Certificate

216.02C14

KLARO GmbH
Spitzwegstr. 63, 95447 Bayreuth, Germany

EN 12566-3, Annex B
Small wastewater treatment systems for up to 50 PT

Small wastewater treatment system oneAdvanced
oneAdvanced 3 PE, oneAdvanced 5 PE, oneAdvanced 7 PE, oneAdvanced 9 PE
SBR plant in one two-zone polypropylene tank

Test report PIA2014-216B14.02

Evaluation of the nominal sequences of the 38-week testing

Nominal organic daily load (influent)	0.27 kg BOD_5/d
Nominal hydraulic daily load	0.75 m^3/d
Material	Polypropylene

Treatment efficiency	Efficiency	Effluent
COD	94.8 %	41 mg/l
BOD_5	98.1 %	7 mg/l
TN_b*	87.0 %	7.9 mg/l
NH_4-N	98.5 %	0.5 mg/l
P_{tot}	80.0 %	1.6 mg/l
SS	96.6 %	14 mg/l

Evaluation of the complete 38-week testing

Electrical consumption	0.63 kWh/d

** determined for temperatures ⩾ 12 ° C in the bioreactor*

Tested by:

PIA – Prüfinstitut für Abwassertechnik GmbH
(PIA GmbH)
Hergenrather Weg 30
52074 Aachen, Germany

This document replaces neither the declaration of performance nor the CE marking.

[redacted]

Martina Wermter February 2023

Notified Body
No.: 1739

Leistungserklärung oneAdvanced 3-9 EW

DE Leistungserklärung oneAdvanced 3-9 EW
Nr. 45

>> Seite 2

EN Declaration of performance oneAdvanced 3-9 PE
No. 45

>> Page 3

FR Déclaration des performances oneAdvanced 3-9 habitants
N° 45

>> Page 4

ES Declaración de prestaciones oneAdvanced 3-9 habitantes
N° 45

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IT Dichiarazione di prestazione oneAdvanced 3-9 abitanti
N° 45

>> Pagina 6

PL Deklaracja właściwości użytkowych oneAdvanced 3-9 RLM
N° 45

>> Strona 7

Declaration of performance
oneAdvanced 3-9 PE

Nr. 45/Translation

1. Unique identification code of the product-type	**oneAdvanced 3 PE** **oneAdvanced 5 PE** **oneAdvanced 7 PE** **oneAdvanced 9 PE**
2. Type, batch or serial number or any other element allowing identification of the construction product as required pursuant to Article 11(4)	**Type size and serial number on control cabinet type plate**
3. Intended use or uses of the construction product, in accordance with the applicable harmonised technical specification, as foreseen by the manufacturer	**EN 12566-3:2005+A2:2013: Prefabricated and/or site assembled domestic wastewater treatment plants**
4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant to Article 11(5)	**Otto Graf GmbH Kunststofferzeugnisse** **Carl-Zeiss-Str. 2-6** **79331 Teningen** **Germany**
5. System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V	**System 3**
6. Name and identification number of the notified body	**PIA - Prüfinstitut für Abwassertechnik GmbH - NB 1739**

7. **Declared performance** (with regard to the harmonised standard EN 12566-3:2005+A2:2013)

	Performance			**Test report No.**
Cleaning capacity	Nominal organic daily dirt cargo (BOD_5) = 0.06 kg/d per PE. Nominal daily inflow (Q_N) = 150 l per PE.			
Treatment efficiency	COD: BOD_5: NH_4-N: N_{tot}: SS:	94,2 % 98,0 % 98,3 % 87,0 % 96,3 %	43 mg/l 7 mg/l 0,5 mg/l 8 mg/ 14 mg/l	PIA2014-216B14.01
Watertightness	Passed			PIA2016-WD-1509-1050.02 / PIA2021-WD-2101-1002.03 (Carat S)
Stability	Passed			PIA2016-ST-PIT-1509-1050.02 (Carat S)
Durability	Passed			PIA2016-DH-1509-1050.02 (Carat S)
Reaction to fire	Class E			PIA2016-RF-1509-1050.02 (Carat S)
Release of dangerous substances	NPD			

8. **The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 7. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.**

Signed for and on behalf of the manufacturer by:

[redacted]

Ralf Oestreicher
Head of Product Division
-DIY / garden / wastewater treatment-
Teningen, 12.12.2022

Wastewater Treatment Solutions

WASTEWATER TREATMENT SYSTEMS & SEPTIC TANKS

ADVANCED WASTEWATER TREATMENT SYSTEMS

ONE 2 CLEAN

SEPTIC TANKS

Benefits of the Carat system

The only wastewater underground tank of it's kind!

