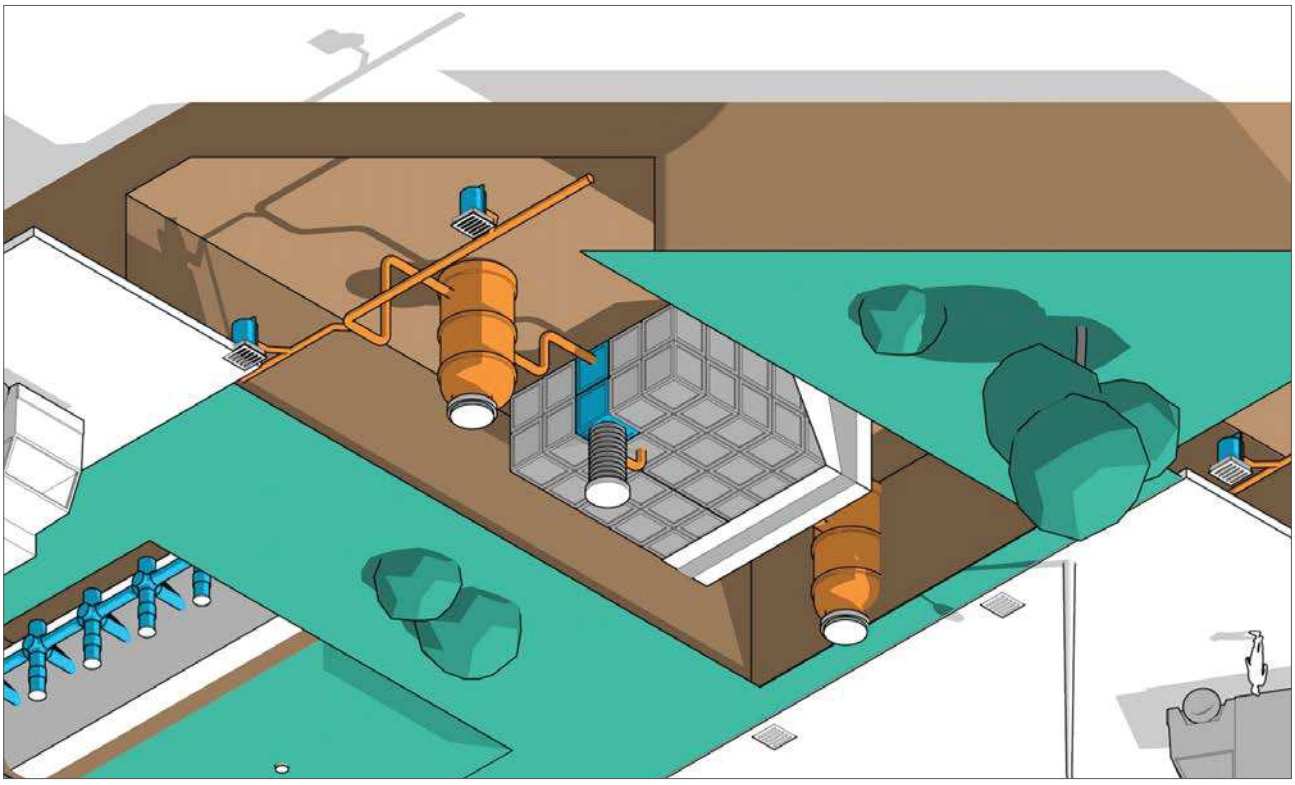
06 RAUSIKKO HydroClean

For physico-chemical rainwater purification

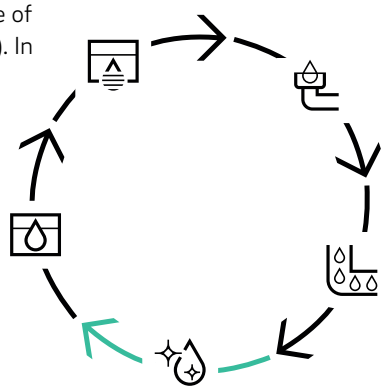
Contents

You can find the main dimensions and material numbers in the price list for rainwater management (print no. 838350).



A key aspect of rainwater management is purification. Precipitation water, especially from traffic areas or from uncoated copper or zinc metal roofs, contains contaminants and requires treatment prior to percolation.

The RAUSIKKO HydroClean is a filter chamber system approved by the German Institute of Civil Engineering (DIBt) and the state office for environmental protection of Bavaria (LfU). In other words: guaranteed safety.



High standard of safety and quality

- German general building approval of the German Institute of Civil Engineering DIBt Z-84.2-6 for type HT
- Water-based design approval from the state office for environmental protection of Bavaria (LfU) BY-41F-2016/2.0.0 for type M

Deutsches Institut für Bautechnik DIBt

Flexible and versatile use

- Purification of precipitation water with tolerable and non-tolerable levels of contamination
- Different filter media adapted to the different contaminants
- Compact filter chamber DN 1000

Lasting functionality

- Sludge collector with funnel-shaped inlet and slowdown zone; prevents backflushing, even during heavy rain.
- No redissolving of heavy metals when de-icing salt is applied.
- Easy and quick maintenance

Little space required

- Compact purification chamber with 3 integrated treatment stages – sedimentation, filtration and adsorption
- Ready-to-connect into RAUSIKKO AWASCHACHT DN 1000

06.01 Product description

Always a step ahead:
The perfect system for advanced purification

The tests carried out by the LGA/TÜV Rheinland show that the RAUSIKKO HydroClean HT meets the latest strict requirements of the DIBt. This also includes adhering to the thresholds of the German Federal Soil Protection Act (BBodSchV).

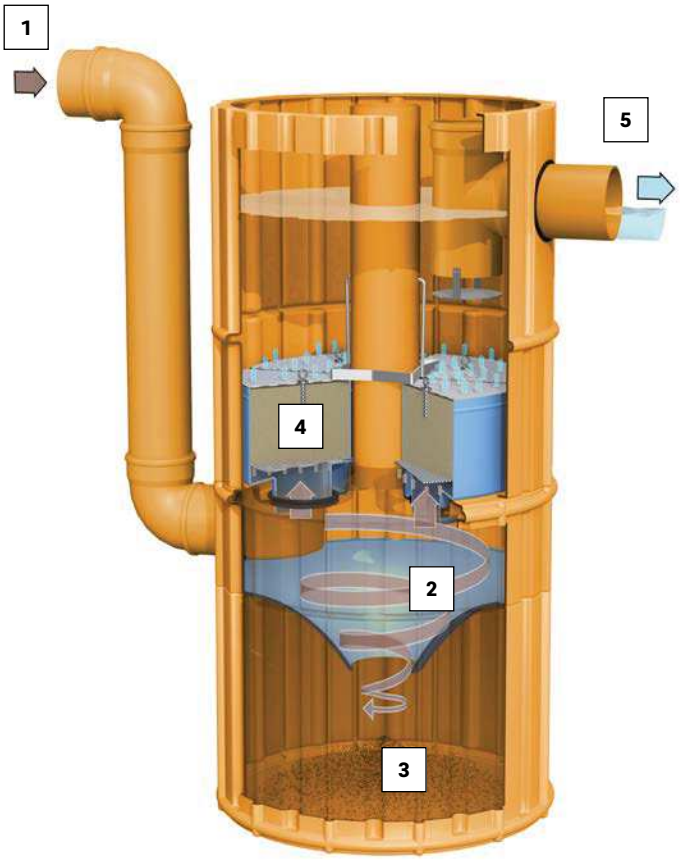
RAUSIKKO HydroClean M has been tested by TU Munich and is approved by the state office for environmental protection of Bavaria (LfU) "for treating precipitation water from metal (roof) areas for subsequent percolation".

