

## Installation and assembly instruction for Graf Klaro Easy Professional system in a Carat S septic tank

### System pack

#### Klaro Easy Professional for E system

4 Inhab. Order No. 107367

8 Inhab. Order No. 107368

10 Inhab. Order No. 107369

14 Inhab. Order No. 107370



The points described in these instructions must be observed under all circumstances. All warranty rights are invalidated in the event of non-observance. Separate installation instructions are enclosed in the transportation packaging for all additional articles purchased from GRAF.

Missing instructions must be requested from us immediately.

The tank must be checked for any damage prior to insertion into the trench under all circumstances.

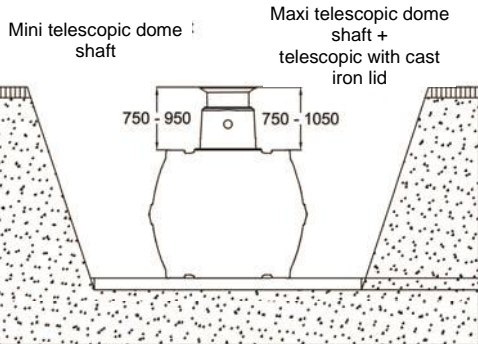
Missing instructions can be downloaded on [www.graf.info](http://www.graf.info) or can be requested from GRAF.

Separate instructions are provided for the operation and maintenance of the system.

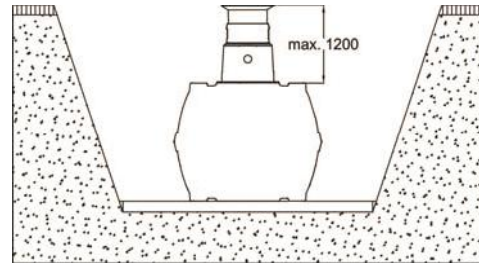
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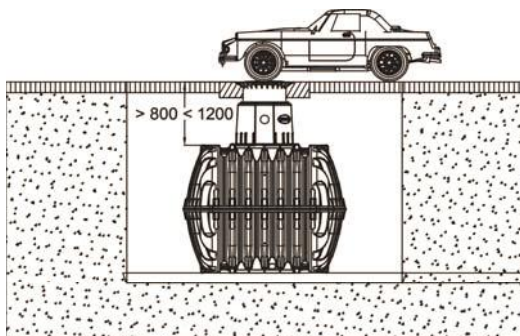
## 1. Installation conditions septic tank



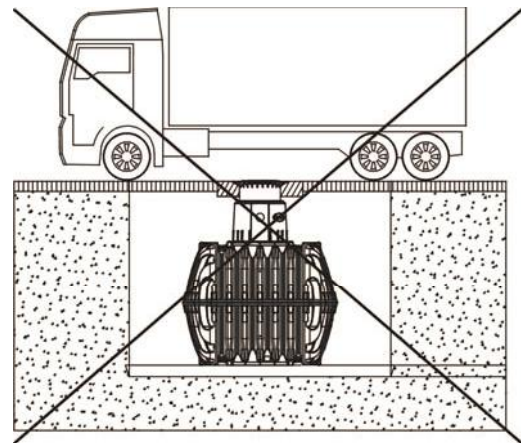
Coverage heights with telescopic dome shaft in green areas



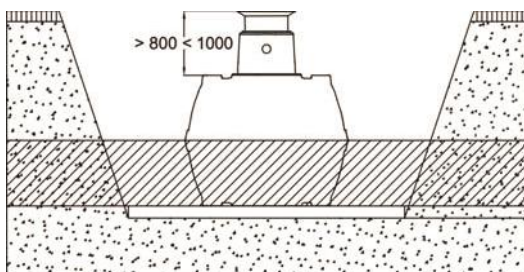
Maximum coverage heights with intermediate section and telescopic dome shaft  
(in green areas only, without groundwater and stratum water)



