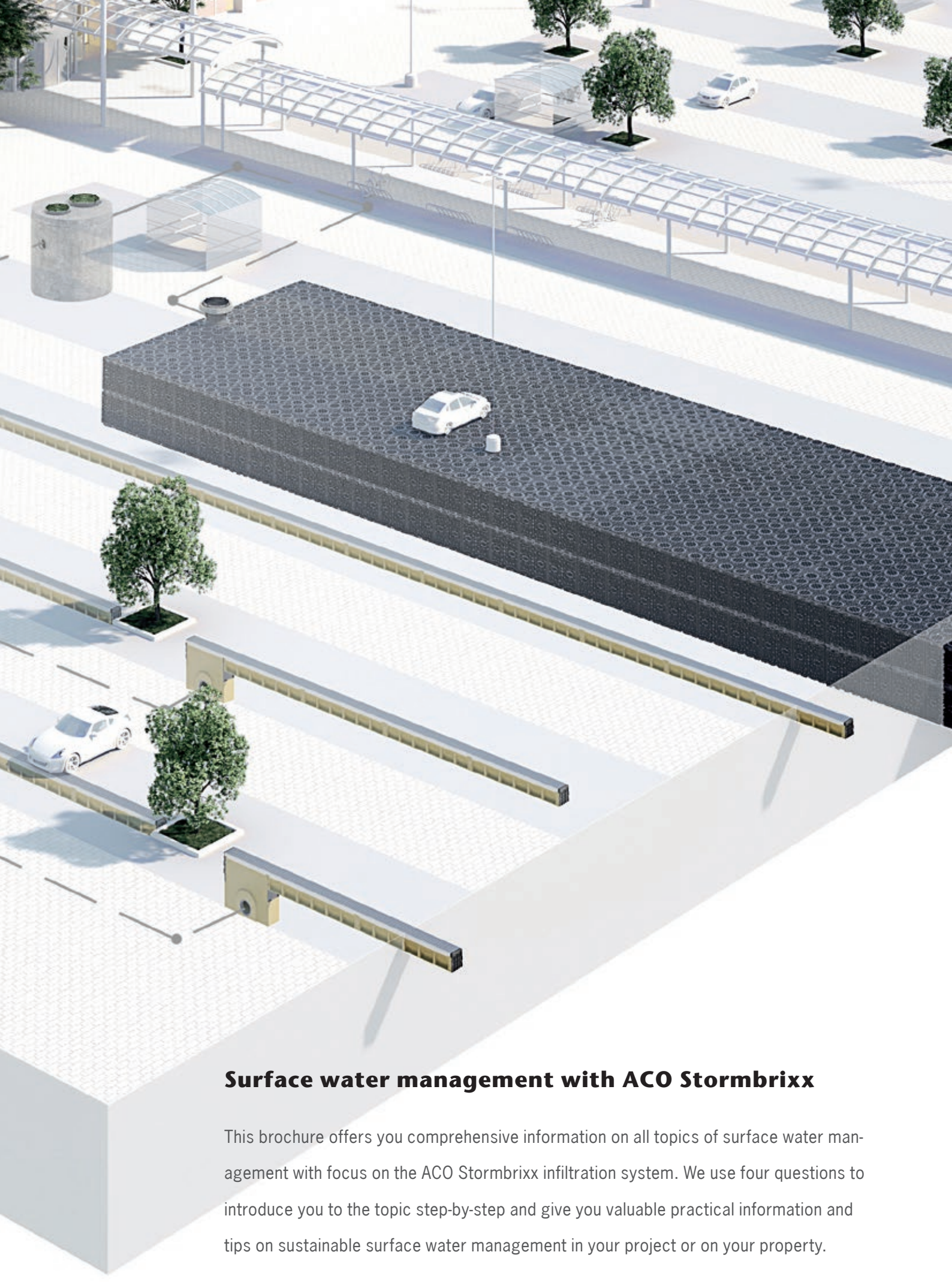
collect – clean – hold – release

Surface water management with ACO Stormbrixx SD and HD



Surface water management with ACO Stormbrixx

This brochure offers you comprehensive information on all topics of surface water management with focus on the ACO Stormbrixx infiltration system. We use four questions to introduce you to the topic step-by-step and give you valuable practical information and tips on sustainable surface water management in your project or on your property.

Contents

ACO. The future of drainage.

ACO Tiefbau

As a reliable partner of the specialist civil engineering construction materials trade, ACO offers solutions for professional surface water management and water protection. They play a large role in the planning and design of urban, infrastructural and industrial drainage. Whether for public clients, consultant engineers, landscape architects, contractors and operators, within the ACO Group, ACO Tiefbau not only provides innovative product solutions for civil engineering, road construction and landscape gardening. With comprehensive design tools and services, ACO Tiefbau also assists with the design, construction and sustainable operation of modern drainage systems.

www.aco-tiefbau.de

Headquarters of the ACO Group in Rendsburg/Büdelsdorf, Germany

Hans-Julius Ahlmann and his son Iver

ACO Group

The ACO Group is a world market leader in drainage technology. Climate change sets us a challenge to react effectively with innovative solutions to new environmental conditions. With its integrated approach, ACO stands for professional drainage, efficient cleaning, and the controlled discharge or reuse of water. Products include drainage channels and drains, oil and grease separators, backflow stop systems, pumps and pressure-water-tight cellar windows and light shafts.

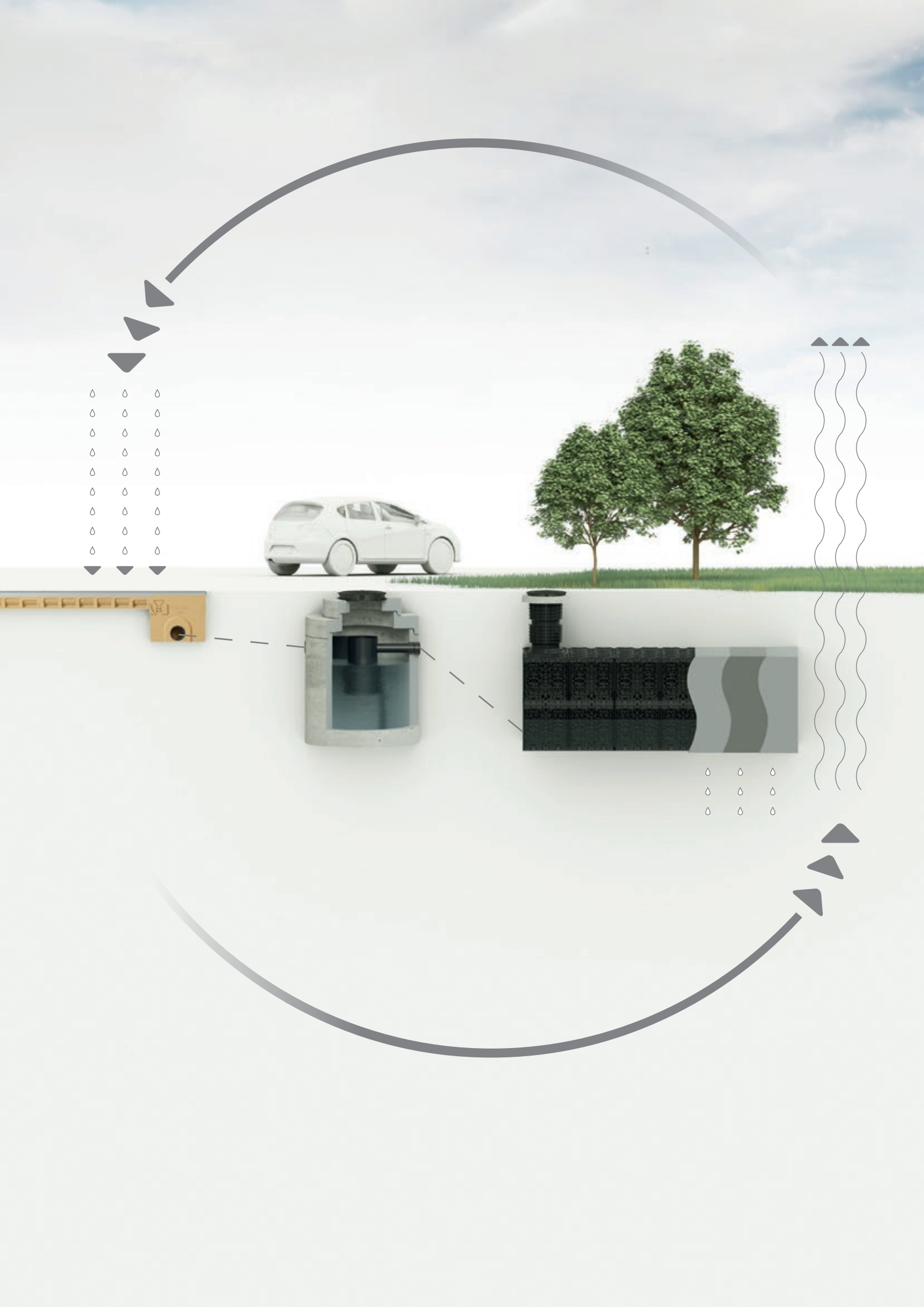
The family-owned company headquartered in Rendsburg/Büdelsdorf, Germany, was founded in 1946 on the site of the Carlshütte foundry – Schleswig-Holstein's first industrial company. It still has very strong roots in the region. The major innovation strength of the ACO Group is built on intense research and development, and its technical expertise in processing polymer concrete, plastic, cast iron, stainless steel and reinforced concrete.

ACO Group at a glance

- 4,400 employees in more than 40 countries (Europe, America, Asia, Australia, Africa)
- 30 production sites in 15 countries
- Sales 2016: Euro 711 million

ACO. The future of drainage.

ACO Academy for practical training



Sustainable surface water management is important for the future

The challenge

Stormwater is an issue that affects us all

For landscape architects, town planners, building architects as well as building owners and operators, rainwater is becoming an increasingly significant challenge to overcome. As well as being a valuable asset that is of vital importance to flora, fauna and people alike, it presents significant sources of risk.

More and more, rainwater is becoming unable to seep away at the points where it falls, and surface sealing is one of the major reasons for this.
The German government has responded to this situation: "The goal of the Federal Government's strategy for sustainable development is to reduce the use of new land for housing and transport to an average of 30 hectares per day by 2030."

Heavy precipitation is another major factor contributing to this trend.
While total precipitation in Germany has only risen slightly year on year, studies have shown that the country has experienced not so much a rise in the intensity, but rather a rise in the number of days on which heavy precipitation occurs.
(Source: G. Malitz, C. Beck, J. Griesner: Veränderung der Starkniederschläge in Deutschland (Changes in heavy precipitation within Germany), from "Warnsignal Klima", 2011, 3rd edition, compiled by WetterWelt GmbH)

The solution

Surface water management – well thought out from collect to release

For every project, ACO offers customized drainage solutions based on the ACO system chain.

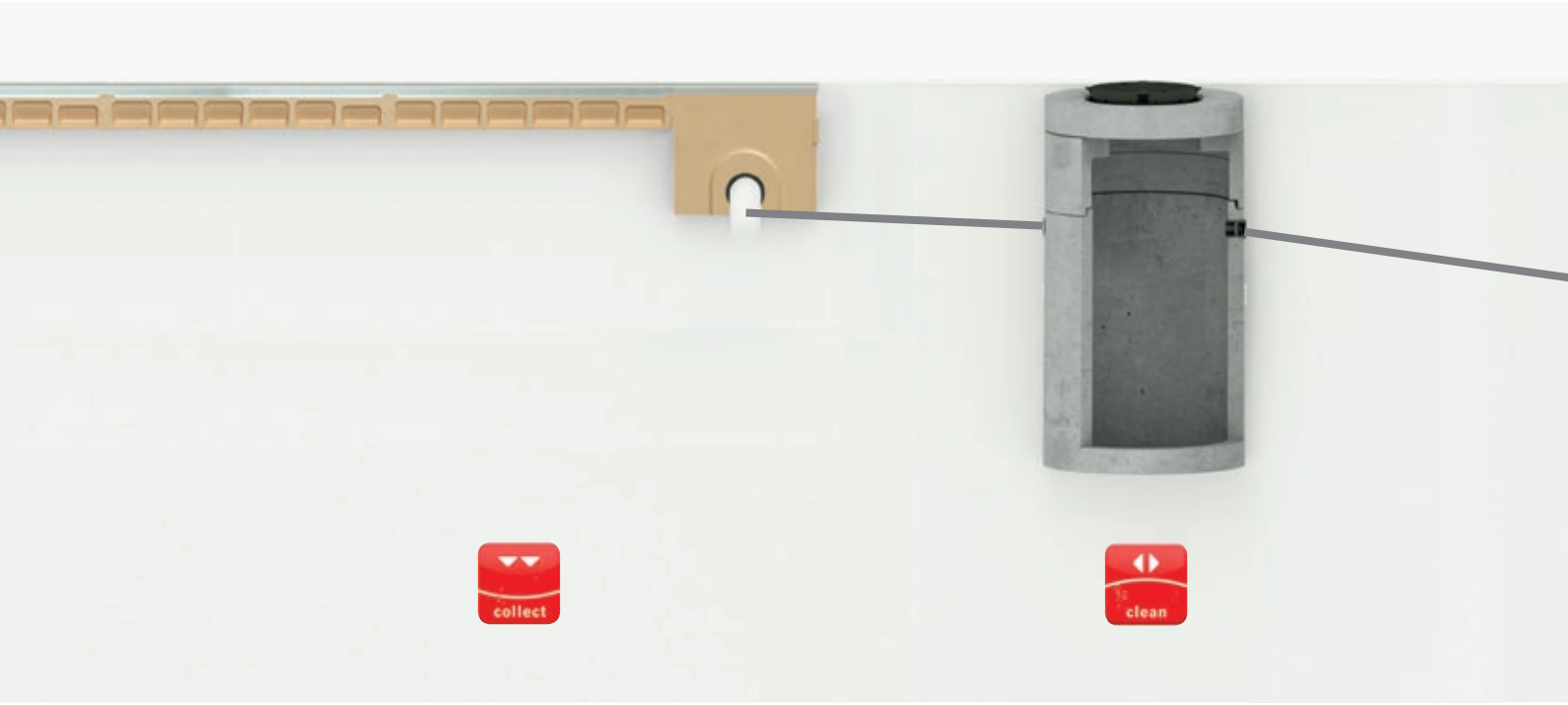
- Collect and uptake surface water
Whether line or point drainage, high-quality drainage channels and gullies are available for every application case.

- Cleaning and treating surface water: where does the surface water come from and where should it be discharged? Different sedimentation shafts and systems enable proper treatment of the surface water, as required by law, before it infiltrates the soil or is discharged into the receiving water.

- Retaining surface water: Surface water retention basins are used if the receiving water is overloaded. Products made of concrete and plastic are available, so that the best solution can be chosen for each use. Infiltrations systems, for example, block infiltration drains, also initially retain the surface water. The water is then gradually discharged into the soil, which promotes groundwater recharge.

- Discharging surface water: Controlled discharge of the previously collected surface water is becoming increasingly important. ACO offers suitable flow restriction systems and pumping installations, to discharge the surface water from a collection tank into the receiving water in a controlled way.

Four guiding questions in surface water management



How does surface water management and water protection begin?

ACO surface water drainage

- Drainage channels
- Road and yard drains
- Gully tops
- Manhole covers

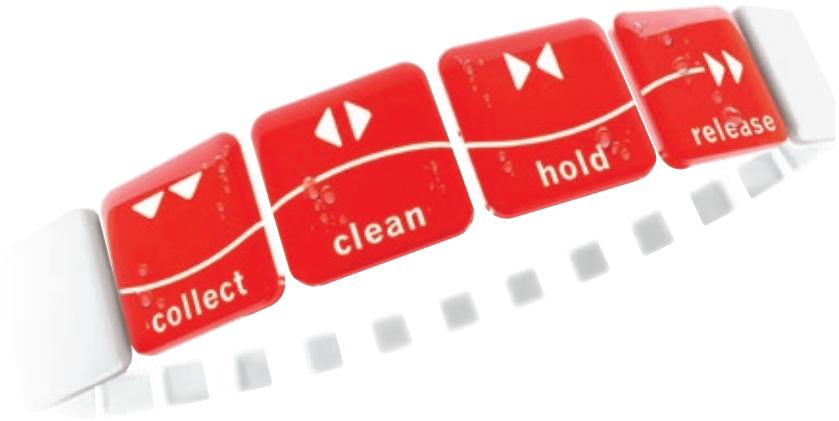
from page 10

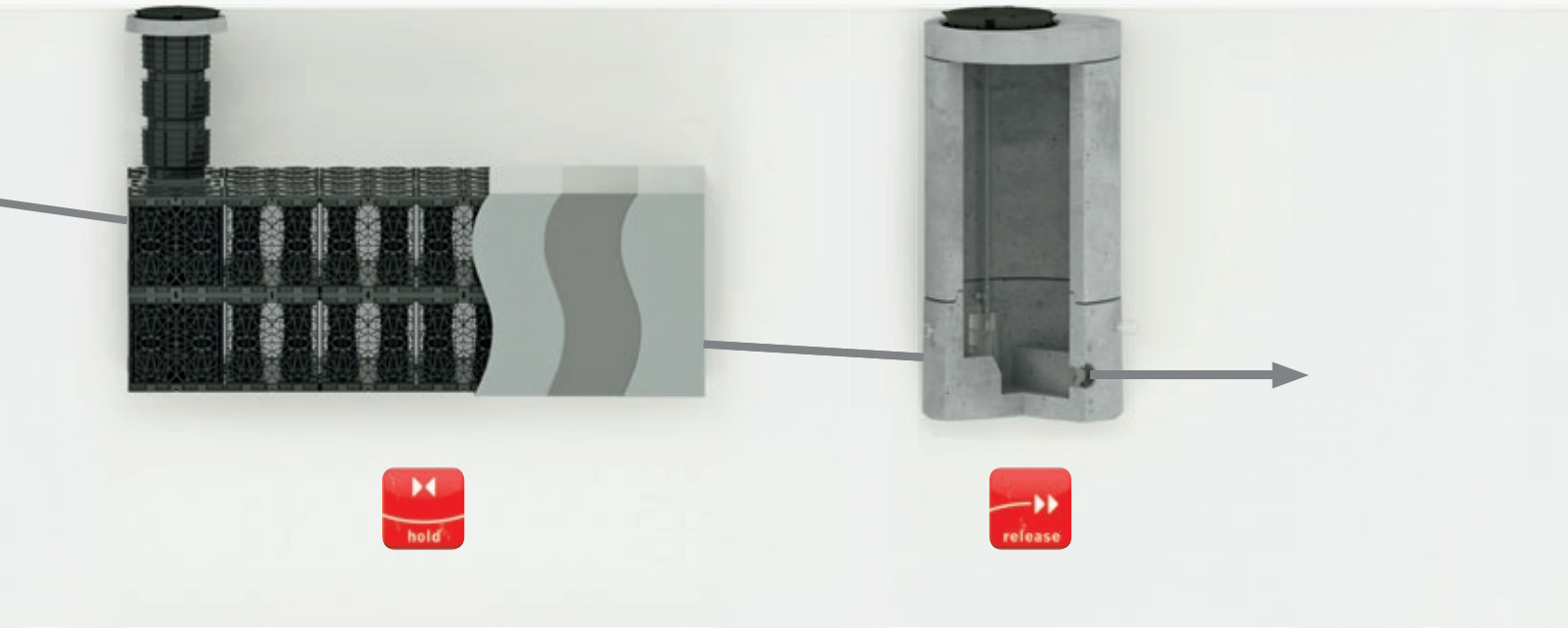
How to achieve the right water quality?

ACO cleaning systems

- Separators
- Sedimentation and filtration systems

from page 14





How to reduce surface runoff to a natural level?

ACO infiltration/ attenuation systems

- Control valve shafts
- Infiltration and attenuation systems
- Retention basins made of concrete

from page 24

How to control the discharge rate to the required level?

ACO control systems

- Flow control systems
- Pump shafts

from page 66

How does surface water management and water protection begin?

ACO surface water drainage

ACO cleaning systems

ACO surface water drainage

Reliable and sustainable surface water management begins with reliable collection of the surface water from hard surfaces. ACO offers a comprehensive range of drainage channels and gullies, which have been developed for optimum performance depending on the specific project requirements, to ensure the safety, protection and convenience of people, buildings and traffic routes

What ACO drainage channels and gullies offer:

- 100 % fulfilment of the relevant standards, e.g. EN 124, EN 1433
- The suitable load case depending on the application case
- Guaranteed safety
- Required hydraulic design depending on the project
- ACO Multiline Seal in and ACO Monoblock RD 200 V (tight) provide a seal between the channel joints as a standard feature
- This means that 100 % of the collected surface water is carried to the destination

ACO infiltration/attenuation systems

ACO control systems

ACO DRAIN® Multiline
Flexible solution for a large number of application cases

ACO DRAIN® PowerDrain
Heavy duty channel made of polymer concrete

ACO DRAIN® Monoblock
Monolithic polymer concrete channel for the highest loads

ACO Qmax
Retention slot channel with large storage volume

ACO Combipoint PP
Lightweight road gully made of plastic

Drainage channels

ACO DRAIN® line drainage made of polymer concrete or plastic

ACO XtraDrain
The channel body made of high-quality plastic offers easy handling combined with top quality. Technical details, such as the tried and tested V-profile or the hexagonal structure of the side walls fulfil all requirements for a modern drainage channel. High flow velocities and good self-cleaning effects minimise the care and maintenance work required for the channel system. The tongue and groove joint at the start and end of the channel enable simple and convenient installation.

ACO XtraDrain made of plastic with Composite plastic grating

corrosion-free

ACO PowerDrain
ACO PowerDrain is a real all-rounder for traffic areas, which withstands heavy loads and achieves good flow performance even at high flow velocities in the area of ramps. With its new nominal size system, universal stability, functionality, design freedom and innovative noise dampening the product line has plenty of convincing features.

ACO PowerDrain heavy-duty channel with integrated damping

quiet

efficient

The special elastomer damping achieves permanent noise reduction

Yard drains and gullies

ACO DRAIN® point drainage made of polymer concrete or plastic

ACO yard drain
The yard drain system with load class B 125 can be installed with a few manual actions. Thanks to the Pointlock screwless stop, the cover is protected against vandalism and theft and can only be opened with the help of a tool. The yard drain is therefore extremely suitable for use in public areas. A filter bag is available for connection to a pipe seepage system. The water is thus clean when fed into the seepage system.

ACO yard drain system
with Pointlock stop

boltless

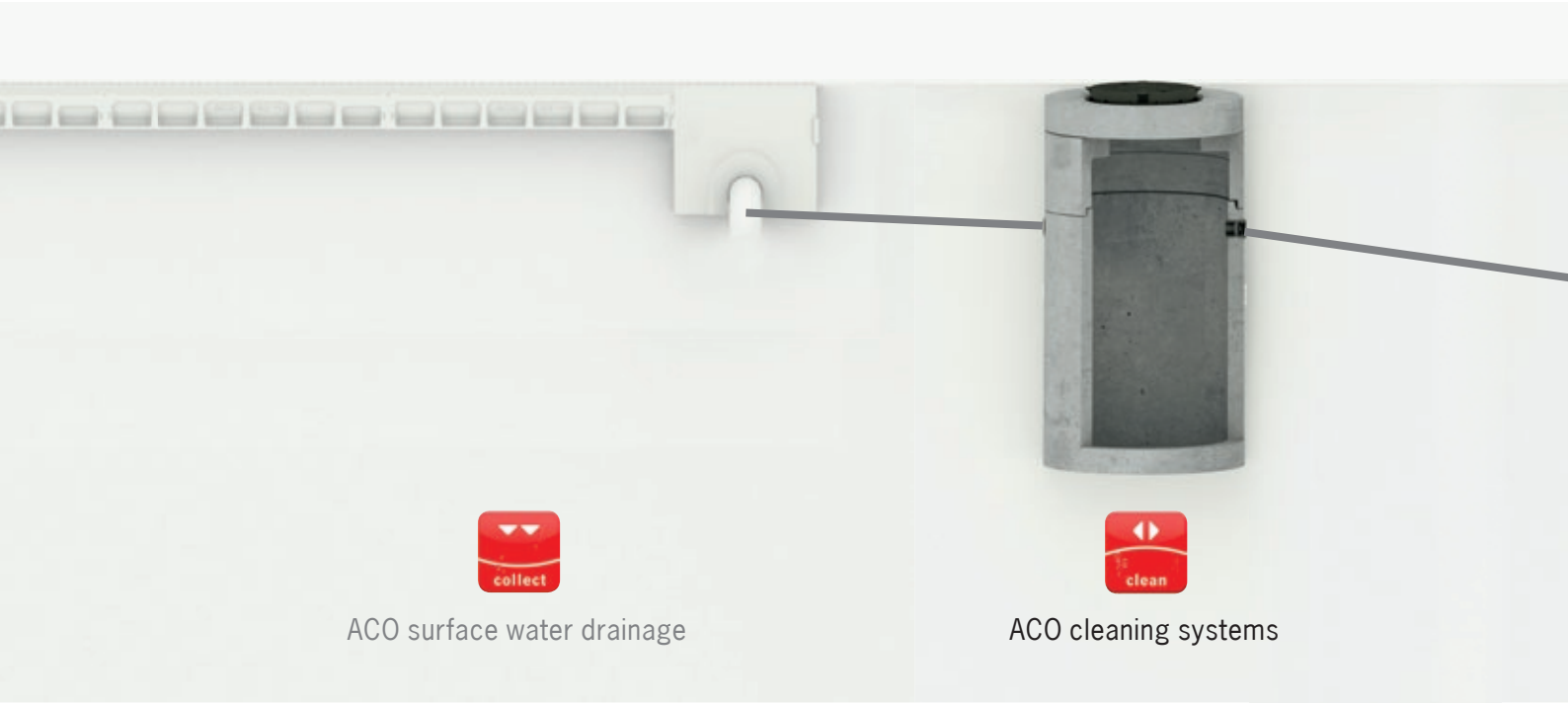
ACO Combipoint PP road gully
The Combipoint PE made of polyethylene is suitable for load class D 400. These are used, among other things, where electrofusion socket fittings are used in the area of the pipe connection.

The gully and gully top are load-separated and matched with each other so that they transfer loads into the adjacent base courses. This avoids settlement, the structure is protected and irreparable damage to the mortar joint is prevented. The low weight of the gullies – between 6 and 10 kg depending on their size – makes their installation easy and cost-effective.

ACO Combipoint PE
one-piece gully body

separated

How to achieve the right water quality?



collect

ACO surface water drainage

clean

ACO cleaning systems

ACO cleaning systems

Collected surface water from traffic areas, car parks and uncoated metal roofs or façades contains substances that must not be discharged directly into the receiving water (outfall) or the groundwater. If they are discharged into nature, they constitute a risk to soil, groundwater and the environment. The collected surface water must therefore be treated, to prevent sediments, tyre wear particles and heavy metals from getting into the sewers or nature.
Different sedimentation and surface water treatment plants are available, depending on the degree of contamination of the collected surface water.

What ACO cleaning systems offer:

- Hydraulic calculation to DWA-M 153
- Load class depending on application case
- Required dimensioning by object

ACO infiltration/attenuation systems

ACO control systems

ACO Combipoint SSA
Separation road gully

ACO Sedised-P
Sedimentation system

ACO Sedised-C
Sedimentation system

ACO Sedismart-C
Sedimentation system

ACO HMS
heavy metal separator
Safe solution for metal roofs

min. **Cleaning quality** max.

Sand traps

For pre-cleaning smaller catchment areas

Yard driveways

ACO Combipoint
Rainwater that is to seep away on a piece of private land using a infiltration system must first be cleaned. The ACO Combipoint plastic road gully makes it possible to clean rainwater that collects on the following surfaces:

- 400 m² roof area
- or 200 m² road/square areas
- or 200 m² roof area and 150 m² road/square areas

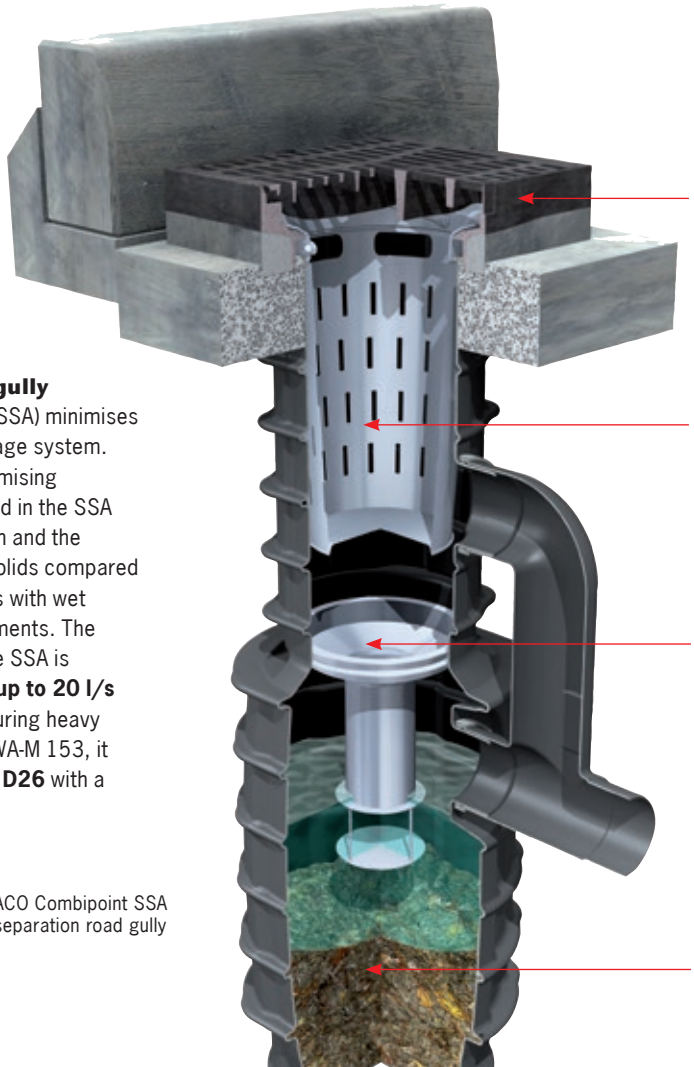
Thanks to the innovative modular structure, the size of the sludge compartment can be varied to match the requirements.

There are two options for collecting and cleaning surface water before it drains into the infiltration system:

- Line drainage – Surface water is collected through an ACO drainage channel and directed into the ACO Combipoint road gully and cleaned there. The cover is a closed manhole cover.
- Point drainage – Surface water is collected directly through the ACO Combipoint road gully with road gully top.

ACO Combipoint PP
liquid sludge road gully

Public roads



ACO Separation road gully
The separation road gully (SSA) minimises solids getting into the sewage system. Using a flow insert for minimising turbulence that is integrated in the SSA improves the sedimentation and the discharge of sedimented solids compared to conventional road gullies with wet sludge collection compartments. The surface area drained by the SSA is approx. **500 m² at 8 l/s; up to 20 l/s** for short periods of time during heavy rain. In accordance with DWA-M 153, it must be assessed as **type D26** with a **passage value of 0.6.**

ACO Combipoint SSA
separation road gully

Sedimentation systems

The protective pre-cleaning stage

Sedimentation systems are used to free surface water of sediments and floating substances, thereby protecting filtration systems or rainwater attenuation basins from silting up.

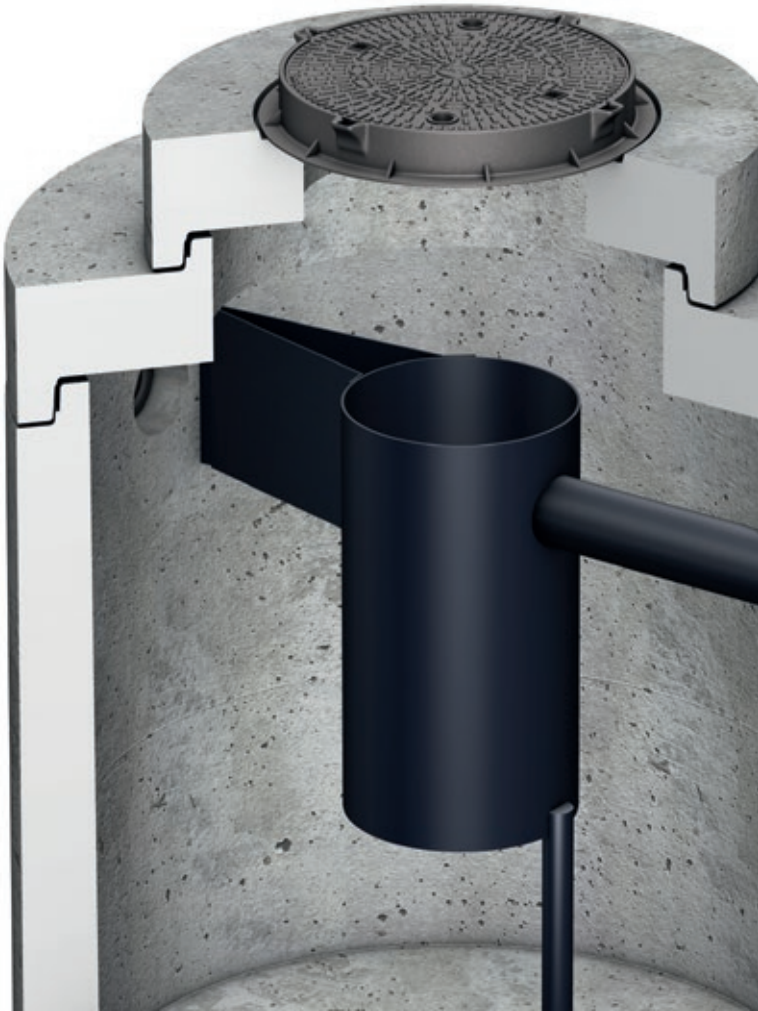
Traffic areas

ACO Sedised-P

ACO Sedised-C

ACO Sedised-P and -C can clean surface water of sediments up to a precise granulation size. Calculations are carried out with a surface coating of either **9, 10 or 18 $m^3/(m^2h)$** during dimensioning only. ACO Sedised-P and -C are sedimentation systems **type D21, 24 or 25** according to DWA-M 153.