Deutsches Institut für Bautechnik DIBt

The DWA worksheet A 138 highlights the importance of protecting soil and water when percolating precipitation water. The precipitation run-off gets contaminated due to the local air pollution and contamination on the connected surfaces. Depending on the location and use of the surfaces where run-off accumulates, contamination of the precipitation water can reach such extents that direct percolation would damage the groundwater and the soil.

For evaluation purposes, the DWA worksheet A 138 classifies precipitation run-offs from hardened surfaces into three categories, taking into account their material contamination. While precipitation run-offs with acceptable levels of contamination may be percolated directly through unsaturated soil without pre-treatment, those with tolerable and non-tolerable levels of contamination require appropriate pre-treatment.

If sedimentation of the particle-bound pollutants is not enough to bring the run-off below the limit values acceptable for percolation, dissolved substances must also be removed from the precipitation water. The rainwater filter system RAUSIKKO HydroClean offers a verified and economically efficient option in cases where a more thorough cleaning of precipitation water is desired or necessary, as the system also removes dissolved contaminants effectively.



Functional principle

1 The rainwater is fed into the lower part of the chamber. Using a rotation aid, the water is diverted tangentially and a circular current forms (hydrodynamic separator).

2 This laminar radial current stimulates sedimentation of sand fraction particles on the funnel-shaped separator base.

3 The sediments pass through an opening in the radial separator and settle into the sludge collector located in the lower part of the chamber where they can be suctioned out, if needed. The low flow action in the sludge collector and the funnel-shaped inlet effectively prevent backflushing, even during heavy rain events.

4 The water is thoroughly pre-cleaned of solid matters at this stage. It then flows through the filter elements in the middle of the chamber from bottom to top. A large share of the dissolved contaminants precipitate here and are bound adsorptively. The filter elements also work as a filter for suspended sediments still in the precipitation water. The filter elements can be easily replaced, if needed.

The clean water above the filter elements then passes through an oil retention system and finally flows through the outlet into the downstream percolation system or into the receiving water. 5

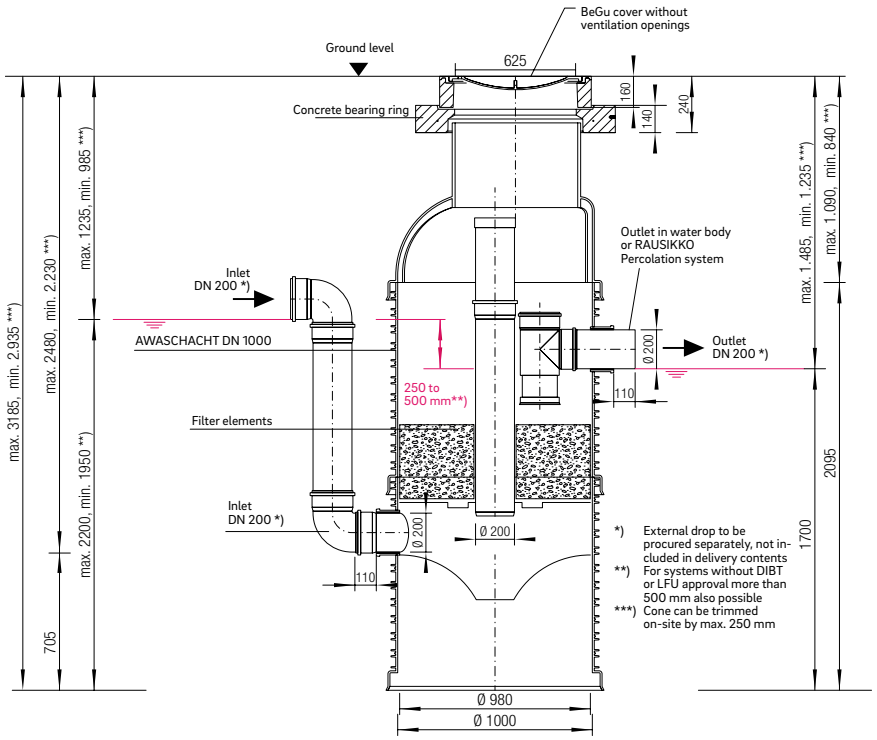
Structure of the filter element: 4
The cleaning components are integrated into compact filter elements. One filter set consists of 4 filter elements. To ensure quick and irreversible contaminant retention, different cleaning components are used in different proportions depending on the individual case.

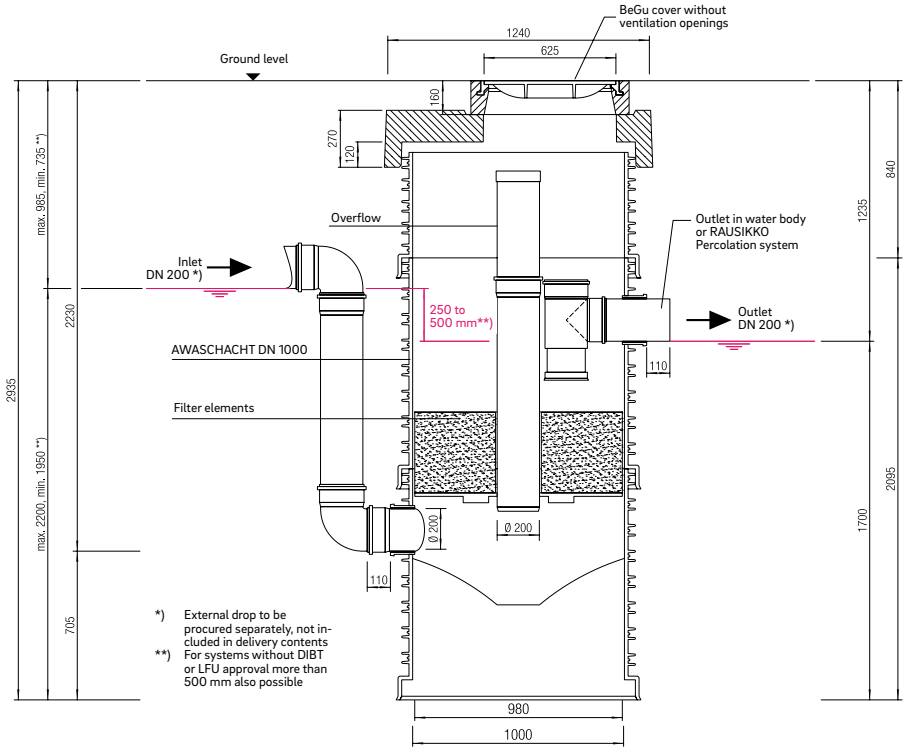
Evaluation of precipitation run-offs as per DWA worksheet A 138