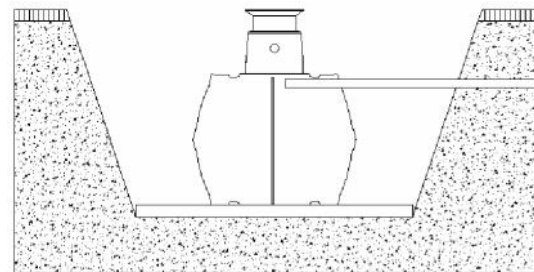
Coverage heights with cast telescopic dome shaft (class B) in areas used by passenger cars  
(without groundwater and stratum water)



The Carat – S series tanks must not be installed below areas used by vehicles which are heavier than passenger cars



Coverage heights on installation in groundwater – the hatched area specifies the permissible immersion depth for the Carat S tanks  
(not under areas used by passenger cars or trucks)



The outlet pipe has to extend into the tank up to a defined distance in front of the dividing wall!  
(see point 4.2)

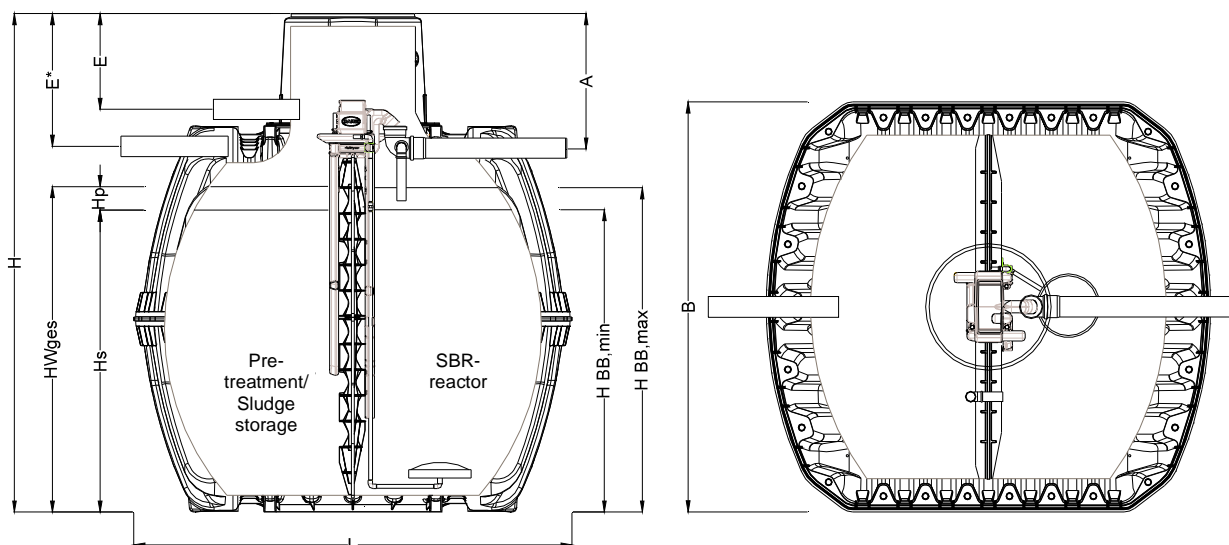
## 2. Installation and assembly

The installation of the tank must follow the directions in the enclosed installation instructions.

These instructions also contain further information on the installation conditions for the tanks and how to connect up the infeed and overflow lines.

The emergency overflow should be fitted during assembly of the dividing wall, see section 4.1.

