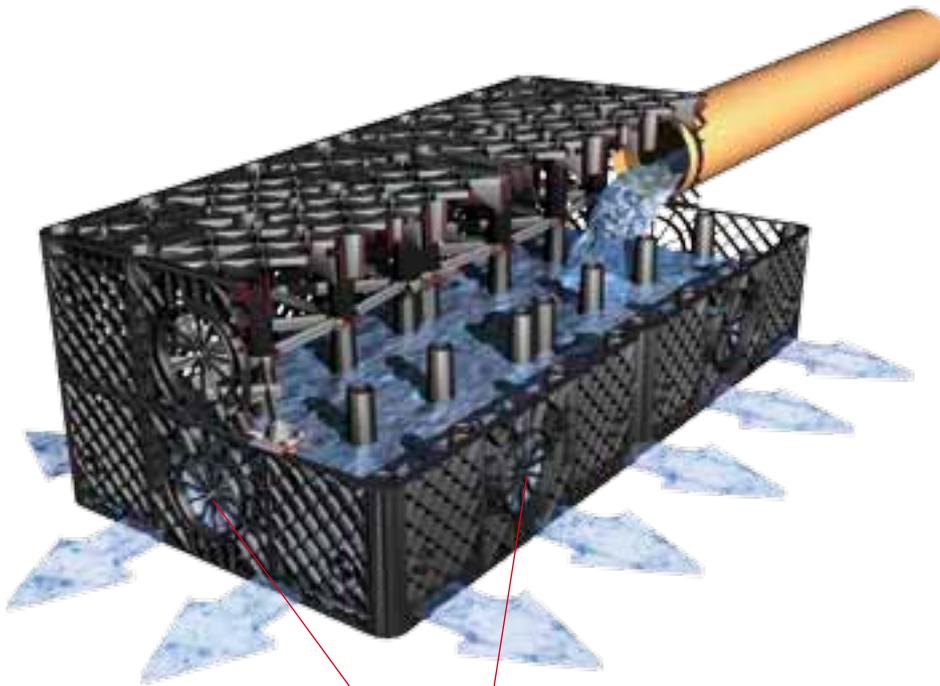
## Inspectable

The unique inspect rim facilitates flexible laying of inspection channels within your ditches. The Rain Bloc Inspect is already completely prefitted and only has to be installed in the tried and tested Rain Bloc system. The Rain Blocs can be inspected easily with a push-rod camera through the opening of diameter DN 150. Crossing inspection channels can also be laid easily.

## Easy to install

The Rain Bloc can be installed in rows or block form, with 1 to a maximum of 10 layers and a max. installation depth of 5 meters, depending on the local conditions and the desired storage capacity. Installing the module is easy, fast and variable. It can be installed without heavy equipment - a Rain Bloc weighs just 16-19 kg. The individual modules are connected using practical fast connectors..





The special construction of the GRAF Rain Bloc guarantees lasting, high infiltration performance.

Flexible connection options - length and crossways DN 100/125/200.

#### Rain Bloc vehicle loading

Item	Capacity [Litres]	Length [mm]	Width [mm]	Height [mm]	Colour	Order no.
Rain Bloc	300	1200	600	420	green	360016
Rain Bloc inspect <sup>1)</sup>	300	1200	600	420	green	360017

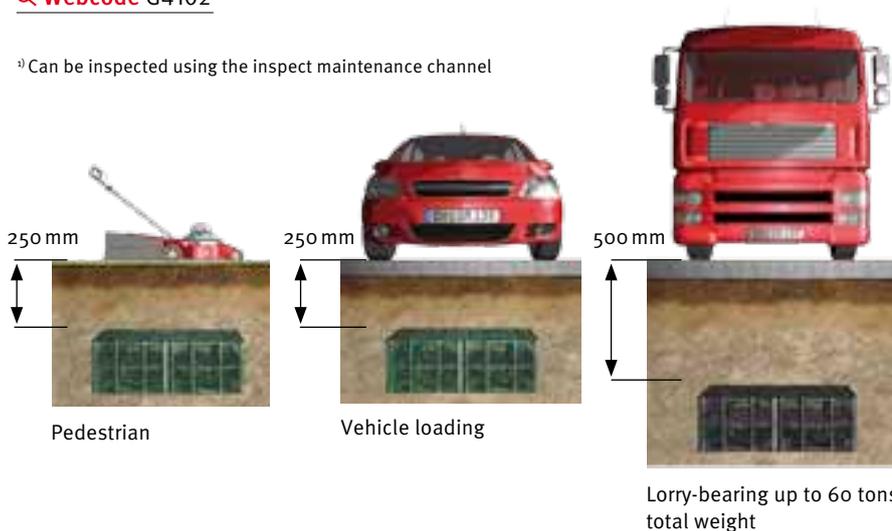
[Webcode G4101](#)