Unique manufacturing process

The GRAF Carat 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.

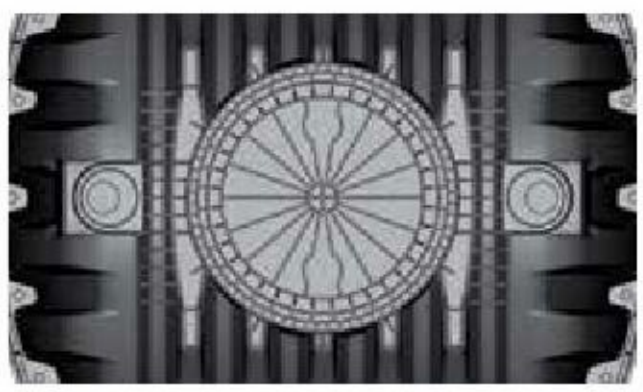
To manufacture the Carat range, one of the worlds largest injection moulding systems had to be developed.

The tank that turns it head for you

The GRAF Carat 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 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.

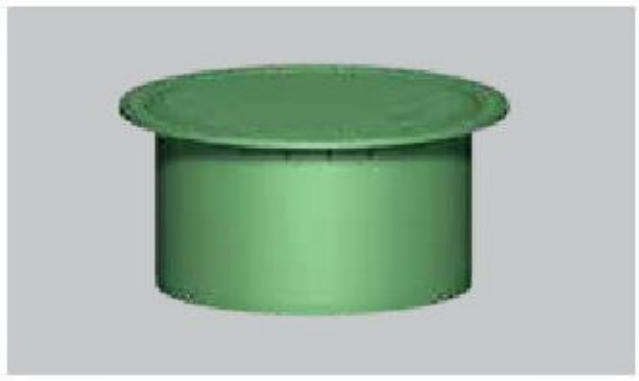
Flush with ground level

The Carat underground tank has numerous seals to efficiently stop dirt getting into the tank. This means that groundwater cannot get into the tank and, thus, dirt particles cannot contaminate the wastewater. 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.



Ribbed tank base

The tank base of the Carat underground tank is extremely stable thanks to the numerous ribs. These enable the Carat 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.grafuk.co.uk).

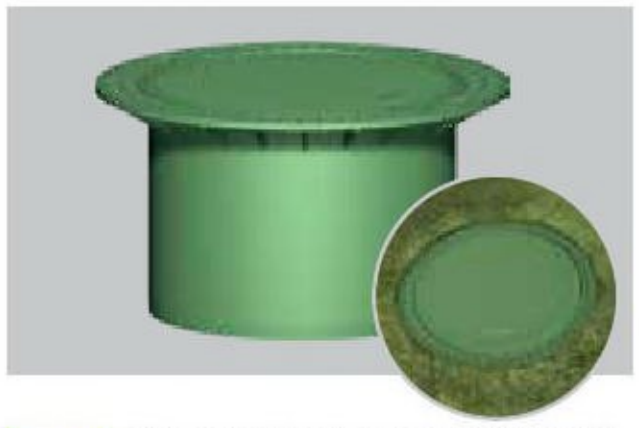


Telescopic dome shaft Mini

- With PE cover
- Suitable for pedestrian loading
- Weight 9kg
- Adjustable earth covering across upper tank surface

plus 140mm - 340mm earth covering

Order no. 371010



Telescopic dome shaft Maxi

- With PE cover
- Suitable for pedestrian loading
- Weight 15kg
- Adjustable earth covering across upper tank surface

plus 140mm - 440mm earth covering

Order no. 371011

Telescopic dome shaft cast iron

- Suitable for vehicle loading - with child-proof cast iron cover up to 3.5t
- Weight 55kg
- Adjustable earth covering across upper tank surface