ACO Sedised-P is a plastic container with a monolithic structure. The lower weight is a clear advantage compared to concrete containers. For structural reasons, the maximum installation depth of 3 m must be observed. Different gully tops mean that variants of load class B 125 and D 400 are available.
ACO Sedised-C is a concrete container that is available in load class D 400.



ACO Sedismart-C

The optimised ACO Sedismart-C sedimentation system has an internal body that the surface water to be cleaned must flow around and through. This moves the water in the sludge trap into a rotational flow. The flow time is extended and the sedimentation of solids is optimised. The hydraulic performance limits of the optimised sedimentation systems have been confirmed by an external expert using hydrodynamic flow simulation.
The ACO Sedismart-C sedimentation systems correspond to **type D24** according to DWA-M 153.

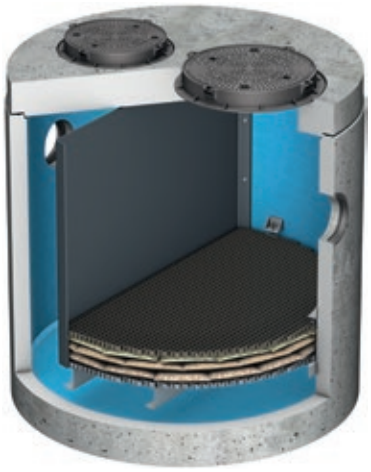
Heavy metal separation

The next pre-cleaning stage

Water flowing off heavy metal roofs must not be discharged into watercourses, sewers or groundwater without being treated. This water is classified as being highly polluted by copper, zinc and lead, and requires special processing.
ACO HMS heavy metal seperator systems for rainwater treatment can protect infiltration systems against pollution and obstruction by settleable solids.

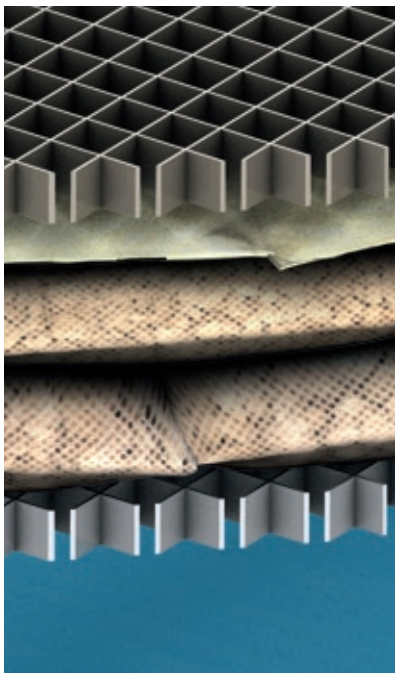
The rainwater is cleaned using ion exchangers. The water quality is then so high that it can be fed directly into the infiltration system or seepage shafts, watercourse, biotope or into a rainwater consumption system. In the filter shaft, the rainwater is cleaned by the following basic technical processes: sedimentation, adsorption and filtration.

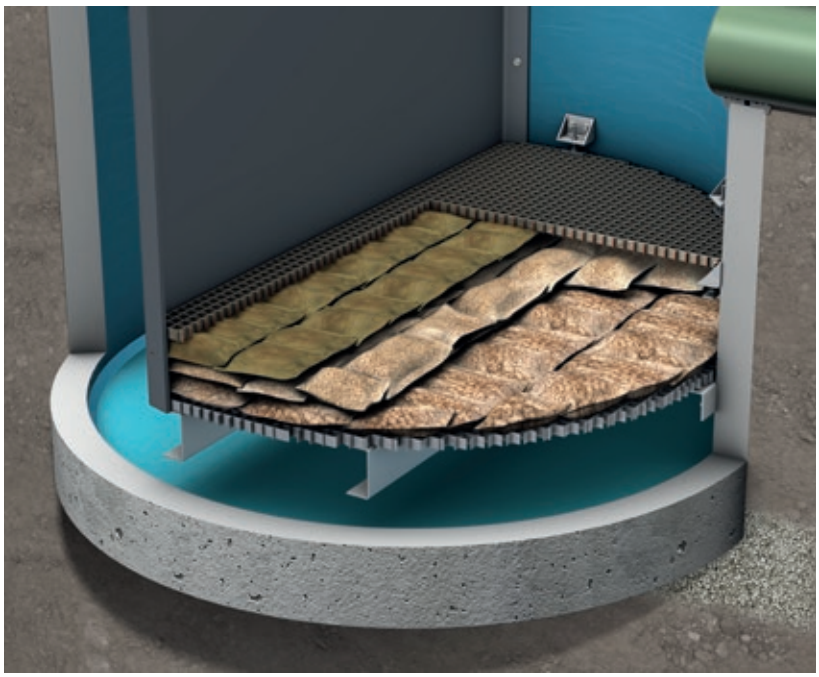
The cleaning capacity is very high due to the large sedimentation volume and downstream HMS filter with integrated fine sludge trap. Based on DWA-M 153, the combination of external sludge trap and HMS with integrated sludge trap is therefore to be classified in the same way as the retention soil filter **Type D11**. The design of the drainage to DWA-M 153 can be based on a passage value of 0.15.



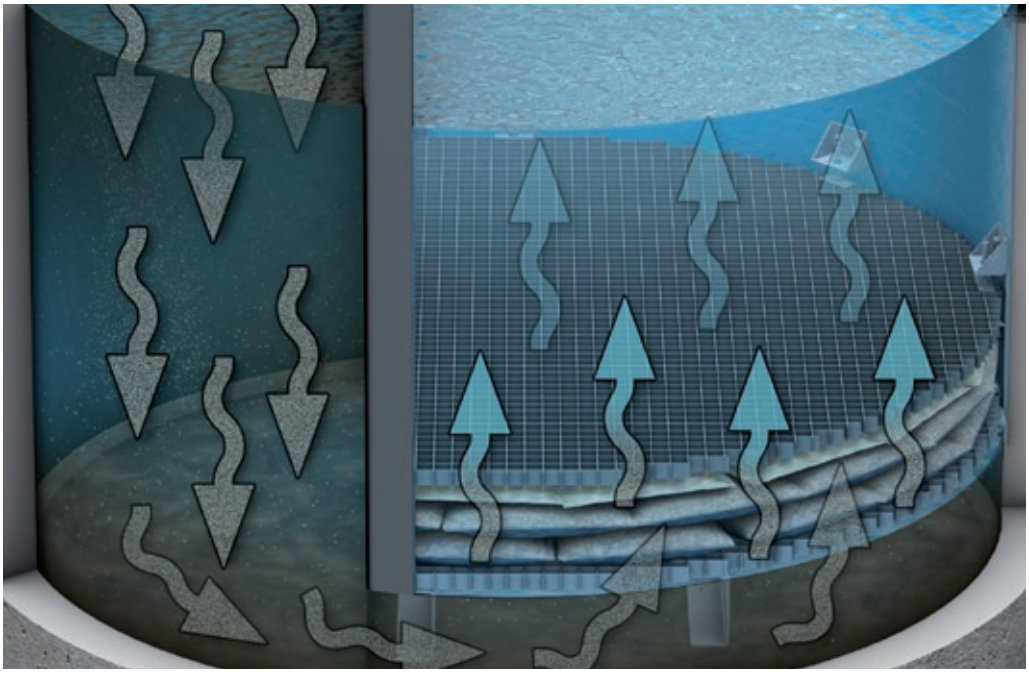
Metal roofs
Metal facades

ACO HMS heavy metal separator
with integr./ext. sludge trap



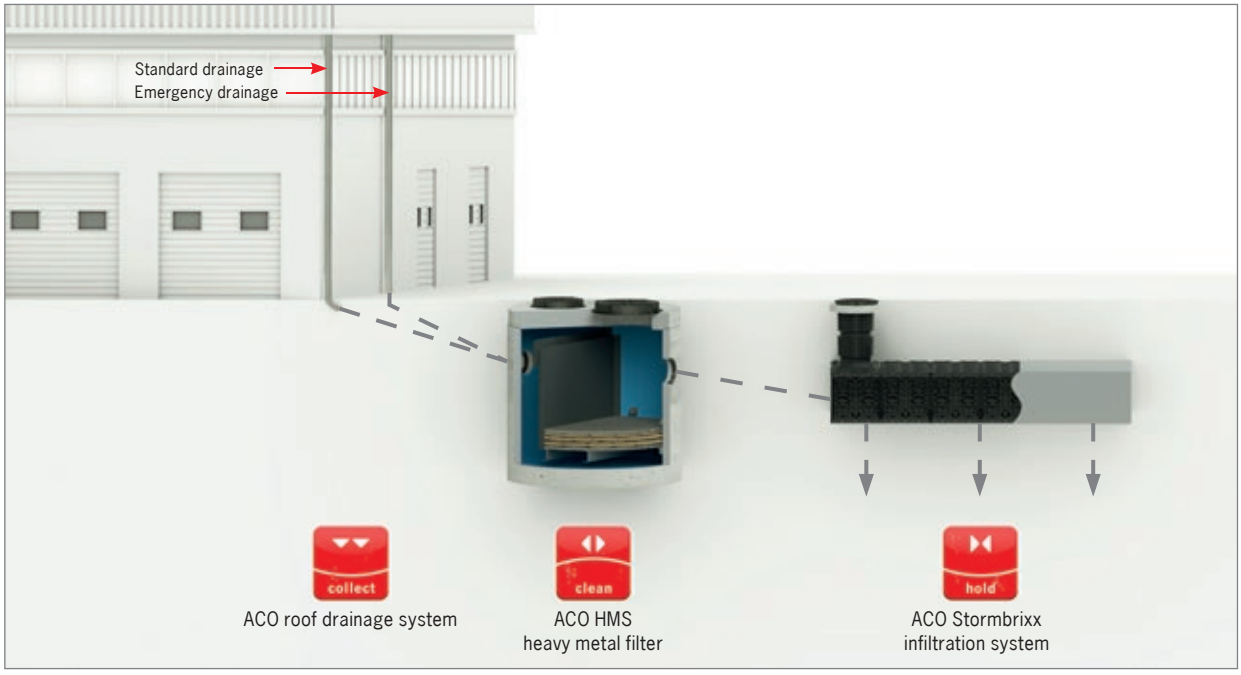


Protection against soiling and blockaging caused by settling substances in the discharge of surface water, e. g. from uncoated roofings made of copper, zinc and lead



Treatment of the metal roof runoff via ion exchangers and process technology (sedimentation, adsorption, filtration)

Infiltration – Metal roof



Application example of ACO system chain for rainwater infiltration with ACO Stormbrixx

Standard drainage | Intake of rainwater through ACO flat roof gullies and ACO GM-X pipes – roof water cleaned using ACO HMS heavy metal filter – temporary storage and time-delayed infiltration of the rainwater through the ACO Stormbrixx infiltration system.
Emergency drainage | The emergency drainage for roof surfaces as defined in DIN 1986 Section 100, Paragraph 5.3.1, Edition 2008, does not exclude direct drainage via a treatment stage (ACO HMS heavy metal filter) into the ACO Stormbrixx infiltration system.
The infiltration system and the heavy metal filter must be dimensioned accordingly.

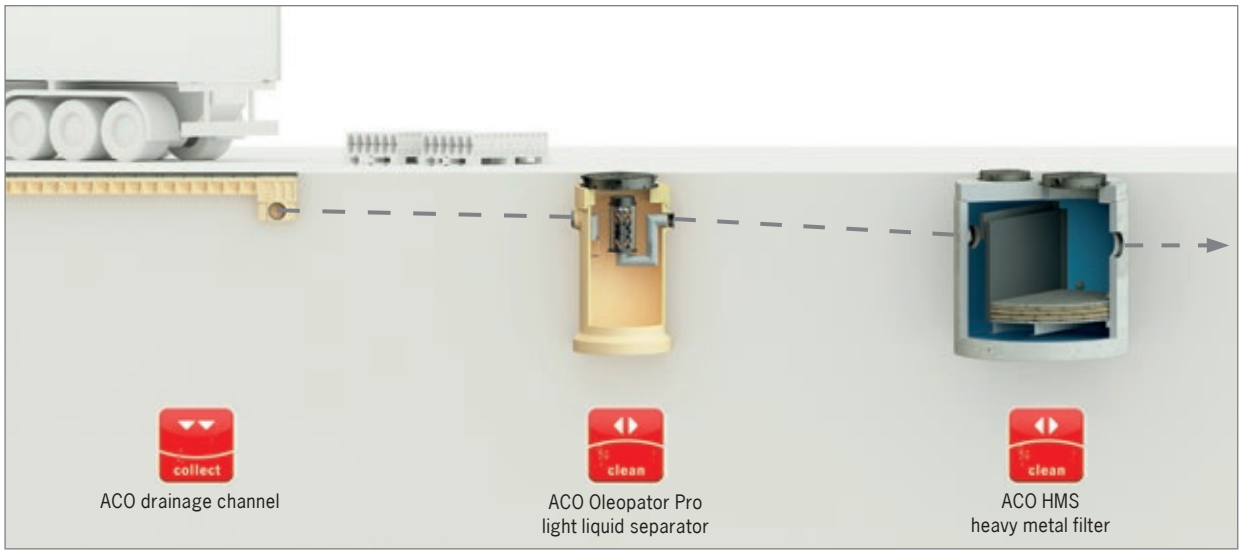
Light liquid separators

Pre-cleaning: water-endangering substances

In an individual case, it can be useful to use a light liquid separator to EN 858 in conjunction with surface water infiltration or retention. Surface water can become contaminated, e.g. when it occurs on hardened surfaces. Surface water that has become mixed with light liquids of mineral origin in specific applications, must be treated via suitable separator systems or retention devices must be provided.
The treated surface water must then be fed into the wastewater sewer (DIN 1999-100).

Laws, for example the law on prevention and remediation of environmental damage, require maximum operating safety of plants that handle water polluting liquids. ACO offers practical solutions with new and innovative technology.
If the contaminated surface water is to be discharged into a body of water, the respective authority must decide what treatment plant must be used depending on the degree of contamination and the sensitivity of the receiving water.

Pre-cleaning – Heavy load area



Application example of ACO system chain for rainwater pre-cleaning

In exposed locations (connection to the wastewater sewer is not possible), use of a coalescence separator and heavy metal filter may be specified by the authorities to achieve pretreatment of the surface water. The surface water is then discharged, e. g. directly into the available outfall.

Polymer concrete chambers

ACO separators made of polymer concrete are virtually maintenance-free and bear a low renovation risk. Due to the outstanding property profile of polymer concrete, a coating or PE-HD internal lining can be omitted.

ACO polymer concrete shafts and shaft components are made of pressure-resistant and impermeable polymer concrete with a high compressive strength of at least 90 N/mm² and at least 22 N/mm² ultimate flexural strength. The monolithic chambers and shaft construction are bonded together so that a completely impermeable shaft system results.

As polymer concrete has a water penetration depth of 0 mm, standard susceptible coating can be completely omitted, similar to plastic material. The result is a material that is resistant on the inside and outside, which is permanently protected up to the top of the shaft cover against attack by light liquid.

A further advantage is easy handling, which results from a weight up to 60 % less than that of concrete.

ACO polymer concrete is chemical resistant without additional coatings

Tight

Lightweight

Resistant

Concrete chambers

Concrete is a material that plays a decisive role in tank construction for separator and drainage technology. ACO tanks for drainage technology are made from a highly waterproof concrete, have a very high resistance and stability. The tanks can be used as separators, pumping stations, accident (spillage) systems or special chambers and can also be equipped with a plastic coating or lining. ACO tanks made of concrete are a durable solution for the drainage and treatment of water.

Coated or lined

Reliable

Low-maintenance due to filterless multi-channel technology

In addition to the light liquids in wastewater, coalescence separators also filter out suspended substances and fine sludge fractions. As these substances attach themselves to the light liquid droplets, they adhere to the surface of the coalescence filter. As a consequence the element must be cleaned at regular intervals to prevent blockaging and thus malfunctioning of the separator.

Not the case with the Oleosmart Pro: Thanks to the filterless multi-channel technology it is almost maintenance free. Interruptions in operation to clean the coalescence unit are therefore completely unnecessary (self-cleaning by flow energy), follow-up costs are reduced substantially due to the lack of wear in the element. The blockage-free coalescence channel also prevents blockaging (e. g. by fine sludge and/or suspended substances) and the accompanying build-up in the separator.
The risk of light liquids escaping from the separator is minimised substantially. High operational safety and reliability is thus achieved.

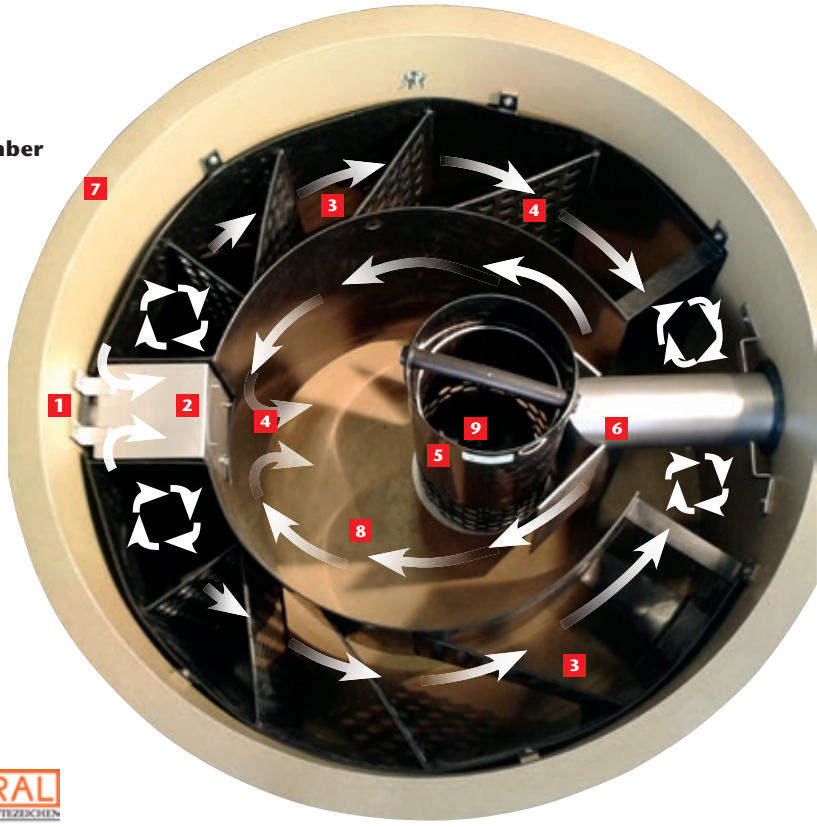
ACO Oleosmart Pro

ACO Oleosmart Pro
made of polymer concrete

Without filter

Filterless coalescence unit in the polymer concrete chamber

1. Inlet pipe
2. Inspection opening
3. Coalescence channels
4. Flow conditioner
5. Protective pipe with dirt trap
6. Outlet
7. Polymer concrete chamber
8. Integrated sludge trap
9. Float switch



DIBt

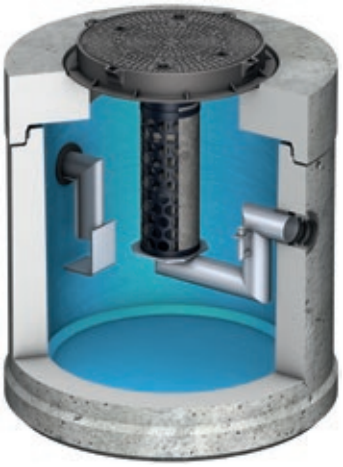
National technical approval issued by the DIBt Berlin

GET (Gütegemeinschaft Entwässerungstechnik e. V.) awarded quality mark RAL-GZ 693. The RAL quality mark is one of the most important quality symbols in Germany.

Effective coalescence separator

The Oleopator-C light liquid separator works effectively and is nonetheless space-saving. The nominal performance and volume of the sludge trap are determined for each specific project based on the actual requirements. Another advantage for the operating costs: All separators in this series are tested as petrol and coalescence separators. This means that when the coalescence element is replaced, the wastewater flow does not have to be interrupted, as the petrol separation continues to run. The petrol separator ensures safe, reliable, simple and cost-effective operation, provided it is inspected regularly according to the self-monitoring regulations.

The light liquid separator with coalescence separator is also available as an ACO Oleopator Pro polymer concrete separator.



ACO Oleopator-C

ACO Oleopator Pro
made of polymer concrete

With filter

Coalescence filter in the concrete chamber

1 Inlet pipe

2 Coalescence element with filter

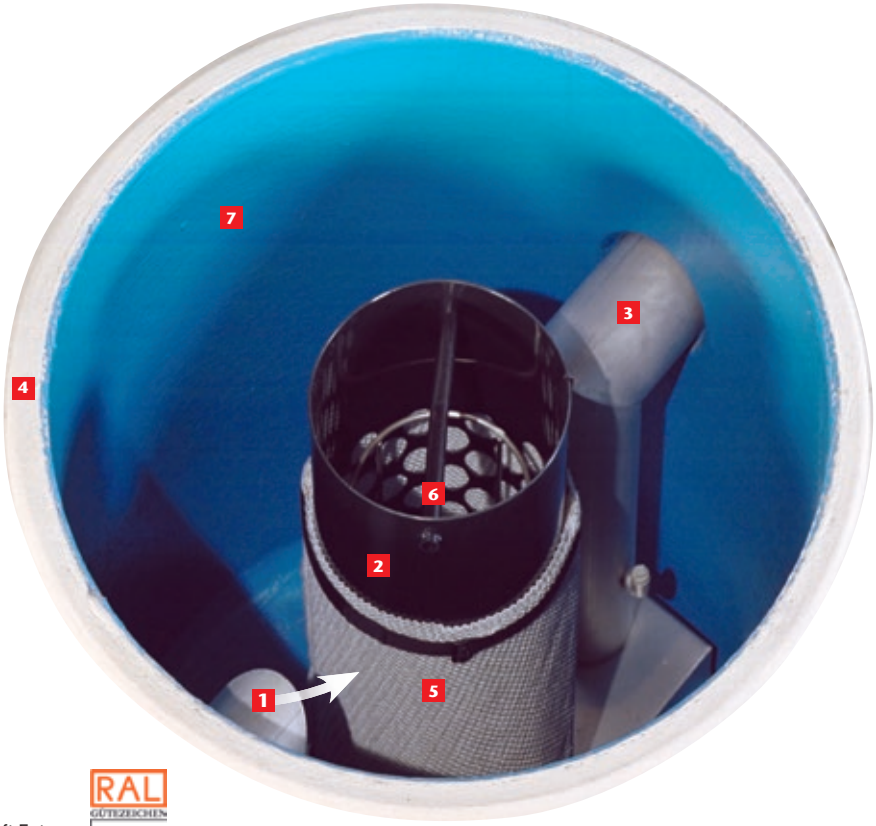
3 Outlet

4 Reinforced concrete container

5 Integrated sludge trap

6 Float switch

7 Coating



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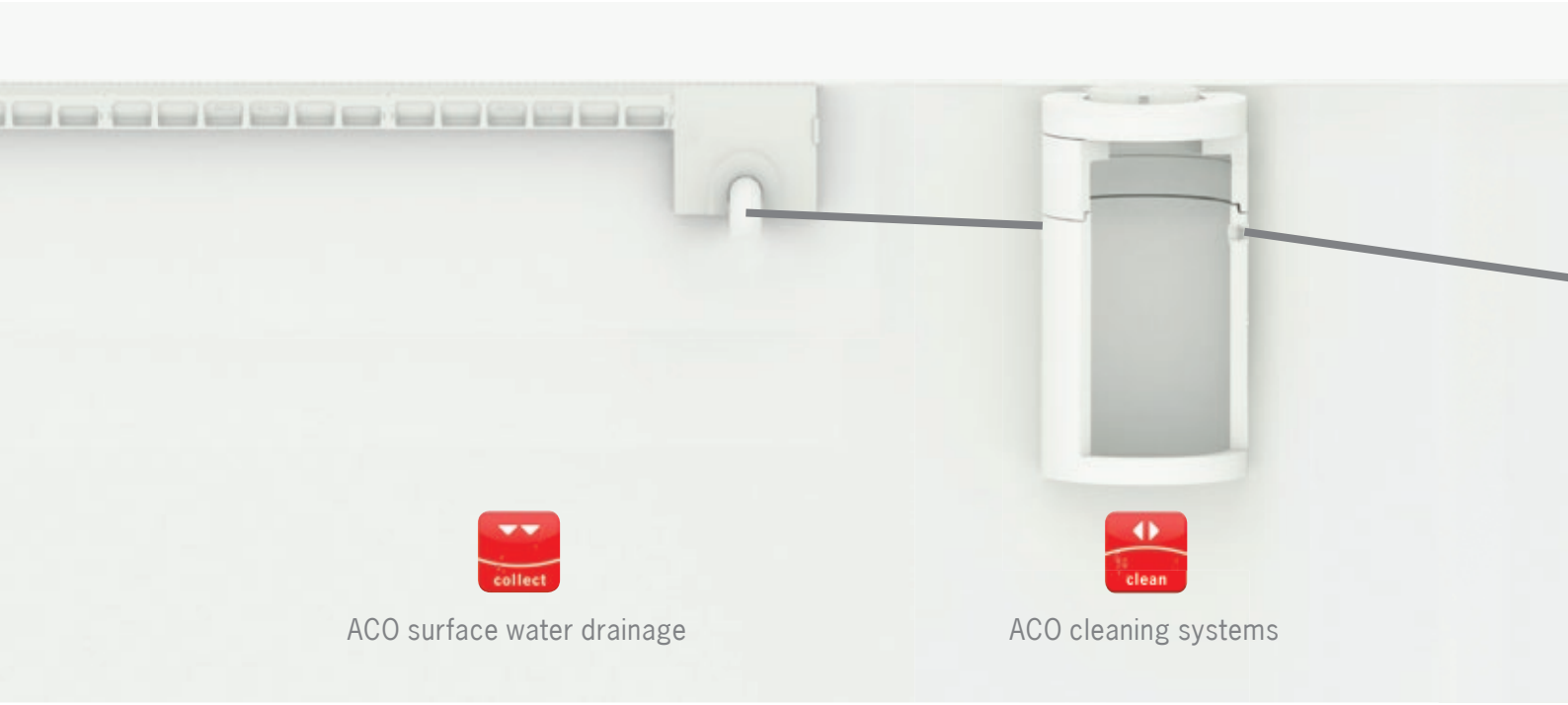
How to reduce surface runoff to a natural level?



ACO surface water drainage

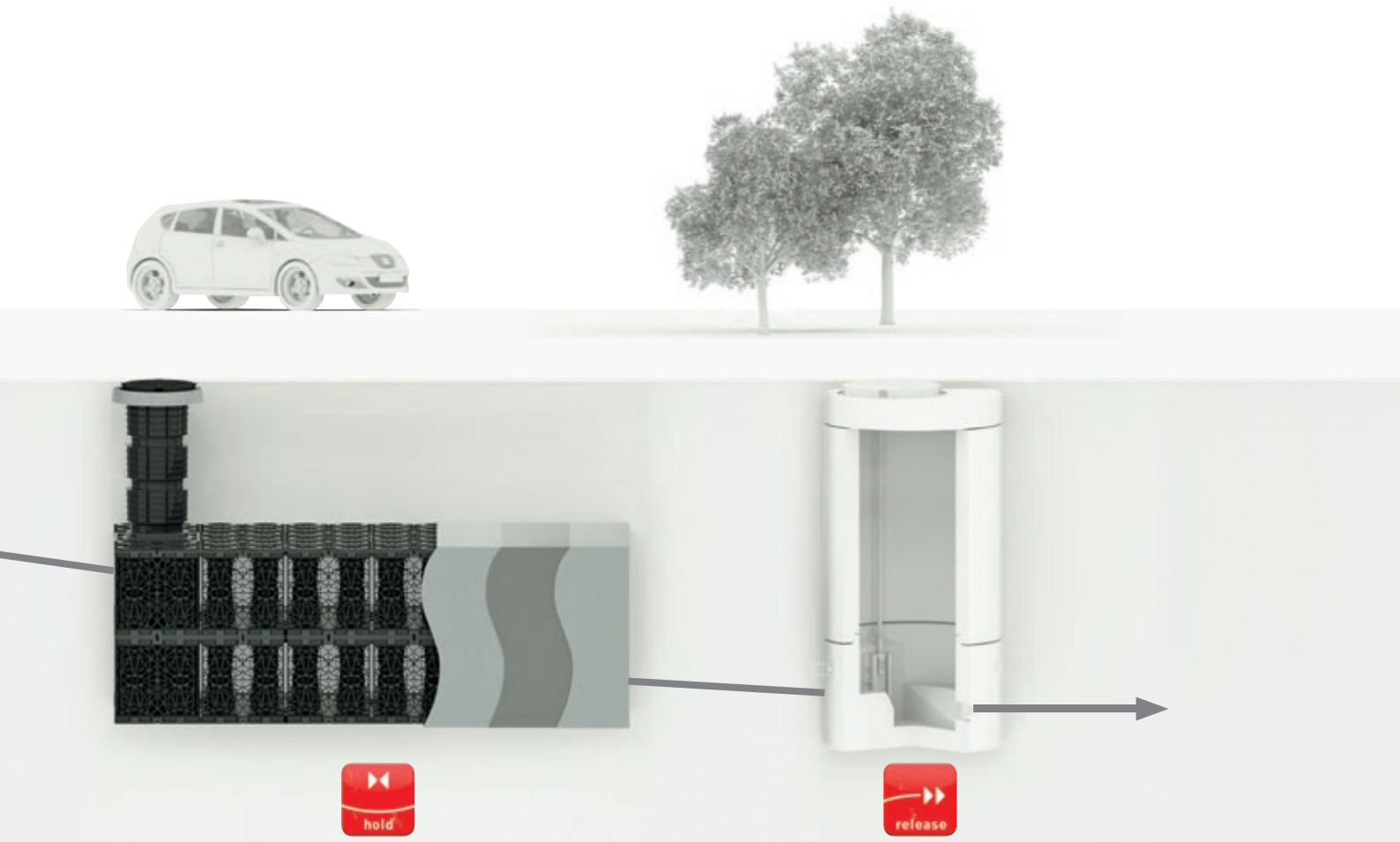
ACO cleaning systems

ACO infiltration/attenuation systems

Groundwater recharge and the retention and controlled discharge of stormwater into the receiving water are two central topics of surface water management.
Classically, retention basins or storage channels are used here. The ACO Stormbrixx block infiltration drain system provides an additional innovative and optimal solution:
In infiltration the previously collected and treated surface water is collected in the ACO Stormbrixx infiltration drain system. From there it is gradually discharged into the in situ soil and promotes groundwater recharge.
Encased in a waterproofing sheet (geomembrane), a type of tank is formed, in which the previously collected and cleaned surface water is collected, and is then discharged into the receiving water in a controlled way and with a time delay.
The controlled discharge of surface water into sewers or the receiving water is becoming increasingly important, especially in case of heavy rainfall events. In this way, the peak runoff of the surface water of a storm is spread over a longer period and is therefore reduced.