#### Rain Bloc Lorry-bearing

Item	Capacity [Litres]	Length [mm]	Width [mm]	Height [mm]	Colour	Order no.
Rain Bloc	300	1200	600	420	black	360014
Rain Bloc inspect <sup>1)</sup>	300	1200	600	420	black	360015

[Webcode G4102](#)

<sup>1)</sup> Can be inspected using the inspect maintenance channel



#### Deaeration end DN 100

Order no. 369017



#### Connecting elements

for all horizontal and vertical connections 10 units

Order no. 369012



#### GRAF-Tex geotextile

for a Rain Bloc size of 2.50 x 2.50 m

Order no. 231006

Material sold by the metre, roll width 5 m

Order no. 231002

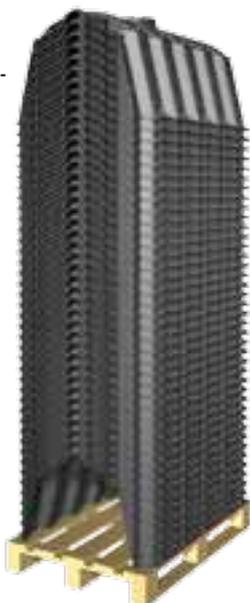
# GRAF Infiltration Tunnel /Infiltration Tunnel twin

Space-saving and cost-efficient



The Graf Infiltration Tunnel has been mainly designed for the use in private and rural areas. The system which consists of one or several tunnel modules and two end plates can be extended at will. The laying is realized in one or more lines of the same level. As the weight of one module is only 11 kilos, the handling of the Infiltration Tunnel is excellent.

The surface beyond the tunnels is vehicle loading which offers versatile possibilities for utilisation.



## Up to 12000 litres infiltration volume per pallet

Thanks to its special design the GRAF Infiltration Tunnel can be stacked easily. Consequently, the shipment of up to 40 infiltration tunnels on one pallet saves considerable transport and storage costs.