plus 140mm - 440mm earth covering

Order no. 371020

Tank dome Mini

Tank dome Maxi

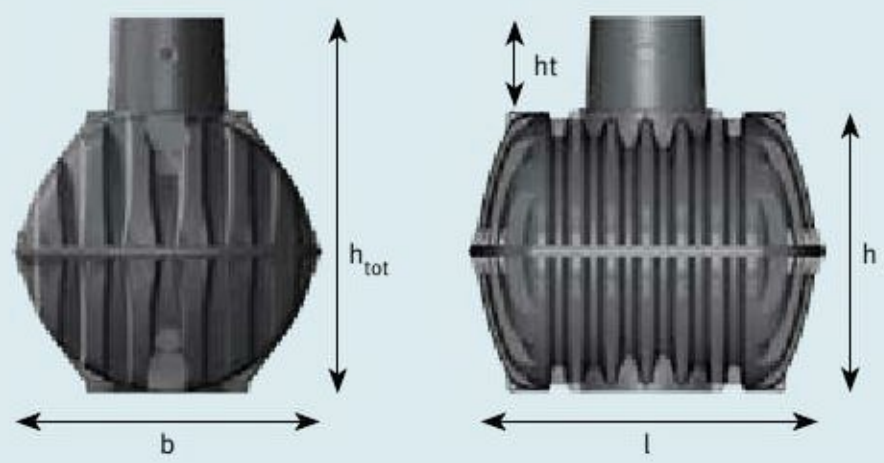
Tank dome Micro

Dimensions

Volume [l]	Width b [mm]	Length l [mm]	Height h [mm]	Height h_{tot} [mm]	Height of tank dome ht [mm]	Inner Ø of tank dome [mm]	Weight [kg]	Order no.
2,700 (700 US gal.)	1565 (61.6")	2080 (81.9")	1400 (55.1")	2010 (79.1")	610 (24.0")	650 – 800 (25.6 – 31.5")	120 (265 lbs.)	372028
3,750 (1,000 US gal.)	1755 (69.1")	2280 (89.8")	1590 (62.6")	2200 (86.6")	610 (24.0")	650 – 800 (25.6 – 31.5")	150 (331 lbs.)	372029
4,800 (1,250 US gal.)	1985 (78.2")	2280 (89.8")	1820 (71.6")	2430 (95.7")	610 (24.0")	650 – 800 (25.6 – 31.5")	185 (408 lbs.)	372030
6,500 (1,700 US gal.)	2190 (86.2")	2390 (94.1")	2100 (82.7")	2710 (106.7")	610 (24.0")	650 – 800 (25.6 – 31.5")	220 (485 lbs.)	372031

Technical data

Max. earth covering (without groundwater vehicle loading)	1200 mm (47.2")
Max. vehicle weight	Suitable for vehicle loading (3.5 t) Higher loads on request
Earth covering required for vehicle loading	800 – 1200 mm (31.5 – 47.2")
Groundwater stability	up to middle of tank
Earth covering required for groundwater stability	800 – 1000 mm (31.5 – 39.4")
Connection	DN 100 / DN 150 / DN 200 on top



Advanced wastewater treatment systems

- ✓ No live electrical parts in the water
- ✓ Low power consumption
- ✓ Optional automatic adjustment to living situation (underload detection)
- ✓ Optional remote monitoring
- ✓ High-quality components mean low maintenance costs

Super-quiet control cabinet

- Extremely low noise thanks to EPP housing and very quiet air compressor
- Battery-free power failure detection
- Very easy installation
- Interchangeable plug-in components

High-tech installation kit

- Integrated self-cleaning sampling container
- Each lifter manufactured as a single piece.
  No connectors or screws necessary
- Colour-coded and pre-assembled
- Special lifter design prevents sludge from leaking in
- Lifters easy to remove for maintenance without the use of tools

Wastewater tank

- Telescopic cover
- State-of-the-art manufacturing for maximum stability
- Suitable for vehicle loading in conjunction with telescopic vehicle dome shaft
- 100% watertight and corrosion-resistant
- Can be installed in groundwater up to the middle of the tank

Technical data

System	Advanced WWT Systems
System conformity	EN 12566-3
Purifying technology	fully biological SBR lifting technology
One-tank systems available up to	9 inhabitants | 1,350 l/d
Maintenance interval	1 – 2 per year
Warranty for underground tank	10 years
Warranty for purifying technology	2 years
Cleaning performance	7, 14, 0.5 (5-18PE)/ 12, 20, 12 (22-50PE)