What the ACO Stormbrixx block infiltration system provides:

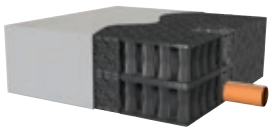
- Safe and reliably system stability through structural calculations
- Optimised logistics and easy handling
- Simple inspection and cleaning
- Hydraulic design to DWA-A 138
- ACO Stormbrixx SD has been tested by MFPA Leipzig GmbH
- ACO Stormbrixx HD is DIBt certified



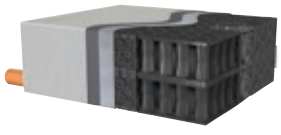
ACO infiltration/attenuation systems

ACO control systems

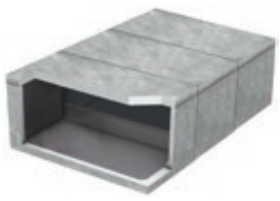
ACO Stormbrixx
Modular (SUDS) infiltration system



ACO Stormbrixx as
surface water infiltration

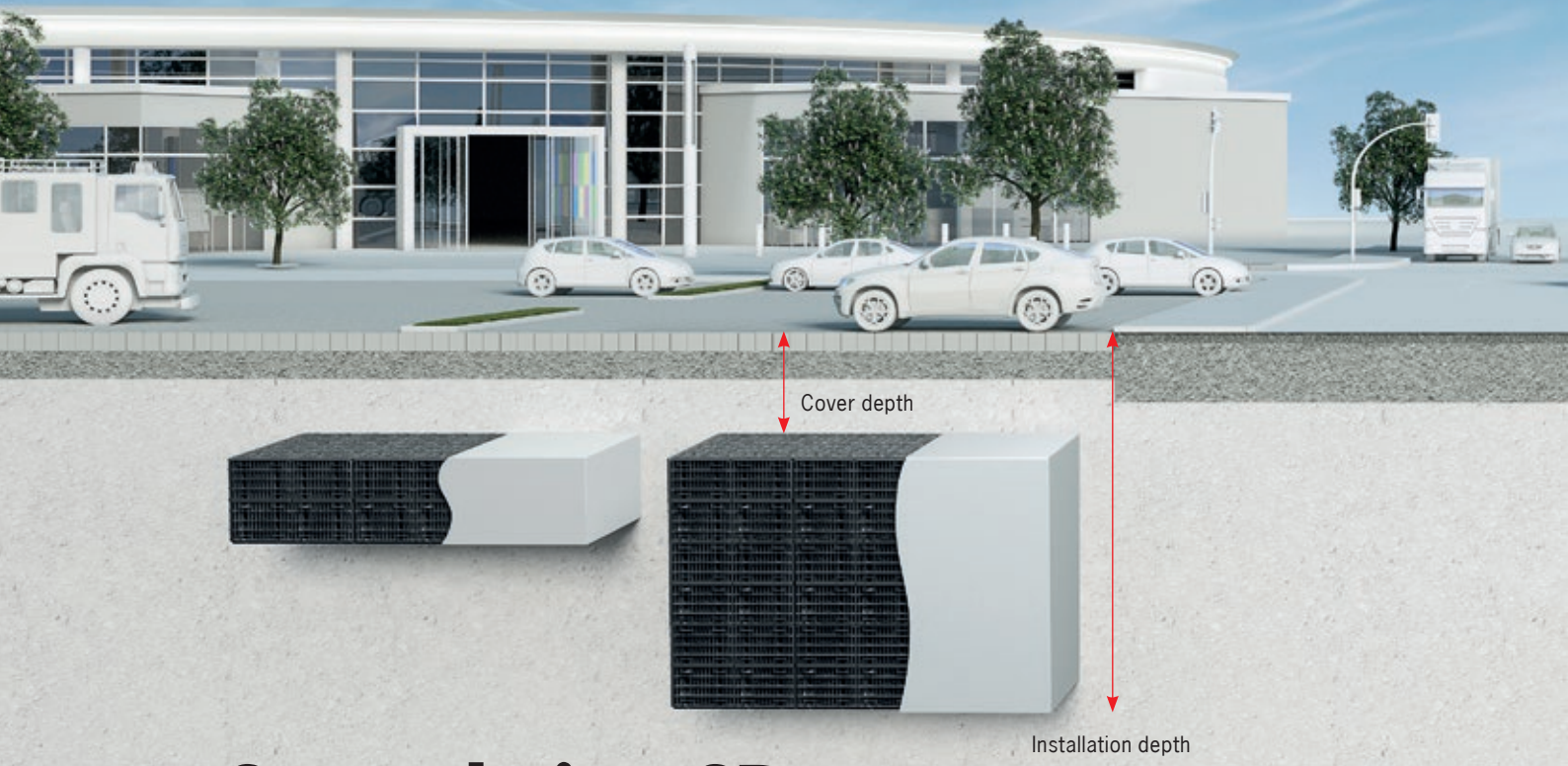


ACO Stormbrixx as
surface water retention



ACO Retention basin
made of concrete

Application overview –
Find the appropriate Stormbrixx construction



NEW Stormbrixx SD

Suitable for car traffic and emergency services

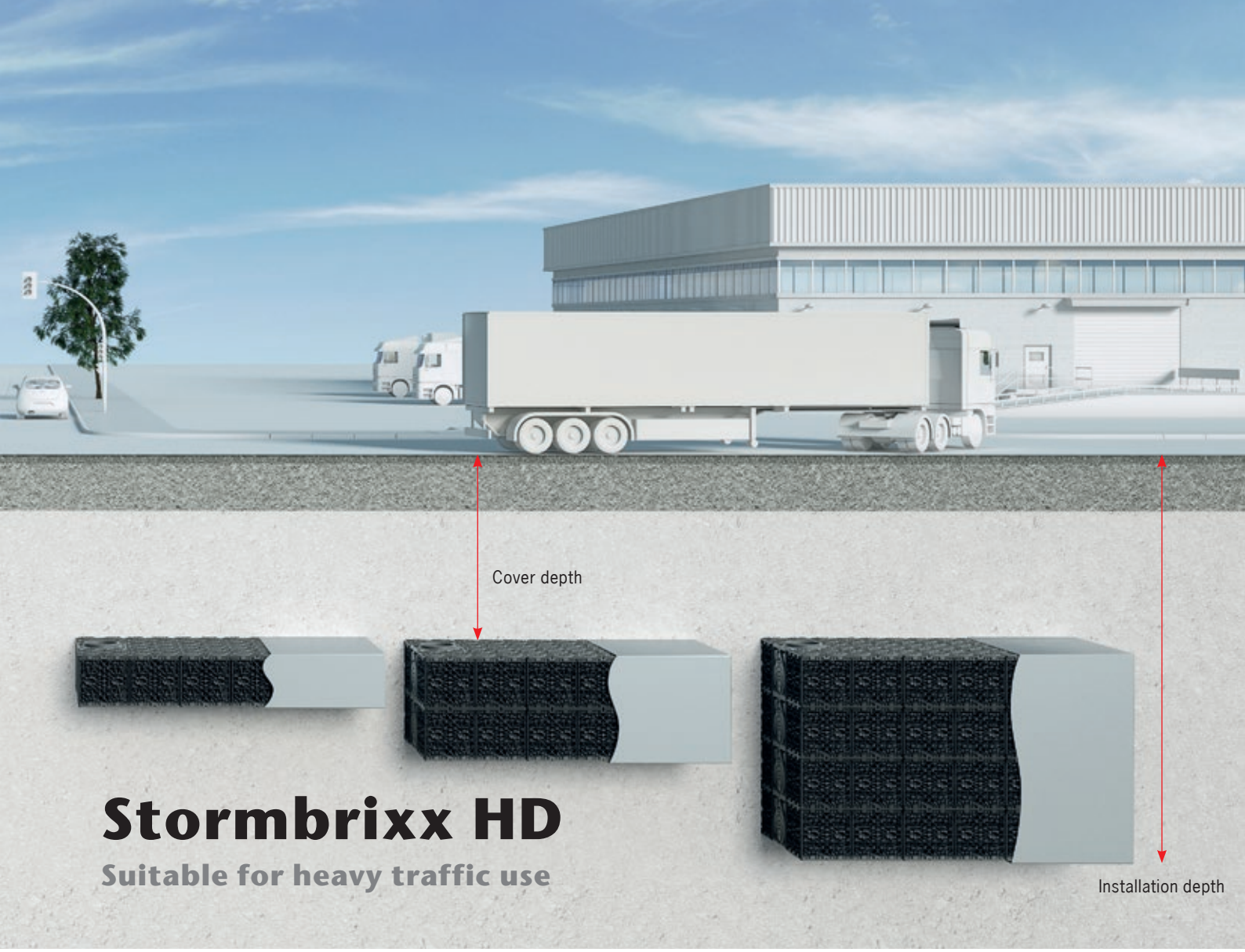
Application category
frost-free installation depth,
at least 80 cm deep (DIN 1054),
without groundwater influence:

- Landscaped areas, no vehicles
- Landscaped areas, driven by mowers
- Pedestrian areas, protected by obstacles (bord, bollards) from driving
- Driveways to carparks, crossing of emergency vehicles possible
- Carparks, crossing of emergency vehicles possible
- Access roads for residential property with scheduled crossings by special vehicles (refuse or tank vehicles) as well as operating service vehicles

Layers	Walkable			Trafficable		
	Cover depth		Installation depth	Cover depth		Installation depth
	minimal [mm]	maximal [mm]	maximal [mm]	minimal [mm]	maximal [mm]	maximal [mm]
1	800	2000	2914	800*	2000	2914
2	800	2000	3828	800*	2000	3828
3	Please contact ACO Application engineering in your country					

*Please consider the required road construction

Service
ACO Application engineering advises you.
Please contact them in your country.



Stormbrixx HD

Suitable for heavy traffic use

Application category
frost-free installation depth,
without groundwater influence:

- Landscaped areas, no vehicles
- Landscaped areas, driven by mowers
- pedestrian areas, protected by obstacles (bord, bollards) from driving
- driveways to carparks, crossing of emergency vehicles possible
- carparks, crossing of emergency vehicles possible
- Access roads for residential property with scheduled crossings by special vehicles (refuse or tank vehicles) as well as operating service vehicles
- Storage areas and secondary facilities of traffic routes which are not constantly used by heavy traffic (mainly stationary traffic, no traffic lane. Connection between storage areas)
- Traffic routes with heavy traffic: only in consultation with ACO Application engineering

Layers	Walkable and trafficable			Trafficable with heavy traffic		
	Cover depth		Installation depth	Cover depth		Installation depth
	minimal [mm]	maximal [mm]	maximal [mm]	minimal [mm]	maximal [mm]	maximal [mm]
1	800*	3400	4010	1000	3400	4010
2	800*	3400	4620	1000	3400	4620
3	800*	3400	5230	1000	3400	5230
4	Please contact ACO Application engineering in your country					

*Please consider the required road construction

H = 610 mm
(2 basic elements = 1 layer)

NEW ACO Stormbrixx SD

Standard duty

ACO Stormbrixx SD was tested in 2017 by the Gesellschaft für Materialforschung und Prüfungsanstalt für das Bauwesen Leipzig mbH (MFPA Leipzig).

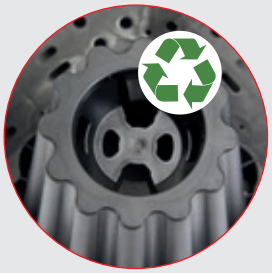
Special features

- Height of 1 layer: 914 mm
- Basic elements/m³: 3
- Volume/basic element: 319 l
- Storage coefficient: 97 %
- Min. cover depth: 0.8 m
- Max. cover depth: 2.0 m
- Tested by MFPA Leipzig (Installation up to 2 layers)

Example: 10 m³ = 10,000 l/319 = 32 basic elements

General features

FEEL SAFE WITH US 50 YEARS



Recycable polypropylene material provides a robust and corrosion-resistant basis for a long-lasting infiltration system. The basic elements form a loadable structure.

Basic elements can be cut in half to allow integration into the overall system.

Functional design combined with an intelligent snap-lock system make for problem-free handling and rapid installation.

ACO Stormbrixx HD

Heavy duty

Z-42.1-500

Deutsches Institut für Bautechnik DIBt

ACO Stormbrixx HD was awarded the general official approval Z-42.1-500 by the German Institute for Building Technology (DIBt) as an additional level of certainty.

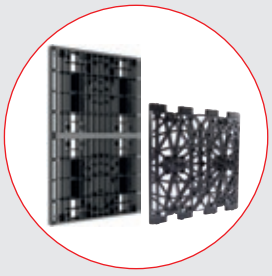
Special features

- Height of 1 layer: 610 mm
- Basic elements/m³: 4.5
- Volume/basic element: 209 l
- Storage coefficient: 95 %
- Min. cover depth: 1.0 m
- Max. cover depth: 3.40 m
- DIBt certified (Installation up to 3 layers)

Example: 10 m³ = 10,000 l/209 = 48 basic elements

Basic elements are layed and connected together in pattern in order to create structural rigidity in the overall system.

The pillars are also filled with storm water. Small openings at the base of the pillars optimise water treatment in the product.



Side panel perimeters for the entire system offer a sound base for laying the geotextile wrapper.

Thanks to the open structure of ACO Stormbrixx, inspection cameras and cleaning devices can have free passage through the system.

Practical
Stackable

Double pallet with basic ACO Stormbrixx elements

Stormbrixx benefit 1

Optimised logistics and reduced handling

Both the basic elements and the side panels, as well as the covers for the ACO Stormbrixx infiltration system stack perfectly for ease of transport. The building blocks fit into each other precisely, thus reducing the volume to be transported compared to traditional systems, resulting in substantially lower transport costs and CO_2 emissions.

ACO Stormbrixx makes it possible to transport required product units on a truck.

- Stormbrixx SD: 347 m^3 storage capacity
- Stormbrixx HD: 309 m^3 storage capacity

For conventional infiltration systems, up to four vehicles would be needed. Stacking the basic Stormbrixx elements therefore reduces transport costs.

Optimised transport

The modular ACO Stormbrixx infiltration system reduces transport costs and therefore more than halves CO_2 consumption and the storage space required in storerooms and on the construction site compared to other systems

Short paths to the pallets increase the installation speed

Stormbrixx benefit 2

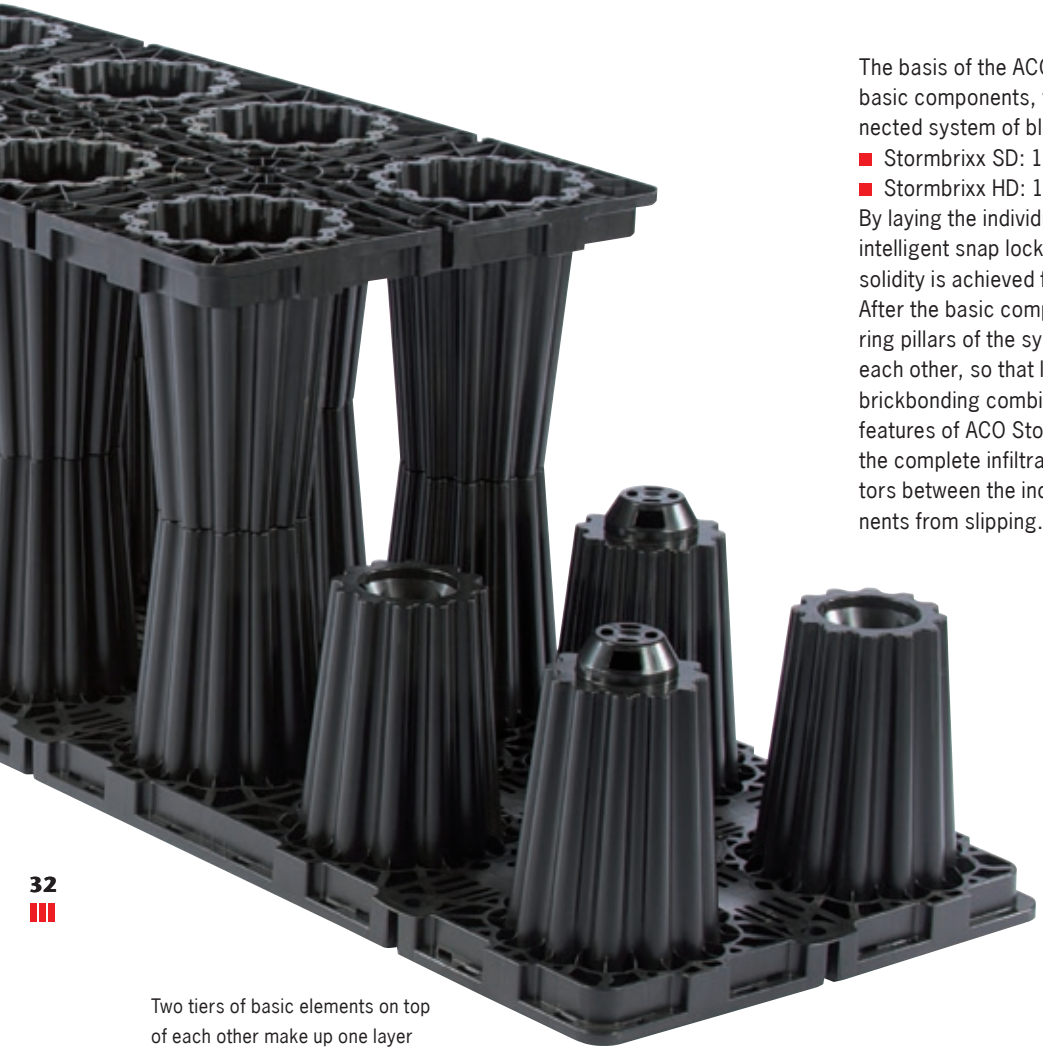
Stability thanks to brickbonding

The basis of the ACO Stormbrixx system is provided by the basic components, which are combined on site into an interconnected system of blocks.

- Stormbrixx SD: 1200 x 600 x 457 mm
- Stormbrixx HD: 1205 x 602 x 305 mm

By laying the individual components in patterns and using an intelligent snap lock system, an exceptional level of structural solidity is achieved for the overall system.

After the basic components have been assembled, the load-bearing pillars of the system are precisely vertically aligned above each other, so that loads are distributed downwards evenly. The brickbonding combination of the components is one of the key features of ACO Stormbrixx. It provides a stable construction for the complete infiltration system. All that is required are connectors between the individual layers to prevent the basic components from slipping.

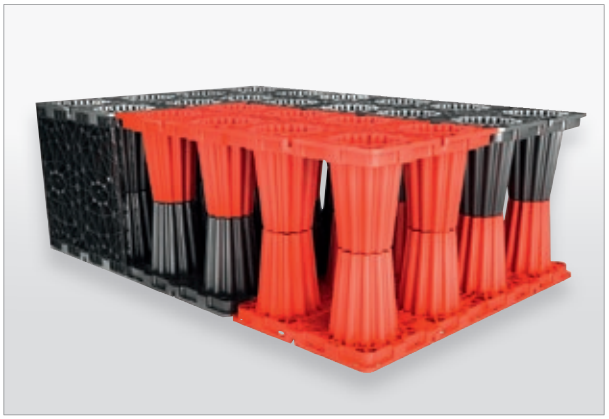


Two tiers of basic elements on top of each other make up one layer

Robust

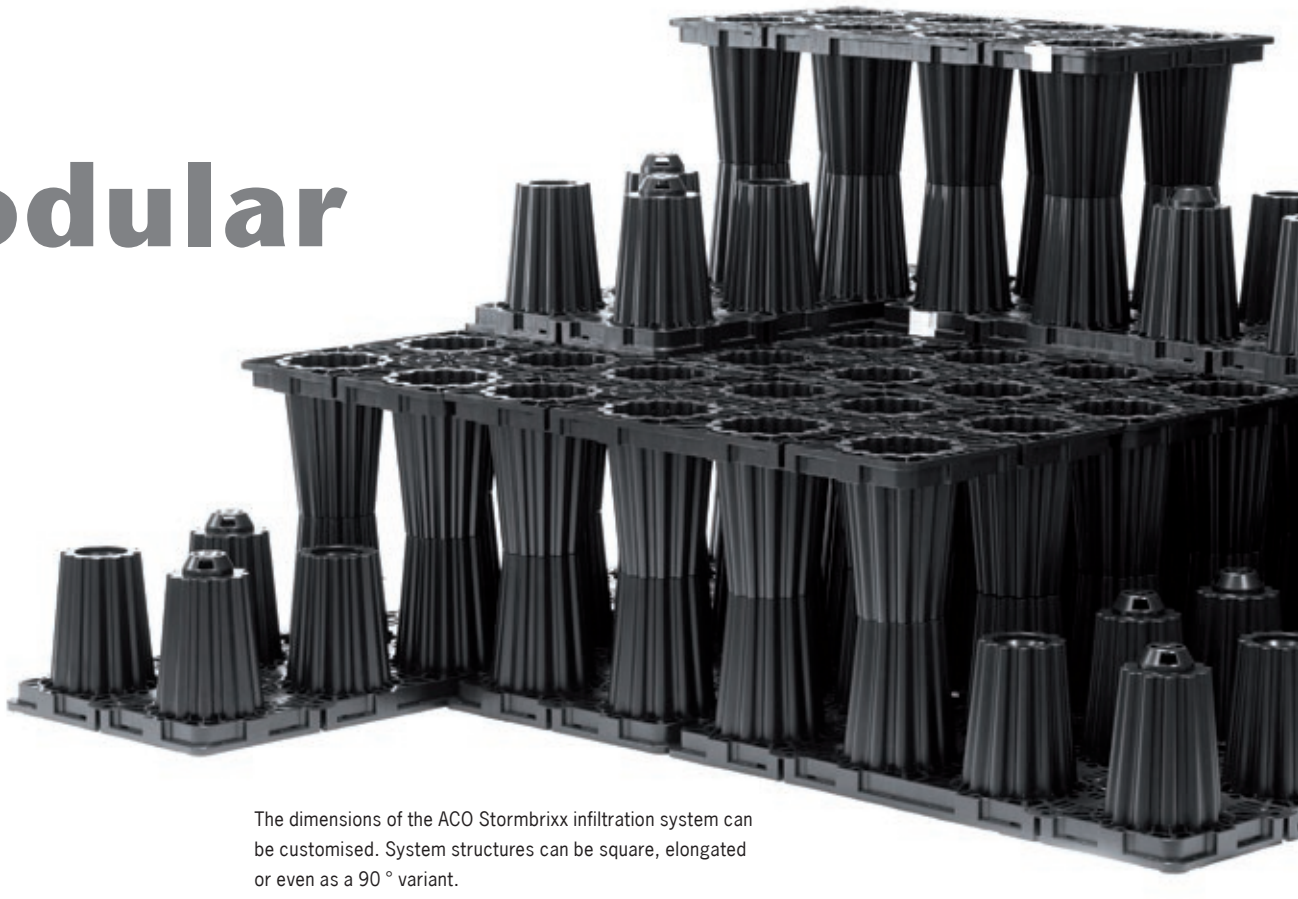
High integral strength

Male and female connectors audibly lock into place during assembly



The basic elements are installed in interlocking patterns to ensure the stability of the entire infiltration system in addition

Modular

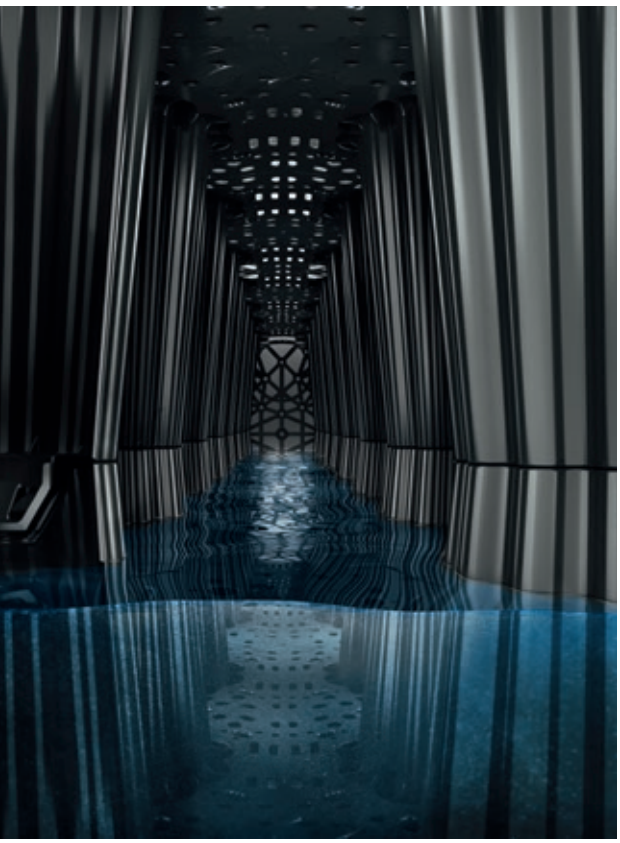


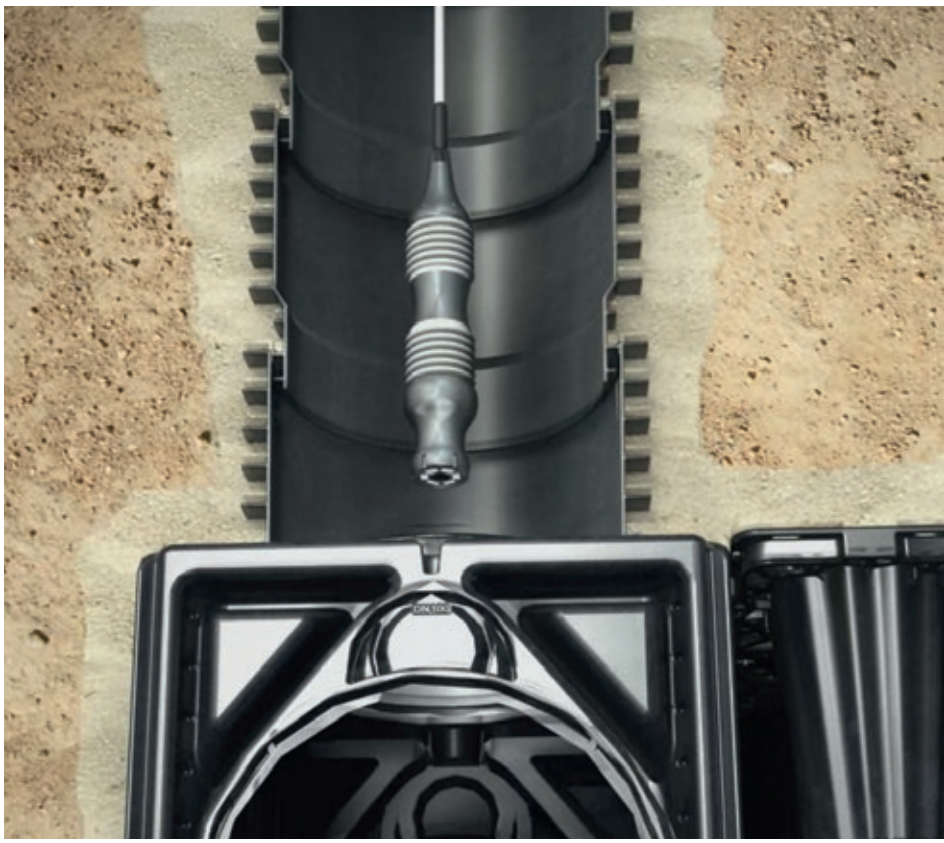
The dimensions of the ACO Stormbrixx infiltration system can be customised. System structures can be square, elongated or even as a 90 ° variant.

Stormbrixx benefit 3

Open system for user-friendly inspection and cleaning

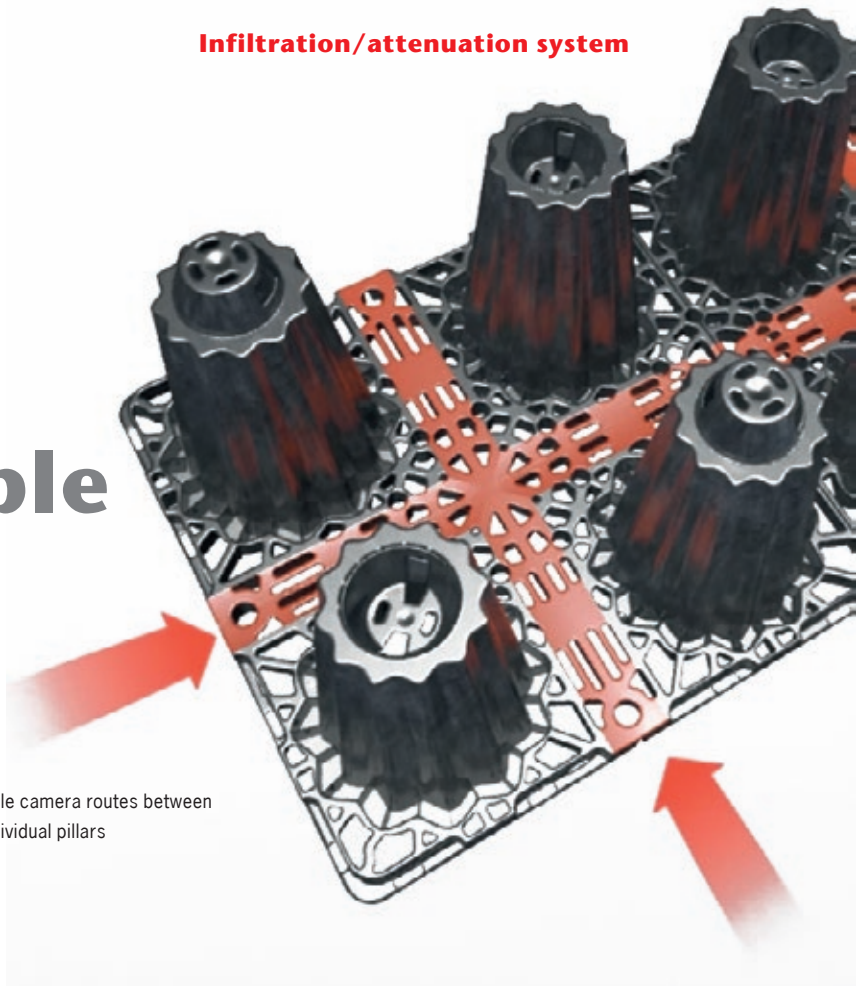
Inspection cameras or sewer flushing nozzles pass through the shaft openings into the ACO Stormbrixx block infiltration drain system.
The inspection camera or flushing nozzle is inserted vertically into the infiltration drain system. The special design of the ACO Stormbrixx enables camera inspection and flushing in all directions: Optimum maintenance and inspection of the system is possible, not only in the longitudinal direction, but also in the transverse direction. The open structure of ACO Stormbrixx significantly reduces the number of access shafts compared to other infiltration drain systems. The ACO Stormbrixx infiltration drain system is accessed via the LW 400 shaft cover. This opening also enables simultaneous flushing and extraction of the soiled water.



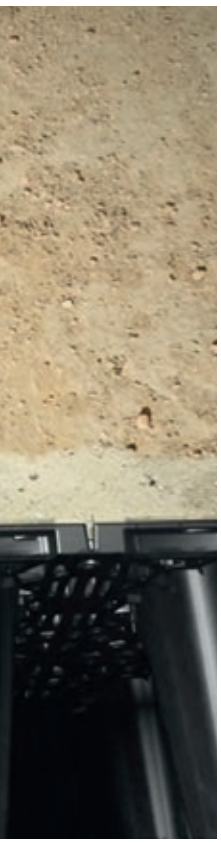


The inspection camera is introduced vertically into the infiltration system via ACO Stormbrixx upper parts and intermediate/bottom shaft sections

Fully inspectable and accessible



Possible camera routes between the individual pillars

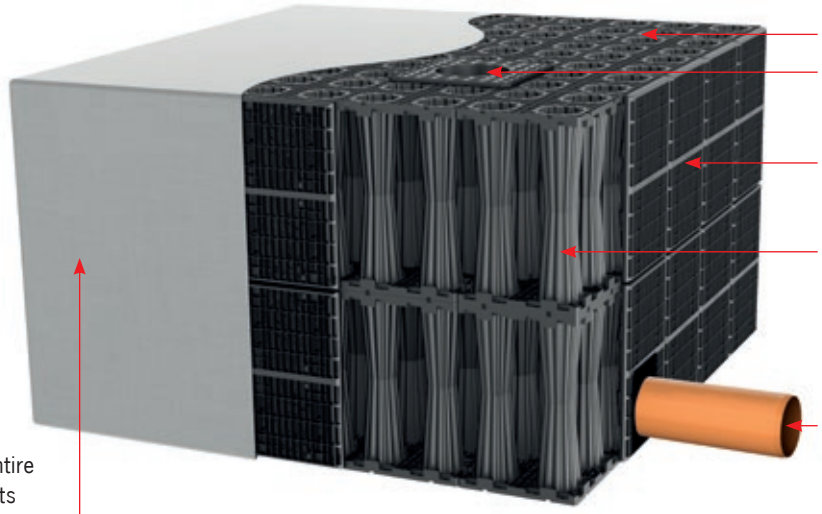


Slide inspection cameras can be easily used in the ACO Stormbrixx system

Cleaning equipment with a rinsing head. Any deposits that may be in the system can be pressure-rinsed and suctioned at the same time.

Effective replenishment of groundwater – infiltration of storm water

As a SUDS infiltration system, the ACO Stormbrixx offers a dual effect ecological solution: treated surface water is collected underground in the block infiltration system. It thus stores the surface water initially in case of heavy rainfall. The water then gradually seeps into the soil and in doing so helps to recharge the groundwater.
The legal basis for infiltration is provided by the state water law, the DWA (Association for Water, Wastewater and Waste) standard A 138 “Planning, Construction and Operation of Facilities for the infiltration of Storm Water”, and the DWA advisory leaflet M 153 “Recommended Actions for Dealing with Storm Water”.
The subsoil must be capable of infiltration water and there must not be an underground impermeable layer.
No harmful substances may penetrate the ground or the groundwater via infiltration.



Geotextile as
protective layer for the entire
infiltration system prevents
soil penetration

Geotextile robustness class: GRC 3
Weight: 200 g/m²
Thickness: 1.9 mm

Infiltration

The system is constructed of basic elements that are laid in interlocking patterns

ACO Application Technology creates a corresponding installation plan for every building project.
Reference project: Heider Marktpassage, Heide: ACO Stormbrixx HD as an infiltration system underneath car parking areas.