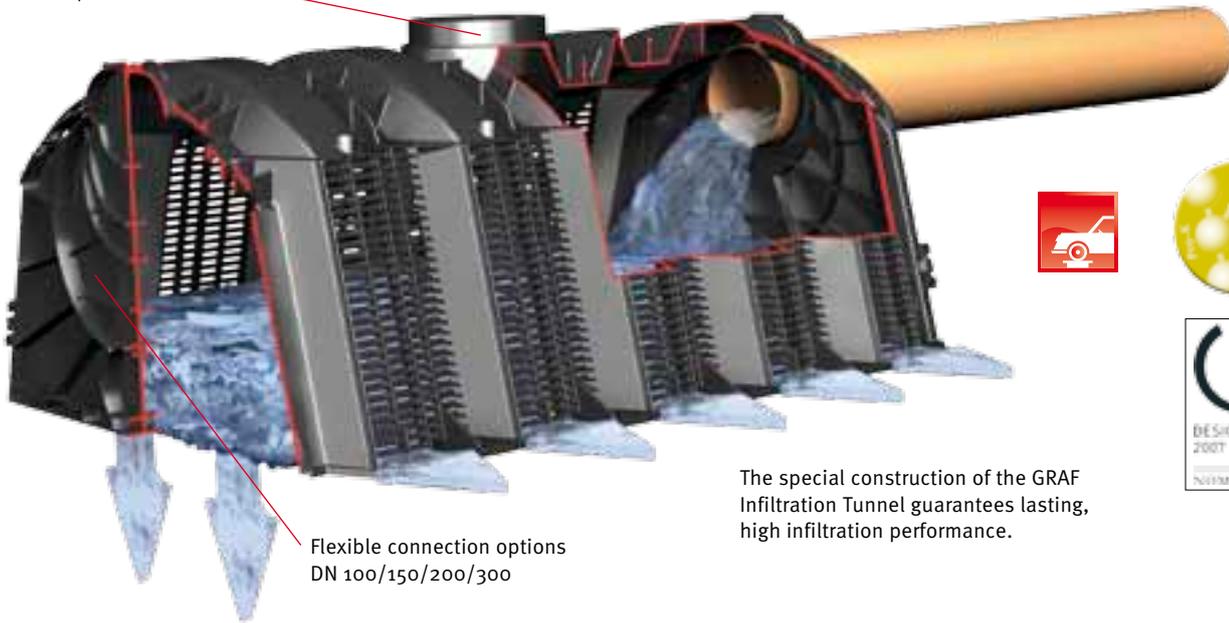
## Vehicle loading

For offering versatile possibilities of utilisation, the surface beyond the infiltration tunnels can be loaded permanently up to 3,5 tons/sqm and thus is also suitable for vehicle loading.

## Easy installation

The GRAF Infiltration Tunnels are laid in lines and can be flexibly adapted to specific conditions and to the individual storage volume requested. The installation of the modules is easy, quick and variable. The installation is possible without heavy equipment, as one infiltration tunnel only weighs 11 kilos. The tunnel modules are simply stuck together in one line and equipped with 2 end plates per line.

Flexible connection options  
DN 100/200



The special construction of the GRAF Infiltration Tunnel guarantees lasting, high infiltration performance.

### Infiltration Tunnel vehicle loading



Capacity [Litres]	Length [mm]	Width [mm]	Height [mm]	Colour	Order no.
300	1160	800	510	black	230010

Q Webcode G4103

### Infiltration Tunnel Twin vehicle loading

Consisting of two Tunnel and 1 set Click-Bolt-Connector



Capacity [Litres]	Length [mm]	Width [mm]	Height [mm]	Colour
600	1160	800	1020	black

Q Webcode G4104

### End plate for Infiltration Tunnel / Twin



Item	Length [mm]	Colour	Order no.
End plates (Set 2 units)	30	black	410098

### Inspection end

DN 200

Order no. 340527



### Deaeration end

DN 100

Order no. 369017



### GRAF-Tex geotextile

For an Infiltration Tunnel size of 2.50 x 2.50 m

Order no. 231006

### Roll width 5 m

Order no. 231002

### GRAF Click-Bolt-Connector

Connecting elements for Infiltration Tunnel Twin

Order no. 410094



250 mm



Pedestrian

500 mm



Vehicle loading

# Infiltration

## Planning and sizing

Planning, sizing and installing an infiltration system in Germany is regulated by ATVDVWK-A 138 (German standard). According to this, infiltration systems must be sized using the local heavy rain figures. As a rule, a 5-year flood frequency ( $n=0.2/a$ ) is required for local plants. This corresponds to a rain event, which statistically occurs every 5 years. Swale infiltration systems can

be sized with a one-year flood frequency ( $n=1/a$  rain event statistically once a year), if there is a ditch emergency overflow. In addition to heavy rain figures, the permeability of the ground (Kf-value m/s), the area to be connected (m<sup>2</sup>) and the runoff coefficient ( $\Psi$ ) must be taken into account when sizing the infiltration system.

**WE WOULD BE HAPPY TO SIZE YOUR PROJECT. GIVE US A CALL!**

## Calculation guideline for smaller properties

### 1. Specify your soil type

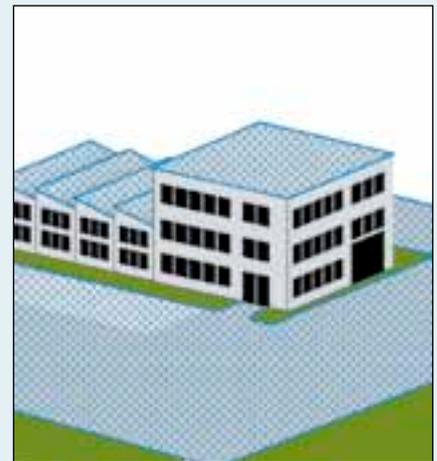


### 2. Specify your rain level



Values on the table correspond to a rain event, which statistically occurs every 5 years.

### 3. Specify your connected surface



Surfaces of the connected buildings plus roof overhangs (independent of roof pitch) + other connected surfaces.

Type of soil	Percolability		number GRAF modules		
			100 m <sup>2</sup>	150 m <sup>2</sup>	200 m <sup>2</sup>
Gravel		150 litres	3	4	5
		200 litres	5	7	8
Medium sand		150 litres	6	8	10
		200 litres	7	11	14
Fine sand		150 litres	8	12	15
		200 litres	10	15	20
Coarse clay		150 litres	10	15	19
		200 litres	13	19	25
Clay			No infiltration possible		

We recommend property-related sizing for infiltration systems in principle.