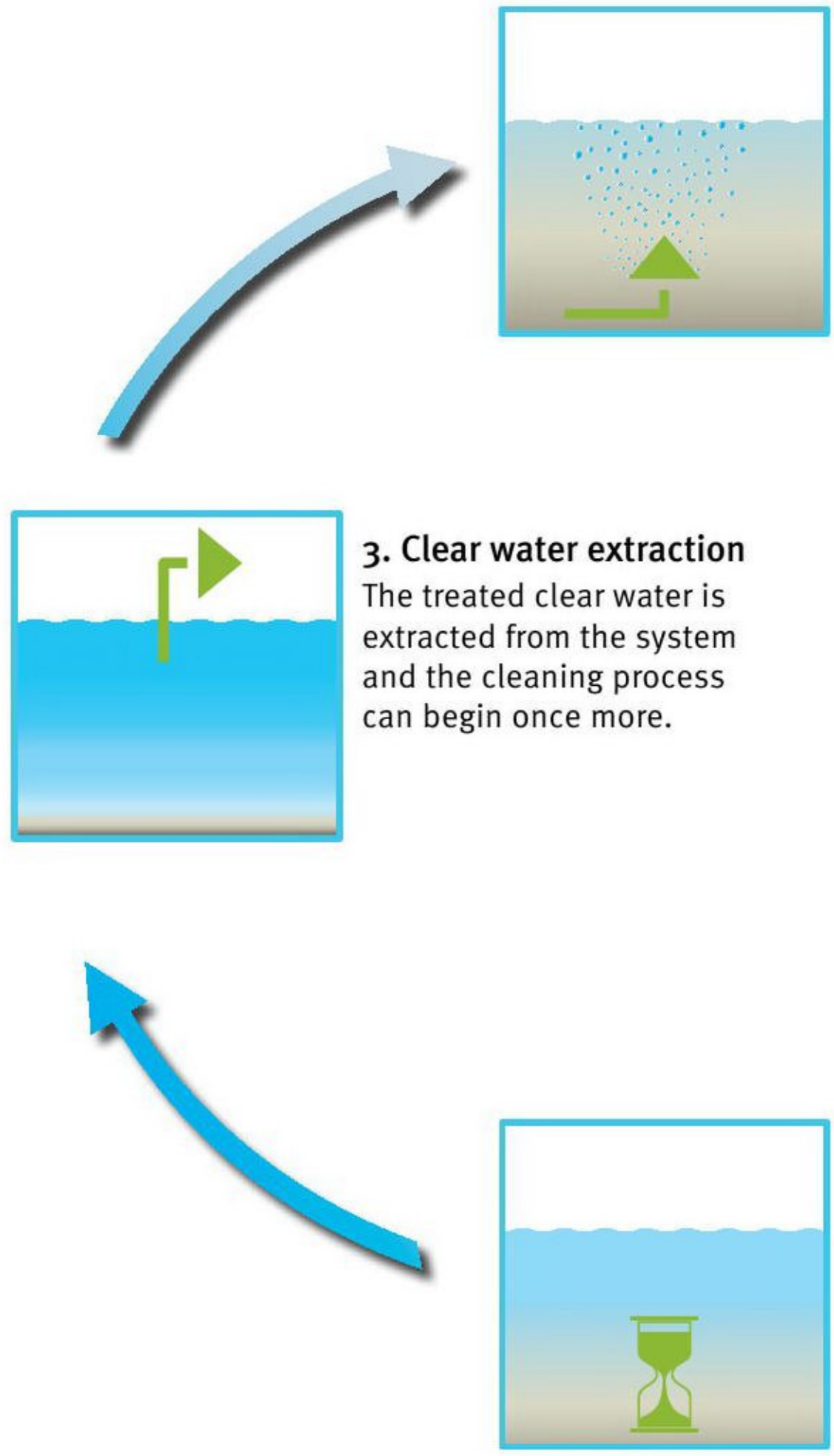
Control	KL24plus (+K)
Holiday / economy mode (underload detection)	Automatic
Back pressure monitoring	●
+R Remote transmission (GSM modem)	○
+P Phosphate removal	○
+C Carbon infeed	○
+H Hygiene package (Disinfection)	○
+D Removal of nitrogen	○
Control power failure recognition	●
Temperature sensor to protect against overheating	●
Logbook function	●
Operation	14 keys
Serial interface for software updates	●
External control cabinet for installing control unit outdoors	○