Acceptable contamination	Tolerable contamination	Non-tolerable contamination
Run-offs from: ▪ Green roofs ▪ Roofs without the use of uncoated metals (copper, zinc, lead)	Run-offs from: ▪ Roofs with usual percentages of uncoated metals ▪ Cycle paths, pavements in residential areas up to roads with an average traffic volume (DTV) of 5,000 to 15,000 vehicles ▪ Roofs in air-polluted areas	Run-offs from: ▪ Courtyard and street areas with high air pollution ▪ Special areas (e.g. commercial vehicle parking areas, aircraft parking areas) ▪ Metal roofs

Technical data:

Cover chamber	AWASCHACHT DN 1000/polypropylene
Number of filter elements (pieces)	4
Approx. weight per filter element (kg)	66 kg (type M), 54 kg (type HT), 34 kg (type R)
Approx. total weight (without chamber cone) (kg)	490 kg (type M), 440 kg (type HT), 360 kg (type R)
Inlet	DN 200 (socket)
Outlet	DN 200 (spigot)
Connectable area (m^2)	500 to 1000, depending on type and contamination of the connected areas
Dimensions	see drawing under





Selecting filter elements:
The core of the rainwater treatment system RAUSIKKO HydroClean, i.e. the 4-part filter system, is available in 3 different design variants. This makes it is possible to optimally adjust the purification process to the type of precipitation water contamination.

Contamination level	Examples	Max. surface A_{red} m^2	Max. surface A_{red} as per DIBt test catalogue** m^2	Filter type	Surface type as per DWA-M 153
Low	Roofs (non-metallic) and terrace surfaces in residential and equivalent commercial areas.	1000		R	F 2
	Cycle paths and pavements (distance to street > 3 m)	750*	500	HT	F 3
	Courtyards, car parks where there is no frequent change of cars in residential and equivalent commercial areas.	750*	500	HT	
	Low-traffic areas (residential streets; < 300 vehicles/day) in residential and equivalent commercial areas.	750*	500	HT	
Medium	Streets (300–5,000 vehicles/day; e.g. residential and district roads)	750	500	HT	F 4
	Courtyards, car parks where there is no frequent change of cars in mixed, commercial and industrial areas.	750	500	HT	F 5
	Streets (5,000–15,000 vehicles/day; e.g. main roads)	750	500	HT	
High	Metal roofs (copper, zinc)	650		M	
	Car parks where there is frequent change of cars (e.g. shopping centres)	750	500	HT	F 6
	Streets and areas with considerable contamination (haulage companies)	500	500	HT	
	Streets (> 15,000 vehicles/day; e.g. national highways, motorways)	500	500	HT	
	High commercial vehicle traffic (e.g. landfill sites) in industrial areas	500	500	HT	F 7
	Commercial vehicle parks and holding areas	500	500	HT	

* Larger connection surfaces on request.
** As per DIBt, the admissibility of backwater in traffic areas is to be established by means of a flood test in accordance with DIN EN 752.

The purification performances of the RAUSIKKO HydroClean systems can be found in the following table. Columns 3 to 7 show the usual contamination values of run-off and column 9 shows the measured average run-off values for RAUSIKKO HydroClean systems. The RAUSIKKO HydroClean system can be set to have an average leakage value of 0.2 as per DWA data sheet M153.

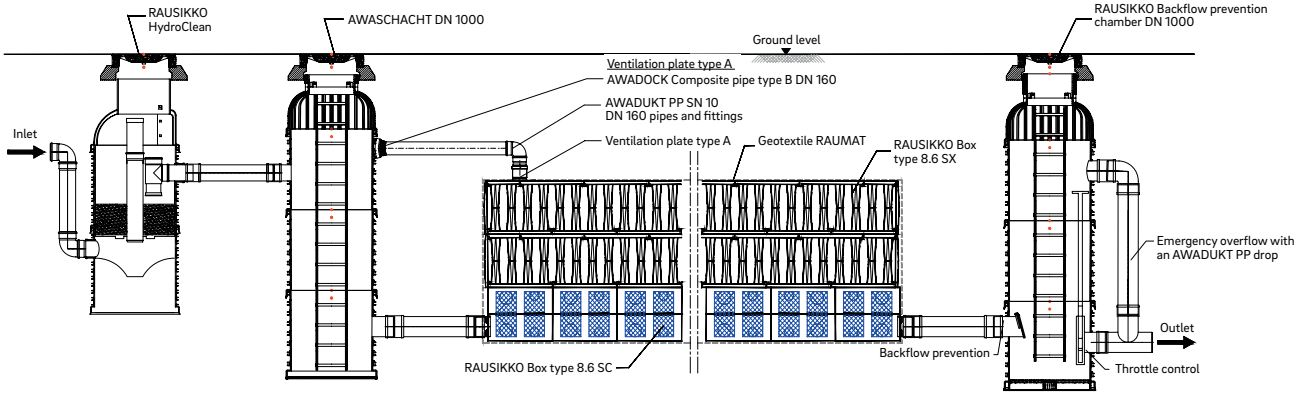
Substance	Unit	Roof (general)		Copper roof		Zinc roof		Car park/residential street		Main road		BBodSchV[1]	HydroClean
		from	to	from	to	from	to	from	to	from	to	Test value	Run-off value[2]
						Sum parameters						90 percent	
Electr. conductivity	(µS/cm)	25	270	25	270	25	270	50	2400	110	2,400	–	< 1500
pH value	(–)	4.7	6.8	4.7	6.8	4.7	6.8	6.4	7.9	6.4	7.9	–	7.0–9.5
						Nutrients							
TP	(mg/l)	0.06	0.50	0.06	0.50	0.06	0.50	0.09	0.30	0.23	0.34	–	0.20
NH_4	(mg/l)	0.1	6.2	0.1	6.2	0.1	6.2	0.0	0.9	0.5	2.3	–	0.3
NO_3	(mg/l)	0.1	4.7	0.1	4.7	0.1	4.7	0.0	16.0	0.0	16.0	–	[3]
						Heavy metals							
Cd	(µg/l)	0.2	2.5	0.2	1.0	0.5	2.0	0.2	1.7	0.3	13.0	5.0	< 1.0
Zn	(µg/l)	24	4,880	24	877	1,731	43,674	15	1,420	120	2,000	500	< 500
Cu	(µg/l)	6	3,416	2,200	8,500	11	950	21	140	97	104	50	< 50
Pb	(µg/l)	2	493	2	493	4	302	98	170	11	525	25	< 25
Ni	(µg/l)	2	7	2	7	2	7	4	70	4	70	50	< 20
Cr	(µg/l)	2	6	2	6	2	6	6	50	6	50	50	< 50
						Org. sum parameters							
(PAH) EPA	(µg/l)	0.4	0.6	0.4	0.6	0.4	0.6	0.2	17.1	0.2	17.1	0.2	< 0.2
MOH	(mg/l)	0.1	3.1	0.1	3.1	0.1	3.1	0.1	6.5	0.1	6.5	0.2	< 0.2