# GRAF Infiltration shaft system

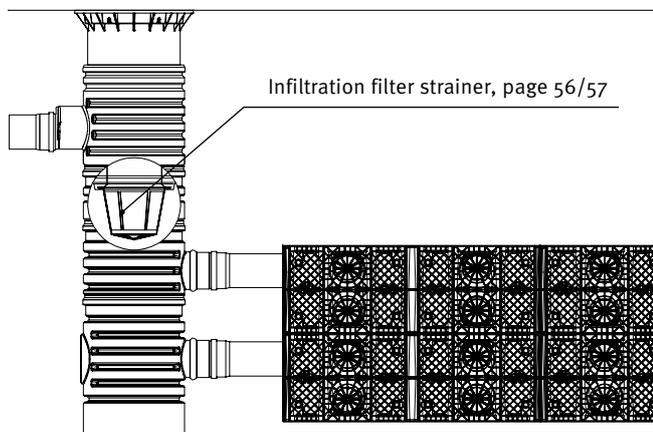
## Areas of use

The GRAF Infiltration shaft system is the final addition to the proven GRAF percolation modules and is perfectly coordinated for use with the Rain bloc and tunnel. The Infiltration shaft system basically comprises an inlet and dis-

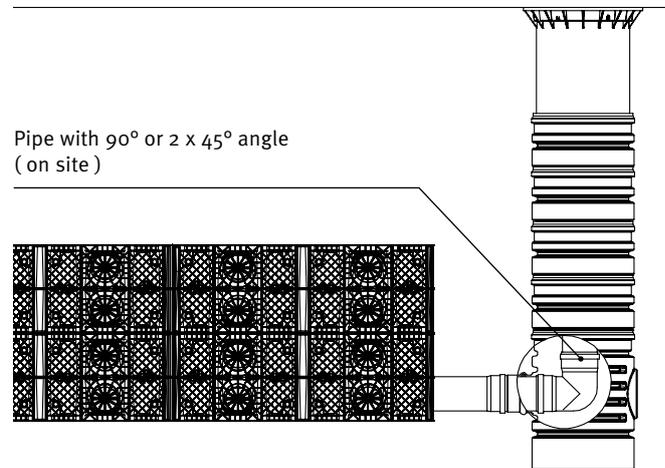
tributor module of either DN 400 or DN 600 in diameter. The appropriate cover can be selected depending on the load class required (up to class D). Shaft extensions between the two main modules (also above the inlet module

with the DN 600 diameter version) ensure a simple connection even for percolation systems with high earth coverings.

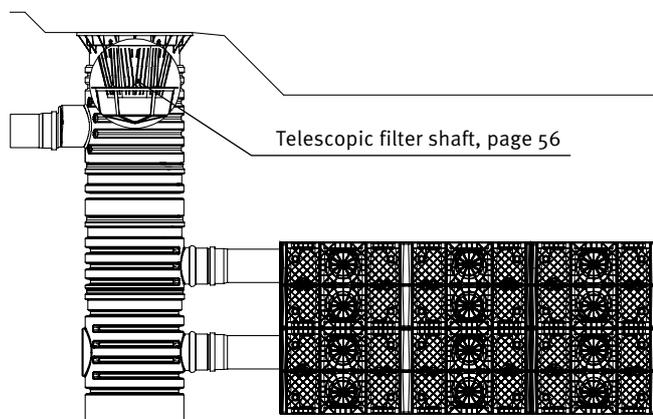
### As filter shaft



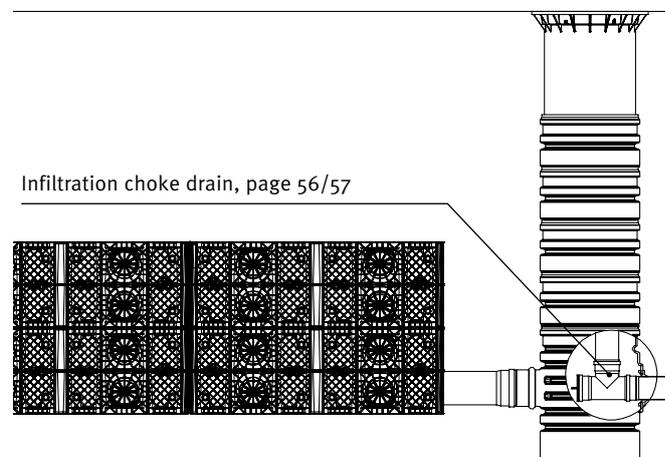
### As inspection shaft



### As infiltration ditch overrun



### As choke drain shaft



You will find an enquiry form and sizing assistance on our website [www.graf.info](http://www.graf.info)