Parameter	%	mg/l
COD (chemical oxygen demand)	94.2 /91.9%	43/51
BOD_5 (biochemical oxygen demand)	98.0/95.9%	7/12
SS (suspended solids)	96.3/94.4%	14/20
NH_4-N	98.3/65.4%	0.5/12
N_{total}	87.0/57.1%	7.9

Results of practical testing undertaken by the Prüfinstitut für Abwassertechnik (Testing Institute for Wastewater Technology), Aachen

● Standard equipment
○ Available as options
— not available

Advanced wastewater treatment systems



1. Wastewater treatment

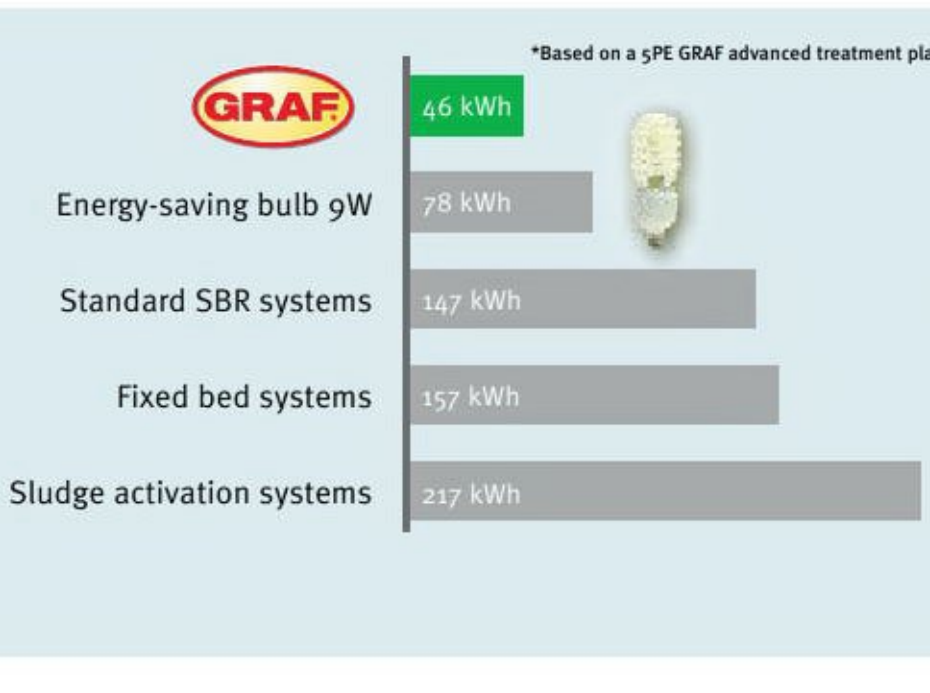
The wastewater arrives directly in the biological zone without the need for pumping processes. Aeration of the entire container leads to immediate wastewater activation. The micro-organisms begin the biological cleaning process without delay.

2. Settling phase

Aeration is interrupted by the control unit, the activated sludge sinks to the bottom. A clear water zone develops in the upper part of the container.

3. Clear water extraction

The treated clear water is extracted from the system and the cleaning process can begin once more.



Minimal power consumption per inhabitant[1)]

1)The diagram indicates the annual power consumption of various wastewater treatment systems. Source: “wwt”, edition 6/2007 “The wastewater treatment system as a permanent solution”, page 15, table 3, practical data; One2Clean: test report by PIA (Prüfinstitut für Abwassertechnik GmbH, Testing Institute for Wastewater Technology), Aachen, test number PIA2014-216B14.01.e

Advanced wastewater treatment one-tank systems

Inhabitants [max.]	Max. daily flow [l/d]	Max. organic load [kg BOD5/d]	Total volume [l]	Volume [l]	Length [mm]	Width [mm]	Height [mm]	Weight [kg]
5	750	0.3	3,750	3,750	2280	1755	1880	150
7	1,050	0.42	4,800	4,800	2280	1985	2110	185
9	1,350	0.54	6,500	6,500	2390	2190	2390	220