(critical parameter, cleaning required generally no cleaning required, case-based decision generally non-critical parameter)
[1] Test values of soil-groundwater dynamics as per § 8 para. 1 point 2 of the BBodSchGes (German Federal Soil Protection Act, 1999)
[2] The targets refer to yearly average values based on haulage
[3] Nitrate is not reduced significantly with this filter

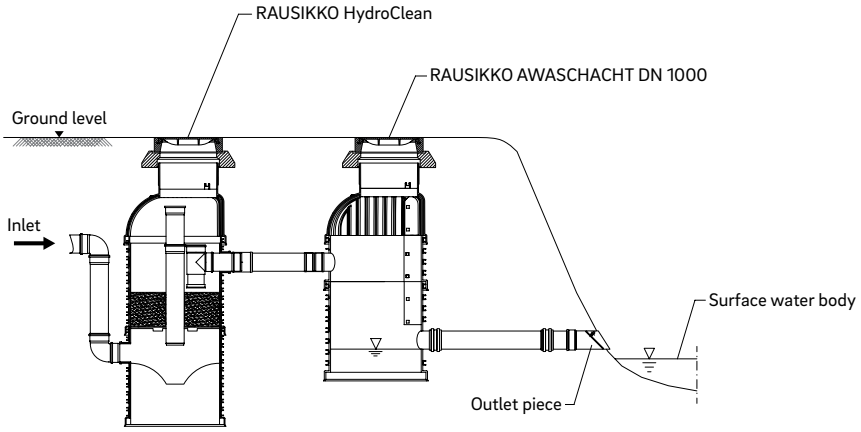
The RAUSIKKO HydroClean can be valuated with a degree of efficiency of 80% with respect to the AFS63 (suspended solids with grain sizes between 0.45 µm and 63 µm).

06.02 Execution examples

RAUSIKKO HydroClean with downstream, three-layer box gravel trench and RAUSIKKO Backflow prevention chamber DN 1000



RAUSIKKO HydroClean with outlet into a water body



06.03 Installation instructions for HydroClean

06.03.01 General

The RAUSIKKO HydroClean filter system is delivered at the construction site as a pre-installed unit for an AWASCHACHT DN 1000. Once delivered, it is ready to install into the system.

The company commissioned with this is solely responsible for a professional installation.

Prior to installation, obtain the construction documents for the planned installation location of HydroClean. These will contain information on groundwater, building ground conditions and pipes and canals in the area of the excavation pit.

The maximum installation depth is 5 m.

The installation technician must confirm that the installation was carried out according to specification by signing the attached form "Attestation from specialist company" (see page 121). This declaration is to be kept in the construction records and should be made available to the system operator.

The filter chamber is delivered without an integrated ladder. A tripod, and potentially also a mobile ladder, are therefore required for persons to safely enter the chamber.

Area of application
RAUSIKKO HydroClean is a purification system for physico-chemical pre-treatment of contaminated precipitation water.

The purification system is designed for cleaning precipitation water that has run off from:
- Traffic areas
- Uncoated metal roofs made of copper or zinc
- Roofs classified as acceptable within the meaning of DWA work sheet A 138

There are different types of filter available for individual areas of application.

Run-offs from special areas, such as bearing surfaces, railway facilities or waters containing water-hazardous substances, must undergo a separate examination.

Installation in groundwater
The RAUSIKKO HydroClean should generally be installed above the groundwater level. Any other conditions require clarification with the REHAU Applications Engineering Department and the responsible water authority.

Incoming material inspection
- The system parts must be checked for damage and completeness of contents on receipt.
- It must also be ensured that they conform to the client's requirements.
- The delivery must be signed off with the recipient's legible signature.
- Damaged parts may not be installed.

06.03.02 Transport and storage

Unloading from vehicle

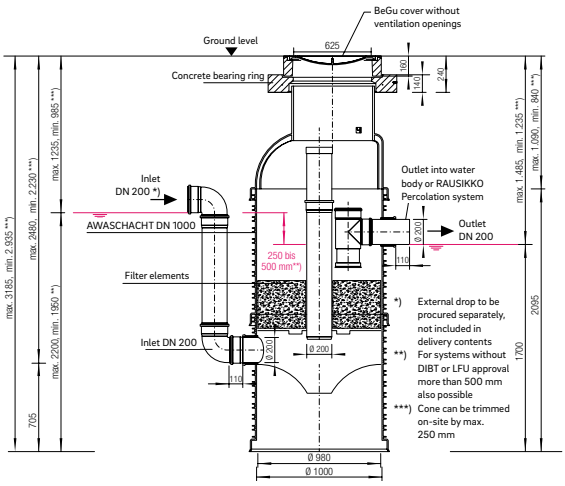
When unloading and transporting HydroClean and its accessories, make sure that the components do not get damaged. Under no circumstances should you tip, throw or drop components.

Storage at the construction site

- The components must be stored on a level and sufficiently stable surface.
- If stored in the open air for longer periods, the components must be protected against direct sunlight. The protective cover is to be laid out in such a way that no heat builds up underneath it.
- Storage times of over a year must be avoided.

06.03.03 Preparing excavation pits and bedding

The RAUSIKKO HydroClean must be installed with an external drop. To do so, lay the inlet line in front of the chamber downwards and attach it to the lower connection branch (socket) of the chamber. The distance between the base of the upstream inlet line and the base of the outlet line must be between 250 and 500 mm. For systems without approval from DIBt or LfU, this distance could also be bigger than 500 mm.



RAUSIKKO HydroClean

- The excavation pit must conform to the safety regulations of the Bauberufsgenossenschaft (German building trade association) and DIN 4124.
- Secure the excavated earth walls or line them so that they are stable during the individual construction stages.
- For safety reasons and to avoid damage, use appropriate equipment and procedures to drain the components and machines in the excavation pit.
- The excavation pit must remain water-free until the installation works have been completed.