## 3. Dimensions



Tank		2.700 L	3.750 L	4.800 L	6.500 L
<b>Inhabitants</b>		<b>5 Inhab.</b>	<b>8 Inhab.</b>	<b>10 Inhab.</b>	<b>14 Inhab.</b>
Total volume		2.700 L	3.750 L	4.800 L	6.500 L
Length	L	2080 mm	2280 mm	2280 mm	2390 mm
Height	B	1565 mm	1755 mm	1985 mm	2190 mm
Weight	H	2010 mm/ 1680** mm	2200 mm/ 1870** mm	2430 mm/ 2100** mm	2710 mm/ 2380** mm
Min. Water level SBR	H <sub>BB,min</sub>	850 mm	960 mm	1130 mm	1310 mm
Max. Water level	H <sub>BB,max</sub>	1010 mm	1180 mm	1370 mm	1600 mm
Max. Water level for primary treatment	HW <sub>ges</sub>	1100 mm	1280 mm	1480 mm	1750 mm
Height buffer storage	H <sub>P</sub>	350 mm	430 mm	480 mm	600 mm
Height sludge storage	H <sub>S</sub>	750 mm	850 mm	1000 mm	1150 mm
Inflow	E	520 mm/ 200** mm	520 mm/ 200** mm	520 mm/ 200** mm	520 mm/ 200** mm
Inflow *	E*	790 mm/ 460** mm	790 mm/ 460** mm	790 mm/ 460** mm	790 mm/ 460** mm
Outflow	A	800 mm/ 470** mm	800 mm/ 470** mm	800 mm/ 470** mm	800 mm/ 470** mm

\* alternative inflow height is possible

\*\* with MINI telescopic dome shaft

Depending upon local conditions, the inflow can be either on the tank dome or on the tank at the front.

## 4. Assembly of machinery

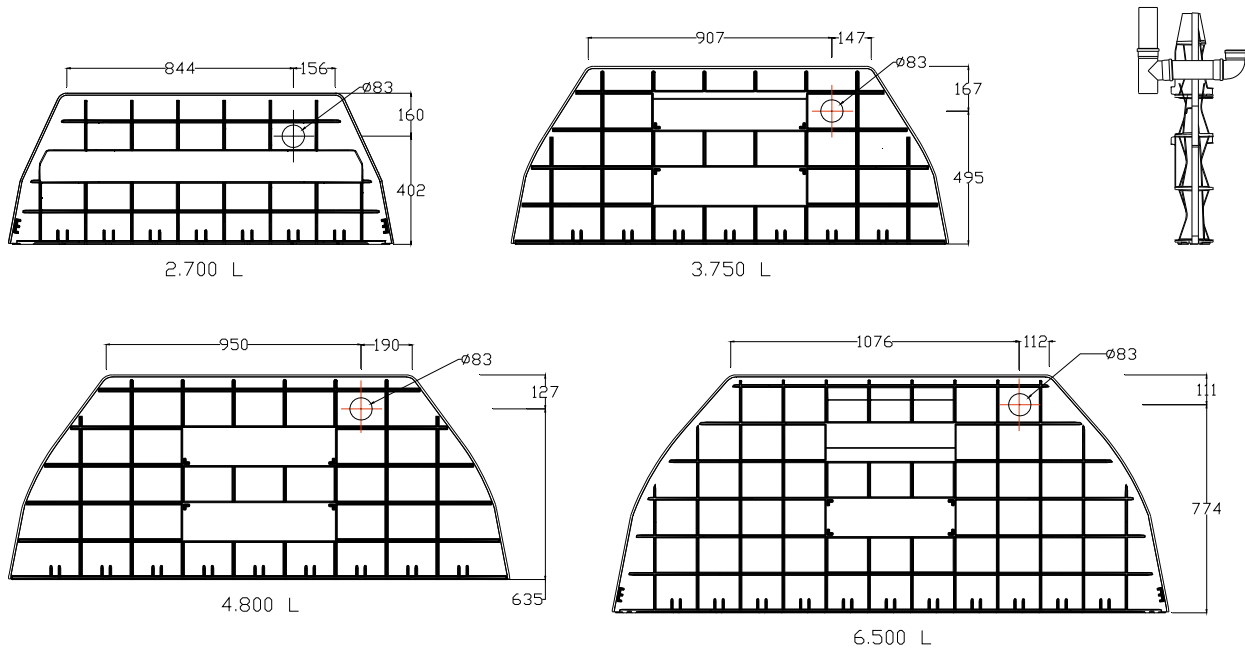
### 4.1 Assembly of the emergency overflow

The emergency overflow prevents coarse material from entering the SBR reactor in the event of damage. The emergency overflow consists of:

- 1 x HT - T-piece 87°, DN 70
- 2 x HT - pipe DN 70; l = 150 mm
- 1 x HT - 87°bend DN 70
- 1 x lip seal DN 70

The emergency overflow is not included in the set-up kit. This can be ordered separately from Otto Graf GmbH (item no. 107197).