The protective geotextile is then laid around the infiltration system so that it is completely covered

Inlet from ACO Sedised-C via a KG pipe with ACO adapter for pipe connection in the infiltration system

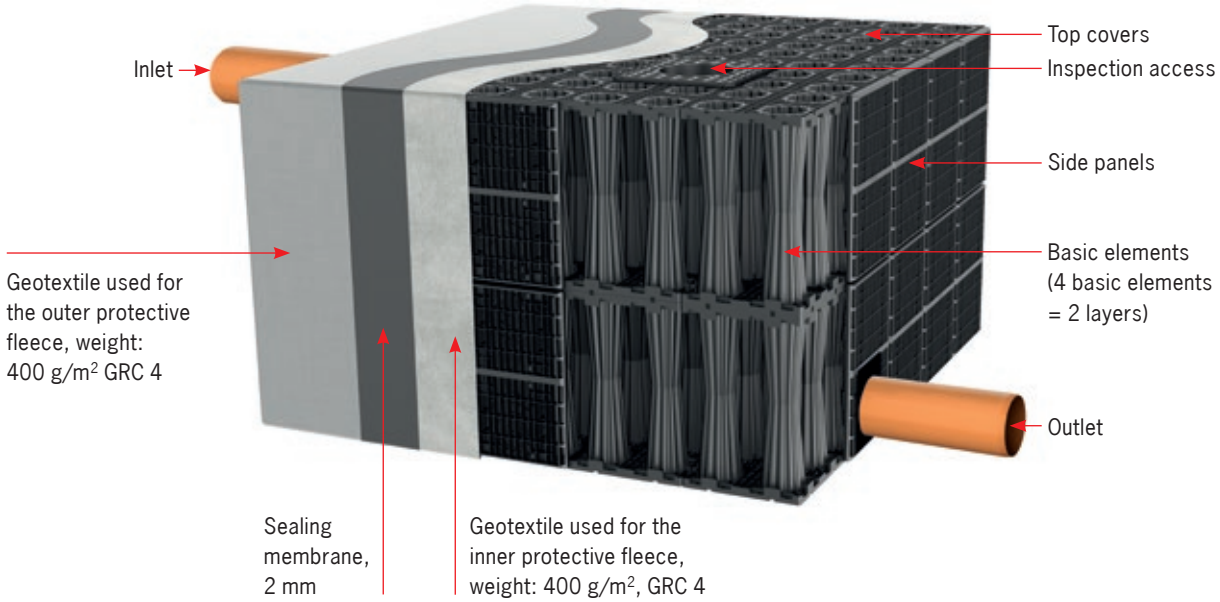
Filling the infiltration system

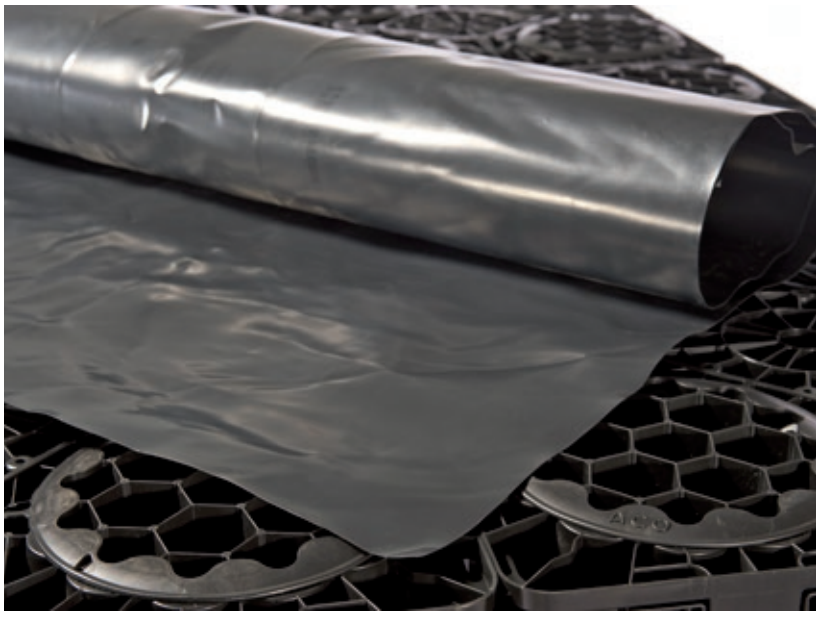
Controlled release – attenuation of storm water

As a bulk store below driveways, public areas or on private grounds, the ACO Stormbrixx infiltration system stores the previously collected rainwater and releases it in a time-delayed fashion into the watercourse or sewage system. The drainage channels are thereby relieved during heavy rainfall. Each application must consider the respective soil and traffic loads.

ACO Stormbrixx has a restricted application in areas where groundwater is present. Separate calculations must be carried out on a case-by-case basis.

Attenuation





Sealing membrane

The bulk storage system is wrapped with an inner protective fleece and a sealing membrane

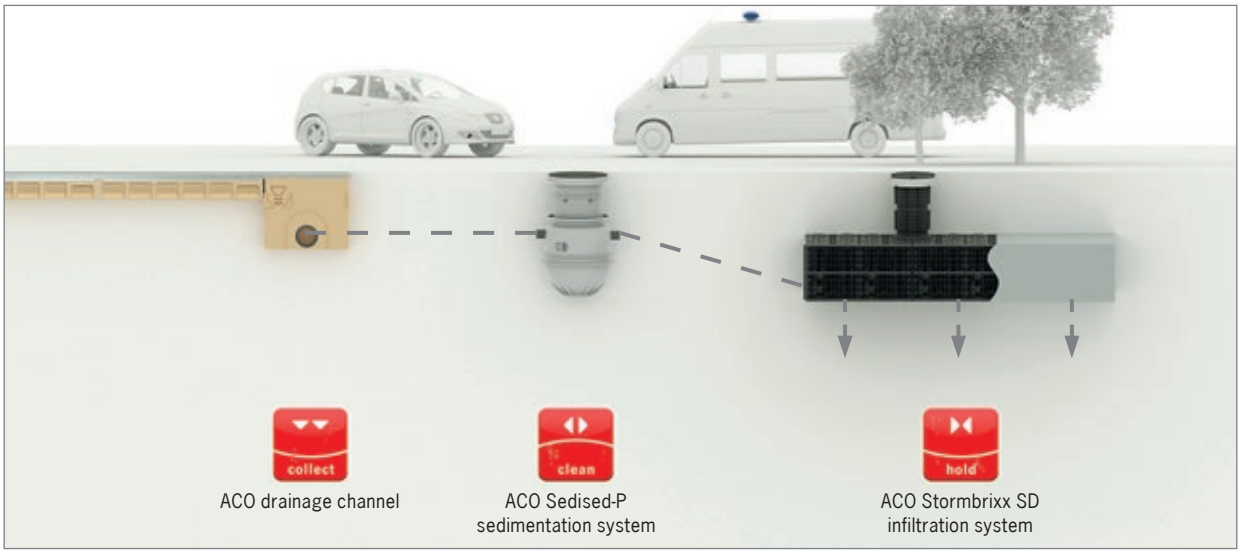
The sealing membrane is then welded

Reference Albert-Schweitzer-Gemeinschaftss-chule school, Schwentinental:
The surface water of the small multifunctional pitch, the sand (volleyball) court and the track for school, club and leisure sports within the school's grounds is collected via ACO channels and is stored temporarily and retained in the ACO Stormbrixx block infiltration system, from where it is then discharged into the outfall after a time delay through controlled discharge by means of a flow restriction element.

The outer protective fleece is applied once the sealing membrane is complete

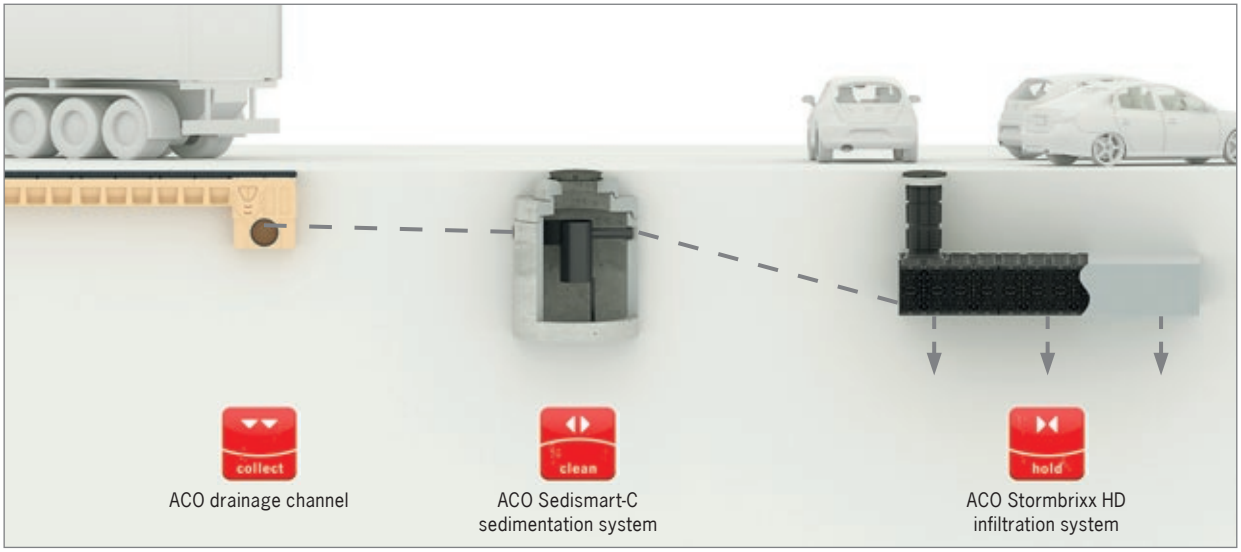
Application examples – Infiltration

Public areas, roads and parking areas



Application example of ACO system chain for rainwater infiltration with ACO Stormbrixx

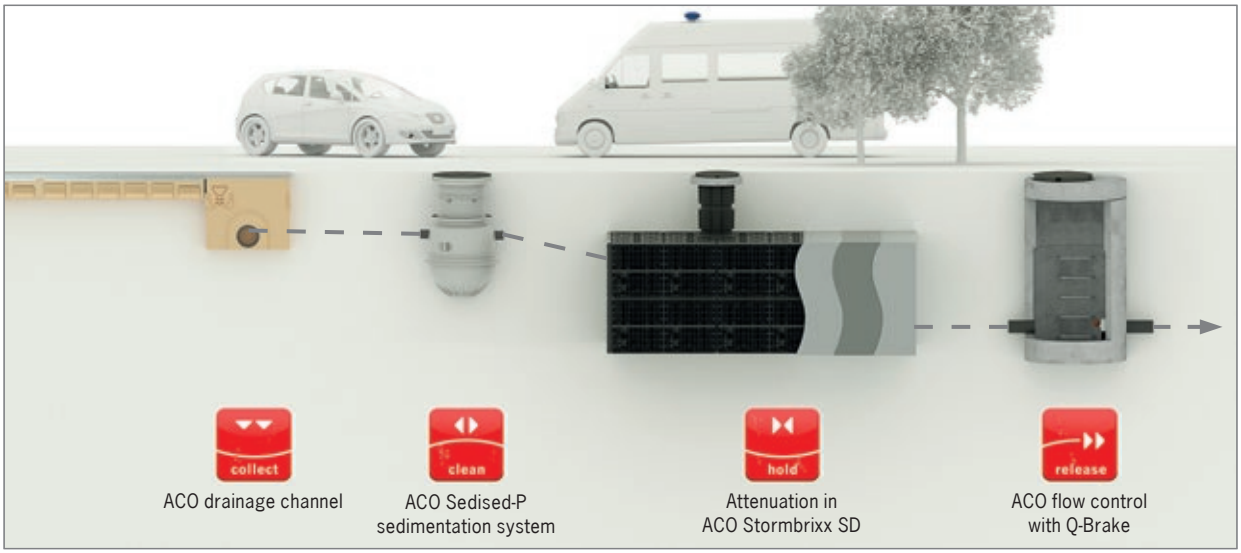
Logistics space



Application example of ACO system chain for rainwater infiltration with ACO Stormbrixx

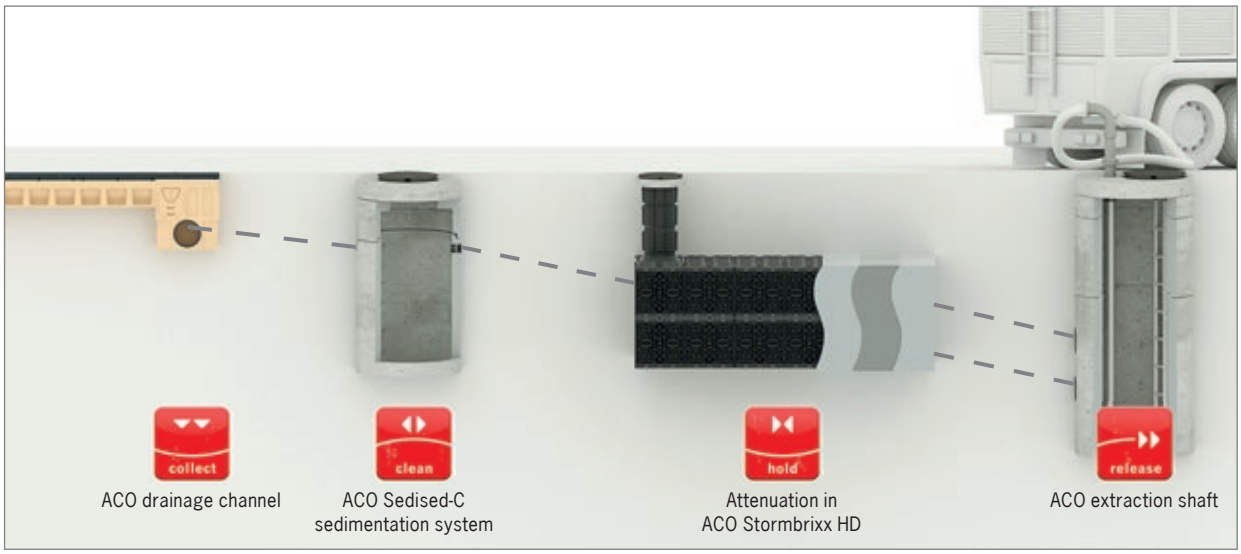
Application examples – Attenuation

Public areas, roads and parking areas



Application example of ACO system chain for rainwater attenuation with ACO Stormbrixx

Reservoir for fire extinguishing water

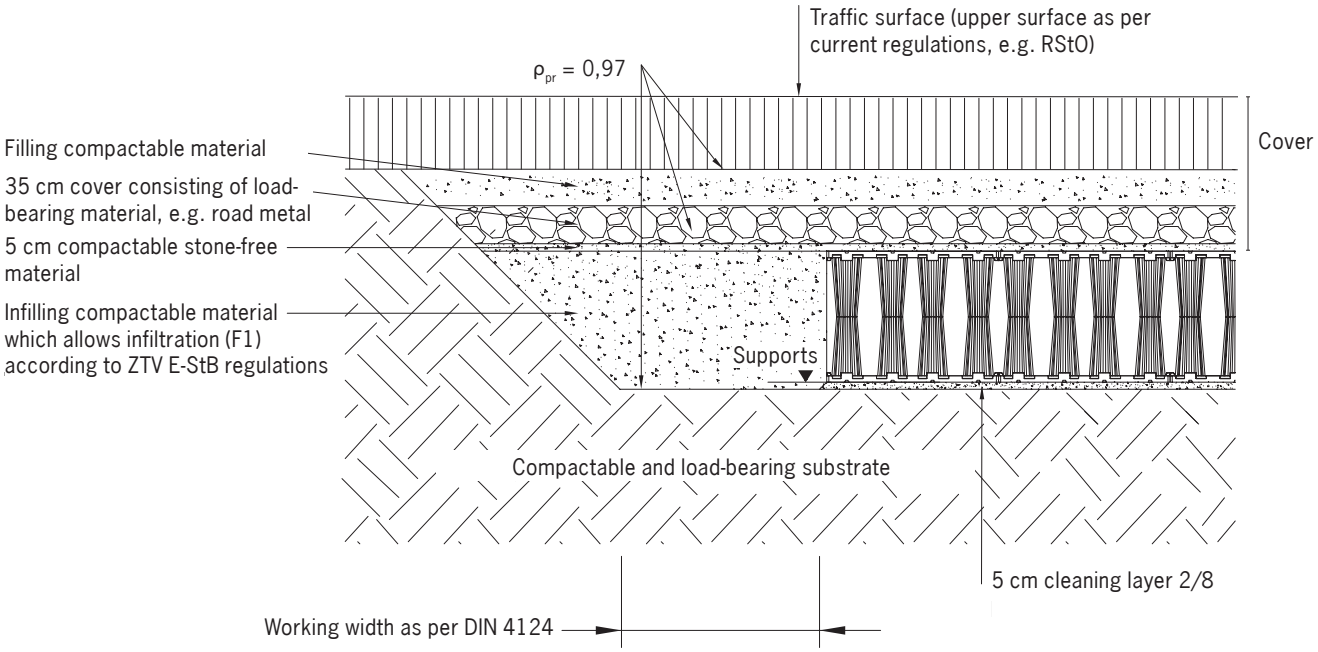


Application example of ACO system chain as a fire extinguishing water tank according to DIN 14230.
Fire extinguishing water tank and extraction shafts must be approved and accepted by the responsible authority.

Service
ACO Application engineering advises you.
Please contact them in your country.

Installation

Standard soil cover for installation of Stormbrixx SD

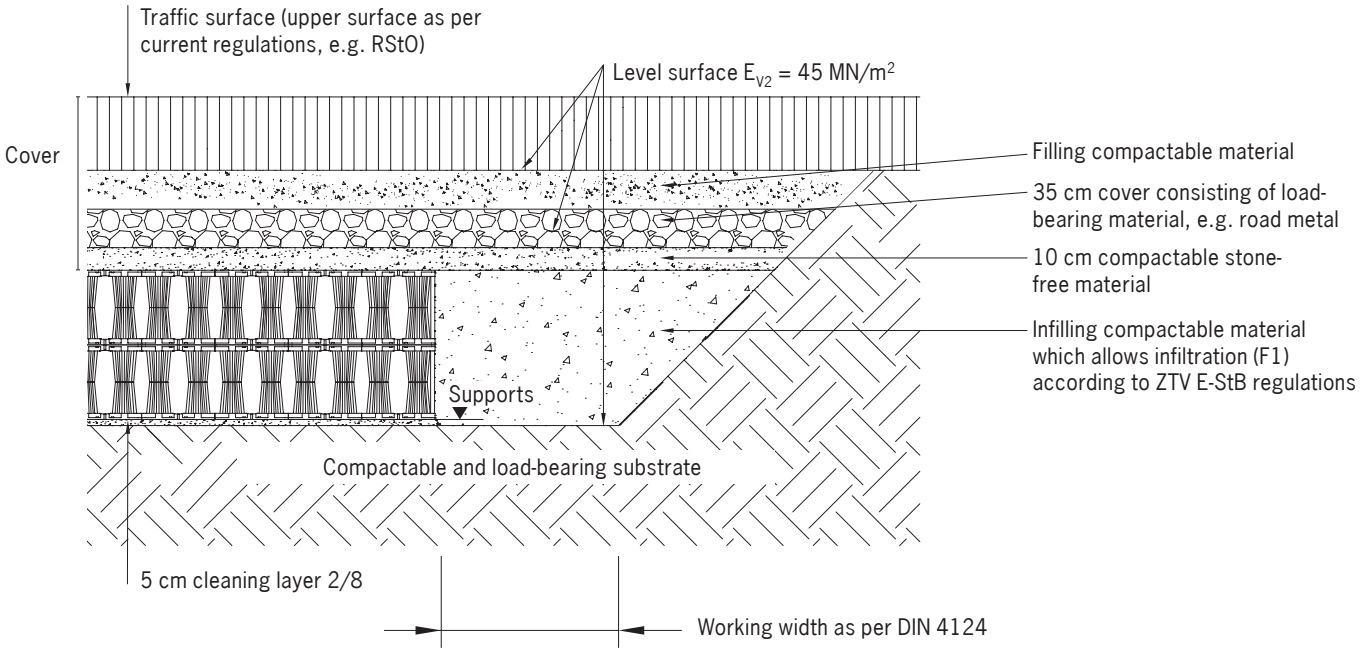


Installation dimensions Stormbrixx SD

Layers	Walkable			Trafficable		
	Cover depth minimal[2] [mm][1]	Cover depth maximal[3] [mm][1]	Installation depth maximal [mm][1]	Cover depth minimal[2] [mm][1]	Cover depth maximal[3] [mm][1]	Installation depth maximal [mm][1]
1	800	2000	2914	800*	2000	2914
2	800	2000	3828	800*	2000	3828
3	Please contact ACO Application engineering in your country					

*Please consider the required road construction

Standard soil cover for installation of Stormbrixx HD



Installation dimensions Stormbrixx HD

Layers	Walkable and trafficable			Trafficable with heavy traffic		
	Cover depth minimal[2] [mm][1]	Cover depth maximal[3] [mm][1]	Installation depth maximal [mm][1]	Cover depth minimal[2] [mm][1]	Cover depth maximal[3] [mm][1]	Installation depth maximal [mm][1]
1	800*	3400	4010	1000	3400	4010
2	800*	3400	4620	1000	3400	4620
3	800*	3400	5230	1000	3400	5230
4	Please contact ACO Application engineering in your country					

*Please consider the required road construction

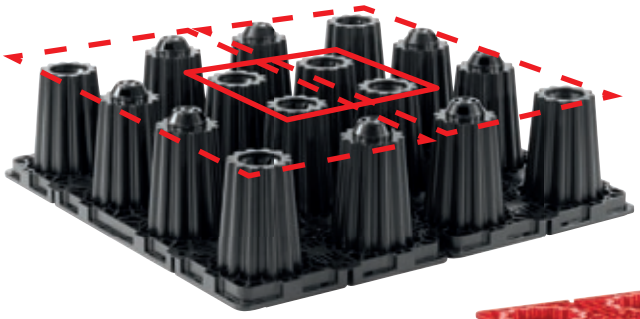
To ensure the stability of the system, various requirements and standards must be observed when installing ACO Stormbrixx.

[1] Ground cover consisting of cover and upper surface as per RStO regulations

[2] Please allow for local conditions when defining the frost-free installation depth

[3] Other cover depths for special cases should be agreed with ACO application technology

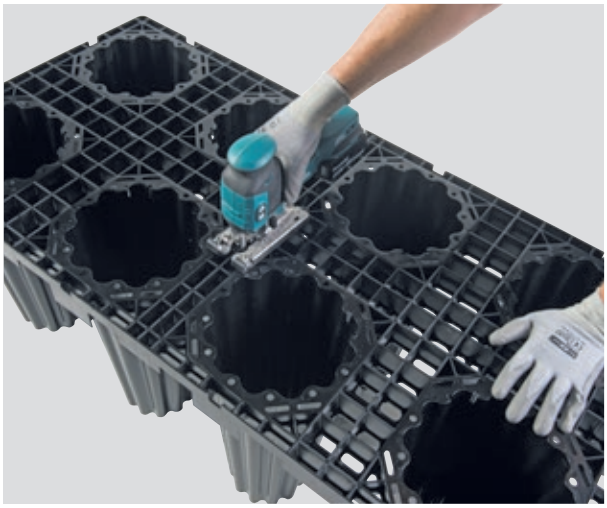
System configuration



Linking blocks

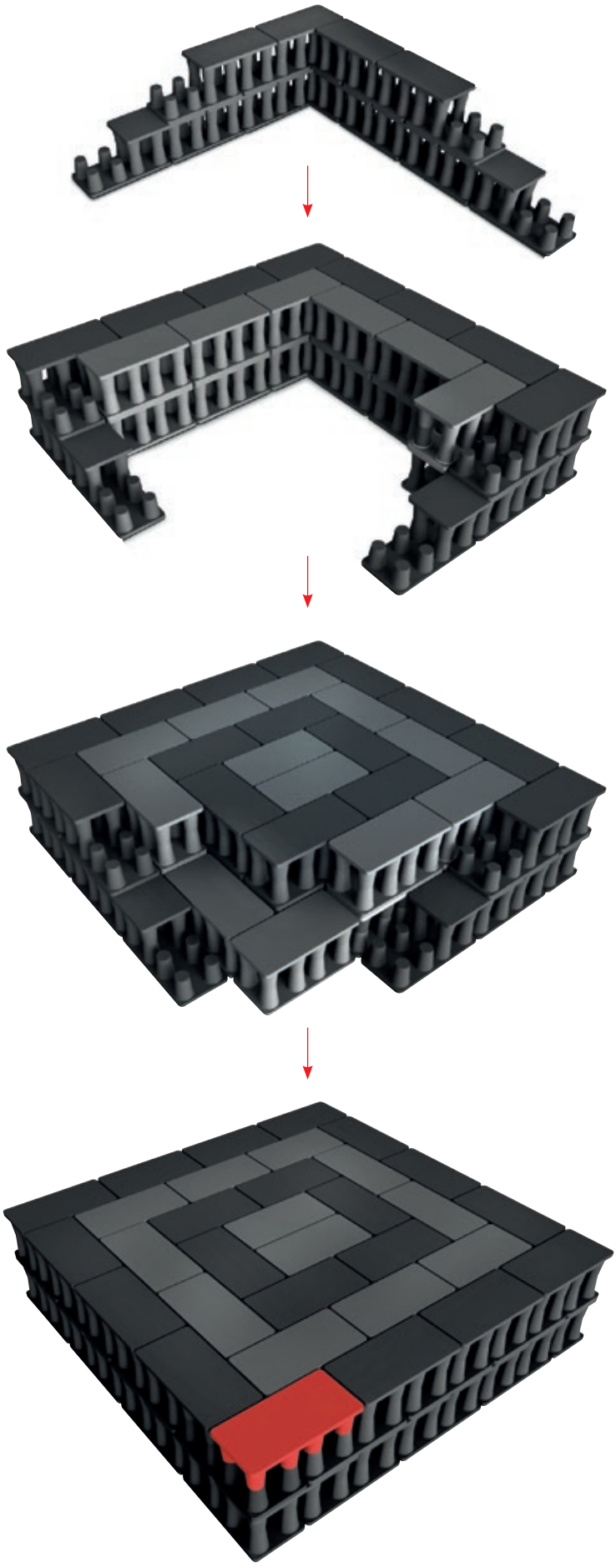
The basic elements consist of eight columns, of which four are equipped with spigots and four with sockets.

They are easily assembled by plugging together the individual components. The basic elements are assembled with interlocking to optimise the positional safety of the overall system. To achieve this, four push-fit connections must be positioned next to each other.



Halve the basic elements

ACO Stormbrixx basic elements can be bisected along their central rib using a handsaw or jigsaw. Each half can be linked to the rest of the system using connectors. The cut surfaces must face into the centre of the tank system.

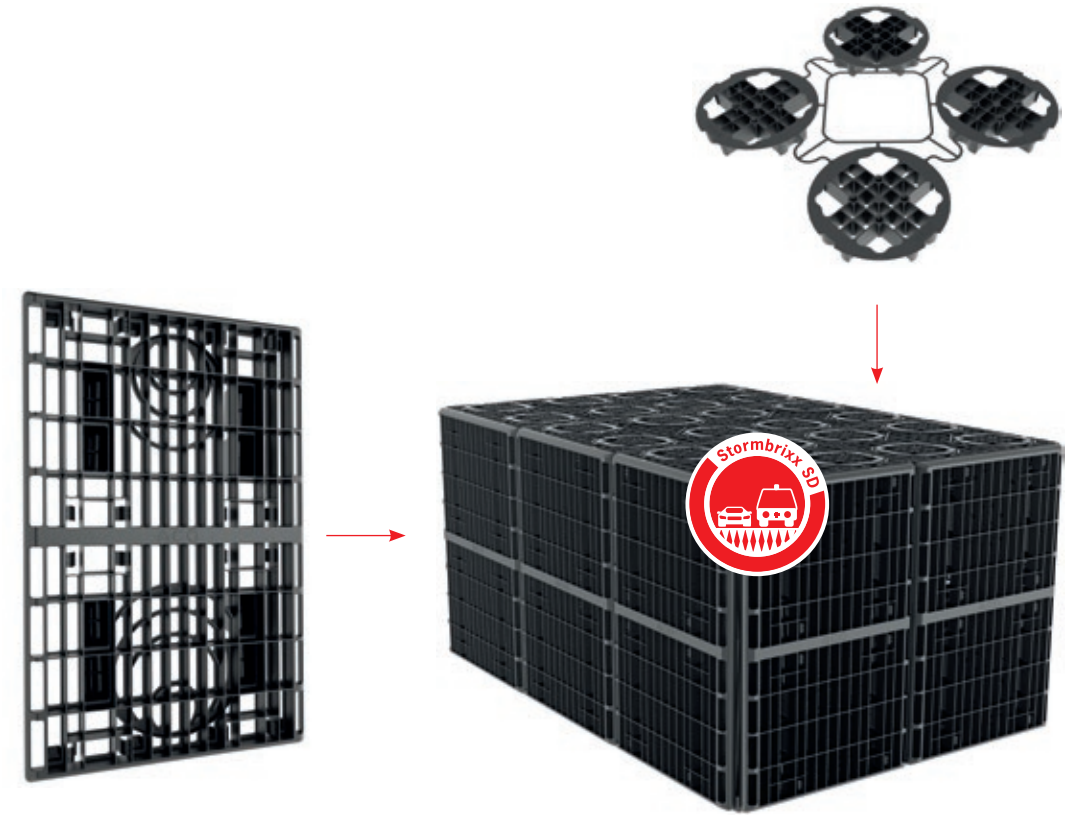


Recommended layout:

Concentric design

This is a series of rings, which become increasingly smaller as they approach the middle of the system.

1. Set out the outlines of the system and level the base of the excavation and lay a levelling layer of sand (H = 5 cm) to form the formation.
2. Lay geotextile (filter nonwoven) and/or waterproof membrane if necessary
3. Set the outer perimeter of the infiltration system with basic elements.
   Principle:
   Two ACO Stormbrixx basic elements are placed on the ground. A third basic element is turned upside down and is laid on the first two elements in a block bond.
4. If necessary, cut half-basic elements to size
5. Repeat steps for all other layers.
6. Connect together the individual layers with the help of the connectors
7. For large systems (larger than 100 m^3), we recommend starting the installation from a corner, an end or a side. At the same time, begin assembling the inner rings.
   If necessary, connect existing rings and layers with the help of connectors.



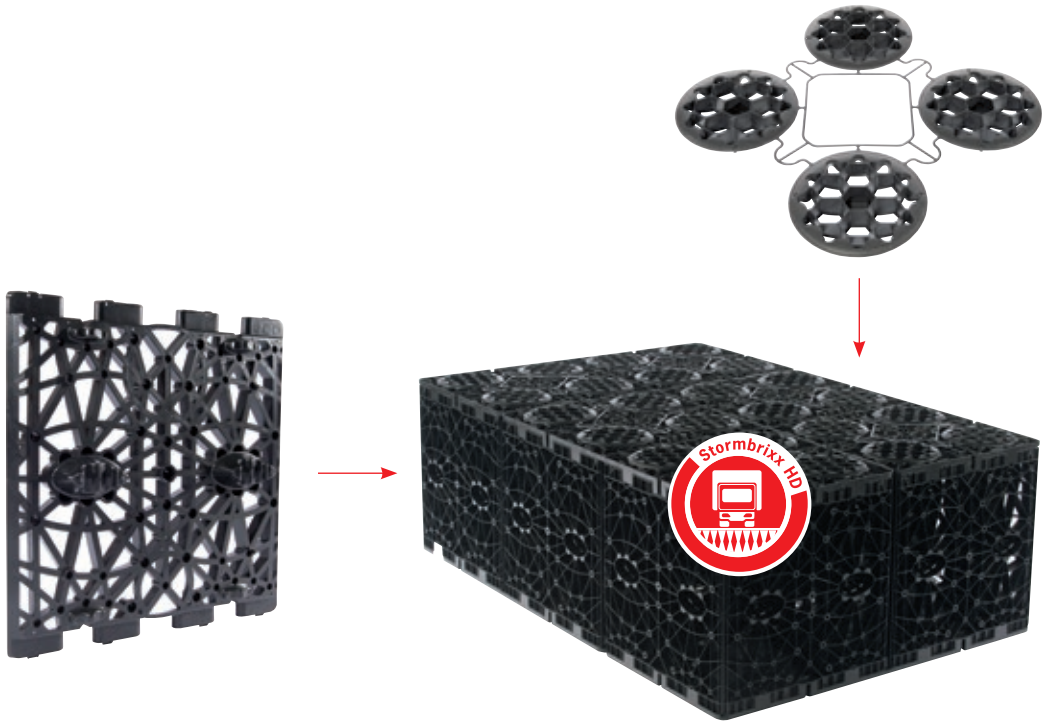
Side panels as the outer boundary

Covers close off the top layer

Side panel and top cover

The side panels are only used at the outsides of the block infiltration system. The covers are only used to close off the openings of the columns in the top layer.
If necessary, pipe connections DN/OD 110–315 can be cut out in the places provided (markings).

Different side panels and covers are available for ACO Stormbrixx SD and HD.



Side panels as a clean system surface for the enveloping geotextile

Covers prevent geotextile and soil from penetrating the system

Installing the side panel

Easy assembly: The side panels latch into the basic elements and close off the outer border of the infiltration system. Due to the soil pressure, the geotextile cannot penetrate into the infiltration system.

Installing the top cover

Fast attachment: Four column openings can be closed off in a single step with the help of the ACO Stormbrixx cover. Covers are only mounted on the top layer of the basic elements, before installing the geotextile.

Open side
facing downwards

+

Closed side
facing upwards

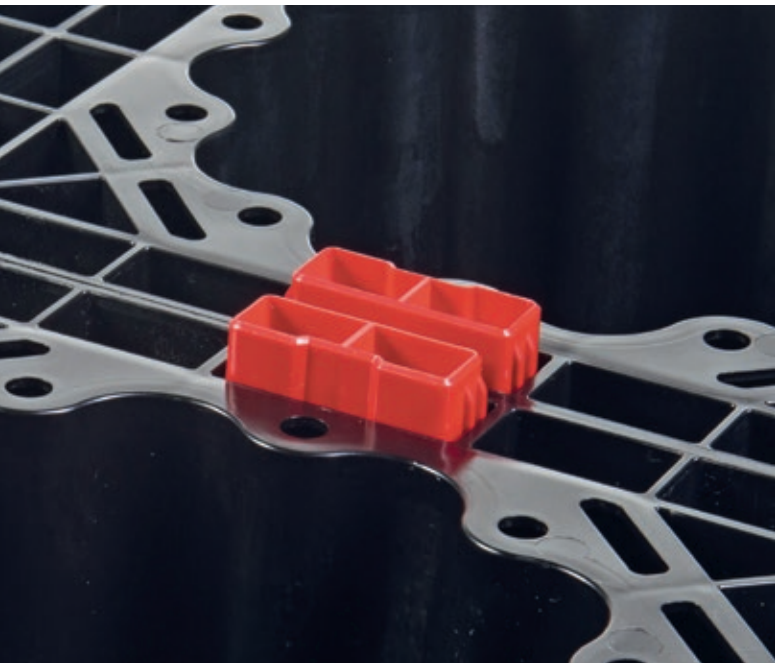
Stormbrixx SD

Rounded side
forwards

+

Flattened side
forwards

Stormbrixx HD



Connectors

When assembling two or three layers of ACO Stormbrixx, the layers are aligned and secured positionally by means of two connectors pushed together. The exact position of the basic elements and connectors within the overall infiltration system is shown in the laying diagram!
The connectors must each be mounted in the middle of the basic element.