Chamber base and bedding

Prepare the bedding area of the chamber base as per DIN EN 1610. The subsoil must be load-bearing and even. To do this, create at least a 10 cm-thick layer of bedding (e.g. granular subbase).

Making the chamber bedding

06.03.04 Installing HydroClean

Install the connection pipes as per the planning specifications. Ensure that the flow through the cleaning chamber runs from bottom to top. To this end, create an external drop in the inlet.

The filter inserts of the RAUSIKKO HydroClean must be protected against contaminations during fitting/installation work.

1. Cover the filter inserts or remove them just before installing the system.
2. Position and align the RAUSIKKO HydroClean to match the connection pipes.
3. Before attaching the pipes to the chamber, check the connection seals and spigots for their correct fit and clean them of any dirt.

4. Coat the spigots with lubricant.

Coating with lubricant

5. Push the spigot end and socket together until they latch.
   If chamber rings or a chamber cone need to be attached,
   - coat the topmost sealing chamber with lubricant.
     This makes it easier to insert the sealing ring and ensures it is in the right position.
   - Insert the element sealing ring DN 1000 into the top most sealing chamber with the writing facing upwards and check for damage and correct positioning.

Coating with lubricant

Sealing ring after insertion

   - Apply an even coat of lubricant on the element sealing as well as on the socket of the chamber element to be attached.
   - Then, put on the chamber ring or the chamber cone and push together.
     The two chamber components must not be tilted and must be pushed together until they latch.
     Four external fixing lugs help in attaching the chamber ring and/or chamber cone.

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Turn the cone so that the access opening is just above the inlet chamber.

Attaching the cone

   - Follow the same procedure to attach any additional chamber rings.
     The maximum installation depth is 5 m.

06.03.05 Embedding the chamber structure/ filling the chamber pit

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Use G1 or G2 soil as filling material as per DWA work sheet A 127 with a maximum grain size of 32 mm for round grain material or 16 mm for crushed material.
Spread the filling material carefully and in layers with a thickness of 20 to 40 cm and a width of min. 40 cm as per the specifications of DIN EN 1610 and the DWA work sheet A 139.
In the road area, the degree of compaction must be at least D_{Pr} = 97%.

- Do not commence mechanical compaction until a layer with a minimum thickness of 30 cm has been spread above the inlet/outlet pipe crown.
- The chamber cone is supplied to the building site untrimmed and can be trimmed on site at the access opening. The trimming dimension for the chamber cone should be calculated beforehand by means of dimensioned installation diagram.
  The maximum trimming dimension depends on the length of the overflow. When chambers without additional chamber rings are being used, this dimension is 25 cm. Trim in the rib base. The ribs are arranged with 1 cm gaps. Deburr the cut area.

Trimming the chamber cone

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The overflow may not be trimmed for reasons pertaining to hydraulics.

- Create the filling or bedding of the chamber structure to 5 cm below the top edge of the trimmed chamber cone.

- The surface of the bedding must be made level and should not transfer any point loads onto the concrete bearing ring (if need be, insert a layer of fine grit or mortar).

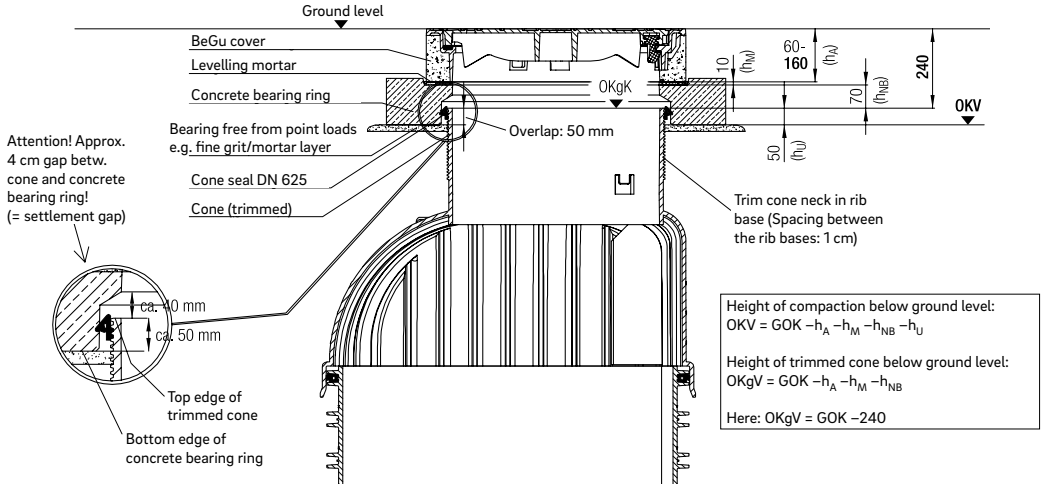
Installing a concrete bearing ring

1. Mount the sealing ring DN 625 flush to the top edge of the trimmed cone and coat with lubricant.

2. Coat the inside of the concrete bearing ring with lubricant and mount centrically.
   Cable loops (see "Accessories") can be screwed into the concrete bearing ring to make it easier to mount it centrically.
   - The concrete bearing ring transfers the traffic loads to the substructure. The concrete bearing ring must be seated solidly and evenly. Avoid point loads.
   - Direct load contact between the concrete bearing ring and the chamber cone is also not permissible. This is prevented by creating an approx. 5 cm overlap between the chamber cone and the concrete bearing ring.
   - A height clearance of approx. 4 cm must be maintained between the top edge of the cone and the concrete bearing ring. This ensures that traffic loads are not transferred directly onto the chamber in the case of road structure subsidence.

Distance between the cone and the concrete bearing ring

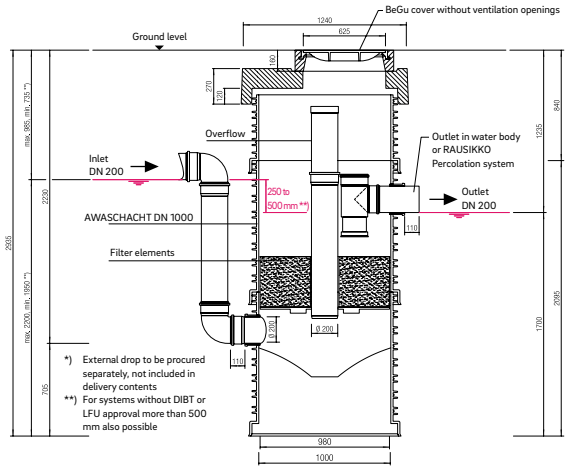
During the construction phase of the road, place a steel cover plate or similar in the concrete bearing ring to cover the chamber.