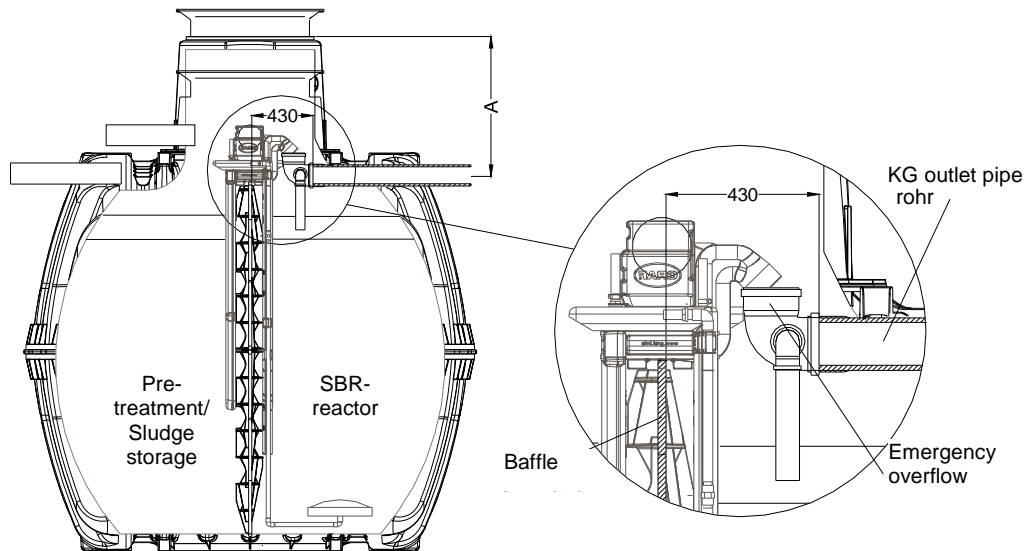
For fitting purposes, an opening of 83 mm must be produced in the dividing wall with a core drill. The position of the hole can be seen in the drawing. The DN 70 seal and pipe piece should be inserted into the hole and the T-piece fitted on.



## 4. Assembly of machinery

### 4.2 Position of emergency overflow and outlet pipe

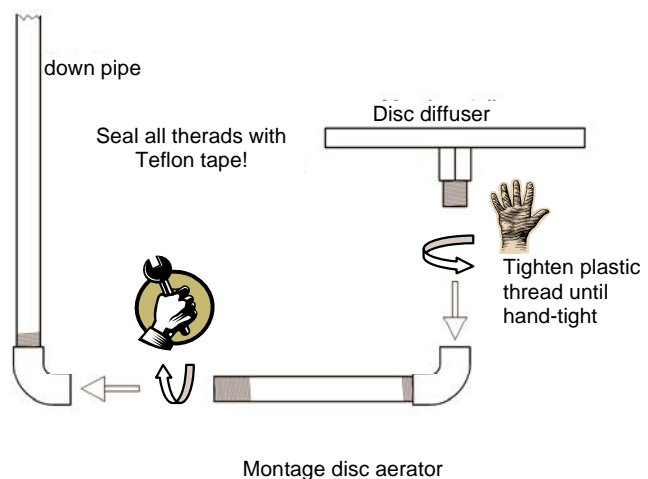
The position and location of the outlet pipe depends on the position of the baffle. The distance between the baffle and the beginning of the straight outlet pipe is 430 mm. The baffle spot is the outer surface of the top central lying rip. At the installation the emergency overflow has to be pushed about 60 mm onto the outlet pipe.