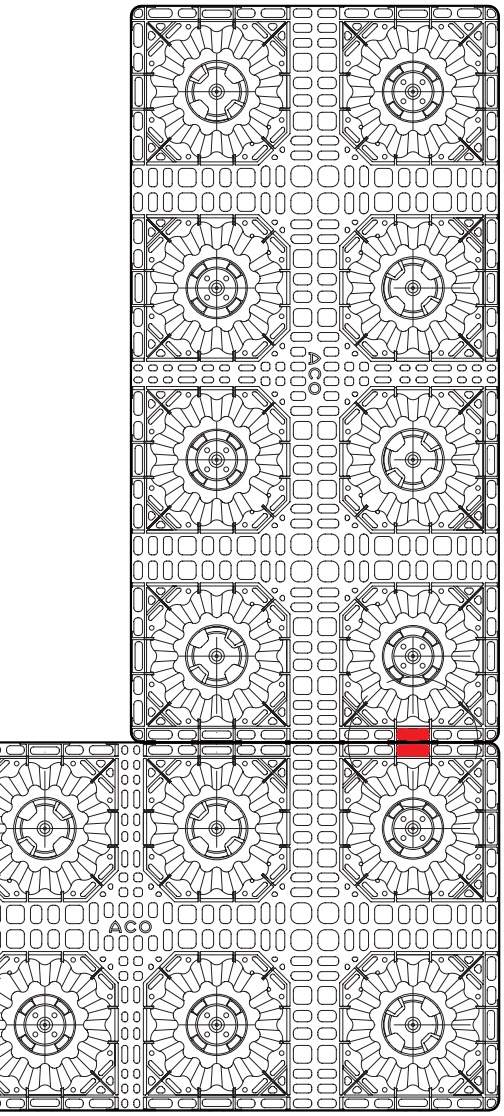
Installing one layer

If only one layer of ACO Stormbrixx is installed, unlike other block infiltration systems, **no connectors** are required. Laying the basic elements in the interlocking bond or pattern (see page 32/33) provides additional stability for the overall system.

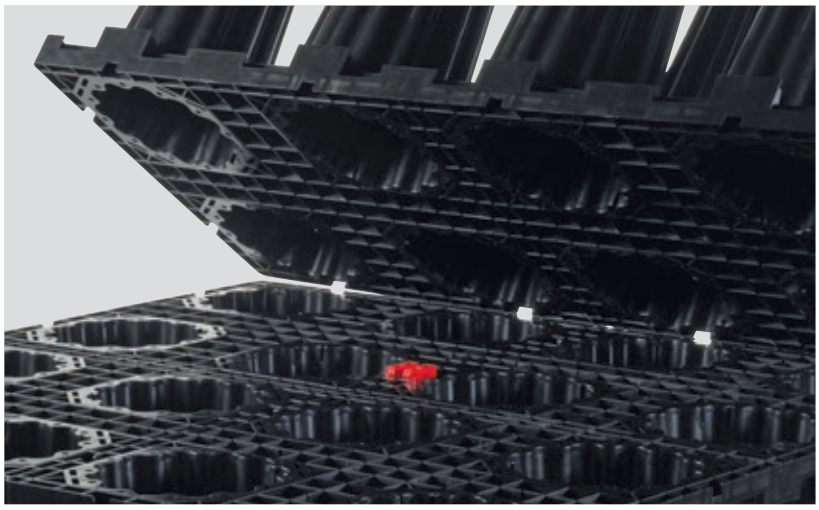
Installing several layers

Connectors are used if two or more layers of ACO Stormbrixx are installed: Two individual connectors are pushed together to form one and are inserted between the individual layers as positional fixing. This helps to achieve precise alignment of the spigots of several layers.

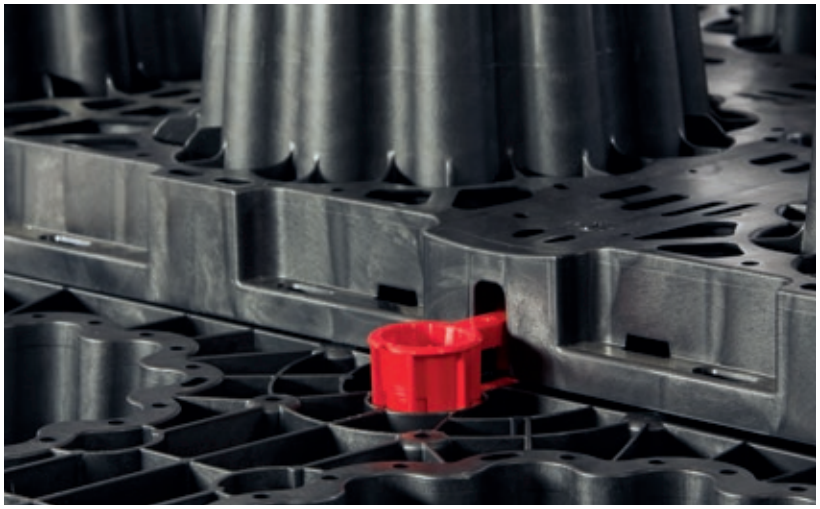
The basic rule of thumb is: one double connector must be used for each basic element.



One double connector for each basic element

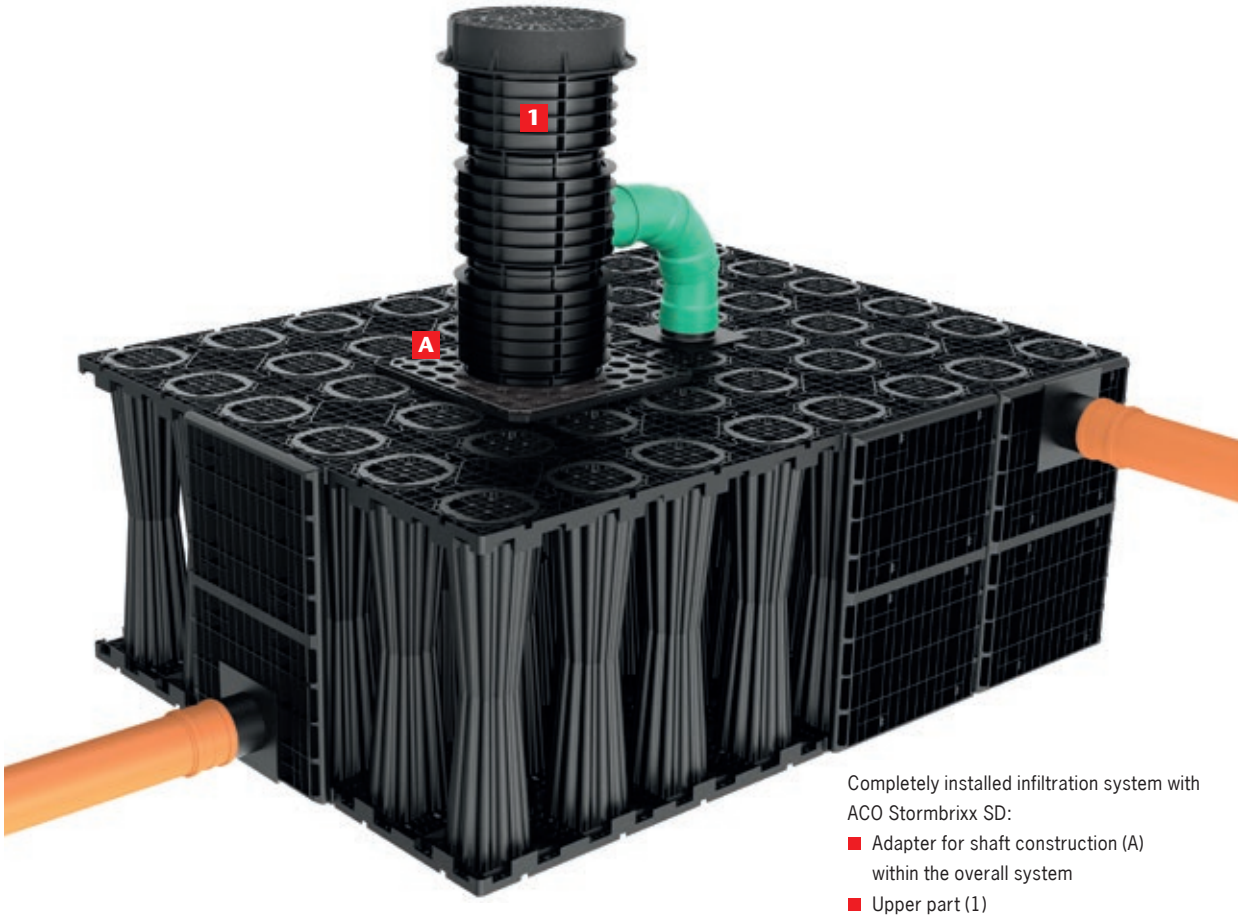


ACO Stormbrixx SD:
Two connectors pushed together secure the alignment of the spigots of two installation layers



ACO Stormbrixx HD:
Two connectors pushed together secure the alignment of the spigots of two installation layers

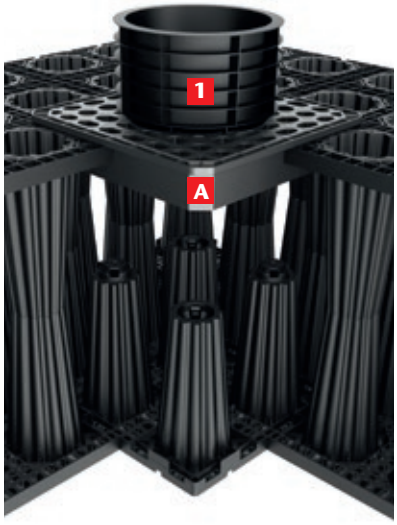
Inspection and maintenance access



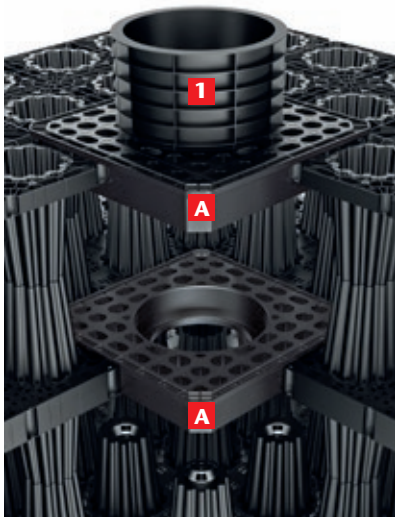
Completely installed infiltration system with ACO Stormbrixx SD:
- Adapter for shaft construction (A) within the overall system
- Upper part (1)

Entrance via access plate

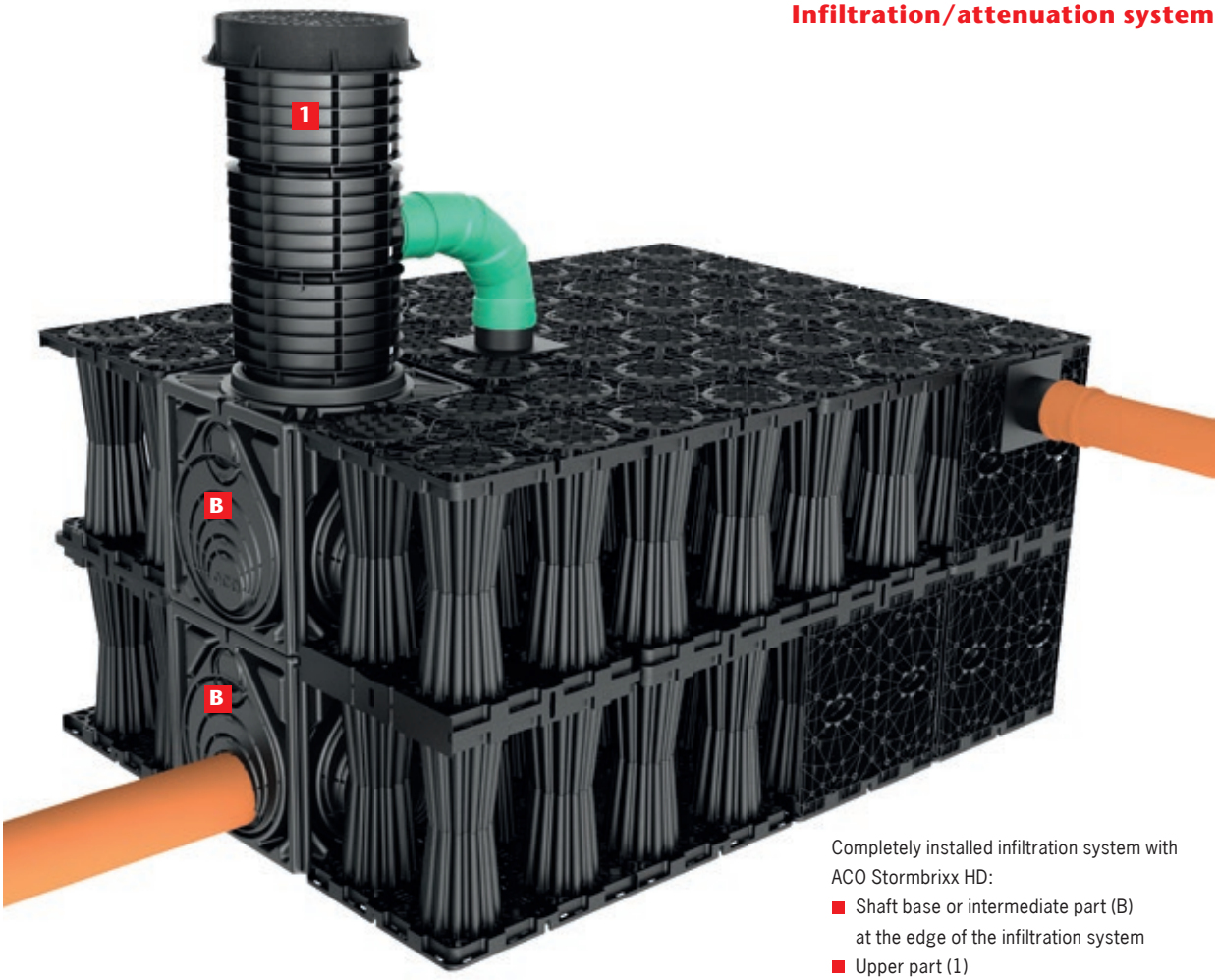
The ACO Stormbrixx Adapter for shaft construction (A) is installed as an inspection access **within the block infiltration system**. An inspection shaft can thus be installed quickly and economically by simply assembling in the required place. The ACO Stormbrixx upper parts (1) are added to the top of the access.



Infiltration system with ACO Stormbrixx SD: The adapter for shaft construction (A) together with the ACO Stormbrixx upper part (1) is mounted within the overall system for inspection and cleaning of the infiltration system



Infiltration system with ACO Stormbrixx HD: If accesses are required within the system, the adapter for shaft construction (A) can be used together with the upper part (1) as an alternative to the shaft base or intermediate part (B)

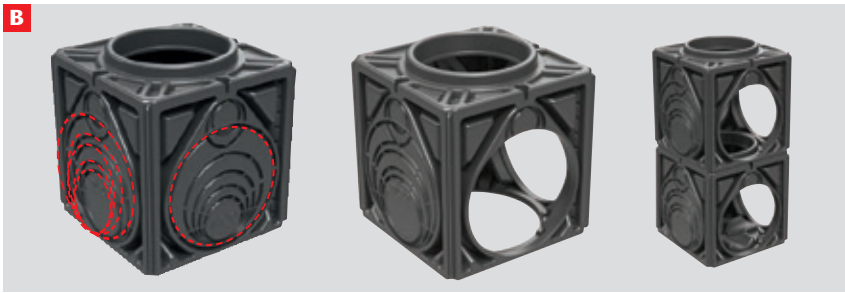


Completely installed infiltration system with ACO Stormbrixx HD:
- Shaft base or intermediate part (B) at the edge of the infiltration system
- Upper part (1)

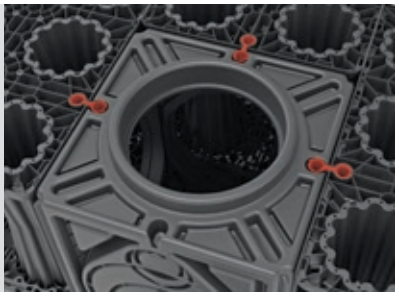
Entrance via access chamber

For ACO Stormbrixx HD, the shaft base or intermediate part (B) can be integrated not only in the overall block infiltration system but also at the edge of the block infiltration as a connection and inspection shaft. In multi-layer infiltration systems the shaft bases and intermediate parts are simply assembled on top of each other.

Each shaft base and intermediate part can be cutout on site for different pipe size connections according to the in situ requirements (DN/OD 110, 160, 200, 315, 400).
Tip: It is advisable to make a predrilled hole for the saw blade.
The top of the shaft is added to with ACO Stormbrixx upper parts (1). The height is variable and is adapted to the ground level. A shaft cover rounds off the modular system.

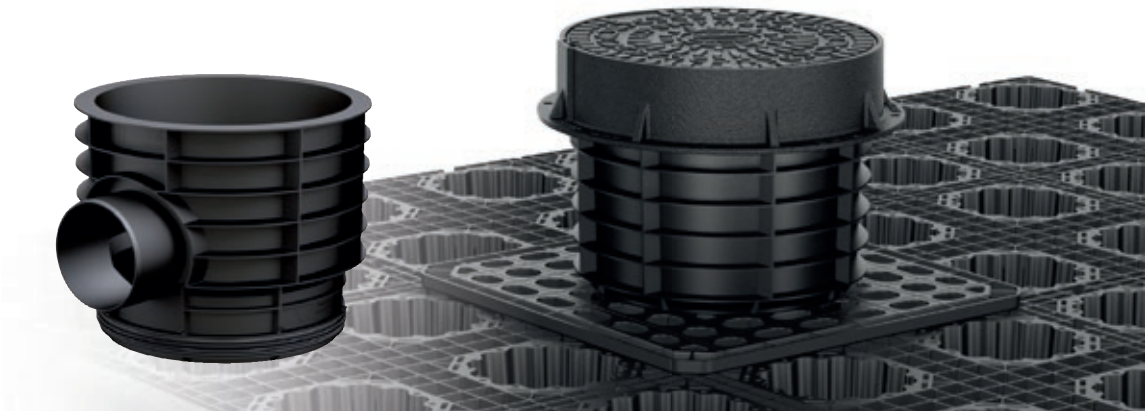


Only in conjunction with Stormbrixx HD!
The shaft base and intermediate part can be used at the edge of the infiltration system for inspection and cleaning of the infiltration system. A lateral pipe connection DN/OD 400 can be made via this.



Shaft bases and intermediate parts are connected with individual connectors at the edge of the basic element.
Do not use connectors on the underside!

Manholes



ACO Stormbrixx offers two options for accessing the system with a sewer camera or jetting nozzle or lance for inspection or maintenance of the block infiltration system (see page 60/61). Shaft upper parts enable access to the Stormbrixx system from the surface.

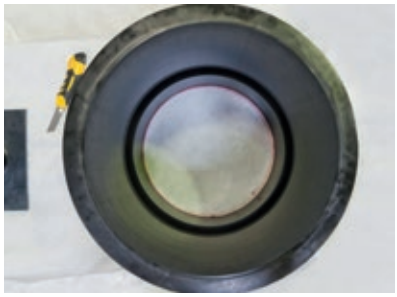
The upper parts with and without sockets can be rotated to match the pipe axis. Their push-fit connection can be adjusted to the longitudinal and transverse gradient on site and can be telescopically adjusted vertically (+/– 30 mm). They are watertight up to 0.5 bar.

Load separation and vertical alignment of the individual components are ensured by the telescope principle. Any settlement that occurs in the backfill area can be absorbed by the tolerance window in the telescope. The load of the shaft cover is dissipated by the support of the shaft frame in a fresh concrete bed.

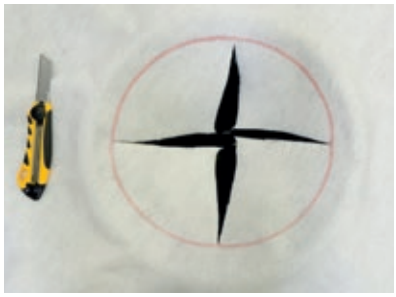
Caution!

- Before inserting upper sections, remove protective film from seal and clean it
- Seals must be coated with a suitable lubricant
- Upper section must be inserted to at least the minimum insertion depth!

Insert the upper sections

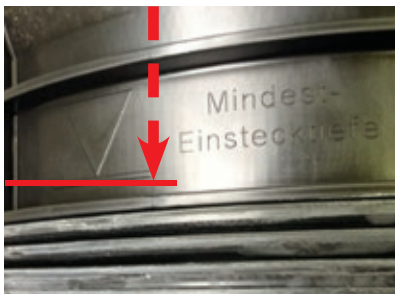


Drawing the inner diameter



Cutting a cross within the marked circle

Installing the intermediate section (= sand tight)



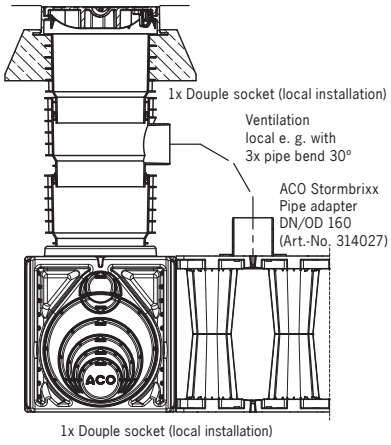
Insert to at least the minimum depth!

The temporary cover/formwork must protect the opening throughout the whole of the construction phase

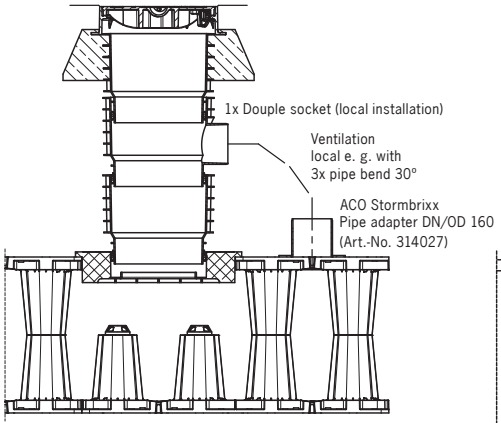
Creating a ventilation:
A pipe elbow connects the upper part with the nozzle and the pipe connection adapter

Inspection via different access points

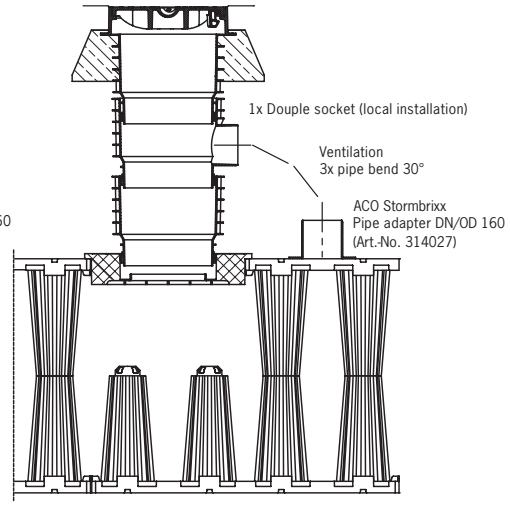
At the edge of the box
via the ACO Stormbrixx upper part
(inner diameter = 339 mm)
in connection with the access chamber
(inner diameter = 400 mm)



Within the box
via the ACO Stormbrixx upper part
(inner diameter = 339 mm)
in connection with the access plate
(inner diameter = 400 mm)



Within the box
via the ACO Stormbrixx upper part
(inner diameter = 339 mm)
in connection with the access plate
(inner diameter = 400 mm)

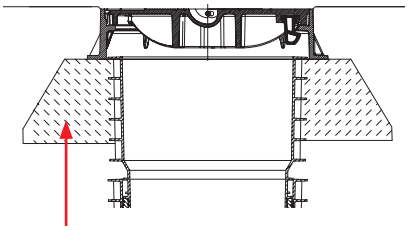


Shaft cover SA 400

The shaft cover has a maintenance free, screw-free and traffic-safe catch made from highly wear-resistant plastic (conforms to DIN EN 124 / DIN EN 1229, is stable at extreme temperatures, repels dirt, is self-locking and vandal-proof). Once the cover has been put in place, it can be locked into place by stepping on it vertically on the area sitting over the frame. A concrete seating surrounding the upper section provides the load transmission for the shaft cover. A concrete seating C12/15 approx. 20 cm wide is created all the way around, as defined by DIN EN 206-1, and raised by 2 cm to the highest drain upper section.

Use the inserted temporary cover/formwork to smooth off the inserted concrete flush. Then remove the temporary cover/formwork, press the frame into the wet cement base to a depth of approx. 2 cm until it is completely seated on the upper shaft section or as required for the final height.

After inserting the frame, it is possible to use a dirt bucket compliant with DIN 4052-B, low profile.



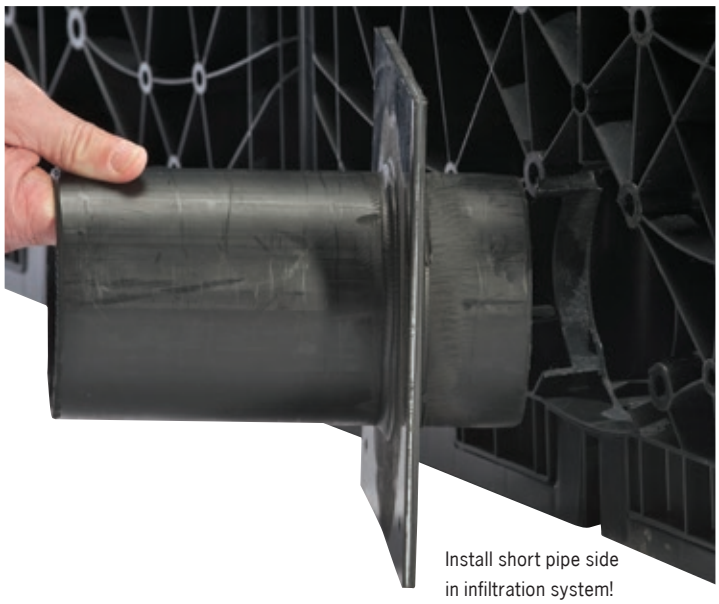
Depth of concrete: 20 cm
Concrete quality: ≥ C12/15

Available with and without air vents

Making the pipe connections

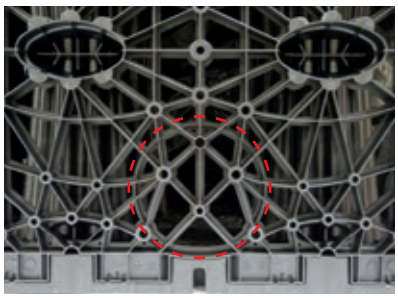
ACO Stormbrixx pipe adapters must be used for the connection of inlets and outlets and ventilation pipes at the side panels of the infiltration system. Sizes from DN/OD 110 to DN/OD 315 are available.

Pipes size DN/OD 400 are connected laterally only via the shaft base or intermediate section of the ACO Stormbrixx HD infiltration system.



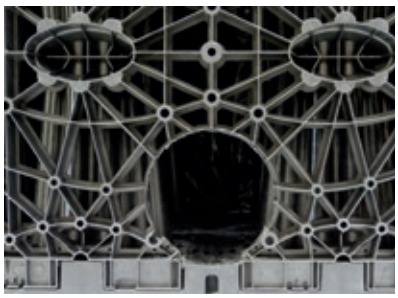
Install short pipe side in infiltration system!

Side openings

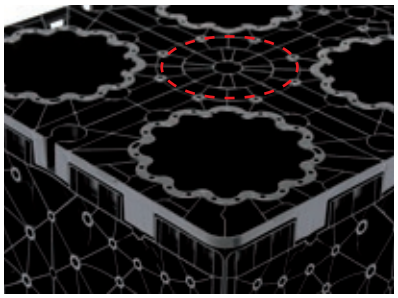


The openings for inlets and outlets must be cut out before installing the side panels

A keyhole saw with extra-long saw blade is required to cut out the pipe connection opening in the side panel

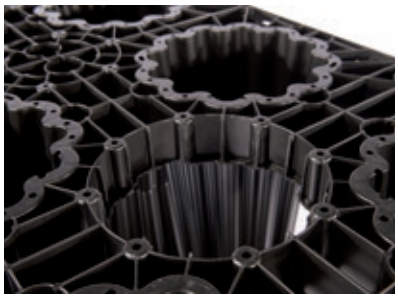


Top openings

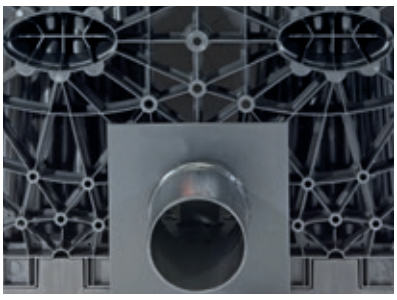


The openings for ventilation and the inspection openings must be cut out of the basic elements before they are installed

A keyhole saw with extra-long saw blade is required to cut out the openings for the pipe penetrations in the side panels and at the top of the basic elements

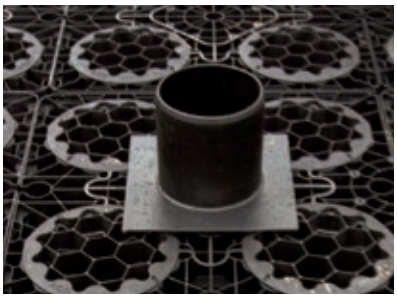


Markings on the side panels indicate the opening sizes for different pipe diameters



The pipe adapter is mounted in the previously cut out opening in the side panel

The geotextile is cut in and is pushed over the pipe adapter



The pipe adapter is mounted in the previously cut out opening at the top

The geotextile is cut in and is pushed over the pipe adapter

Pit excavation and surrounding the infiltration system

The soil must be load-bearing and sufficiently permeable for infiltration. In case of non-load bearing soil the geological conditions must be investigated and suitable measures taken. The load-bearing substrate must be stone-free, flat and without a gradient.

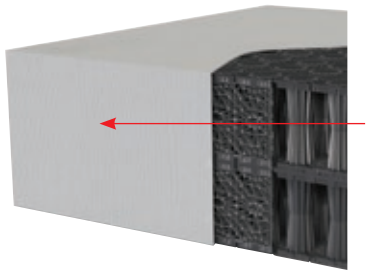
The bedding consists of the in situ soil or exchanged soil with a minimum load-bearing capacity of $E_{V2} \geq 45$ MN/m² and an approx. 5 cm thick blinding layer (chippings/gravel without fines) with grading range 2/8. This blinding layer must be drawn off flat.
The permeability of the soil must be ensured even after compaction. The quality of this bedding is decisive for the further laying and has a significant influence on the load-bearing and settlement behaviour of the hollow block infiltration systems, especially where a multi-layer structure is used or large loads occur (soil/traffic load).

The system must not be installed permanently or temporarily in in-situ groundwater, stratum or perched water. The relevant recommendations of the DWA-A 138 standards must be taken into account for infiltration systems. Accordingly, the distance to the mean highest groundwater level should be at least 1.0 m.

Infiltration – Laying the Filter Fleece

The entire block infiltration system must be surrounded with **filter nonwoven (geotextile robustness class: GRC 3, Weight: 200 g/m², Thickness: 1.9 mm)**. Before laying the basic elements, the nonwoven must be laid out on the blinding layer with sufficient overhang. ACO Stormbrixx is completely surrounded with the filter nonwoven, to prevent the penetration of fine soil fractions. At least 0.50 m overlap must be maintained on all sides of the infiltration system. Ensure that the nonwoven fits tightly on the ACO Stormbrixx system and soil does not penetrate between the components and the nonwoven enclosure.

The filter nonwoven is dimensioned as follows: Length of the nonwoven sheets = infiltration system perimeter **+ at least 0.50 m overlap.** The two ends of the geotextile are temporarily and adequately fixed on the trench slopes or edges. After installing the ACO Stormbrixx components the filter nonwoven is detached from the trench slopes/edges and is placed over the infiltration system with overlap at the nonwoven joints. Ensure that the nonwoven fits tightly on the ACO Stormbrixx System and soil does not penetrate between the components and the nonwoven enclosure.



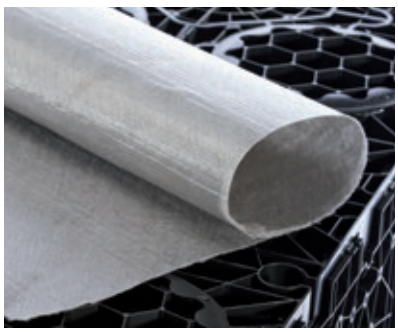
Geotextile,
filter fleece, weight: 200 g/m²

After creating a level surface which is free of stones, even and without gradient the trench is lined with a filter fleece.

Please note!
Take care that the overlaps are always at least 50 cm, that the fleece surface is completely sealed and that it cannot fall open during in-fill.

Infiltration geotextile

- Geotextile robustness class GRC 3
- Weight: 200 g/m²
- Thickness: 1,9 mm
- Characteristic opening width: 0,08 mm
- Water permeability to EN ISO 11058: 90 l/sm²

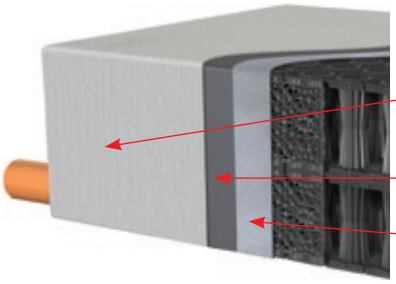


Attenuation – Laying the protective fleece and sealing membrane

If the modular ACO Stormbrixx infiltration system is used to retain surface water, the entire system must be surrounded by a **waterproof membrane (2 mm thick)** and welded. The waterproof membrane must be protected against mechanical damage by a **protective nonwoven (weight 400 g/m²) on both sides**.