# GRAF Infiltration shaft system DN 400

## Covers



### Telescopic dome shaft 400

With PE cover, suitable for pedestrian loading, grass green colour



Order no. 340053

### Telescopic dome shaft 400 class B

With cast iron cover, suitable for vehicle loading class B, black colour



Order no. 340054

### Telescopic dome shaft 400 class D

With cast iron cover, lorry-bearing class D, black colour



Order no. 340049

### Telescopic filter shaft 400 class B

With slotted cast iron cover, suitable for vehicle loading class B, incl. coarse filter insert and fine filter basket (0,35 mm mesh width) black colour



Order no. 340126

## Individual components



### Infiltration inlet module DN 400

incl. profile seal for telescopic dome shaft; DN150/DN 200 connections

Order no. 330339

### Infiltration filter strainer DN 400

Mesh width 0.35 mm



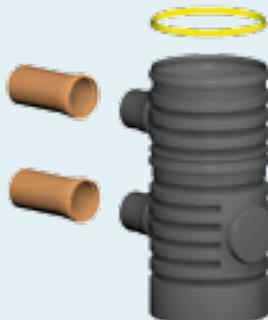
Order no. 340524



### Infiltration connecting piece DN 400

To produce greater installation depths, useful length 500 mm/250 mm

Order no. 330341



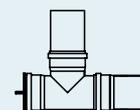
### Infiltration distributor module DN 400

incl. profile seal for Infiltration connecting piece and/or inlet module; 2 x DN 150 connections; mounting surface for connections of up to DN 150

Order no. 330340

### Infiltration choke drain

Connection DN 100; including overflow DN 100; delayed drain of 0,5 up to 6,5 l/sec



Order no. 330547

[Webcode G9301](#)

## Covers



### Maxi telescopic dome shaft

With PE cover, suitable for pedestrian loading, grass green colour

Order no. 371011



### Cast iron telescopic dome shaft

With cast iron cover, suitable for vehicle loading class B, black colour

Order no. 371020



### BEGU telescopic dome shaft

For common concrete rings, lorry-bearing class D, black colour, BEGU covering on site

Order no. 371021



## Individual components



### Infiltration inlet module DN 600

incl. profile seal for telescopic dome shaft; DN 150/DN 200/DN 250/DN 300 connections

Order no. 330360

### Infiltration filter strainer DN 600

Completely made from stainless steel, mesh width 0.50 mm

Order no. 340523



### Infiltration connecting piece DN 600

To produce greater installation depths, useful length 300 mm

Order no. 371003



### Infiltration distributor module DN 600

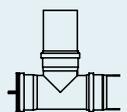
incl. profile seal for Infiltration connecting piece and/or inlet module; 2 x DN 150 connections; mounting surface for connections of up to DN 150

Order no. 330361

### Infiltration choke drain

Connection DN150; including overflow DN150; delayed drain of 2,0 up to 13 l/sec

Order no. 330598



[Webcode G9302](#)