### 4.3 Final assembly of the ventilation apparatus

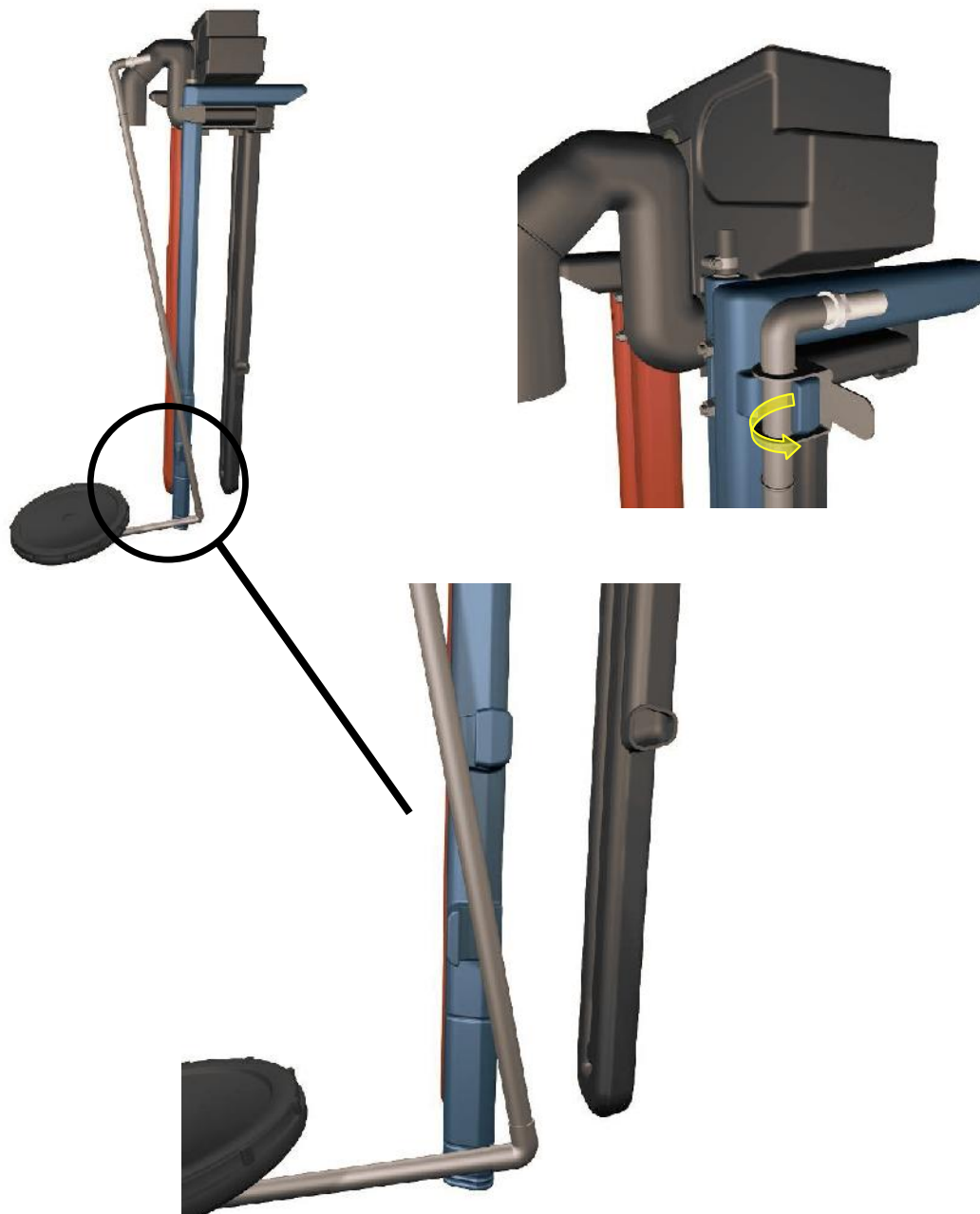
Remove the Klaro Easy installation kit from the packaging and screw the short stainless steel tube (length 350 mm) on to the stainless steel 90° elbow on the down pipe.