The pipe adapters and shaft upper parts must be welded with the sealing membrane. The sealing membranes must be welded by examined qualified welders with testable welds in accordance with the DVS guidelines. The tightness of the welds must be verified and appropriate test records must be submitted to the client. The work must be carried out by a specialist company with examined plastic welder.

Important!
It must be ensured that the surface of the nonwoven and waterproofing is completely closed and no openings can occur during backfilling!



Covering over – Infilling

Recognised good technical practice, and applicable laws and standards must be respected (such as „Additional technical specifications and guide lines for soil works in road constructions“ (ZTV E-StB), „Directive for standardisation of upper surfaces for road constructions“ (RstO)).

Filling the trench sides

The stone-free infill material (which must meet DIN 18196) must be compactable and able to absorb percolated water. The coefficient of permeability of the infill material must at least match the calculated kf-value.
Side infilling is to be carried out according to DIN EN 1610, in layers no deeper than ≤ 30 cm each time, up to the upper edge of the trench.

Compact the fill material with a light-weight compactor to a Proctor value of approx. 97%. Avoid any direct contact between the compactor and the plastic components. The insertion of the infill material must not create any problematic distortion, damage or inappropriate loading of the trench system. Care must be taken when infilling and compacting that the overlaps of the geotextile are not disturbed and pulled apart, and that the ACO Stormbrixx system is not damaged!

Covering

After completing the infilling around the sides, a compacted covering of 10 cm of stone-free filler material and a 35 cm thick load-bearing layer of e.g. road metal are placed over the infiltration system to create a flat base for the subsequent structure.

Covering the ACO Stormbrixx system must be done in layers, tipping materials from the edge. For this e.g. a light-weight backhoe or wheel loader can be used with a maximum total weight of 15 tonne (4 double wheels). This equipment may only be driven over the site once it is covered by a sufficiently compacted layer with a thickness of ≥ 45 cm, while taking care not to create tracks.

For surfaces which will carry traffic the current road construction regulations apply (RStO). During and after the construction phase care must be taken to ensure that no dirt enters the infiltration system.

Please note!

Compaction using heavy vibrating rollers is not permitted! Driving construction vehicles directly over the ACO Stormbrixx system is not permitted! Driving heavy construction vehicles directly over the ACO Stormbrixx system is only permitted when there is a compacted covering at least 100 cm thick.

Planning instructions and technical regulations

The information in this brochure, our application technology consultancy advice, and any other recommendations are based on a large volume of scientific research and many years of experience. Nevertheless, they are only indicative, and designers and fitters remain responsible themselves for checking the products and the installation instructions in combination with all local circumstances, current technical regulations and the current state of the art of the technology, and we accept no liability.

ACO Stormbrixx is a modular infiltration system made from synthetic materials which, on the one hand provides bulk storage, and on the other hand is used to provide bulk percolation of storm water. The installation is carried out totally below ground level. Providing the correct earth covering is an essential part of this (see Page 42/43). The prerequisites for long-term operation are advance and careful planning, correct installation by professionals and where relevant connection to a functioning watercourse, together with regular maintenance/cleaning. The **standards for concrete** given in the ACO Tiefbau installation details are minimum values. Any special requirements which arise from local conditions (resistance to frost, road salt, chemicals, abrasion etc.) need to be taken into account by designers, applying the correct **choice of exposure class** as defined in DIN EN 206-1 and DIN 1045-2. For the selection and design in particular, but also for the installation of Stormbrixx, the following **technical regulations** apply in their current versions.

DIN 1045-2 „Reinforced and pre-stressed concrete structures – Part 2: Concrete – Specification, performance, production and conformity; Application rules for DIN EN 206-1“
DIN 4124 „Slopes, planking and strutting, breadths of working spaces“
DIN 18196 „Civil Engineering – Soil classification for civil engineering purposes“
DIN EN 206-1 „Concrete – Specification, performance, production and conformity“
DIN EN 1610 „Construction and Testing of Drains and Sewers“
DWA (German Association for Water, Wastewater and Waste) and ATV-DVWK (former name of above) work instructions

- A 166 Structures for centralised storm water treatment and retention, 1999

DWA and ATV-DVWK fact sheets

- M 176 Notes and examples for the design and equipment of structures for centralised storm water treatment and retention, 2001
- M 178 Recommendations for the planning, construction and operation of retention ground filters for additional rainwater handling in mixed and separated systems, 2005

(In addition to the DWA rules listed on page 64)
RAS-Ew „Directives for Road Design – Section: Drainage“
RStO „Directives for the Standardization of Traffic Area Surfaces“

VOB (standard building contract terms) Part C:
ATV (general technical requirements) DIN 18299 „General regulations for construction work of all kinds“
VOB Part C: ATV DIN 18300 „Excavations“
VOB Part C: ATV DIN 18315 to 18318 „Construction of traffic-bearing roads; Surface courses without binder/ … with hydraulic binder/… made of asphalt/ … dry-jointed sett and slab pavements and surrounds“
Working paper „„Surface pavements with pavings and slabs by bonded construction“ ((Research Company for Roads and Traffic) FGSV-No. 618/2)
ZTV Asphalt-StB „... for the Construction of Asphalt Pavement Surfaces“
ZTV Beton-StB „... for the Construction of Concrete Pavement Surfaces“
ZTV E-StB „...for Civil Engineering for Road Construction“
ZTV Ew-StB „Additional Technical Terms of Contract and Directives for the Construction of Drainage Systems in Road Construction“
ZTV P-StB „... for the Construction of Dry-jointed Sett and Slab Pavements“ (without binder)
ZTV T-StB „... for the Construction of Base Courses for Road Construction“

The above list of regulations, standards and directives is indicative only for the design and implementation of line drainage in surfaces which bear traffic, and makes no claim to be exhaustive. To provide verification and certainty we recommend a local hydraulic test be organised on your site by ACO Application engineering. For special applications or for solutions which you do not see in this documentation, please contact ACO Application engineering. Our colleagues will be pleased to advise you and assist you in finding the best solution. Please contact them in your country.

Please also refer to the legislation and technical regulations on page 64.

Maintenance and inspection

Visual Inspection, maintenance and cleaning

Thanks to the intelligent building block architecture of ACO Stormbrixx, which requires only an external perimeter to the entire system using easy-to-erect side walls, the total volume of the installed infiltration system is accessible for inspection and washing.

Basically, maintenance work needs to be thought about during the planning phase. In detail, this may mean: in addition to the maintenance instructions we always recommend adhering to all the current relevant legal requirements (DWA-A 138 with instructions for the maintenance of infiltration systems)

During and after the construction phase care must be taken to ensure that no sediment enters the inlet pipes, shafts and the infiltration system. During and immediately after the construction phase an increase in the volume of sediment must be expected from the connected surfaces and must be counteracted.

Maintenance frequency

The initial inspection/cleaning of the ACO infiltration system should take place after completion and before handover, so forming part of the commissioning of the installation.
A visual inspection of the shafts and a camera passage through the pipes and the infiltration system is recommended. The results should be recorded in an operating logbook.

To guarantee long-term operability, the recommendations of the current relevant legal requirements must be respected (DWA-A 138, instructions for the maintenance of infiltration systems).

A visual inspection must be carried out at least twice a year, preferably in the spring (high pollen levels) and autumn (falling leaves). If necessary, maintenance/cleaning should be undertaken.

The operator is responsible for ensuring that all maintenance work is carried out by qualified expert staff, who are fully aware of the maintenance and operating instructions.
Relevant accident prevention regulations must be respected.

The results of the inspections carried out can then be used to determine the frequency of maintenance interventions in future.

If unusual weather conditions occur (heavy rainfall or similar), additional inspections and/or maintenance are recommended.

The inspection equipment can be moved freely through the trough-shaped indentations in the base plates of the system

Camera, jetting nozzle

The inspection and cleaning accesses, consisting of shaft bases, intermediate sections and upper parts, provide an easy way for sewer cameras, jetting nozzles and jetting lances to access the ACO Stormbrixx hollow block infiltration system (see page 50–53).

Cleaning

The cleaning of the ACO Stormbrixx infiltration system can if necessary be carried out using sewer cleaning equipment (sewer cleaning technology/high-pressure washing). The maximum water pressure must not exceed 100 bar.

The water can be sucked out through the upper sections and the lower and intermediate shaft sections.
When disposing of the cleaning water/sediment all applicable legal requirements must be observed.

Visual inspection

Visual inspection includes the following points:

- The condition of the infiltration space (side walls, bases, covers, columns)
- Connecting pipes

If there are signs of leakage, the watertightness of the system must be re-established by suitable tests.

Maintenance measures

If faults are detected during the visual inspection (dirt, distortions etc.) these must be corrected immediately.

Operating logbook

The results of the visual inspection and any maintenance and repair measures undertaken must be recorded in an operating logbook. These records then allow decisions to be made about the necessary frequency of future visual inspections and maintenance measures.

The following data and information must be recorded in the operating logbook:

- Completeness of the operating log book
- Date of visual inspection or maintenance work
- Identity of staff involved
- Problems arising (also causes of problems)
- Measures taken

Keeping a logbook has many benefits, e.g. traceability of sources of problems, targeted error analysis and determination of follow-up measures.

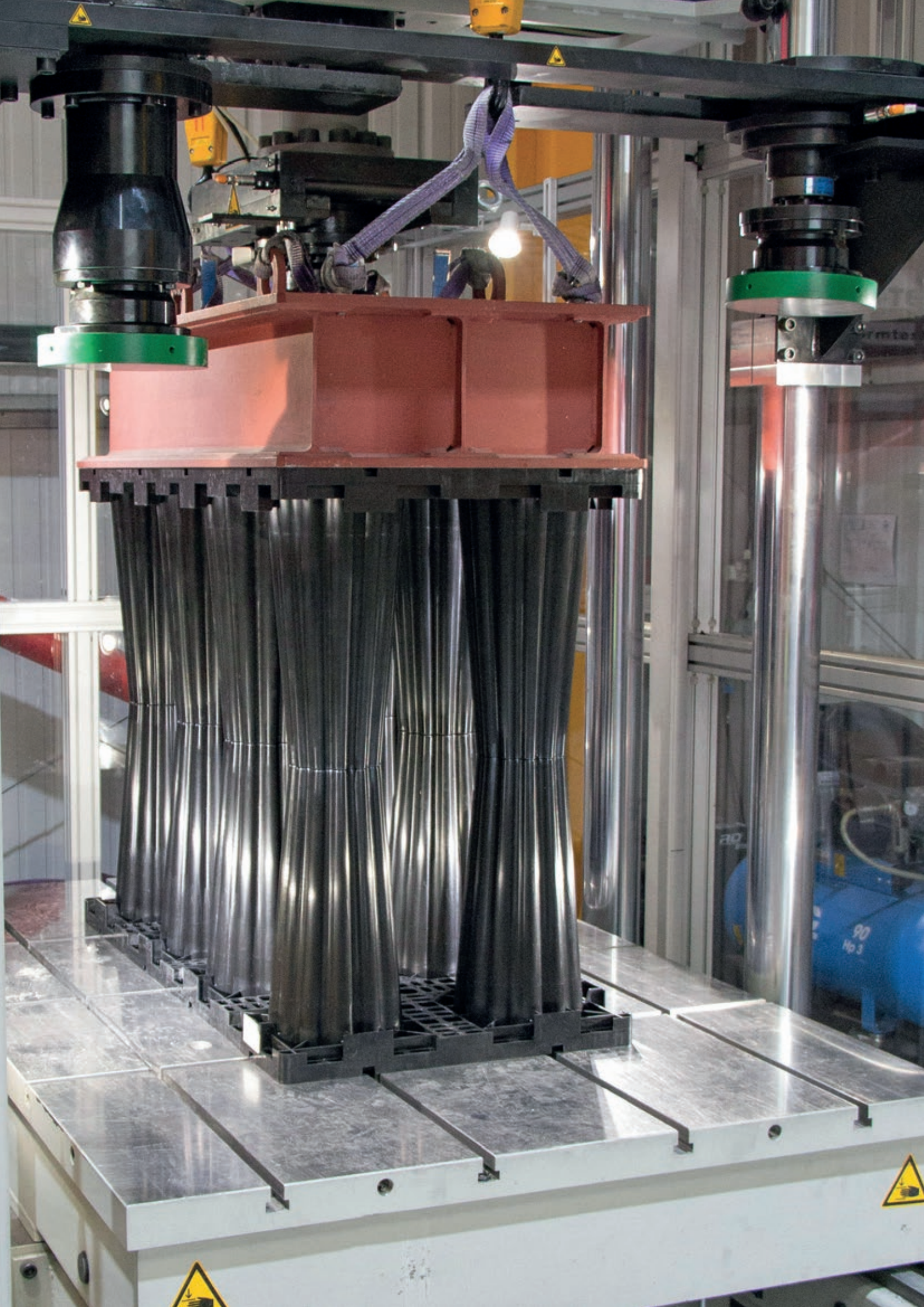
Warranty

Please refer to the relevant section in the general terms and conditions of sale of the ACO company in your country.

Vertical access directly through the system

Push camera, cleaning equipment with a rinsing head

Self-propelling camera



FEEL SAFE WITH US

50 YEARS

Product testing

According to the installation conditions ACO Stormbrixx systems provide a product safety, which is designed for 50 years in accordance with DIBt guidelines.

ACO Stormbrixx HD is DIBt-certified. ACO Stormbrixx SD has been tested by the Gesellschaft für Materialforschung und Prüfanstalt für das Bauwesen Leipzig mbH, Germany.

Regular material and product tests ensure continuous quality.

The specifications in Germany:

Legislation and technical regulations that support solutions

Over the past few decades, draining the accumulated surface water to the watercourse as quickly as possible became an overriding goal. Today, the aim is to enable rainwater to seep, or to recycle it, as well as to keep sealed surfaces to a minimum: surface water should seep away where it falls. Statutory rainwater charges are now levied for sealed surfaces in practically all regions of Germany.
If securing surfaces is unavoidable, rainwater can be managed by means of infiltration and storage.

German Water Resources Law

Both the EU Water Framework Directive and the German Water Resources Law establish clear requirements for handling rainwater.
"Surface water should seep away or be irrigated locally, or be routed into a watercourse directly via a sewage system, without being mixed with grey water, provided that this does not contravene legal requirements on water or other regulations under public law, nor come into conflict with water management issues" (Section 55 German Water Resources Law of 01.07.2009).

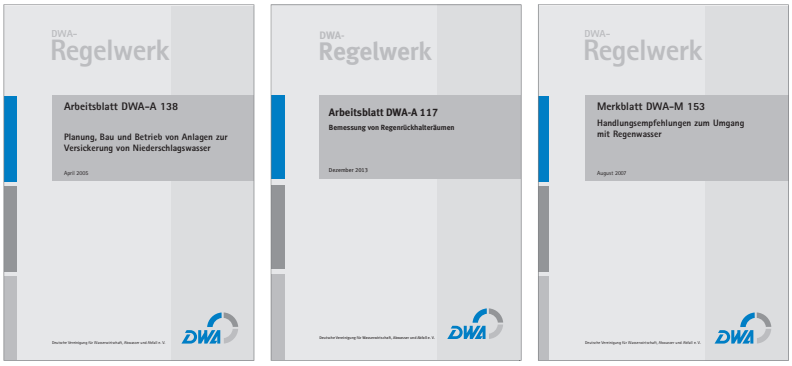
As well as this, German federal states as well as municipalities, towns and cities define their own specifications and regulations that building owners, planners and land owners are required to adhere to.

DWA set of rules

The following rules must be considered when dimensioning infiltration systems and surface water attenuation facilities:

- Standard DWA-A 138
  "Planning, Construction And Operation Of Facilities For The Infiltration Of Precipitation Water". Applies to the infiltration of precipitation that falls on permeable and impermeable secured surfaces. This serves as an essential foundation and must be taken into account for every infiltration system.
- Standard DWA-A 117
  "Dimensioning Of Storm-Water Holding Facilities". Applies to general waste water drainage between land drainage and watercourses.
- Advisory Leaflet DWA-M 153
  "Recommended Actions for Dealing with Storm Water". Provides recommendations for pre-treating rainwater before it is allowed to seep away or routed to a watercourse.

DWA
Klare Konzepte. Saubere Umwelt.



The services:

Dimensioning, consultation, development – benefit from ACO's expertise

The ACO application engineering team assist with all the technical development work involved in the building projects you are planning.
Its services include:

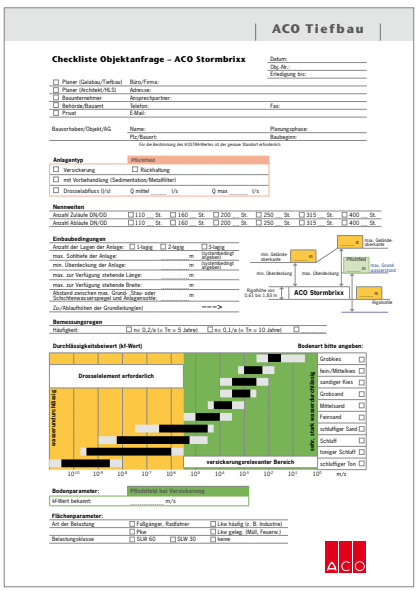
- Selection, dimensioning and determining quantities of required products, such as drainage channels and/or gullies, sedimentation systems, separators and heavy metal seperators – with the applicable directives taken into consideration in each case
- Dimensioning and configuring trench storage components
- Dimensioning the flow control shaft (if required)
- Creating the relevant drawings and installation plans (if required)
- Compiling project-specific performance specifications

The application engineering team is on hand to answer any technical questions you may have about products and installation. Please contact them in your country.

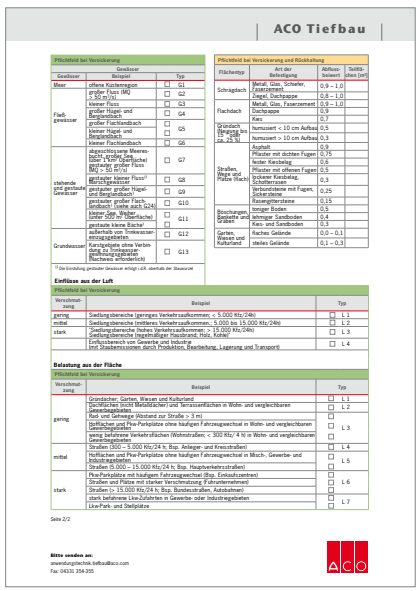
When it comes to dimensioning Cleaning systems, infiltration and attenuation systems, enlisting the assistance of experts is a must. There is also the option of completing and returning the project questionnaire, which is designed to help you determine all the specifications required for expert infiltration or attenuation as well as identify the right pre-cleaning solution for you.
This involves providing the following information:

- What is the quality and pollution level of the collected rainwater? Does it involve a heavily used road, a metal roof or a surface that is only slightly contaminated?
- What is the estimated recurrence interval?
- What are the maximum dimensions that can be used for the infiltration system (number of layers)?
- How far away from buildings is the system?
- What is the ground like?
  Does it have good infiltration properties or is it not very permeable (based on a soil survey)?
- What are the prevailing groundwater levels?
- Where should the water be routed to?
  Does it involve infiltration directly from the infiltration system into the ground or does it flow into a river or lake that is subject to restrictions concerning what can be introduced into it?
- How many litres per second may be fed into the watercourse?
  If a flow control system is to be used, how should it be designed?

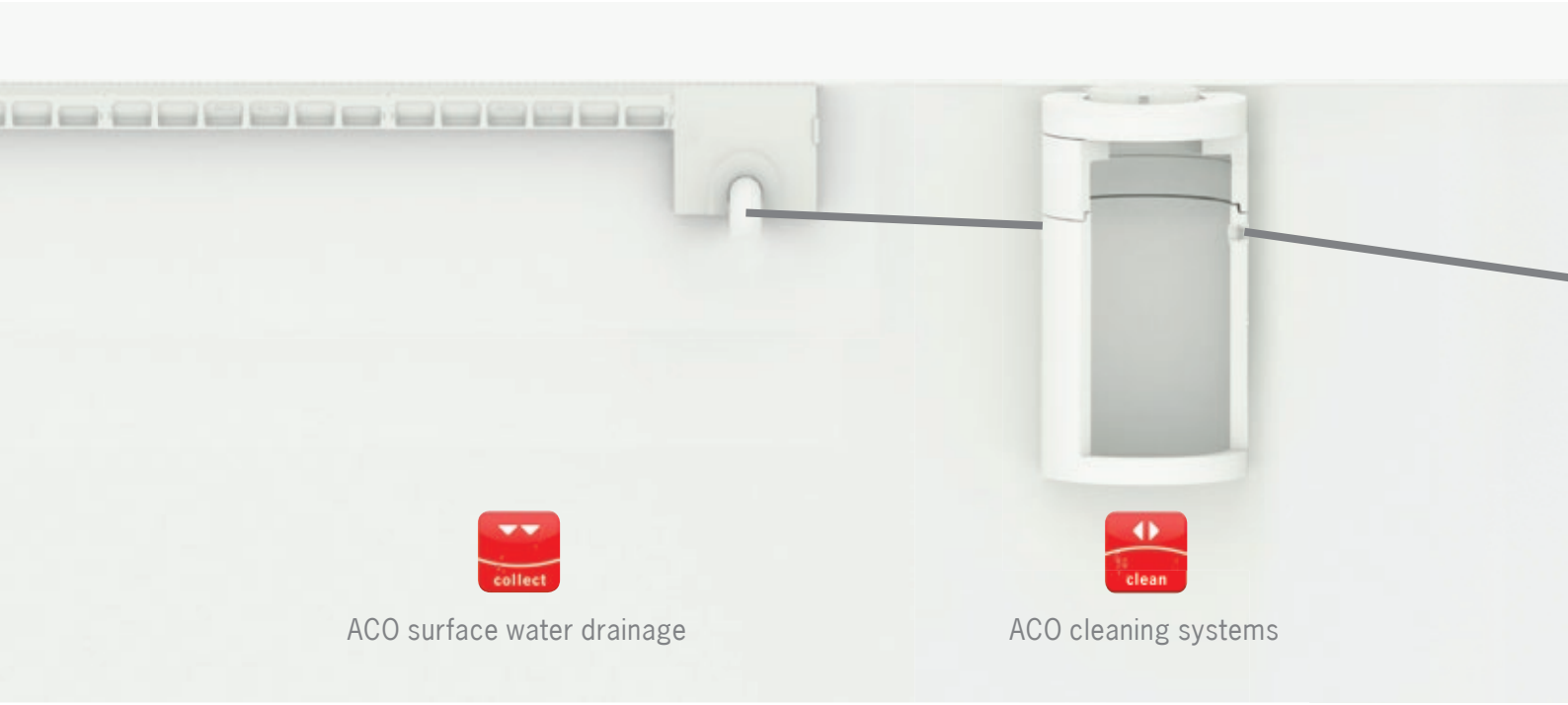
The project questionnaire: Please ask your ACO contact person.


ACO Tiefbau

Checkliste Objektanfrage – ACO Stormbrixx


ACO Tiefbau

How to control the discharge rate to the required level?



ACO surface water drainage

ACO cleaning systems

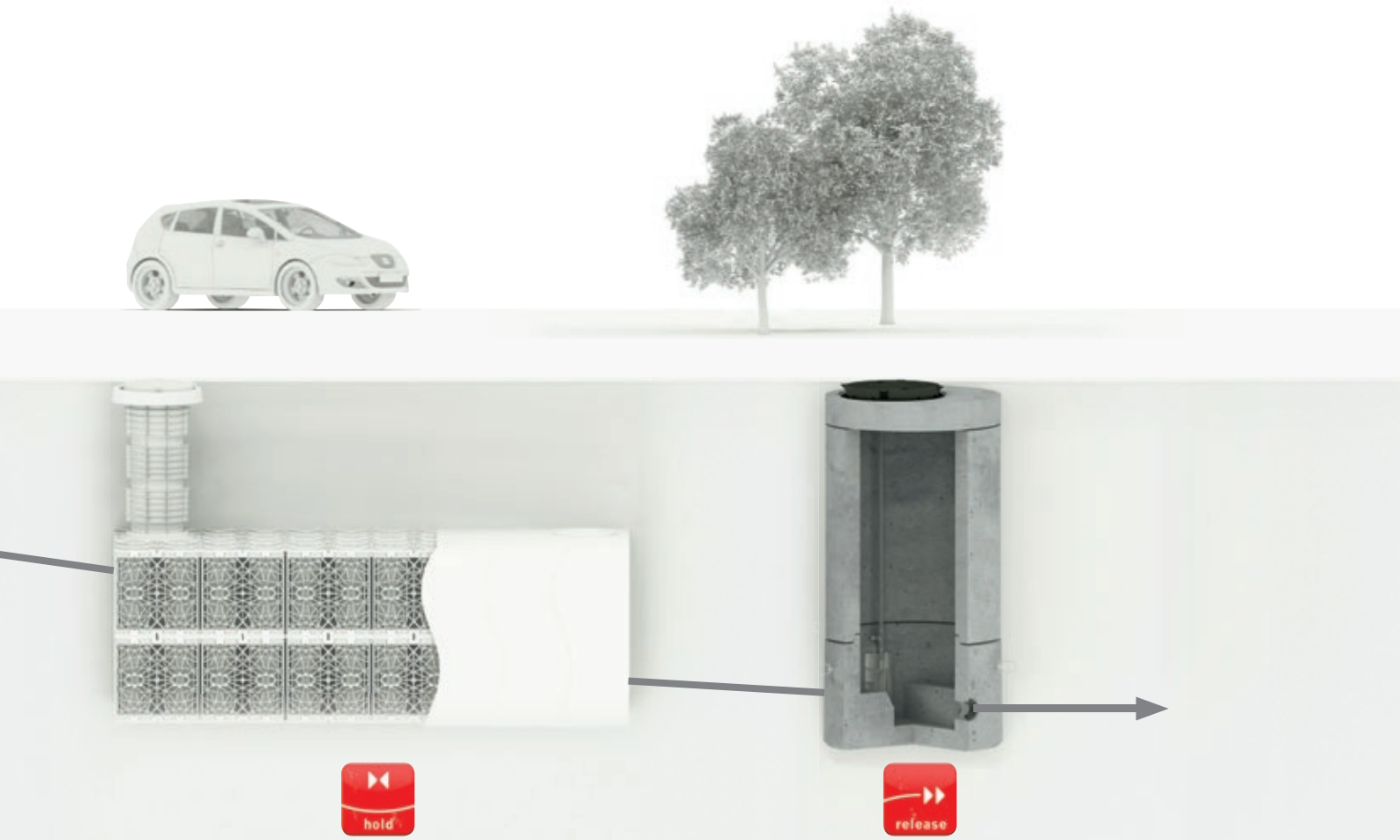
ACO control systems

Changing rainfall events and increasing heavy rainfalls require a change in our approach to discharging the resulting surface water. If the basic requirement of infiltrating rainwater where it falls cannot be met, it is necessary to retain – temporarily store – the surface water and discharge it into the outfall in a controlled way.

Flow restricting elements such as static orifices, flow restrictor gate valves or penstocks, pump shafts, etc. are installed in the structure or downstream of the structure restrict the stormwater outflow from the stormwater retention basin. These components can be used to match the outflowing quantity of surface water to the discharge conditions.

The advantages of ACO throttle manholes:

- Space-saving flat flow restrictor gate valve or penstock
- Corrosion resistant stainless steel construction made of material grade 304
- Division scale for adjustment and indication of the valve plate opening height
- Telescopic spindle extension with square drive and spindle holder
- Subsequent regulation changes can be precisely adjusted with ACO pump shafts



ACO infiltration/attenuation systems

ACO control systems

ACO Flow Control
Controlling the quantity of discharging surface water

ACO Q-Brake
Vortex restrictor system for controlled discharge

ACO Flow control P 400
Road gully with integrated flow restrictor

ACO Powerlift Pro
Pump shaft

Throttle slide

Regulating the quantity of draining rainwater

The ACO flow restrictor manhole is used to control the discharge quantities from the stormwater retention basin via shaft structures made of reinforced concrete with built-in flow restrictor gate valves or penstocks for reducing the discharge cross-section.

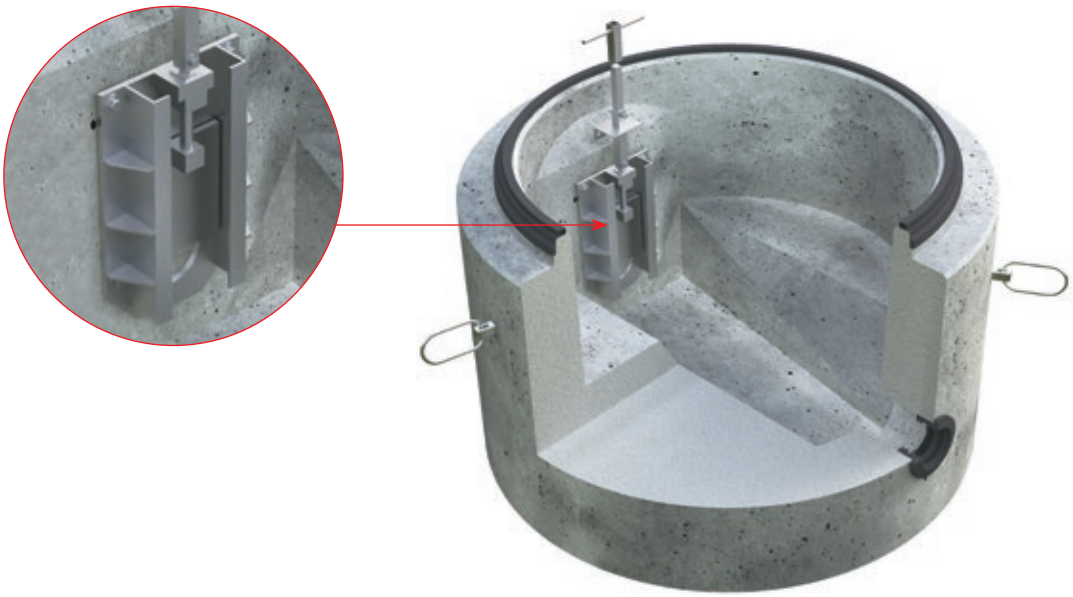
This also counteracts overloading of the sewers by discharging too much surface water.
Retention basins are the classic solution to discharge retention. They should run empty after the end of the rainfall so that they are available for the next rainfall event.

Restricted emptying of the surface water retention basin is preferred to prevent worsened outflow conditions during the emptying, e. g. increased flow velocity. Furthermore, restricted discharge into bodies of surface water also counteracts possible damage to the water body, e. g. drifting of organisms, back erosion or similar impacts.

Protecting public sewers

Product benefits

- Space-saving, flat flow control valve
- Corrosion-resistant stainless-steel structure of material grade 1.4301
- Scale for adjusting and displaying the valve plate opening height
- Telescopic spindle extension with square drive and spindle bracket
- Available systems: 2–256 l/s



Regulators

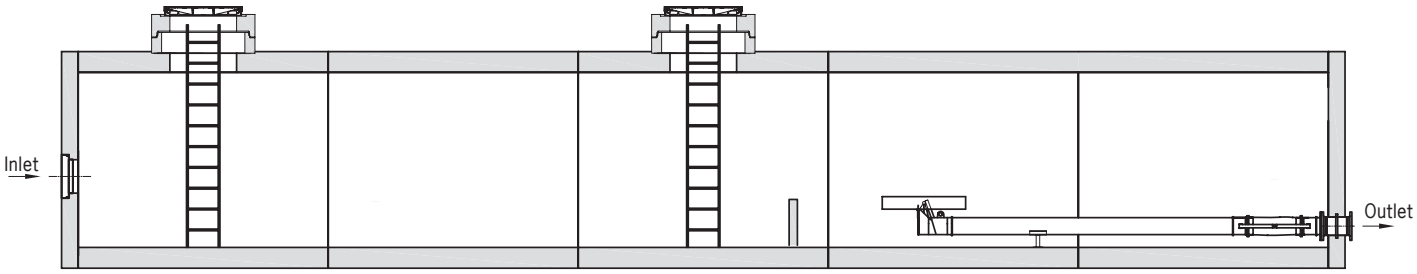
Surface water retention basin with discharge controller

ACO Regulator discharge controllers are installed in surface water retention basins. Their task is to constantly discharge a defined wastewater flow from the basin. The deviation from the nominal flow is max. ±10 % within the range of the water level of 0.6 m up to h_{max}. If the quantity of water per time unit (l/s) flowing into the retention basin is temporarily larger than the quantity discharged by the discharge controller, the water is stored temporarily in the retention basin. The stored quantity is then reduced when the flow into the retention basin is less than the flow out of it through the regulator discharge controller. The discharge controller is designed so that the water in the retention basin is always removed near the surface. This ensures continuous removal of floating oil fractions.

Regulator discharge controllers must be set to a fixed value calculated when designing the retention basin, which is within the range given for the respective type. This results from the design based on the data of DIN 1999 Part 2 and Part 4 and numerically should be roughly equal to half the nominal size of the separator to be installed; i. e. the separator is only loaded with half the flow, based on the nominal size. This design has proven its worth, as the wastewater drawn from the surface of the retention basin is usually contaminated with oil.

Discharge controllers do not accept and transport any sediment sludge, as they drawn water from the surface. The sediment material is separated in the sludge collection chamber of the retention basin, which must be located in the inlet area of the retention basin. If the ACO Type PR-18 regulator basin is used, a required sediment trap must therefore be located upstream or downstream of this regulator basin. Alternatively, the discharge controller can also be installed at half the basin height. The space below the regulator is then used as a sludge collection chamber. However, this reduces the intermediate storage capacity of the system.