# Carat S detention/retention cisterns

For rainwater retention and sewer relief

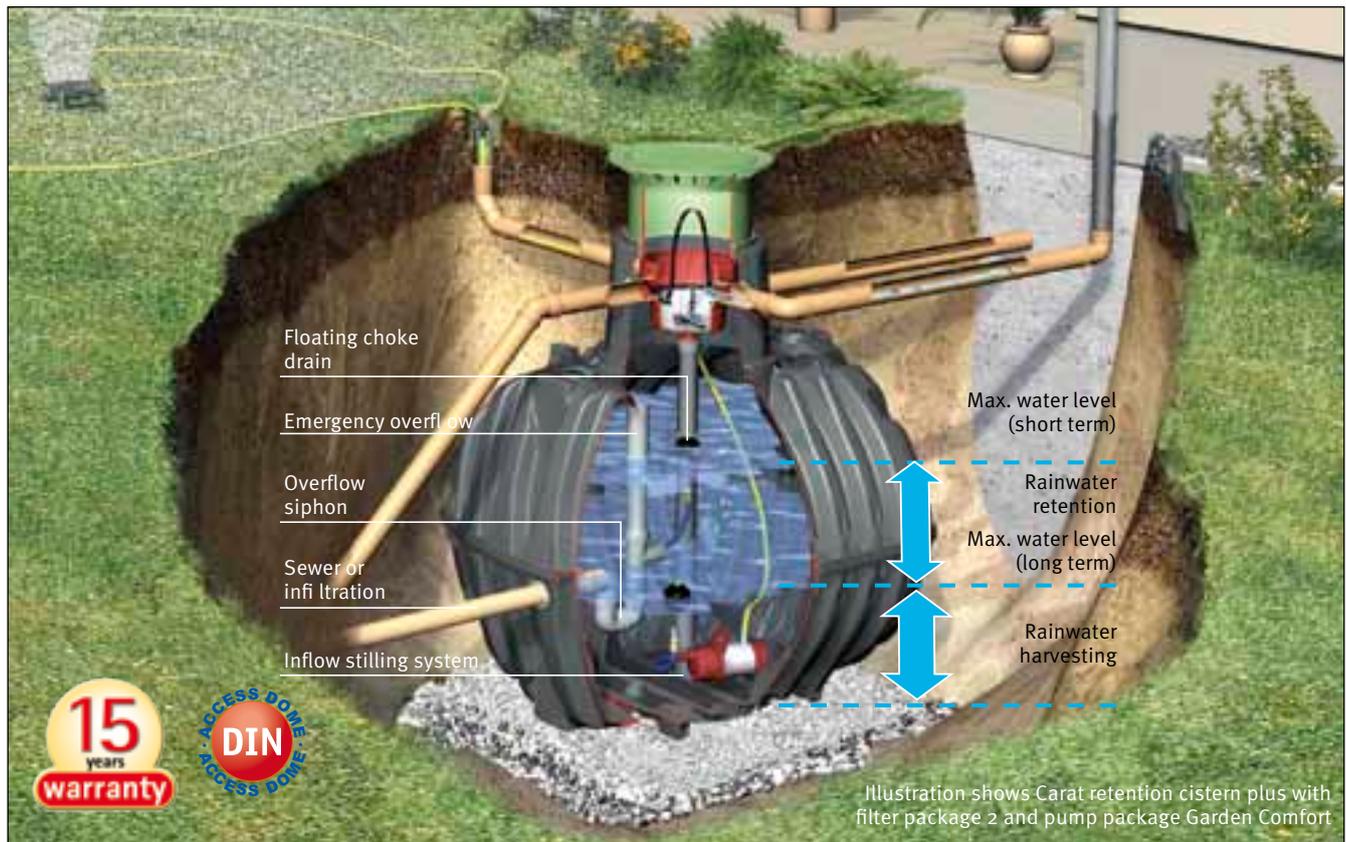


Illustration shows Carat retention cistern plus with filter package 2 and pump package Garden Comfort

## Carat S detention cisterns

Total volume [litres]	Total volume [US gallons]	Retention volume [US gallons]	Retention volume [litres]	Vehicle loading Order no.
2700	700	2700	700	370500
3750	1000	3750	1000	370501
4800	1250	4800	1250	370502
6500	1700	6500	1700	370503

Q Webcode G4301

## Carat S retention cisterns Plus

For combined rainwater retention and harvesting

Retention volume [litres] [US gallons]		Retention volume [litres] [US gallons]		Useable volume [litres] [US gallons]		Vehicle loading Order no.
4800	1250	2000	2000	2800	740	370520
6500	1700	3000	3000	3500	925	370521
6500	1700	2000	2000	4500	990	370522
8500 <sup>1)</sup>	1870	3500	3500	5000	1320	370523
8500 <sup>1)</sup>	1870	5000	5000	3500	925	370524
10000 <sup>1)</sup>	2641	4000	4000	6000	1585	370525
10000 <sup>1)</sup>	2641	6000	6000	4000	1057	370526

Q Webcode G4302

<sup>1)</sup> Carat XL underground tank

Scope of supply: Underground tank Carat S, floating choke drain and hose. Covers, filter packages and pump packages have to be ordered separately.

## What is a detention cistern?

A detention cistern retains the rainwater and drains it into the sewer at a delayed speed.