Advanced wastewater treatment multitank system

Inhabitants [max.]	Max. daily flow [l/d]	Max. organic load [kg BOD5/d]	Total volume [l]	Volume [l]	Length* [mm]	Width* [mm]	Height [mm]	Weight [kg]
10	1,500	0.6	7,500	2 x 3,750	5160	1755	1880	300
14	2,100	0.84	9,600	2 x 4,800	5160	1985	2110	370
18	2,700	1.08	13,000	2 x 6,500	5380	2190	2390	440
22	3,300	1.68	9.600	2 x 4,800	5160	1985	2250-2450	440
28	4,200	1.92	13,000	2 x 6,500	5380	2190	2530-2730	530
35	5,250	2.10	17,000	2 x 8,500	15500	2040	2515-2715	780
40	6,000	2.40	20,000	2x 10,000	15500	2240	2715-2915	930
50	7,500	3.00	26,000	4x 6,500	11360	2190	2850-3050	1060
60	9,000	3.60	26,000	4x 6,500	11360	2190	2850-3050	1060

Advanced wastewater treatment system accessories

Plastic external control cabinet M

for up to 18 inhabitants

Order no. 107773

Plastic external control cabinet L

for up to 22-40 inhabitants

Benefits

- Easy access for maintenance
- Function checking is simple as the control unit is located immediately next to the system
- Ideal solution for large distances from the house (› 20 m)
- Flexible use of the proven GRAF EPP control cabinet in a plastic external column
- Lockable housing in sturdy, weather-resistant plastic
- Integrated double power socket for easy maintenance

Easy, flexible application for the GRAF EPP control cabinet M

EPP control cabinet
Part of the wastewater treatment system

GRAF Plastics external control M cabinet for EP control cabinet (size up to 18 inhabitants)

+K Convenience package

Convenience package: control with larger display and keypad. Underload detection by a pressure sensor in the control.

Standard

KL24plus

- SD card slot for easy logbook transfer
- Automatic underload detection
- Suitable for phosphate precipitation and UV module
- Large display and 14 keys for comfortable operation
- Automatic logging
- Battery-free power failure detection
- High-contrast display with blue backlighting
- Durable, gas-tight membrane keypad

+O Outlet with clear water pump

Lift the clear water when the outlet pipe is lower than the water course.

On request

+D Removal of nitrogen

The +D package for denitrification (removal of nitrogen) results in the clarified water quality satisfying very strict requirements. The GRAF systems thereby attain a N_{total} value (total parameters of inorganic nitrogen compounds) of less than 25 mg/l.

Order no. 107520

+P Phosphate removal package

Phosphate in water results in a massive build-up of algae. The GRAF +P package ensures the safe removal of phosphate and therefore great water quality

On request

+C Carbon infeed

Solution for weekend homes

The addition of carbon as a nutrient allows the purification process to continue and prevents the biology from dying off.

On request

+R Remote transmission

Remote monitoring allows error messages to be transmitted to mobile phones and operating data to be queried by text message. Convenient remote wastewater treatment system control by GSM is also possible.

- Greater efficiency
- Greater operating reliability
- Optimised service intervals
- Greater customer benefit thanks to monitoring service
- Low-cost remote diagnosis in the event of a fault without the service fitter having to come on site

Order no. 107117

+H Hygiene package

Disinfection using the +H package satisfies even the most stringent of purity requirements for a GRAF wastewater treatment system. Without the use of chemical substances, it reliably kills off germs and microorganisms. The clarified water therefore complies with the EU Bathing Water Directive.

On request

- Easy to operate
- Maintenance-friendly thanks to easy-to-remove module
- Fitted in downstream shaft

Accessories for small wastewater treatment systems

Sampling point, internal

For two- and multitank systems

Order no. 107170

Empty pipe seal DN 100

- Air-tight seal for empty pipe
- No insulating foam required
- Clean, professional solution

Order no. 107613

Filling granulate for external cabinets

Prevents soil moisture from rising into the external control cabinet. Required amount: 1 bag per external control cabinet for 12 – 28 inhabitants; 50 l bag

Order no. 107607

Voltage transformer

- From 110 V – 230 V
- Up to 300 W (LA 200)

Order no. 107421

Odour filter

For DN 100 ventilation openings; reliably filters out unpleasant odours; filter insert of multi-layer mesh with impregnated activated carbon

Order no. 104018

Filter insert

For odour filter; replace at least every two years or when odour is perceptible

Order no. 104024

SBR hose package (Advanced)