GOK – ground level;	h_M – levelling mortar height;	h_U – Overlap betw. cone and concrete bearing ring;
OKV – compaction of top edge;	h_A – cover height incl. compensation;	
OKgK – top edge of trimmed cone;	h_{NB} – effective height of concrete bearing ring;	

Installing a concrete cover plate or BeGu cover

The HydroClean can be installed with a concrete cover plate in place of a cone.



Installation situation of concrete cover plate

- Depending on the installation depth of the chamber, the uppermost chamber ring may have to be trimmed by 125 mm. Trim between the two marking lines above the sealing chamber.

- The chamber ring and cover plate must overlap by approx. 70 mm to max. 90 mm to ensure seal tightness and correct load transfer. Make a layer of fine grit or concrete foundation accordingly.

- Coat the top most sealing chamber with lubricant and put the element sealing ring DN 1000 in place with the writing facing upwards.

- Check the chamber element seal for damage and correct positioning and clean away any dirt. Coat the sealing flanks of the concrete cover plate with lubricant.

- Lift the concrete cover plate horizontally and centrically above the chamber ring and place on the prepared surface. Align the access opening to the outlet side. If mounted correctly, there should be a gap of 30–50 mm inside the chamber between the upper edge of the chamber ring and the concrete cover plate.

- Depending on the installation height of the existing chamber cover, concrete compensating rings of different heights should be fitted to adjust it to ground level, if necessary. In the case of too-low equalising heights, it is necessary to trim the chamber ring beforehand by exactly 125 mm (see above). Then put the concrete compensating ring(s) and the chamber cover on the levelling mortar layer. The number of concrete compensating rings required for height equalisation should be kept to a minimum.

Avoid point loads between the concrete bearing ring and cover when installing a BeGu cover (to be procured separately).
Place the cover on a 2 cm-thick layer of levelling mortar as per DIN 4034.

When installing a roll-in cast cover, follow the installation instructions from the respective manufacturer. Ensure that the chamber and filter are not damaged.

06.03.06 Completing installation

1. After attaching the chamber, properly dispose of the precipitation water contaminated at the construction site (by pumping the chamber).
2. After pumping out the contaminated water, re-insert the filter inserts or remove the cover for protecting the filter elements against contamination.
3. Place the T-piece (outlet) on the inside of the outlet line and secure this using threaded rods included in the delivery. Ensure that the oil retention tray is underneath.
4. Finally check that the end cap on the maintenance or overflow pipe (required and supplied only for systems with DIBt or LfU approval) is attached properly. Do the same for the buoyancy protection for the filter inserts and the chamber insert.

Should you need to carry out pavement or ground work on the area to be dewatered after the system has been installed, ensure that no sludge or mortar droppings get into the system, as this could clog the filter elements. In any case, remove the filter inserts before carrying out any work and properly dispose of any contaminated precipitation water by pumping it out.

06.04 Maintenance instructions for Hydro-Clean

06.04.01 General

In view of the contaminants and harmful substances contained in rainwater run-off, the RAUSIKKO Hydro-Clean must be inspected and cleaned at regular intervals like all other wastewater treatment systems.

You may get the complete maintenance done by a specialist company (details below in section „06.04.02 Wartung durch eine Fachfirma").

For the systems approved by the DIBt or LfU, it is mandatory for the operator of the system to sign a maintenance contract with an expert technician or a specialist company.

A maintenance record (enclosed on page 123) is to be kept with details on the time and results of the inspections and maintenance works carried out and also on correction of the defects identified, if any.

The operator has to keep the maintenance contract and the documents on the inspections and maintenance works carried out in his/her possession and present these to the supervisory authorities upon request.

06.04.02 Maintenance by a specialist company

The complete inspection and maintenance works can be carried out by the following company:

Börder GmbH
Unterer Stoffelsweg 6
56743 Mendig, Germany
www.boerder.info
Phone: +49 2652 9711 – 0
Fax: +49 2652 9711 – 79

The following works are carried out to ensure optimum usage of the filter elements and sedimentation zones:

Inspection/function check
Frequency: Once a year
- Visible inspection
- Cleaning the water surface
- Inspecting the sludge collector
- Filter function test (permeability test)
  - Rinsing the filter elements
  - Replacing the filter elements
- Maintaining the register

Cleaning the sludge collector
Frequency: depending on the inspection result and in the case of sustained malfunction of the system
- Pumping out the water above the sludge collector
- Suction cleaning and rinsing the sludge collector
- Proper disposal of liquid and sludge

Filter function test (permeability test)
Frequency: depending on the inspection result and in the case of sustained malfunction of the system

1. Lower a pump with a flow meter, flow regulator and pipe down into the chamber.

2. Pump water from above the filter elements in the central maintenance/overflow pipe; if the water level goes down considerably, refill with tap water.

3. Increase the flow rate until the top edge of the maintenance pipe or the power limit of the pump is reached. Pump in stationary condition for ten minutes.
4. Read the flow rate on the measuring device; the flow rate after ten minutes of pumping corresponds to the permeability of the filter elements.

If the flow rate is less than 6 l/s, the filter elements must be rinsed.

Rinsing the filter elements
Frequency: depending on the permeability test result and in the case of sustained malfunction of the system

1. For systems with DIBt/LfU approval, pull off the end cap from the central maintenance/overflow pipe.
2. Place a jetting lance over the maintenance pipe.

3. Position the jet nozzle underneath a filter element. Position the wastewater pump above the filter elements and switch it on.

4. Attach a compressor and a fresh water connection. Feed air and water into the jetting lance.
5. Carry out the rinsing process until bubbles rise evenly over the entire filter element. Rinse all four filter elements.

6. Repeat the permeability measurement of the filter elements.
7. For systems with DIBt/LfU approval, place the end cap back onto the central maintenance/overflow pipe.

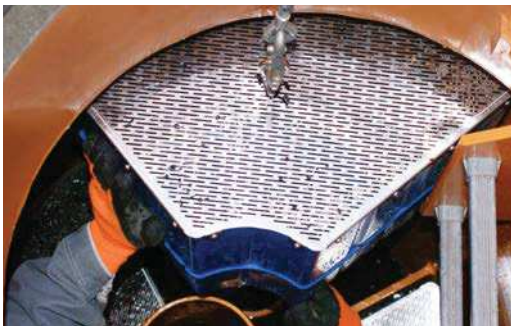
Replacing the filter elements
Frequency: based on the result of the permeability test/rinsing, in intervals of two to five years; for systems with DIBt or LfU approval, after expiry of the maximum operating life or of the approval.

1. Check the atmosphere in the chamber using a gas alarm and monitor it continuously.
2. Position a rescue tripod over the open chamber, attach a safety harness and hook it into the rescue winch, lower the person down into the chamber or climb down using a mobile ladder and stand by the filter elements.