GRAF retention cisterns for rainwater retention and sewer relief. To guarantee retention of rainwater, a delayed drain is fitted in the sewer with a delay of 0.05 to 2.0 l/sec. depending on the customer's specifications. In the event of heavy rainfall, the water level in the cistern rises above this level and is drained into the sewer at a delayed speed using a floating drain choke. This relieves the sewer and the treatment works. The water level can rise to the emergency overflow and sink slowly back down again after the rain.

# Carat S drinking water reservoir

For underground installation



- Reservoir made of robust, long-life polyethylene
- Food-safe design with test certificate in accordance with the KTW recommendations
- Easy to clean due to smooth inner tank surfaces
- Tanks are TÜV safety-tested

**Carat drinking water reservoir suitable for pedestrian loading** (without tank cover - see below)

Capacity/litres	US gallons
2,700	700
3,750	1,000
4,800	1,250
6,500	1,700
8,500 <sup>1)</sup>	2.240
10,000 <sup>1)</sup>	2.640
13,000 <sup>2)</sup>	3,400

<sup>1)</sup> Carat XL underground tank

<sup>2)</sup> Set consisting of two Carat S underground tanks

## Accessories

### 2" container screw connection

Order no. 330035



## Spring water shaft

- Ventilating and desanding spring water
- Food-safe design with test certificate
- Universal use for regulating, sampling, breaker shaft, or spring measurement
- Continuously variable installation depth using the telescopic dome shaft 1200 - 1500 mm
- Cover locked with special key
- Flush with ground level
- Including shaft ventilation
- Easy to clean with one hand
- Dimensions: Ø 730 mm height: 1200 - 1500 mm (telescopic)

### Spring water shaft 200 litres

Incl. cover for pedestrian loading, colour grass-green

Order no. 381541

**Webcode** G9106

## Telescopic dome shaft for drinking water reservoirs

- Continuously variable for an earth covering of 750 mm - 1000 mm above the shoulder of the tank, Ø inner: 600 mm
- Outer cover is suitable for pedestrian loading, sealed and can be locked using a special key
- Internal second cover sealed and lockable with ventilation, insect protection and two carry handles
- Including dome ventilation with integrated insect protection



Telescopic dome shaft with cover



Illus. without outer cover

### Telescopic dome shaft with cover

Order no. 381540



# Rainwater harvesting in style



**A fantastic range  
of products to suit  
every home!**

Choose your tank from more than 50 sizes, shapes and colours: [www.graf.info](http://www.graf.info)



**CLASSIC** LINE



**EXCLUSIVE** LINE



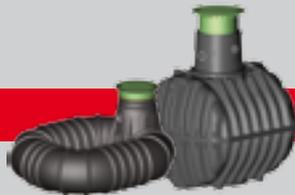
**BASIC** LINE





# Rainwater harvesting solutions

## RAINWATER HARVESTING



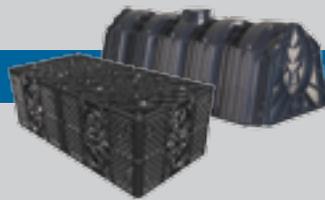
### Prices:

A price list with our export conditions is available on request.

### Warranty clause:

The warranty mentioned in this brochure only refers to the tank in question and not to the accessories. Within the warranty period we grant free replacement of the material. Further benefits are excluded. Pre-condition for warranty benefits are proper handling, assembly and installation according to the mounting guidelines.

## INFILTRATION



N.B. Protect tanks from frost when installed above-ground! In case of groundwater installation, please contact us for further information previous to the purchase!

## WASTEWATER TREATMENT SOLUTIONS



For all indications of measurements in this brochure we reserve a tolerance of +/- 3%. The useful volume of the tanks may be up to 10% lower than the tank capacity, according to the connecting option.

## MULTIPURPOSE CONTAINERS



Technical modifications and further development of the different products are subject to change. Errors excepted.

For all our offers and conclusions of contract are only valid our General Terms and Conditions of Business dated 01/03/2010 which we will send to you on request.

Your expert specialist dealer:

**Otto Graf GmbH**  
**Kunststofferzeugnisse**  
Carl-Zeiss-Straße 2-6  
D-79331 Teningen  
Germany

Phone: +49(0)76 41/5 89-0  
Fax: +49(0)76 41/5 89-50  
mail@graf.info  
www.graf.info

© Otto Graf GmbH, Teningen, Germany  
Reproduction – also in extracts –  
only with written authorisation  
Art.-Nr. 960444/EN