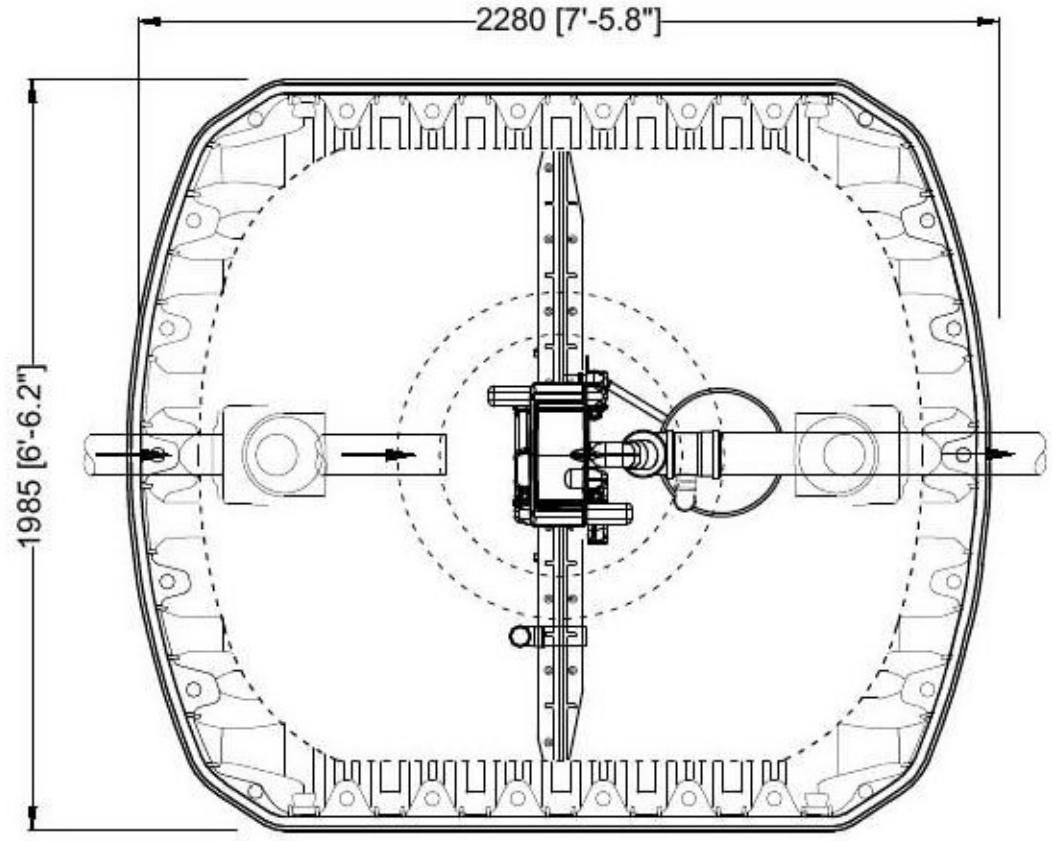
Includes:
1 x Ø 19 mm and 3 x Ø 13 mm PVC hose; colour-coded for Advanved WWT system
Length: 20 m