Regulators are individually designed by ACO's civil engineering application engineers. Please contact them in your country.



Surface water retention basin with ACO Regulator discharge controller

Please integrate your country specific products here.
For example:

Product information
Flow control

Please integrate your country specific products here.
For example:

Product information
Q Brake
Q Plate

Please integrate your country specific products here.
For example:

Product information
Flow control P 400

Please integrate your country specific products here.
For example:

Product information
Pump shafts


ACO
P26
P41
PP01-P29
16" PIPE
H'
PP02-P05
PP02-P11
d=691mm
d=630mm
d=585
d=632
d=641
d=570mm
d=546mm
FD
300D
CH.06
CHANNEL 020
d=200mm
Multiline V 300 (NW 300 mm)
Rinnenkörper, Einlaufkästen und Zubehör
LAYOUT_Channels
AL WATAN
DATE
06/06/2016

Technical information

Surface water drainage

Civil engineering catalogue T 1

Brochure “ACO road gullies and top sections”

www.aco-tiefbau.de/produkte

Cleaning systems

Infiltration/attenuation systems

Control systems

Further technical information:

Civil engineering catalog T 2

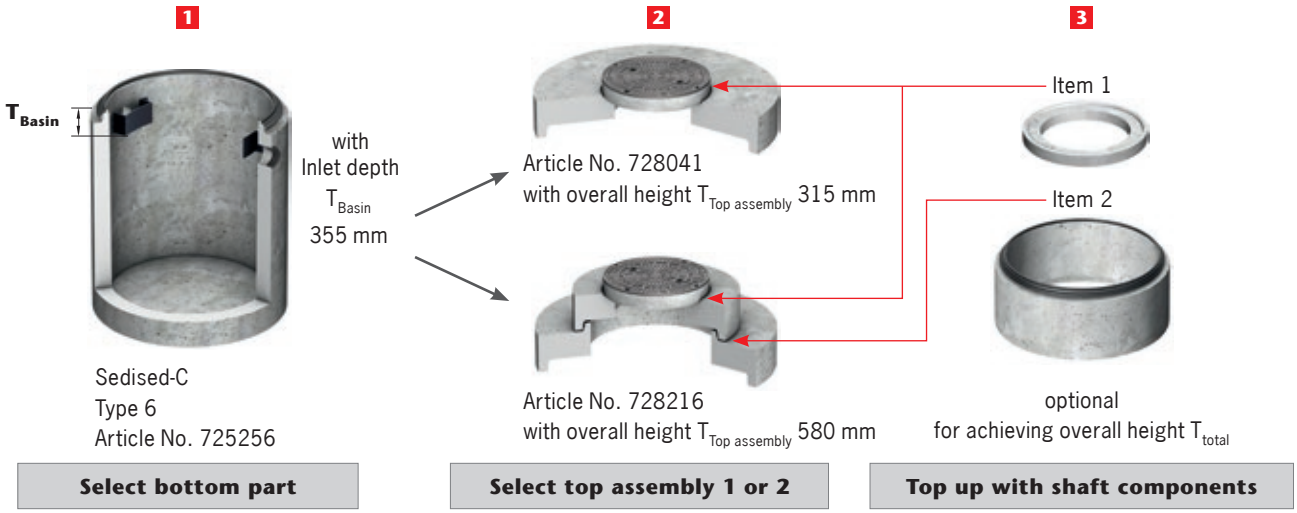
www.aco-tiefbau.de/produkte

Cleaning systems made of concrete in a modular principle

The right shaft construction for each application

All shaft products follow the flexible modular principle. The simple article structure enables systems to be configured individually. Users can select bottom parts and upper parts quickly and save time.

A mechanical seal with integrated load transfer is already included in the bottom parts.
This removes the need for time-consuming application of a mortar bed to transfer the load.



Example with Article No. 725256

Bottom part e.g. Article No. 725240	Top assembly 1 see Article No. 728041	Top assembly 2 see Article No. 728216	Shaft component parts		Possible inlet depth incl. slide ring seal with integrated load transfer and mortar joints
			Shaft rings incl. 15 mm slide ring seal with integrated load transfer	Supporting rings incl. 10 mm mortar joint	
T_{Basin} [mm]	$T_{Top\ assembly}$ [mm]	$T_{Top\ assembly}$ [mm]	T [mm]	T [mm]	T_{Total} [mm]
355	315	–	–	–	670
	–	580	–	–	935
	315	–	–	70, 90, 110[1)]	740 – 955
	–	580	–	70, 90, 110[1)]	1005 – 1245
	–	580	265, 515, 765, 1015	70, 90, 110[1)]	1270 – 5340[2)]
					

[1)] According to EN 476, the entrance height for a shaft neck of 600 mm clear opening shall not exceed 450 mm maximum.

[2)] Larger inlet depths with separate structural calculations available on request.

Example of shaft construction using the modular principle

Manhole cover

Support ring

Cover plate

Shaft ring

Reducing slab

Basin

Sedised-C

ACO product advantages

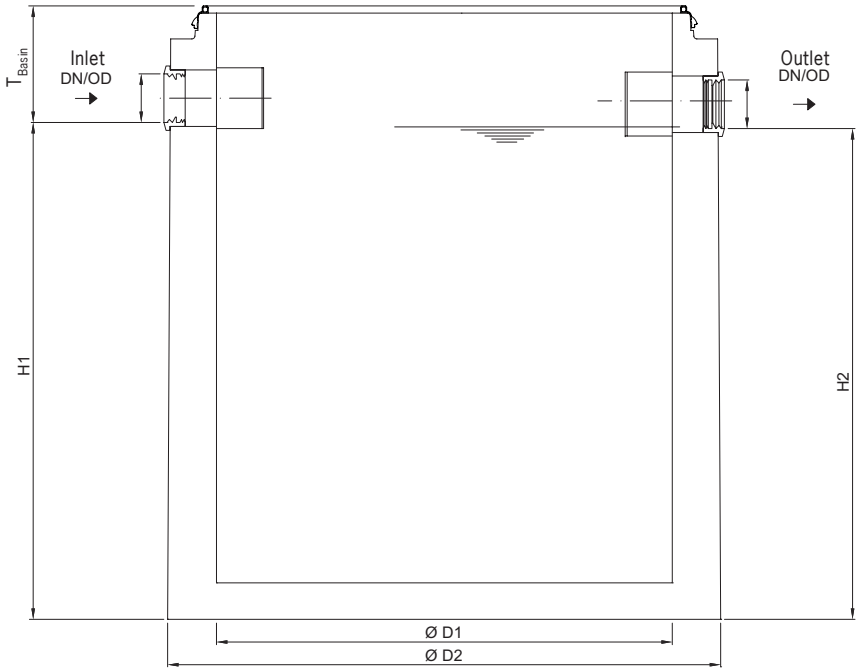
- For protection against sanding up of surface water retention systems and block infiltration (SUDS) drains for seepage
- To DWA-M 153 **Type D25, D24 or D21**
- Inlet and outlet side with baffle against hydraulic short-circuit
- Retention of lightweight solids via baffle at the outlet

- Made of reinforced concrete C35/45
- Monolithic design
- Exposure class XF1, XA2, XC2
- Dimension T_{Basin} including seal with integrated load transfer

Type	Q_{in} at 18 m³(m²h) D25 [l/s]	Q_{in} at 10 m³(m²h) D24 [l/s]	Q_{in} at 9 m³(m²h) D21 [l/s]	Inlet/ Outlet DN/OD [mm]	Total capacity [l]	Basin weight [kg]	Article No.
4	3.9	2.2	2.0	110	900	2262	**725290**
	3.9	2.2	2.0	160	900	2800	**725255**
6	5.7	3.1	2.8	110	1500	2862	**725291**
	5.7	3.1	2.8	160	1500	2,800	**725256**
	5.7	3.1	2.8	200	1500	2860	**725292**
9	8.8	4.9	4.4	160	3000	4188	**725293**
	8.8	4.9	4.4	200	3000	4150	**725257**
	8.8	4.9	4.4	250	3000	4190	**725294**
12	12.0	6.7	6.0	200	5000	6930	**725258**
	12.0	6.7	6.0	250	5000	7220	**725295**
	12.0	6.7	6.0	315	5000	7220	**725296**
19	19.0	10.6	9.5	250	8000	7700	**725259**
	19.0	10.6	9.5	315	8000	7905	**725297**
	19.0	10.6	9.5	400	8000	7911	**725298**
29	28.6	15.9	14.3	315	10000	15600	**725260**
	28.6	15.9	14.3	400	10000	15852	**725299**

Note: $T_{Basin} + T_{Top\ assembly} = T_{Total}$
Dimension T can be adjusted to the inlet depth on site using shaft components.

Info box



Type	Article No.	Dimension					Top assembly 1	Top assembly 2	T_{max}
		H_1 [mm]	H_2 [mm]	D_1 [mm]	D_2 [mm]	T_{Basin} [mm]	Article No.	Article No.	[mm]
4	**725290**	1360	1340	1000	1270	400	725290	–	5385
	725255	1335	1315	1000	1270	425	728040	–	5410
6	**725291**	1480	1460	1200	1475	395	728041	728216	5380
	725256	1520	1500	1200	1475	355	728041	728216	5340
	725292	1500	1480	1200	1475	375	728041	728216	5360
9	**725293**	2000	1980	1500	1800	385	728042	728217	5370
	725257	1980	1960	1500	1740	400	728042	728217	5390
	725294	1930	1910	1500	1800	455	728042	728217	5440
12	**725258**	2325	2305	1750	2050	520	728043	728218	5505
	725295	2300	2280	1750	2070	545	728043	728218	5530
	725296	2270	2250	1750	2070	575	728043	728218	5560
19	**725259**	2305	2285	2200	2440	540	728044	728219	5525
	725297	2305	2285	2200	2440	540	728044	728219	5525
	725298	2265	2245	2200	2440	580	728044	728219	5565
29	**725260**	2070	2050	2700	3000	885	728040	–	5870
	725299	2030	2010	2700	3000	925	728040	–	5910

Note: $T_{Basin} + T_{Top\ assembly} = T_{Total}$
Dimension T can be adjusted to the inlet depth on site using shaft components.

Info box

Sedismart-C

ACO product advantages

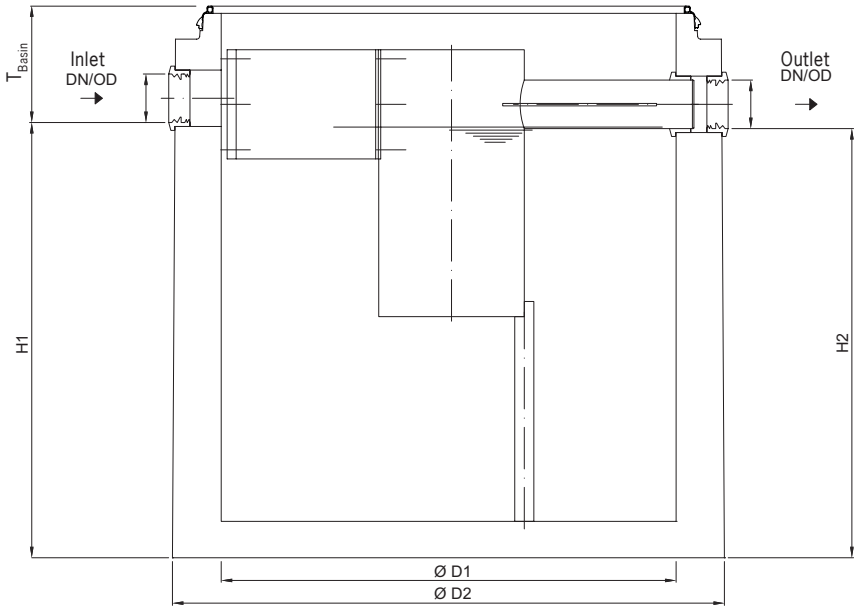
- According to the quality and test provisions for the quality assurance of separators RAL-GZ 693
- To DWA-M 153 **Type D24**
- Special internal construction for optimised sedimentation
- Compact design

- Made of reinforced concrete C35/45
- Monolithic design
- Connections in accordance with DIN 19534/19537 with patented plastic insert, which due to its circular internal design, produces rotational movement of the contaminated water, due to which the accumulating fine material drops to the floor of the shaft
- Exposure class XF1, XA2, XC2
- Dimension T_{Basin} including seal with integrated load transfer

Nominal size	Q_{in}	Inlet/Outlet DN/OD	Contents		Basin weight	Article No.
			Sludge tank	Total		
	[l/s]	[mm]	[l]	[l]	[kg]	
1000	4.0	110	400	1052	2272	**725279**
1200	7.1	160	690	1623	2874	**725280**
1500	11.0	160	1100	2509	3981	**725281**
2200	23.8	200	2500	5835	6309	**725282**
2700	35.8	250	6670	11909	15903	**725283**

Note: $T_{Basin} + T_{Top\ assembly} = T_{Total}$
Dimension T can be adjusted to the inlet depth on site using shaft components.

Info box



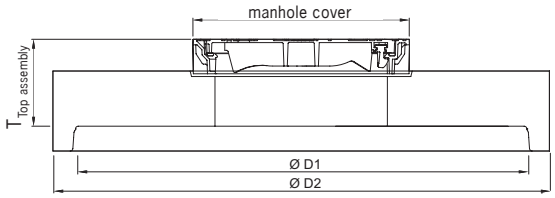
Nominal size	Article No.	Dimension					Top assembly 1	Top assembly 2	T_{max}
		H_1 [mm]	H_2 [mm]	D_1 [mm]	D_2 [mm]	T_{Basin} [mm]	Article No.	Article No.	[mm]
1000	**725279**	1360	1340	1000	1270	400	728040	–	5385
1200	**725280**	1455	1435	1200	1475	420	728041	728216	5405
1500	**725281**	1440	1420	1500	1820	370	728042	728217	5355
2200	**725282**	1555	1535	2200	2440	500	728044	728219	5485
2700	**725283**	2100	2080	2700	3000	855	728040	–	5840

Note: $T_{Basin} + T_{Top\ assembly} = T_{Total}$
Dimension T can be adjusted to the inlet depth on site using shaft components.

Top assembly parts made of reinforced concrete

Top assembly 1 as cover slab

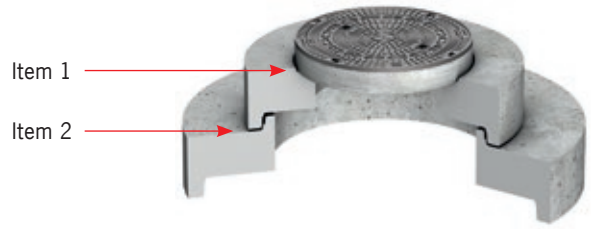
- Shaft cover with maintenance friendly cover made of cast iron, load class D 400 to EN 124-2, clear opening 600 mm

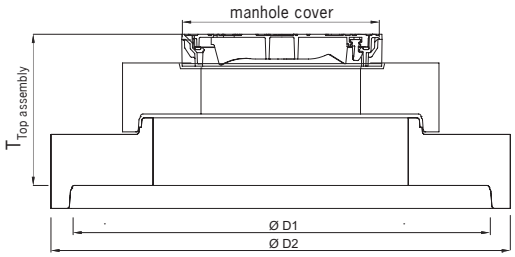


Dimension			Shaft cover	Weight	Article No.
$T_{Top\ assembly}$ [mm]	D1 [mm]	D2 [mm]		[kg]	
315	1000	1270	1 * LW 600	616	**728040**
315	1200	1475	1 * LW 600	816	**728041**
315	1500	1800	1 * LW 600	1216	**728042**
365	2200	2440	1 * LW 600	2116	**728044**

Top assembly 2 as reducing slab with cover slab

- Shaft cover with maintenance friendly cover made of cast iron, load class D 400 to EN 124-2, clear opening 600 mm





Dimension			Shaft cover	Weight	Article No.
$T_{Top\ assembly}$ [mm]	D1 [mm]	D2 [mm]		[kg]	
580	1200	1475	1 * LW 600	1046	**728216**
660	1500	1800	1 * LW 600	1566	**728217**
710	2200	2440	1 * LW 600	3026	**728219**

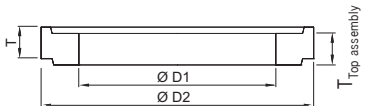
Note: $T_{Basin} + T_{Top\ assembly} = T_{Total}$
Dimension T can be adjusted to the inlet depth on site using shaft components.

Info box

Shaft components made of concrete

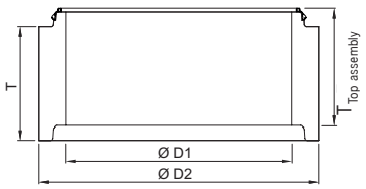
- For increasing the height and adjusting shafts

Supporting ring to/similar to DIN 4034 (Item 1)



Type	Dimension			Shaft construction item for top assembly 1 and 2	Top assembly height with mortar joint $T_{Top\ assembly}$	Weight	Article No.
	T [mm]	D1 [mm]	D2 [mm]		[mm]	[kg]	
AR-V 625 x 60	60	625	865	Item 1	70	50	**727400**
AR-V 625 x 80	80	625	865	Item 1	90	60	**727401**
AR-V 625 x 100	100	625	865	Item 1	110	70	**727402**
AR-V 625 x 200	200	625	865	Item 1	210	140	**727403**
AR-V 625 x 400	400	625	865	Item 1	410	280	**727404**

Shaft ring with coupling socket with seal to/similar to DIN 4034 (Item 2)



Type	Dimension			Shaft construction item for top assembly 2	Top assembly height with GLRD with integrated load transfer $T_{Top\ assembly}$	Weight	Article No.
	T [mm]	D1 [mm]	D2 [mm]		[mm]	[kg]	
SR-M 1000 x 250	250	1000	1240	Item 2	265	240	**728110**
SR-M 1000 x 500	500	1000	1240	Item 2	515	500	**728111**
SR-M 1000 x 750	750	1000	1240	Item 2	765	750	**728112**
SR-M 1000 x 1000	1000	1000	1240	Item 2	1015	1000	**728113**
SR-M 1000 x 1250	1250	1000	1240	Item 2	1265	1250	**728114**
SR-M 1000 x 1500	1500	1000	1240	Item 2	1515	1500	**728115**
SR-M 1000 x 1750	1750	1000	1240	Item 2	1765	1750	**728116**
SR-M 1000 x 2000	2000	1000	1240	Item 2	2015	2000	**728117**
SR-M 1000 x 2250	2250	1000	1240	Item 2	2265	2250	**728118**
SR-M 1000 x 2500	2500	1000	1240	Item 2	2515	2500	**728119**

Note: Further shaft components for the top assembly version 1 (Comfort) on request.

Info box

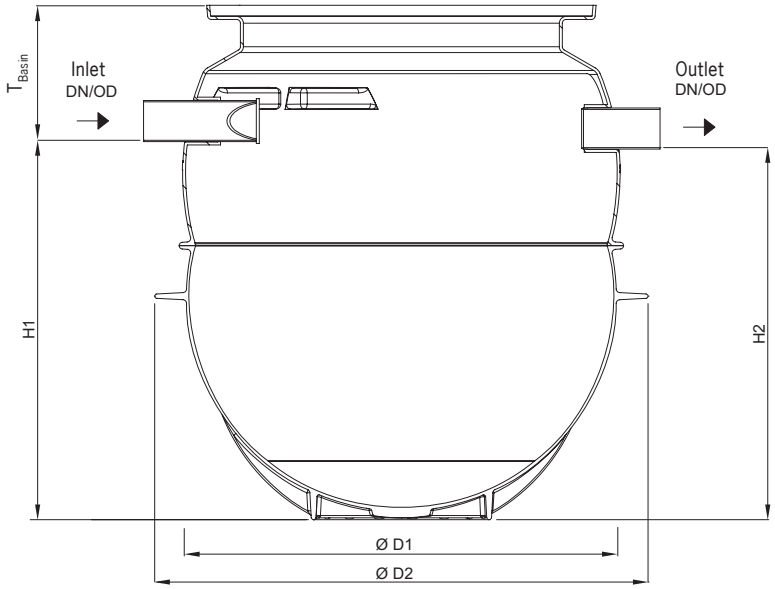
Sedised-P

ACO product advantages

- For protection against sanding up of surface water retention systems and block infiltration (SUDS) drains for seepage
- To DWA-M 153 **Type D25, D24 or D21**
- Inlet side with baffle for flow reduction

- Plastic
- Monolithic design
- Top section for Sedised-P absolutely necessary
- Inlet and outlet for connection to plastic pipe to DIN 19534 and DIN 19537
- Maximum installation depth: 3m

Type	Q_{in} at 18 m³(m²h) D25 [l/s]	Q_{in} at 10 m³(m²h) D24 [l/s]	Q_{in} at 9 m³(m²h) D21 [l/s]	Inlet/ Outlet DN/OD [mm]	Total capacity [l]	Weight of basin [kg]	Article No.
5.1	5.1	2.9	2.6	160	975	75	**314110**



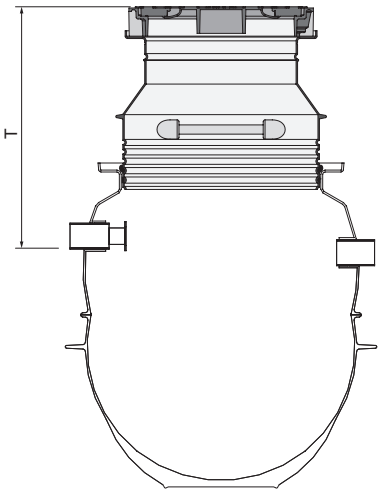
Type	Article No.	Dimension				
		H_1 [mm]	H_2 [mm]	D_1 [mm]	D_2 [mm]	T_{Basin} [mm]
5.1	**314110**	1214	1194	1100	1321	360

Top sections for Sedised-P

Class B 125

- Class B 125 to EN 124
- Clear opening 600 mm
- With maintenance-friendly SAKU B125 cover without ventilation opening
- Cover made of plastic and frame made of plastic/concrete
- Cover loose fitting

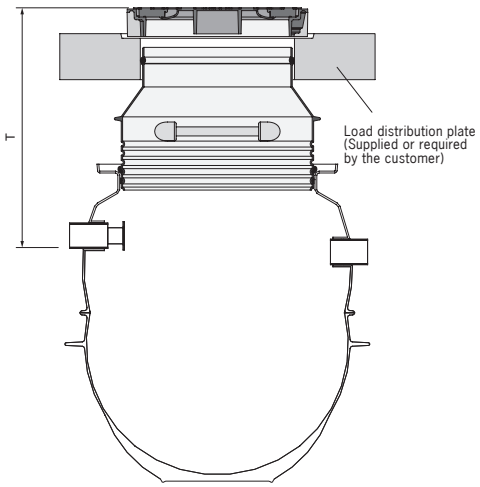
Inlet depth T [mm]	Weight [kg]	Article No.
910-1020	73	**314111**
900-1470	81	**314112**
920-1770	92	**314113**



Class D 400

- Class D 400 to EN 124
- Clear opening 600 mm
- With maintenance-friendly Begu D 400 cover without ventilation opening
- Cover made of cast iron and concrete frame
- Cover loose fitting

Inlet depth T [mm]	Weight [kg]	Load-distribution slab	Article No.
920-1770[1)]	825	included in the scope of supply	**314114**
	200	required on site	**314115**



[1)] Including load distribution slab

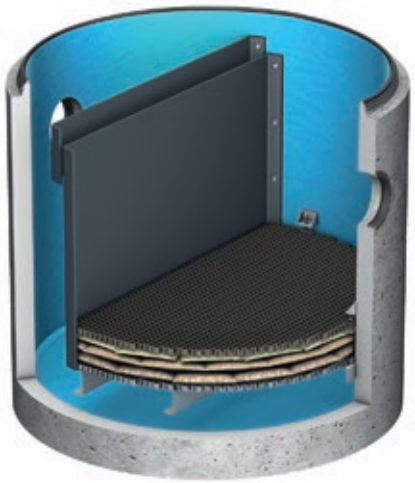
Info box

Heavy metal filter HMS – direct discharge

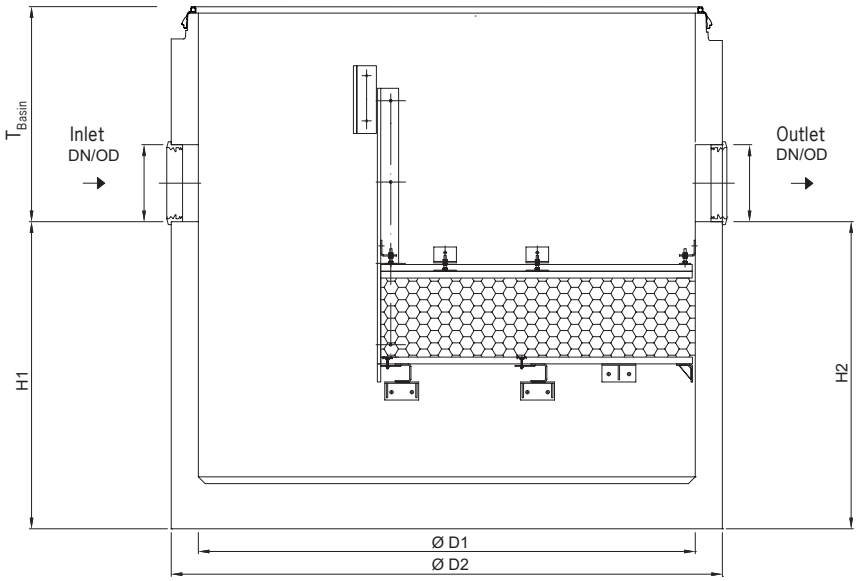
ACO product advantages

- High sedimentation and filter performance
- To DWA-M 153 **Type D11 (12)**
- Two-stage treatment system
- Large outflow capacity
- Blockage-free system
- Good maintenance-friendliness
- Easy entrance

- Surface water treatment system for connecting traffic areas and subsequent discharge into the outfall, e.g. in accordance with the so-called “Trennerlass NRW” (North-Rhine Westphalia Law on the collection and discharge of surface water via stormwater sewers)
- Made of reinforced concrete
- With multi-layer individually configurable filter
- With bypass solution
- **Connectable catchment area up to 10,000 m²**
- On request: Larger diameter of the inlet and outlet pipe
- Dimension T_{Basin} including seal with integrated load transfer



Inlet/Outlet DN/OD [mm]	Shaft cover	Weight Basin [kg]	Article No.
300	2 * LW 600 / 1 * LW 600 1 * LW 800	7000	**725300**



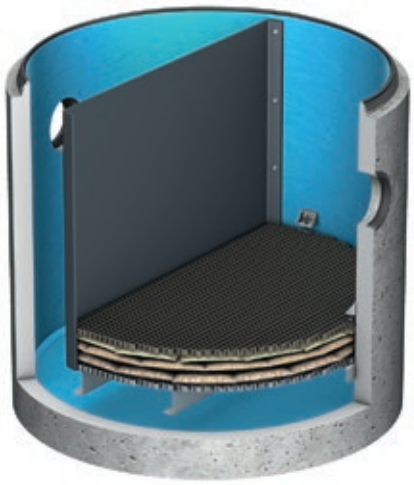
Inlet/ Outlet DN/OD [mm]	Article No.	Dimension H_1 [mm]	H_2 [mm]	D_1 [mm]	D_2 [mm]	T_{Basin} [mm]	Top assembly 1 Article No.	Top assembly 2 Article No.	T_{max} [mm]
300	**725300**	1380	1380	2200	2440	810	728057	728056	5795

Heavy metal filter HMS – infiltration

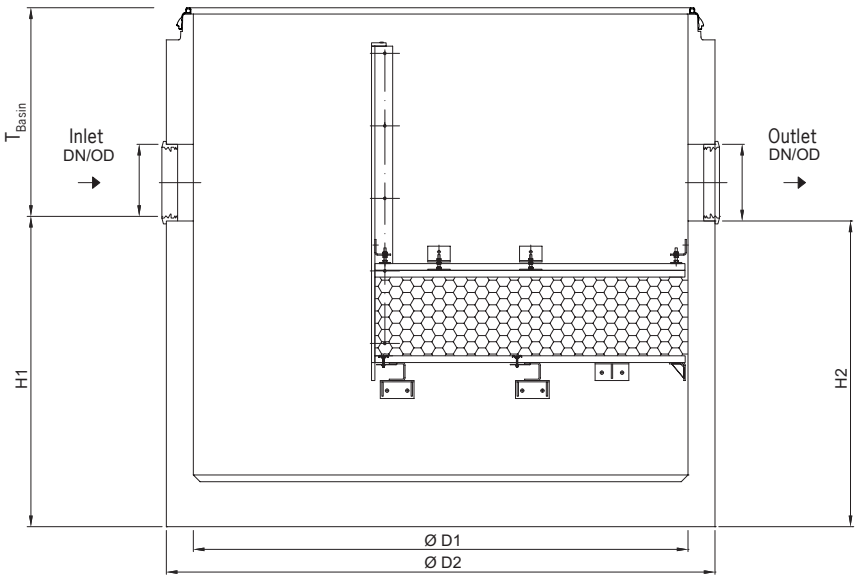
ACO product advantages

- High sedimentation and filter performance
- Large outflow capacity
- To DWA-M 153 **Type D11 (12)**
- Pretreatment stage of an infiltration system
- High degree of operating stability and low maintenance work

- Surface water treatment system for connecting traffic areas and subsequent infiltration (seepage) into the ground
- Made of reinforced concrete
- With multi-layer individually configurable filter
- **Connectable catchment area up to 4,000 m²**
- Dimension T_{Basin} including seal with integrated load transfer



Inlet/Outlet DN/OD [mm]	Shaft cover	Weight Basin [kg]	Article No.
300	2 * LW 600 / 1 * LW 600 1 * LW 800	7000	**725302**



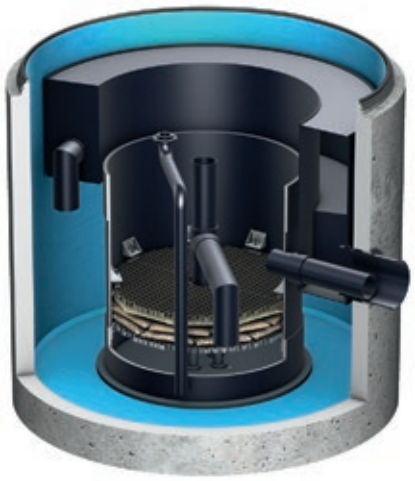
Inlet/ Outlet DN/OD [mm]	Article No.	Dimension H_1 [mm]	H_2 [mm]	D_1 [mm]	D_2 [mm]	T_{Basin} [mm]	Top assembly 1 Article No.	Top assembly 2 Article No.	T_{max} [mm]
300	**725302**	1380	1380	2200	2440	810	728057	728056	5795

Heavy metal filter HMS – large roof drainage

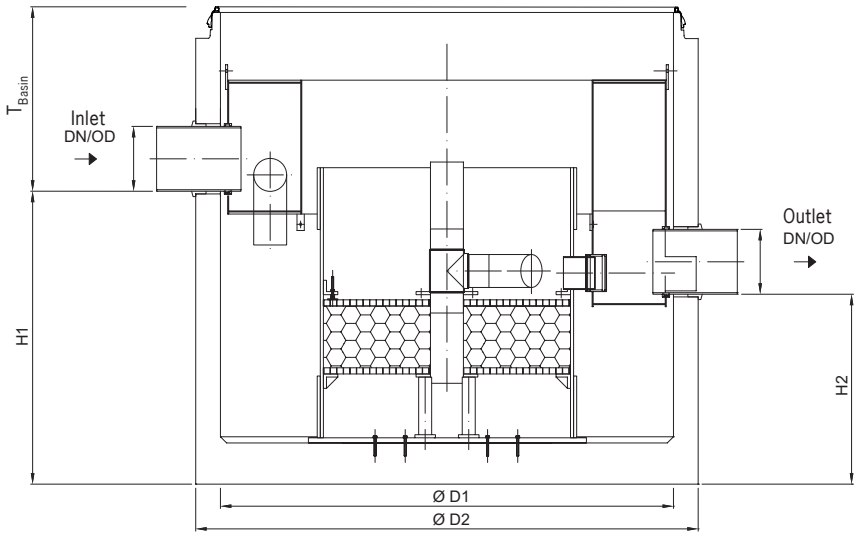
ACO product advantages

- High sedimentation and filter performance
- To DWA-M 153 **Type D11 (12)**
- Compact design
- Good maintenance-friendliness
- Space-saving connection to the existing stormwater sewers

- Made of reinforced concrete
- With multi-layer individually configurable filter
- **Connectable catchment area up to 2,500 m²**
- Maximum bypass capacity 75 l/s
- Maximum filter throughput 7.5 l/s
- Dimension T_{Basin} including seal with integrated load transfer



Inlet/Outlet DN/OD [mm]	Shaft cover	Weight Basin [kg]	Article No.
300	1 * LW 600	7000	**725303**



Inlet/ Outlet DN/OD [mm]	Article No.	Dimension H_1 [mm]	H_2 [mm]	D_1 [mm]	D_2 [mm]	T_{Basin} [mm]	Top assembly 1 Article No.	Top assembly 2 Article No.	T_{max} [mm]
300	**725303**	1430	930	2200	2440	760	728219	728053	5795

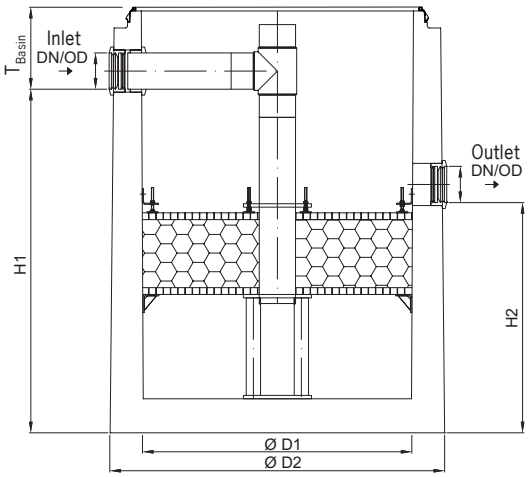
Heavy metal filter HMS – roof drainage

ACO product advantages

- High sedimentation and filter performance
- To DWA-M 153 **Type D11 (12)**
- Compact design
- Good maintenance-friendliness
- Speedy installation due to prefabricated system units

- Made of reinforced concrete
- With multi-layer individually configurable filter
- **Connectable catchment area up to 500 m²**
- Small gradient drop (backdrop) possible as filter is flowed through from below
- Dimension T_{Basin} including seal with integrated load transfer

Inlet/Outlet DN/OD [mm]	Shaft cover	Weight Basin [kg]	Article No.
150	1 * LW 600	3000	**725304**

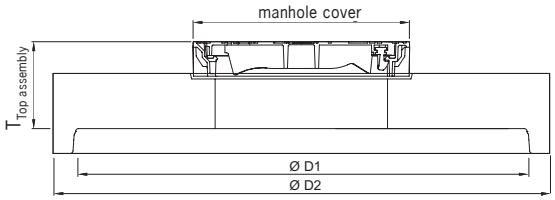


Inlet/ Outlet DN/OD [mm]	Article No.	Dimension H_1 [mm]	H_2 [mm]	D_1 [mm]	D_2 [mm]	T_{Basin} [mm]	Top assembly 1 Article No.	Top assembly 2 Article No.	T_{max} [mm]
150	**725304**	1520	1020	1200	1475	355	728216	728058	5795

Top assembly parts made of reinforced concrete

Top assembly 1 as cover slab

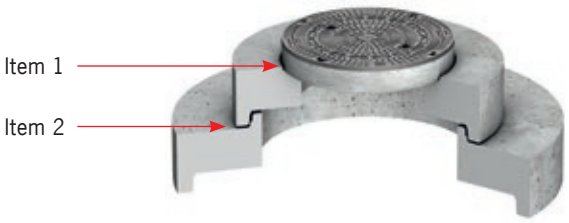
- Shaft cover with maintenance friendly cover made of cast iron, load class D 400 to EN 124, clear width 600 mm

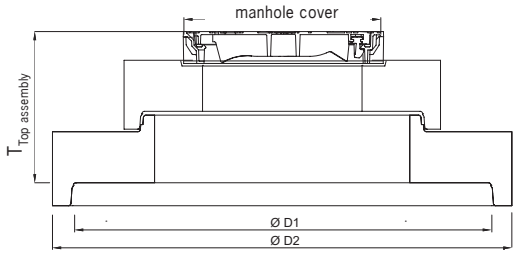


Dimension			Shaft cover	Weight	Article No.
$T_{Top\ assembly}$ [mm]	D1 [mm]	D2 [mm]		[kg]	
365	2200	2440	2 * LW 600	2580	**728057**
580	1200	1475	1 * LW 600	1014	**728216**
710	2200	2440	1 * LW 600	3097	**728219**

Top assembly 2 as reducing slab with cover slab

- Shaft cover with maintenance friendly cover made of cast iron, load class D 400 to EN 124, clear width 600 mm / 800 mm





Dimension			Shaft cover	Weight	Article No.
$T_{Top\ assembly}$ [mm]	D1 [mm]	D2 [mm]		[kg]	
725	2200	2440	1 * LW 600	3002	**728053**
380	2200	2440	1 * LW 600 1 * LW 800	2595	**728056**
365	1200	1475	1 * LW 600	919	**728058**

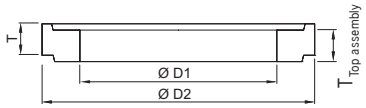
Note: $T_{Basin} + T_{Top\ assembly} = T_{Total}$
Dimension T can be adjusted to the inlet depth on site using shaft components.