Then carefully screw the disc aerator into the thread provided until hand-tight. Please note that all threads must be wrapped with Teflon tape, see illustration.



## 4. Assembly of machinery

The ventilation apparatus is mounted on the kit. The stainless steel downpipe is also attached between the holders on the blue siphon and fixed with the mounting bracket.



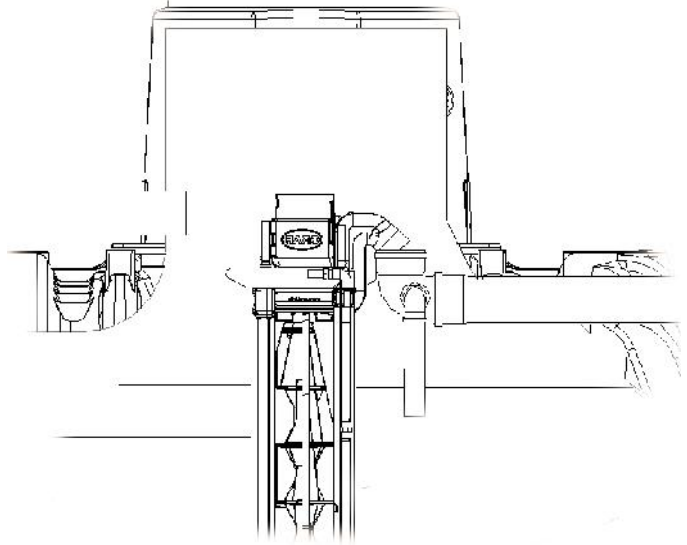
For purposes of individually adjusting the hose connection of the ventilation pipe, the delivery package includes a 90° bend that makes it possible to attach the hose nozzle horizontally.

## 4. Assembly of machinery

### 4.4 Assembly of the drain

The supplied emergency drain is to be positioned on the discharge pipe. In the event of an incident, this prevents sludge from being flushed out of the system.

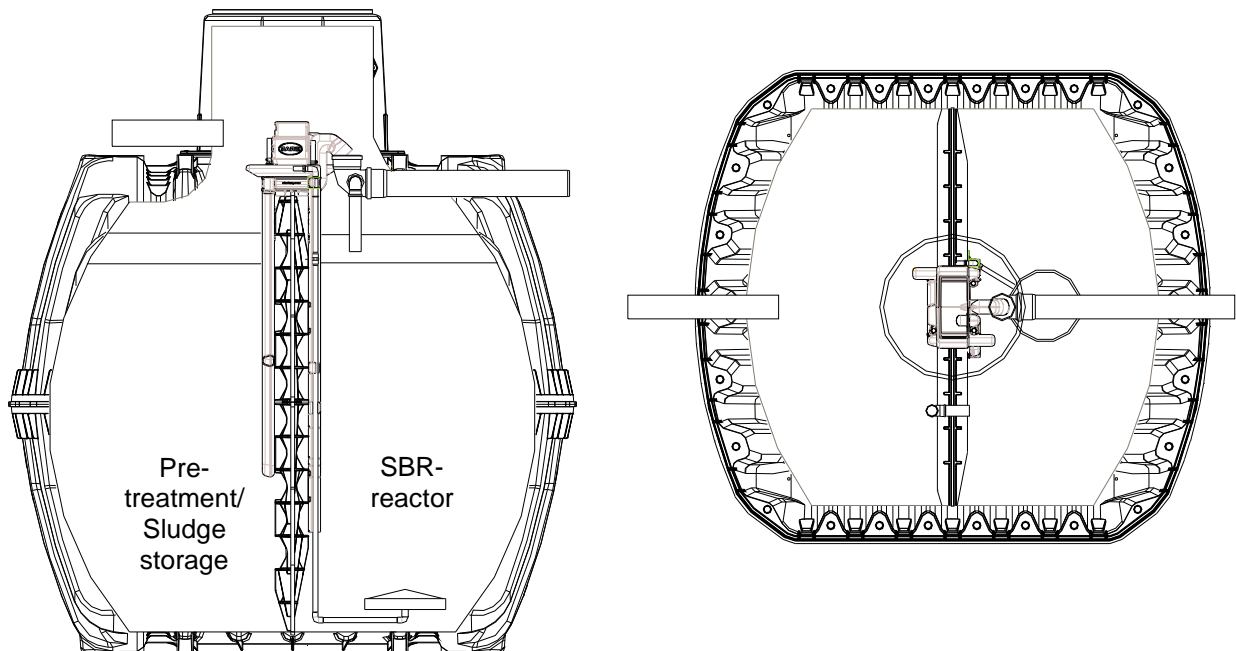
The discharge from the sampling is to be directed from above into the emergency drain. It may be necessary to shorten the discharge pipe.