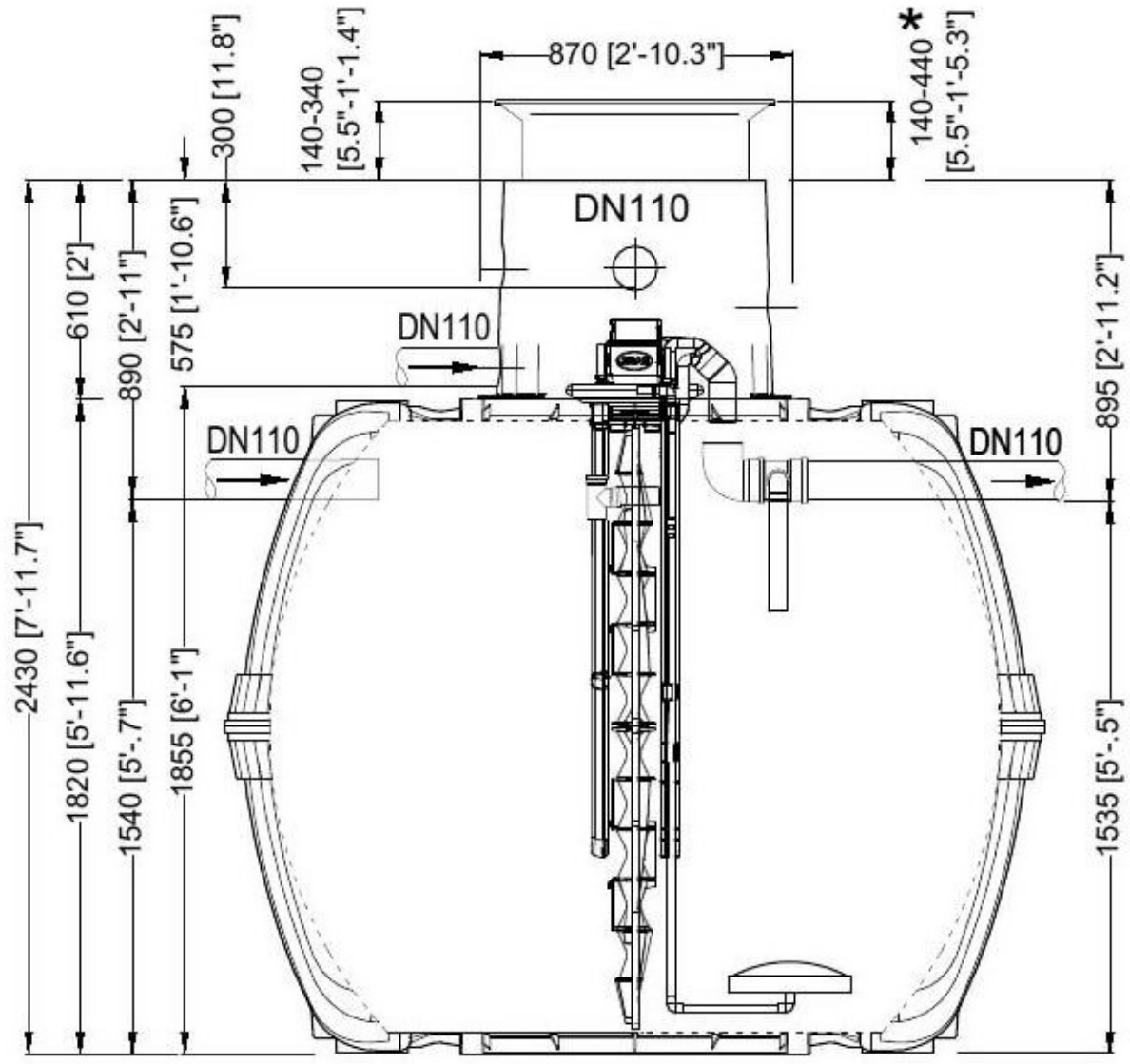
Order no. 107192

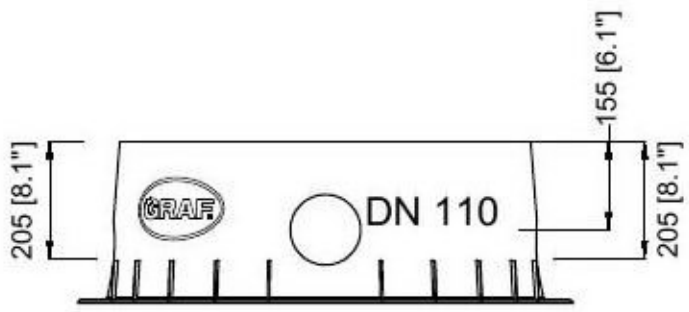
SBR hose package (One2Clean)

Includes:
1 x Ø 19 mm and 1 x Ø 13 mm PVC hose; colour-coded for One2Clean system
Length: 20 m

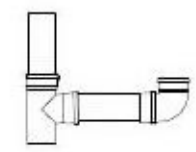
Order no. 107668







TD - Maxi (as option)



emergency overflow

D	oneAdvanced 10 EW TD-Maxi Carat S 4800 L / 1268 gal.		Artikel-Nr. product no. article no. articulo no. 106572
GB oneAdvanced 10 inh. TD-Maxi Carat S 4800 L / 1268 gal.	ES oneAdvanced 10 PE Cúpula Maxi Carat S 4800 L / 1268 gal.	FR oneAdvanced 10 EH maxi-dôme Carat S 4800 L / 1268 gal.	revision
gezeichnet / drawn: ISC	Gewicht / weight: 220 kg	Otto Graf GmbH Carl-Zeiss-Str. 2-6 DE-79331 Teningen mail@graf.info www.graf.info	
Datum / date: 2022.08.08	Toleranz / tolerance: +/- 3%		
Maßstab / scale: M 1:30/ 1:20	Einheiten / units: mm [inch] gal. = US gal.		