Info box

Shaft components made of concrete

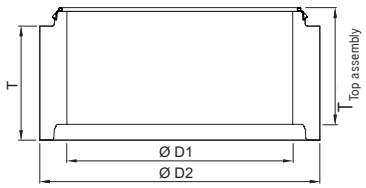
- For increasing the height and adjusting shafts

Supporting ring to/similar to DIN 4034 (Item 1)



Type	Dimension			Shaft construction item for top assembly 1 and 2	Top assembly height with mortar joint	Weight	Article No.
	T [mm]	D1 [mm]	D2 [mm]		$T_{Top\ assembly}$ [mm]	[kg]	
AR-V 625 x 60	60	625	865	Item 1	70	50	**727400**
AR-V 625 x 80	80	625	865	Item 1	90	60	**727401**
AR-V 625 x 100	100	625	865	Item 1	110	70	**727402**
AR-V 625 x 200	200	625	865	Item 1	210	140	**727403**
AR-V 625 x 400	400	625	865	Item 1	410	280	**727404**
AR-V 800 x 100	100	800	1100	Item 1	110	110	**727405**
AR-V 800 x 150	150	800	1100	Item 1	160	165	**727406**
AR-V 800 x 200	200	800	1100	Item 1	210	220	**727407**
AR-V 800 x 400	400	800	1100	Item 1	410	415	**727408**

Shaft ring with coupling socket with seal to/similar to DIN 4034 (Item 2)



Type	Dimension			Shaft construction item for top assembly 2	Top assembly height with GLRD with integrated load transfer	Weight	Article No.
	T [mm]	D1 [mm]	D2 [mm]		$T_{Top\ assembly}$ [mm]	[kg]	
SR-M 1000 x 250	250	1000	1240	Item 2	265	240	**728110**
SR-M 1000 x 500	500	1000	1240	Item 2	515	500	**728111**
SR-M 1000 x 750	750	1000	1240	Item 2	765	750	**728112**
SR-M 1000 x 1000	1000	1000	1240	Item 2	1015	1000	**728113**
SR-M 1000 x 1250	1250	1000	1240	Item 2	1265	1250	**728114**
SR-M 1000 x 1500	1500	1000	1240	Item 2	1515	1500	**728115**
SR-M 1000 x 1750	1750	1000	1240	Item 2	1765	1750	**728116**
SR-M 1000 x 2000	2000	1000	1240	Item 2	2015	2000	**728117**
SR-M 1000 x 2250	2250	1000	1240	Item 2	2265	2250	**728118**
SR-M 1000 x 2500	2500	1000	1240	Item 2	2515	2500	**728119**

Note: Further shaft components for the top assembly version 1 (Comfort) on request.

Info box

ACO Oleosmart Pro

Without coalescence filter

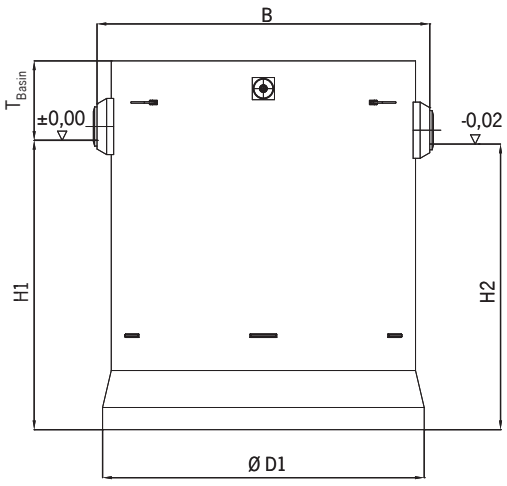
ACO product benefits

- Internal and external resistant material without coating/inliner
- Minimum repair risk due to monolithic bonded and leakproof shaft structure up to the top of the shaft cover
- Low weight
- Low-maintenance due to filterless multi-channel technology
- High sedimentation rate due to long flow section
- Operational safety and reliability due to low-turbulence float guide

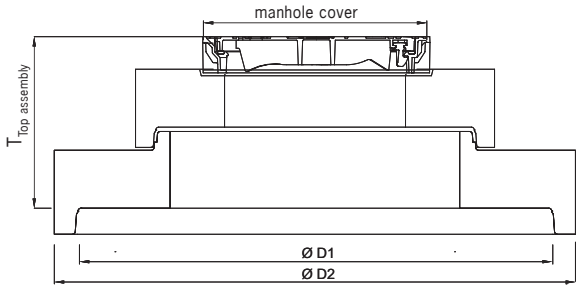
- Made of polymer concrete
- Without coalescence filter
- Simultaneous separation of silt and light liquids
- Free ball passage of at least 40 mm
- With protective pipe for float, therefore short-term hydraulic overload possible
- Inspection opening at the inlet

Nominal size	Inlet/ Outlet [DN/OD]	Sludge trap [l]	Oil storage [l]	Total [l]	Weight Basin [kg]	H1 [mm]	T_{Basin} [mm]	Cover slab Top assembly 1 [1)]	Cover slab Top assembly 2 [2)]	Article No.
NS 3	160	300	142	636	870	950	495	728100	728102	**722718**
	160	650	142	812	957	1175	535	728100	728102	**722719**
NS 4	160	800	142	891	957	1275	435	728100	728102	**722720**
	160	1200	142	1126	1059	1575	450	728100	728102	**722721**
NS 6	160	1200	396	1731	2197	1120	430	728106	728107	**722722**
	160	2500	396	2517	2559	1565	430	728106	728107	**722723**
NS 10	160	2500	396	2517	2559	1565	430	728106	728107	**722727**

Polymer concrete basin



Cover slab dimensions



Optional shaft and supporting rings made of polymer concrete for achieving the required inlet depth

[1)] for monolithic construction
[2)] for reduced shaft construction

Info box

ACO Oleopator Pro

With coalescence insert (filter)

ACO product benefits

- Internal and external resistant material without coating/inliner
- Minimum repair risk due to monolithic bonded and leakproof shaft structure up to the top of the shaft cover
- Low weight
- Favourable procurement and operating costs
- Optimum accessibility for maintenance, cleaning and disposal ensured due to removable cage element

- Made of polymer concrete
- With coalescence insert (filter)

The Oleopator Pro light liquid separator operates effectively and is nonetheless space saving. The nominal performance and volume of the sludge trap are determined for each specific project on the basis of the actual requirements. Another advantage for the operating costs: All separators in this series are tested as petrol and coalescence separators. This means that when the coalescence element is replaced, the wastewater flow does not have to be interrupted, as the petrol separation continues to run.

Nominal size	Inlet/ Outlet [DN/OD]	Sludge trap [l]	Oil storage [l]	Total [l]	Weight of basin [kg]	H1 [mm]	T_{Basin} [mm]	Cover plate Top assembly 1 [1)]	Cover plate Top assembly 2 [2)]	Article No.
NS 3	110	300	163	571	740	867	253	728100	728102	**722037**
	110	600	163	826	851	1192	253	728100	728102	**722038**
NS 3T	110	600	506	1034	935	1457	253	728100	728102	**722039**
NS 4	160	800	160	806	853	1167	278	728100	728102	**722040**
NS 4T	160	800	453	1014	945	1432	278	728100	728102	**722041**
NS 6	160	1200	160	1136	990	1587	278	728100	728102	**722042**
	160	1800	576	2282	2108	1432	363	728106	728107	**722046**
	160	2500	576	2635	2270	1632	363	728106	728107	**722047**
NS 8	160	1600	576	2291	2112	1437	358	728106	728107	**722043**
	160	2400	576	2644	2275	1637	358	728106	728107	**722044**
	160	2500	576	2644	2275	1637	358	728106	728107	**722045**
NS 10	160	2000	576	2653	2274	1672	323	728106	728107	**722050**
	160	2500	576	3280	2579	1997	373	728106	728107	**722048**

Cover plates made of polymer concrete for Oleosmart Pro and Oleopator Pro

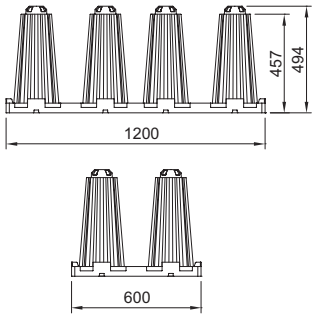
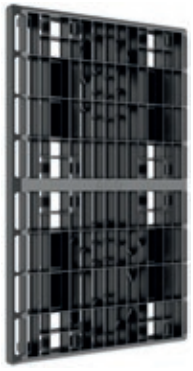
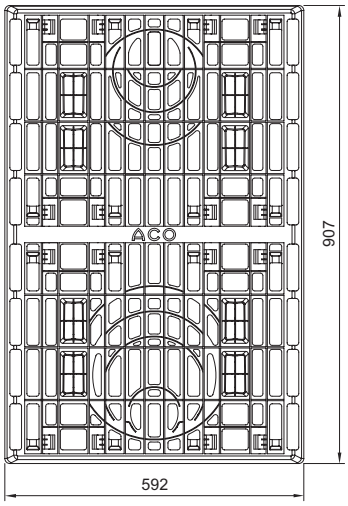
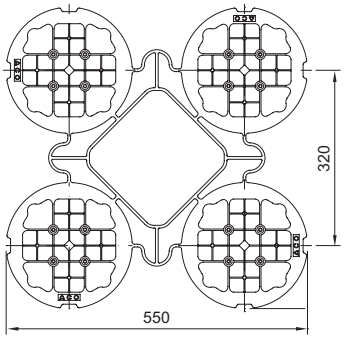
Inlet depth $T_{Top\ assembly}$ [mm]	Diameter D1 [mm]	Diameter D2 [mm]	Shaft cover	Weight [kg]	Article No.
330	1000	1200	1*LW 600	517	**728100**
560	1000	1200	1*LW 600	782	**728102**
505	1500	1800	1*LW 600	1255	**728106**
530	1500	1800	1*LW 600	1544	**728107**

Optional shaft and supporting rings made of polymer concrete for achieving the required inlet depth

[1)] for monolithic construction
[2)] for reduced shaft construction

Info box

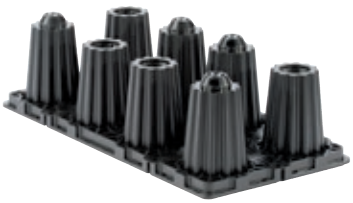
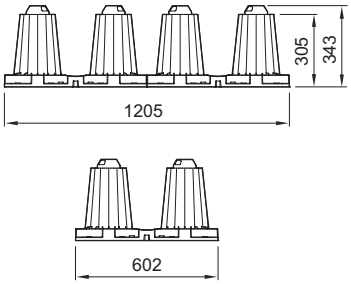
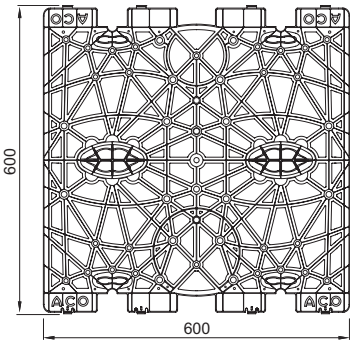
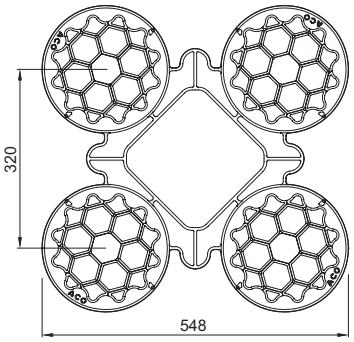
Stormbrixx SD – Specifications of the construction elements

Picture	Dimensional drawing	Dimension			Weight	Item number
		Length [mm]	Width [mm]	Height [mm]	[kg]	
Basic element made of polypropylene (PP)						
		1200	600	494	9.5	**314090**
Side panel made of polypropylene (PP)						
		907	592	104	3.1	**314091**
Top cover made of polypropylene (PP)						
		550	550	50	0.8	**314092**

Accessories

Picture	Description	Suitable for		Weight [kg]	Item number
	**Connector** ■ For connecting basic elements to each other □ For connecting two layers combining 2 connectors ■ Number of connectors when installing 2 layers: 1/2 the number of basic elements in the complete infiltration block ■ Number of connectors when installing 3 layers: 2/3 the number of basic elements in the complete infiltration block ■ Made of polypropylene (PP)	■ ACO Stormbrixx basic element		0.1	**314093**
	**Adapter for pipe connection** ■ Made of polyethylene (PE)	■ ACO Stormbrixx basic element	DN/OD 110	0.4	**314026**
			DN/OD 160	0.7	**314027**
			DN/OD 200	1.3	**314028**
			DN/OD 250	2.7	**314048**
			DN/OD 315	3.3	**314029**
			DN/OD 400	4.5	**314030**
	**Inspection and rinsing shaft** ■ As inspection and rinsing access to the infiltration system ■ With formwork support ■ Made of polypropylene (PP)	■ ACO Stormbrixx basic element		2.6	**314038**
	**Inspection and rinsing shaft with socket** ■ As inspection and rinsing access to the infiltration system ■ DN/OD 160 ■ With formwork support ■ Made of polypropylene (PP)	■ ACO Stormbrixx basic element		2.8	**314039**
	**Access plate** ■ Access within the system ■ Easy installation at any desired position ■ Dimensions: 650 x 650 x 120 mm ■ Made of polypropylene (PP)	■ Anschluss nach oben DN/OD 400		5,5	**314075**
	**Manhole cover SA 400** ■ Load class D 400 ■ Made of EN-GJS cast iron ■ Clear width 400 ■ No air vents	■ Inspection and rinsing shaft		38.0	**314043**
	**Manhole cover SA 400** ■ Load class D 400 ■ Made of EN-GJS cast iron ■ Clear width 400 ■ With air vents	■ Inspection and rinsing shaft		38.0	**314053**
	**Manhole cover SA 160** ■ Access for inspection ■ Load class D 400 ■ Made of EN-GJL cast iron ■ Clear width 160 ■ No air vents	■ Connectors DN/OD 160		15.7	**314044**

Stormbrixx HD – Specifications of the construction elements

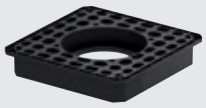
Picture	Dimensional drawing	Dimension Length [mm]	Width [mm]	Height [mm]	Weight [kg]	Item number
Basic element made of polypropylene (PP)						
		1205	602	343	10.0	**314061**
Side panel made of polypropylene (PP)						
		600	600	55	1.6	**314062**
Top cover made of polypropylene (PP)						
		548	548	43	0.8	**314022**

Basic element double pallet

Top cover

Side panel

Accessories

Picture	Description	Suitable for		Weight [kg]	Item number
	**Connector** ■ For connecting basic elements to each other □ For connecting two layers combining 2 connectors ■ Number of connectors when installing 2 layers: 1/2 the number of basic elements in the complete infiltration block ■ Number of connectors when installing 3 layers: 2/3 the number of basic elements in the complete infiltration block ■ Made of polypropylene (PP)	■ ACO Stormbrixx basic element		0.1	**314023**
	**Adapter for pipe connection** ■ Made of polyethylene (PE)	■ ACO Stormbrixx basic element	DN/OD 110	0.4	**314026**
			DN/OD 160	0.7	**314027**
			DN/OD 200	1.3	**314028**
			DN/OD 250	2.7	**314048**
			DN/OD 315	3.3	**314029**
			DN/OD 400	4.5	**314030**
	**Inspection and rinsing shaft** ■ As inspection and rinsing access to the infiltration system ■ With formwork support ■ Made of polypropylene (PP)	■ ACO Stormbrixx basic element		2.6	**314038**
	**Inspection and rinsing shaft with socket** ■ As inspection and rinsing access to the infiltration system ■ DN/OD 160 ■ With formwork support ■ Made of polypropylene (PP)	■ ACO Stormbrixx basic element		2.8	**314039**
	**Access chamber** ■ As access to infiltration system ■ For connecting inlets and outlets within the infiltration system ■ Dimensions: 594 x 594 x 610 mm ■ Made of polyethylene (PE)	■ Connectors up to DN/OD 400		32.0	**27034**
	**Access plate** ■ Access within the system ■ Easy installation at any desired position ■ Dimensions: 650 x 650 x 120 mm ■ Made of polypropylene (PP)	■ Anschluss nach oben DN/OD 400		5,5	**314083**
	**Manhole cover SA 400** ■ Load class D 400 ■ Made of EN-GJS cast iron ■ Clear width 400 ■ No air vents	■ Inspection and rinsing shaft		38.0	**314043**
	**Manhole cover SA 400** ■ Load class D 400 ■ Made of EN-GJS cast iron ■ Clear width 400 ■ With air vents	■ Inspection and rinsing shaft		38.0	**314053**
	**Manhole cover SA 160** ■ Access for inspection ■ Load class D 400 ■ Made of EN-GJL cast iron ■ Clear width 160 ■ No air vents	■ Connectors DN/OD 160		15.7	**314044**

Throttle shafts

ACO product advantages

- Space-saving shallow flow restrictor valve
- Corrosion resistant stainless steel construction made of material grade 304
- Division scale for adjustment and indication of the valve plate opening height
- Telescopic spindle extension with square drive and spindle holder

- 1 x installation material required (Art. No. 702816) for each spindle extension
- Note: Flow restriction shafts are designed individually.
  Contact us.
  Tel. 0049 (0) 6206 9816-0,
  tiefbau@aco.com

Type	Q_{Dr} [l/s]	Inlet/ Outlet DN/OD [mm]	Weight of basin [kg]	Top assembly 1 Article No.	Article No.
2-10	2-10	110	1655	728061	**725150**
10-48	10-48	200	1644	728061	**725152**
35-128	35-125	315	1619	728061	**725154**
80-256	80-256	400	2100	728062	**725156**

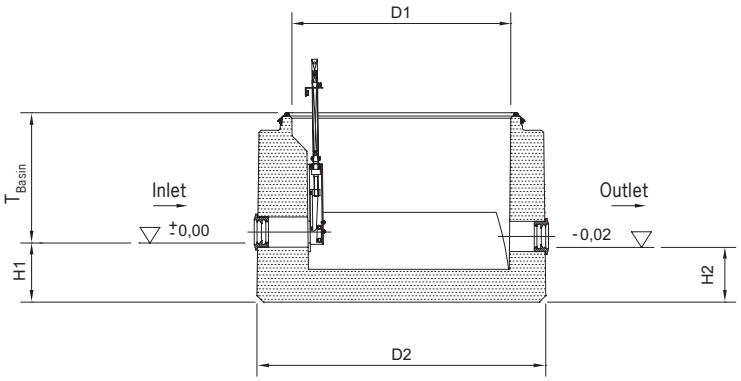
Spindle extension

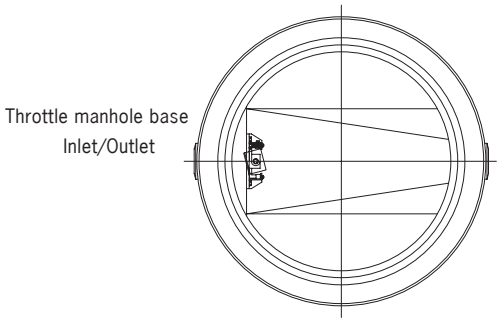
Designation	Article No.	Weight [kg]	Flow restriction shaft DN/OD 110 Art. No. 725150			Flow restriction shaft DN/OD 200 Art. No. 725152		
			Inlet depths of the flow restriction shaft					
			Spindle extension			Spindle extension		
			without	with		without	with	
			T = Standard [mm]	T min [mm]	T max [mm]	T = Standard [mm]	T min [mm]	T max [mm]
1500-2600	717980	4.5	910	1015	3200	930	1065	3400
2600-5500	717981	8.3	910	3200	6100	930	3400	6305

Designation	Article No.	Weight [kg]	Flow restriction shaft DN/OD 315 Art. No. 725154			Flow restriction shaft DN/OD 400 Art. No. 725156[2)]		
			Inlet depths of the flow restriction shaft					
			Spindle extension			Spindle extension		
			without	with		without	with	
			T = Standard [mm]	T min [mm]	T max [mm]	T = Standard [mm]	T min [mm]	T max [mm]
1500-2600	717980	4.5	1225[1)]	1230	3600	1495[1)]	1610	3800
2600-5500	717981	8.3	1225[1)]	3600	6500	1495[1)]	3800	6700

[1)] At least 1x shaft ring 250 mm high (Art. 728110) or higher required

[2)] If size 800 supporting rings are required: use only Art. No. 727468 (AR-V 800 * 80 Type II) and/or 727469 (AR-V 800 * 100 Type II)





Type	Article No.	Dimension					T_{max} [1]
		H_1 [mm]	H_2 [mm]	D_1 [mm]	D_2 [mm]	T_{Basin} [mm]	[mm]
2-10	**725150**	270	250	1000	1320	595	3000
10-48	**725152**	225	205	1000	1320	640	3000
35-128	**725154**	220	200	1000	1320	645	3000
80-256	**725156**	270	250	1200	1500	895	3000

[1] Larger installation depths on request.

Please integrate your country specific products here.
For example:

Technical information (T2 pages)
Flow control P 400

ACO materials

In the design of components and structural elements, the choice of suitable material determines the aesthetic and functional qualities of the product. The materials used by ACO are characterised by their strength, ageing resistance and their resistance to aggressive media, frost, heat and sunlight. Thanks to their long life and recyclability, they are equally sustainable and environmentally compatible and are used in an application-orientated way.

Polymer concrete

With 30 production locations worldwide, we consistently implement our ideas of product quality, economic efficiency and on-time delivery to our customers. Each of our factories has special materials expertise, from which the entire ACO Group profits. Keeping our production technology and ecological performance up-to-date and in line with the latest standards is part of our standard of acting responsibly as a company and to be a worldwide leader.

ACO polymer concrete – a better idea

The special material composition and state-of-the-art production technology give polymer concrete its outstanding properties profile. ACO polymer concrete products have high strength values and a low weight. ACO polymer concrete is waterproof. Water dries quickly. Frost damage is excluded. The smooth surface of ACO polymer concrete allows water and dirt particles to run off quickly and is easy to clean. Polymer concrete is also resistant to aggressive media without requiring additional coatings and can be used versatilely and durably even under extreme conditions.

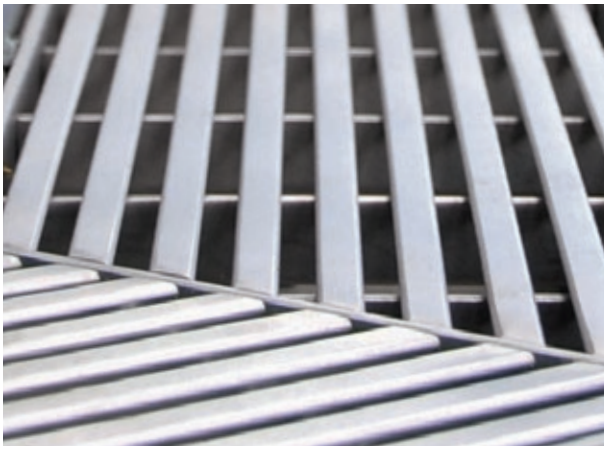
Cast iron

ACO cast iron –
quality for all standards
The types of cast iron used by ACO Guss in Kaiserslautern and Aarbergen are adapted to the continuously increasing requirements through intensive innovation and development processes: Both cast iron with lamellar graphite (grey cast iron GJL) and cast iron with nodular graphite (spheroidal cast iron GJS) have proven their worth as materials for use in cast iron sewers due to their high corrosion resistance. ACO Guss offers the optimum solution for the respective application, independent of the material.

Plastic

ACO plastic –
innovative and flexible
Components made of plastic offer the greatest possible design freedom with regard to form and function. We use this potential to avoid expensive material combinations and time-consuming jointing processes and to develop intelligent solutions “cast in one piece” to take their place. The plastics used by ACO are characterised not only by their high breaking stress (crushing strength) but also by their outstanding resistance to environmental influences. Simple machining options and low weight are the reasons for the outstanding user-friendliness of our plastic solutions.

Steel/stainless



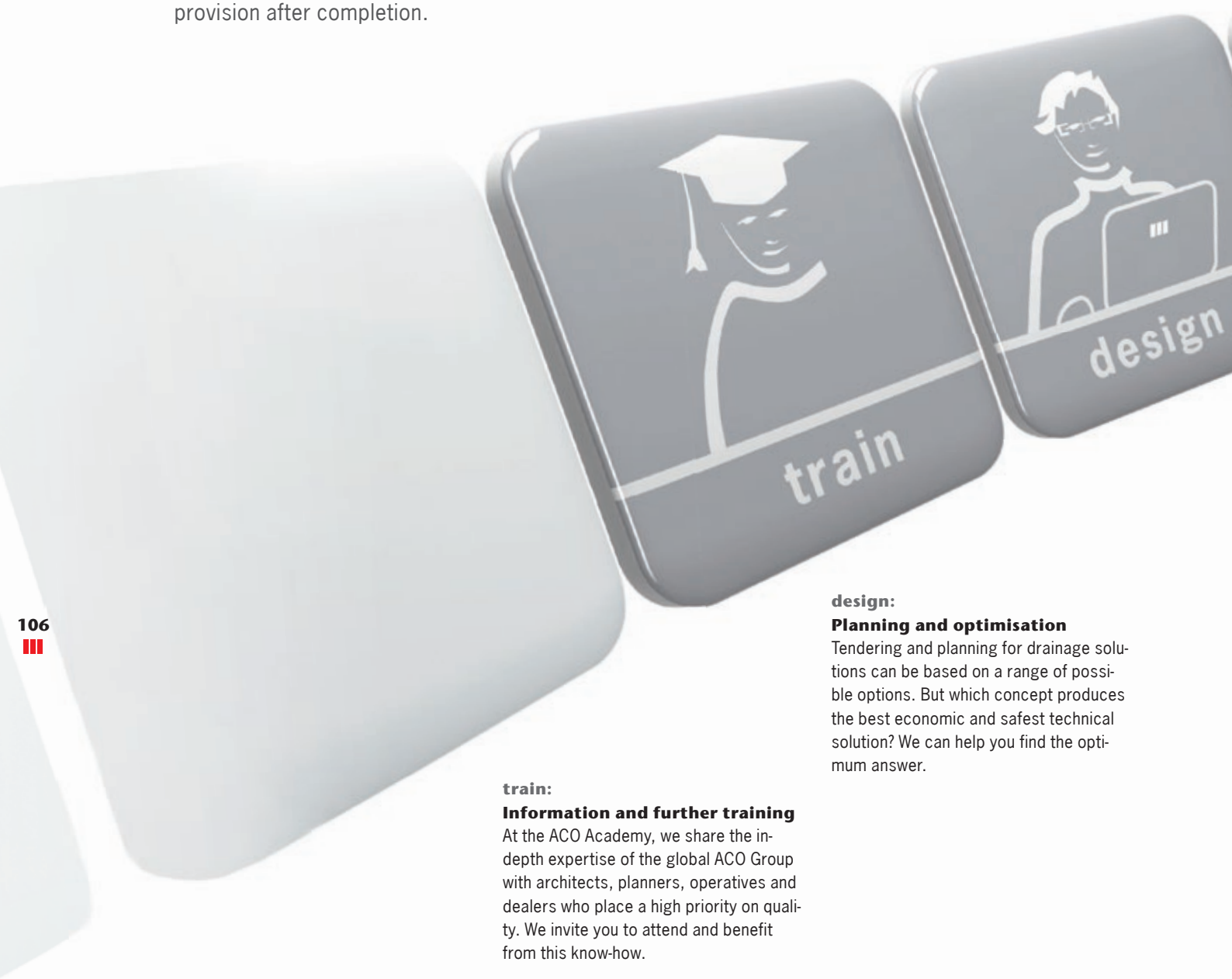
ACO steel/stainless steel –
sophisticated components
The processing of both steel and
stainless steel is a core expertise of ACO in the different production facilities of the ACO Group worldwide. Large investment sums ensure that our production facilities are always state-of-the-art. The high qualification of our skilled workers ensure high-quality products. Our own in-house plants for surface protection and finishing are used, among other things, in the production of ACO Drainlock
gratings.

Concrete

ACO concrete –
durable and reliable
Concrete is a material that plays a decisive role in tank construction for separator and drainage technology. ACO tanks for drainage technology are made from a highly waterproof concrete, have a very high resistance and stability. The tanks can be used as separators, pumping stations, accident (spillage) systems or special chambers and can also be equipped with a plastic coating or lining. ACO tanks made of concrete are a durable solution for the drainage and treatment of water.

The ACO offer for customers

Every project is different, with its own demands and challenges. In addition to our top products, we also make available our in-depth know-how and our services to assist you in developing individual customised solutions – from planning to service provision after completion.



train:
Information and further training
At the ACO Academy, we share the in-depth expertise of the global ACO Group with architects, planners, operatives and dealers who place a high priority on quality. We invite you to attend and benefit from this know-how.

design:
Planning and optimisation
Tendering and planning for drainage solutions can be based on a range of possible options. But which concept produces the best economic and safest technical solution? We can help you find the optimum answer.

support:
Construction advice and assistance
To ensure that there are no nasty surprises between the planning and implementation of a drainage solution, we can provide you with project specific advice and support at your construction site.

care:
Inspection and maintenance
ACO products are designed and manufactured for long service lives. With our after sales service, we ensure that ACO fully satisfies its high quality standards even after many years of efficient operation.

www.aco-tiefbau.de

ACO Tiefbau on the internet
You will find our products with all the information important to you on the ACO Tiefbau website. You can use it during the design, not only to access technical descriptions but also the corresponding image information and tender specification texts and installation instructions and information.

/ACO.tiefbau

www.aco-academy.de

ACO academy
for practical training
The ACO Academy events are something special: They impart sound practical knowledge of all aspects of construction and at the same time, are a place for practitioners from the entire industry to meet and exchange ideas and experiences. The ACO academy is a forum for excellent building. Future topics of the construction industry and compact know-how for all aspects of construction are taught with practical reference. Find out about the contents of the seminars on offer.

www.service.aco

ACO is your strong service partner
The service professionals of the ACO Group are there for you – around the clock, by working together with selected service partners throughout Germany.

Add your country-specific content here

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DR 259 10/2017 Changes may occur