### 4.5 Assembly of the kit

The pre-mounted Klaro Easy kit is placed on the middle partition wall. The ventilation must extend to the container bottom. It should be ensured that the plate ventilator is located in the middle of the chamber. It may be necessary to readjust the plate accordingly by turning the horizontal pipe.

The sampling container is to be filled with water. The uplift of the kit is prevented by the own weight of the filled sampling container. Further fixing of the kit is therefore unnecessary.





## 5. Assembly of the switch cabinet

GRAF uses modern switch cabinets with fully automatic stored-program controls. The switch cabinet is suitable for mounting on an interior wall. The switch cabinet box requires a 16 amp fused 230 V electrical supply outlet. The system control is pre-programmed and delivered ready to plug in.



EPP switch cabinet  
(380 x 580 x 300 mm)



Metal cabinet  
(500 x 500 x 300 mm)

### 5.1 EPP switch cabinet for indoor installation

The machine cabinet of EPP with the dimensions 380 x 580 x 300 mm (BxHxT) is fastened to a wall using the hanger bolts supplied. The hanger bolts must be screwed into the wall with the dowels with a horizontal spacing of 280 mm. The cabinet is then attached to the bolts and secured with the wing nuts.

The hose connections are located on the underside of the cabinet; this must be taken into consideration when selecting the installation location.

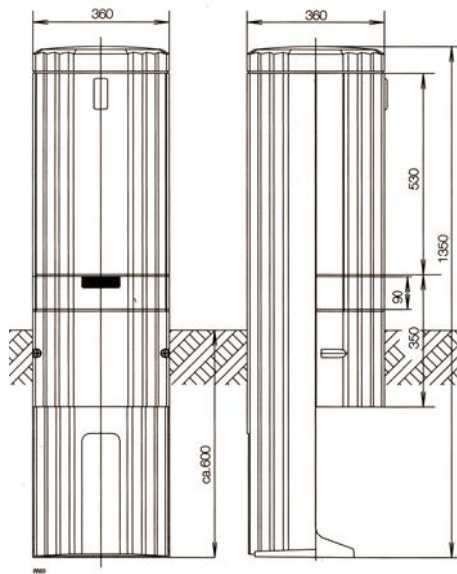
### 5.2 Metal cabinet for indoor mounting

The switch cabinet with the dimensions 500 x 500 x 300 mm (BxHxT) is prepared for wall mounting. For this purpose the wall holders, which are included in the delivery, have to be fixed on the back of the cabinet.