3. For systems with DIBt/LfU approval, remove the end cap from the central maintenance/overflow pipe. Then pull the extension for the overflow pipe out of the socket and lift out of the chamber.
4. Loosen the screw on the T-piece (oil boom) and remove it; completely pull out the T-piece and lift from the chamber.

5. Loosen the buoyancy protection of the filter element and pull it upwards.

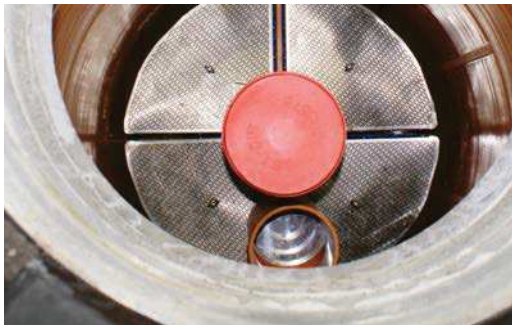
6. Hook the cable pull in the filter lug and lift out the filter from the chamber, rinse it and place in the palette provided. Repeat this procedure for the other three filter elements.



7. Lower down the sludge pump through the maintenance pipe into the chamber, turn it on and pump out water. Observe the discharge guidelines.
8. Pump out water until it is below the interim level. When doing so, thoroughly rinse the inside of the chamber and seals from above with water. You can pull out the pump after rinsing.

9. Before inserting the new filter elements, apply silicone spray to the sockets.
10. Lower down the filter (with winch) into the chamber and place in seals.
11. Insert the T-piece (oil boom) and attach the fastening screw.

12. Refit the buoyancy protection and attach the extension for the central maintenance and overflow pipe.
13. Release water into the annulus space between the filters or between the filters and the chamber wall and check if the water level in the annulus space remains constant.
14. For systems with DIBt/LfU approval, place the end cap back onto the central maintenance and overflow pipe.



06.04.03 Maintenance by the operator

Carry out the following maintenance and inspection measures to ensure optimum usage of the filter elements and sedimentation zones:

§

When inspecting the system, properly secure the area around the access point with an information sign or by blocking it off to avoid any fall/injury to persons. The filter elements should be replaced using a safety harness and tripod. After maintenance is complete, close the access point again with a cover.

Tools required:

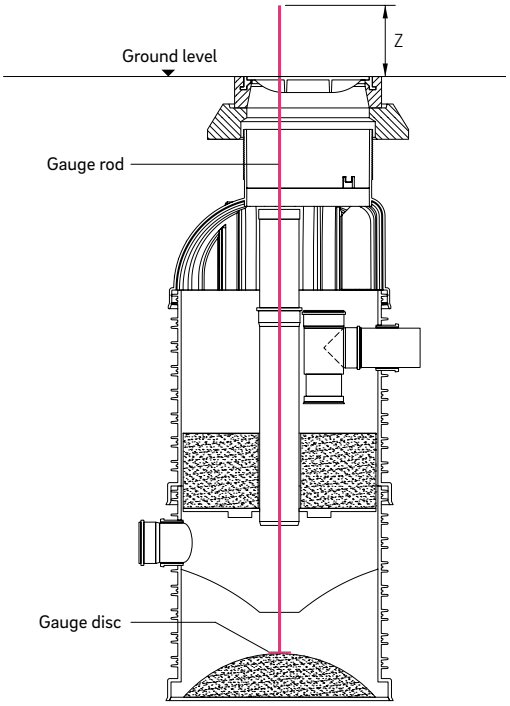
- Suction and rinsing vehicle or submersible sludge pump with hoses
- Power generator if there is no electrical connection nearby
- High-pressure cleaner
- Compressor
- Jetting lance
- Rescue tripod with 2 winches (for rescuing persons and for replacing filters)
- Safety harness
- Gas alarm
- Container for filters
- Gauge with disc
- Mobile ladder

Inspection
Frequency: Once a year
- Visible inspection
- Cleaning the water surface
- Inspecting the sludge collector
- Rinsing filter elements
- Maintaining the register

These inspections can be done without pumping out the filter chamber.

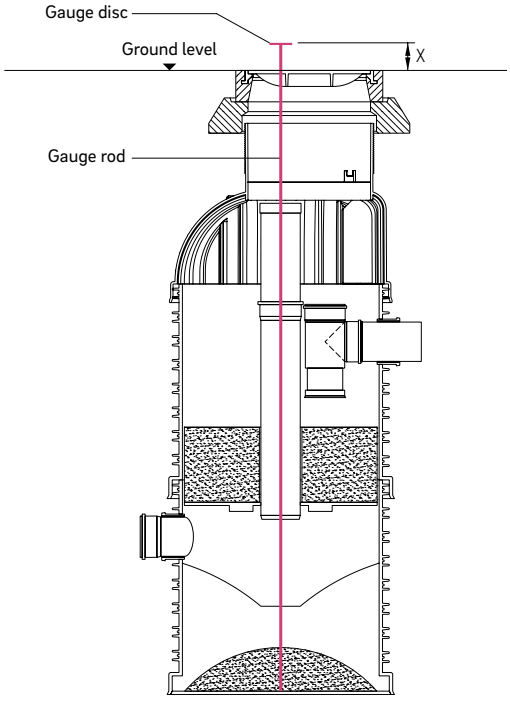
Inspecting the sludge collector
You can determine the height of the sludge layer in the collector by following this method:

- Immerse a gauge with circular disc (diameter approx.150 mm) disc-first down through the overflow pipe to the sludge layer.
- Using a pocket rule, measure the height Z between the top edge of the concrete bearing ring and the gauge end (see image below).



Gauge disc down to sludge layer

- Pull the gauge rod out of the chamber and then immerse the other end of the gauge (without the disc) down through to the container base.



Gauge rod down to base

- Measure the height X in the same manner as you measured height Z.

  The difference between the two heights is the sludge layer thickness.

If the layer thickness is more than 20 cm, suction out the sludge collector.

Emptying the sludge collector
Frequency: depending on the inspection result, in one to five-year intervals:
- Pumping out the water above the sludge collector
- Suction cleaning and rinsing the sludge collector
- Disposal of liquid and sludge

This period could vary in the case of rain drainage with unusually low or high sediment loads. If this is the case, it will be clear in the first few years of operation. An obvious indication of this is frequent working of the overflow which causes clouding of the discharge water and a thick sedimentation deposit on the filter plate.

§

Drain off the water pumped out of the chamber to the sewage treatment plant (into a sewer or mixed water pipe). Under no circumstances may the water flow into a water body, a rainwater canal or an underground percolation system.
Observe the municipal drainage regulations.
Properly dispose of the sludge removed from the collector.