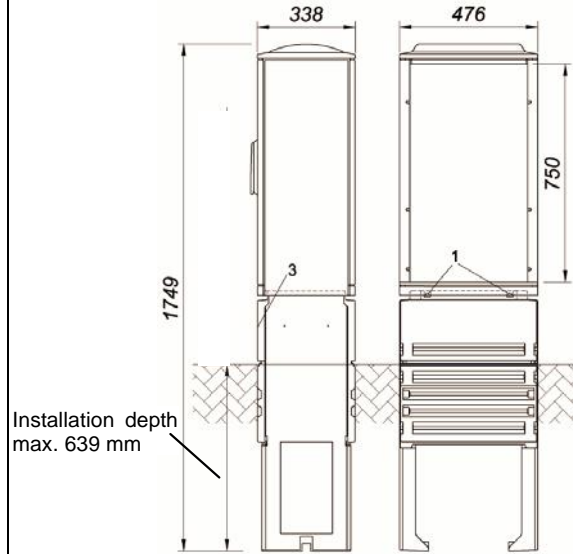
At the right-hand side there is the feeder with a main switch and an aeration grid. At the left-hand side the hose connections and an aeration grid as well are mounted.



## 5. Assembly of the switch cabinet



Switch cabinet for outdoor use  
2-10 Inhab.



Switch cabinet for outdoor use  
12-18 Inhab.

### 5.3 Assembly of the external switch cabinet

For setting up outside, there is the plastic external switch cabinet that must be set into the ground to the level of the marking on the column and is attached to the front side of the control box. For this purpose there must be a hole excavated of sufficient depth (see image). The position of the switch cabinet assembly should be chosen so that it is not in continuous direct sunlight as this may cause overheating in summer.

The empty conduit for the four air hoses and the underground electricity supply cable is to be laid so that the hoses and cable can be led from directly below up into the column.

Finally, the excavated hole is to be refilled according to good professional practice and so that the column sits firmly and vertically in the ground.

## 5. Assembly of the switch cabinet

### 5.4 Connecting the air hoses

The ventilation device and the three air lift pumps must be connected in the control box on the solenoid valve side.

The hoses for the air lift pump must have a 13 mm inside diameter and the hose for the ventilation must have a 19 mm inside diameter. When connecting the hoses it is important to be sure that they are joined to the correct connections.

To prevent mistaking the connections, the air lift pumps and the downpipe of the ventilation into the tank as well as the four connection points on the control box are colour coded as follows:

Feed lift pump (red)	→	<b>red</b> (red hose)
Ventilation (stainless steel)	→	<b>blue</b> (transparent horse, 19 mm)
Drainage lift pump (black)	→	<b>black</b> (black hose)
Excess sludge lift pump (grey)	→	<b>white</b> (white hose)

The connections must be joined according to their correct colours and then secured with hose clamps. Hoses are also available in their appropriate colours.

**After the hoses have been installed and connected, the empty conduit ends must be closed off to prevent an exchange of gasses between the waste water facility and the environment of the control box due to dampness, offensive odours and explosive gasses.**

Here we recommend **PU foam**.

The hose surfaces and conduit walls should be cleaned with water and made damp with water before filling with foam.

It is important to ensure that each hose is enclosed in foam from all sides. To make sure of a good covering, the hoses should be moved backwards and forwards during the foam application.



Open internal switch cabinet with hose clips



Open external switch cabinet

## 6. Commissioning the system

The instruction manual is to be read and observed prior to commissioning.

After the Klaro set-up kit has been installed, the entire system should be filled with fresh water. Only then can the system be commissioned.

After the switch cabinet is connected to the mains power (the main switch of metal switch cabinets is to be switched to position "1"), the control electronics carry out a brief self-test. The cabinet is then ready to operate and operates the system fully automatically.

The cabinet is then ready for operation and operates the system on a fully automatic basis. After assembly the system functions should be checked in manual mode, both in the machine cabinet and in the trench.

In the case of systems with optional comfort control with underload detection (ZKPlus), this is to be calibrated and started up. You will find the instructions for this in the instruction manual.

**Important:** According to DIN 4261-1 all chambers / tanks must be aerated. Additional ventilation lines or ventilation openings must be fitted if necessary. The ventilation lines must be arranged such as to allow natural ventilation (flue effect).