Rinsing filter elements
Frequency: once a year
- Position the jet nozzle underneath a filter element.
- Feed air and water in the lance (see section "06.04.02 Maintenance by a specialist company" on page 116)

ⓘ

If the water above the filter is severely clouded or contains many suspended sediments, this indicates frequent working of the overflow (as a result of clogged filters). If that is the case, replace the filter elements.

Replacing the filter elements
Frequency: as per DIBt or LfU approval.
- Pumping the clear water area
- Replacing the filter units (see section "06.04.02 Maintenance by a specialist company" on page 116)

Cleaning the sludge collector and replacing the filters should be done at the same time.

06.04.04 Replacement filter

Please contact your REHAU sales office to order a replacement filter set.

If ordering a replacement filter set for objects in Germany, we arrange the delivery of the new filter element, collection of the used elements and the proper disposal of the filter material.

The filter elements for a HydroClean system are dispatched by a shipping company on a palette along with 4 sealing caps for used filters.

We request that you roughly clean the used filter elements, close them with the sealing caps included in the delivery and pack them onto the palette. Then, please inform the manufacturer that they are ready for collection.
You will find the contact data for used filter collection on the delivery note.

06.05 Certificates and records

06.05.01 Certificate from specialist company

For setting-up or modifying rainwater management systems

Location of the system: _____

Street: _____

Post code, town:
_____

Specialist company: _____

Expert: _____

Street: _____

Post code, town:
_____

Client: _____

Street: _____

Post code, town:
_____

1. I hereby certify that at the above-mentioned location, the rainwater purification system RAUSIKKO with _____

☐ rainwater pipes
☐ inlet and outlet pipes

has been set up ☐ modified ☐ checked ☐ by me as an expert.

2.The dewatering system has been set-up according to DIN 1610 and hence meets the requirements of the series of standards DIN EN 752 and DIN 1986-100.

The filtered rainwater is discharged into

a percolation system ☐ a surface water body ☐
☐ a rainwater canal ☐ _____

3. The pipes, components and parts used for the system meet the respective product standards.

4. I received the installation instructions from the manufacturer and have installed the system following these instructions.

Installation, commissioning and inspection of the system have been carried out in accordance with the generally accepted rules of the technology.

_____ _____

Date Signature (specialist company)

This certificate is to be kept in the construction records and handed over to the system operator. The system operator should present it to the supervisory authorities upon request.

06.05.02 Commissioning

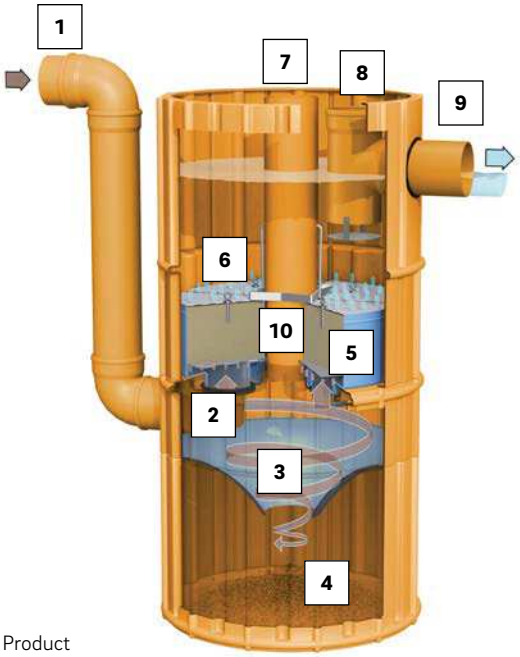
Building project: _____

Ownership represented by: _____

Specialist company represented by: _____

The filter has been commissioned and fulfils the points in the checklist below:

No.	Feature	Comment
1.	The filter chamber has been connected with a drop (1).	
2.	The extension for the overflow pipe (7) is attached. The sealing cap provided in the delivery (only for systems with DIBt or LfU approval) is attached.	
3.	The filter elements (5) were not in the filter chamber during the installation phase and are clean and undamaged.	
4.	All 4 filter elements (5) are present and are seated in the seals. The buoyancy protection (10) lies above the filter elements as described in the instructions.	
5.	The oil boom (8) is attached and sits correctly.	
6.	The filter system is properly connected to the subsequent system (percolation, drainage ditch, rainwater usage system, etc.).	
7.	The installation and maintenance instructions have been handed over to the owner/operator of the system.	
8.	For systems with DIBt/LfU approval: The overflow pipe (7) has been closed off with a sealing cap.	



Product structure

1 Inlet DN 200
2 Rotation aid
3 Separator
4 Container for sediment collection
5 Filter element
6 Filter element removal handle
7 Overflow pipe (for systems with DIBt/LfU approval: with sealing cap)
8 Oil boom
9 Outlet DN 200
10 Buoyancy protection for filter elements

The system operating instructions are complete. All the required documentation for operation and the installation and maintenance instructions have been handed over in full.

Date _____ Signature (specialist company) _____ Signature (owner/operator) _____

06.05.03 Maintenance report (template)

Maintenance interval	Status/remark	Maintenance work		Name and signature
Date:		Visual inspection of the chamber and filter	☐	
		Water surface and chamber cleaned	☐	
		Sludge height in sludge collector checked	☐	
		Sludge collector suctioned/cleaned and water/sludge disposed of properly	☐	
		Permeability check carried out	☐	
		Filter elements rinsed	☐	
		Filter elements replaced	☐	
		Image documentation	☐	
		For systems with DIBt/LfU approval, end cap attached	☐	
Date:		Visual inspection of the chamber and filter	☐	
		Water surface and chamber cleaned	☐	
		Sludge height in sludge collector checked	☐	
		Sludge collector suctioned/cleaned and water/sludge disposed of properly	☐	
		Permeability check carried out	☐	
		Filter elements rinsed	☐	
		Filter elements replaced	☐	
		Image documentation	☐	
		For systems with DIBt/LfU approval, end cap attached	☐	
Date:		Visual inspection of the chamber and filter	☐	
		Water surface and chamber cleaned	☐	
		Sludge height in sludge collector checked	☐	
		Sludge collector suctioned/cleaned and water/sludge disposed of properly	☐	
		Permeability check carried out	☐	
		Filter elements rinsed	☐	
		Filter elements replaced	☐	
		Image documentation	☐	
		For systems with DIBt/LfU approval, end cap attached	☐	
Date:		Visual inspection of the chamber and filter	☐	
		Water surface and chamber cleaned	☐	
		Sludge height in sludge collector checked	☐	
		Sludge collector suctioned/cleaned and water/sludge disposed of properly	☐	
		Permeability check carried out	☐	
		Filter elements rinsed	☐	
		Filter elements replaced	☐	
		Image documentation	☐	
		For systems with DIBt/LfU approval, end cap attached	☐	