

Instructions for installation GRAF EcoBloc Inspect smart

GRAF EcoBloc Inspect smart

Order-Nr. 402500



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

The GRAF EcoBloc Inspect smart must be checked for any damage prior to installation under all circumstances.

Missing instructions can be downloaded on www.graf.info or can be requested from GRAF.

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1. General information

1. General information

1.1 General

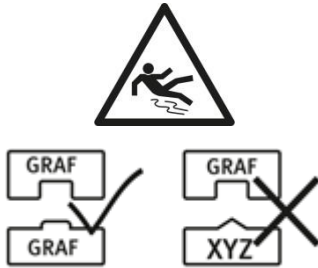
Detention and infiltration systems are usually subject to final approval by the local authority having jurisdiction. This should be investigated in the planning phase and approval sought if required. The statutory specifications and the requirements in the relevant literature, such as national standards and work sheets/ data sheets of the national requirements standards, always apply.

GRAF installation team or authorized and qualified personnel should install the GRAF EcoBloc Inspect smart system. The following safety and installation instructions should also be noted.

An infiltration/detention system is usually sized in accordance with national standards. You can request free sizing from GRAF. In particular the permeability of the surrounding soil is of great significance and may result in problems with and damage to the GRAF infiltration & detention system if calculated incorrectly.

1.2 Safety

All work should be undertaken in compliance with the relevant accident prevention regulations according to national standards.



There is an increased risk of slipping on Graf EcoBloc Inspect smart during wet conditions.

GRAF provides an extensive range of accessories, which are all coordinated and can be combined to form complete systems. The use of accessories that have not been approved by GRAF results in the exclusion of the warranty/guarantee.

1.3 Information about operating the system

The supplementary document "Instructions for maintenance of GRAF Ecobloc Inspect smart" contains more information about the guidelines and obligations of installers & operators of GRAF infiltration & detention system.

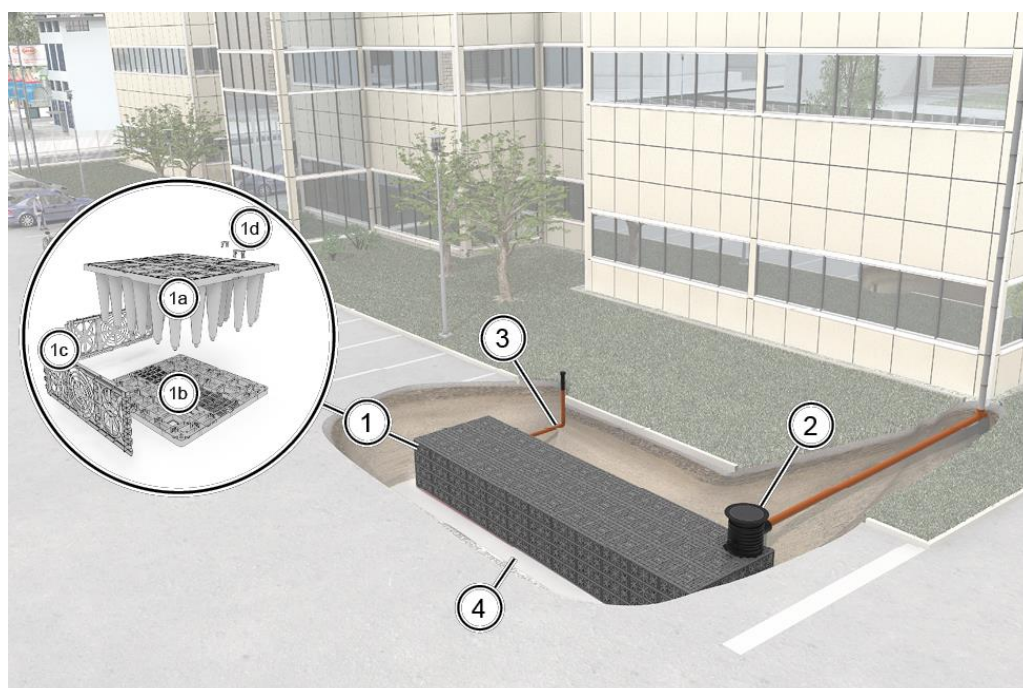
This document also contains information about the filter elements needed to pre-treat the surface & rain-water entering into the GRAF infiltration & detention system.

2. General product information

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Overview of range:

Product type		Description	Art. No.
Infiltration ditch elements	1		
	1a	GRAF EcoBloc Inspect smart	402500
	1b	GRAF EcoBloc Inspect smart baseplate	402501
	1c	GRAF EcoBloc Inspect smart end plates	402503
	1d	GRAF EcoBloc Connectors, e.g. 25-piece set	420018
Shafts & Lids	2	GRAF EcoBloc Inspect smart plus shaft	450151
		GRAF EcoBloc Inspect smart plus shaft cover plate	450160
		GRAF Vario 800 flex, type 1	450050
		GRAF Vario 800 flex, type 2	450051
		GRAF Vario 800 flex, base/cover plate set	450052
		GRAF infiltration inlet module DN600	330360
		GRAF infiltration connecting piece 1000 DN600	371015
		GRAF telescopic dome shaft 600 Ped	371011
		Solid Class B Lid & Shaft	371020
		Tele.shaft black with grate B	75.0020
		Solid Class D Lid	75.0017
		Grated Class D lid	75.0012
		Carat tel.dome shaft concrete	371021
Accessories	3	Venting (by client)	
	4	Geo-textile Non-woven (sqm)	88.0001
		Geo-textile protection (sqm)	369048
		Geo-membrane (sqm)	369049



3. Technical data

3. Technical data

3.1 Technical data for the GRAF EcoBloc Inspect smart

Volume (gross/net)	211 litres/203 litres
Dimensions (LxWxH)	800 x 800 x 330 mm
Weight	10 kg
Material	100 % polypropylene (PP), recycled material
Max. / min. earth coverage	see Table 1 – Installation window

3.2 Technical data for the GRAF EcoBloc Inspect smart base plate

Volume (gross/net)	24 litres/21 litres
Dimensions (LxWxH)	800 x 800 x 40 mm
Weight	4 kg
Material	100 % polypropylene (PP), recycled material
Max. / min. earth coverage	see Table 1 – Installation window

4. Transport and storage

4. Transport and storage

4.1 Transport and storage

GRAF EcoBloc Inspect smart modules are stored and transported in packaging units comprising 76 modules. The basic measurements of the packaging units are always 2.4 m x 0.8 m x 1.8 m. GRAF EcoBloc Inspect smart base plates are usually located on a separate pallet.

The GRAF EcoBloc Inspect smart system elements can be transported to the installation location, the client must provide unloading equipment on delivery with a fork lift truck or similar equipment. At the installation location, the EcoBloc Inspect smart modules and the EcoBloc Inspect smart base plates can be moved manually or with light-duty equipment.

A level and stable surface should be used for intermediate storage. Please ensure correct storage. This means away from negative influences such as fuel, lubricants, chemicals, and acids. Storage outdoors should not be for any longer than one year. The impact sensitivity of the elements also increases as temperature falls. In particular, impact during extreme weather could damage the elements.



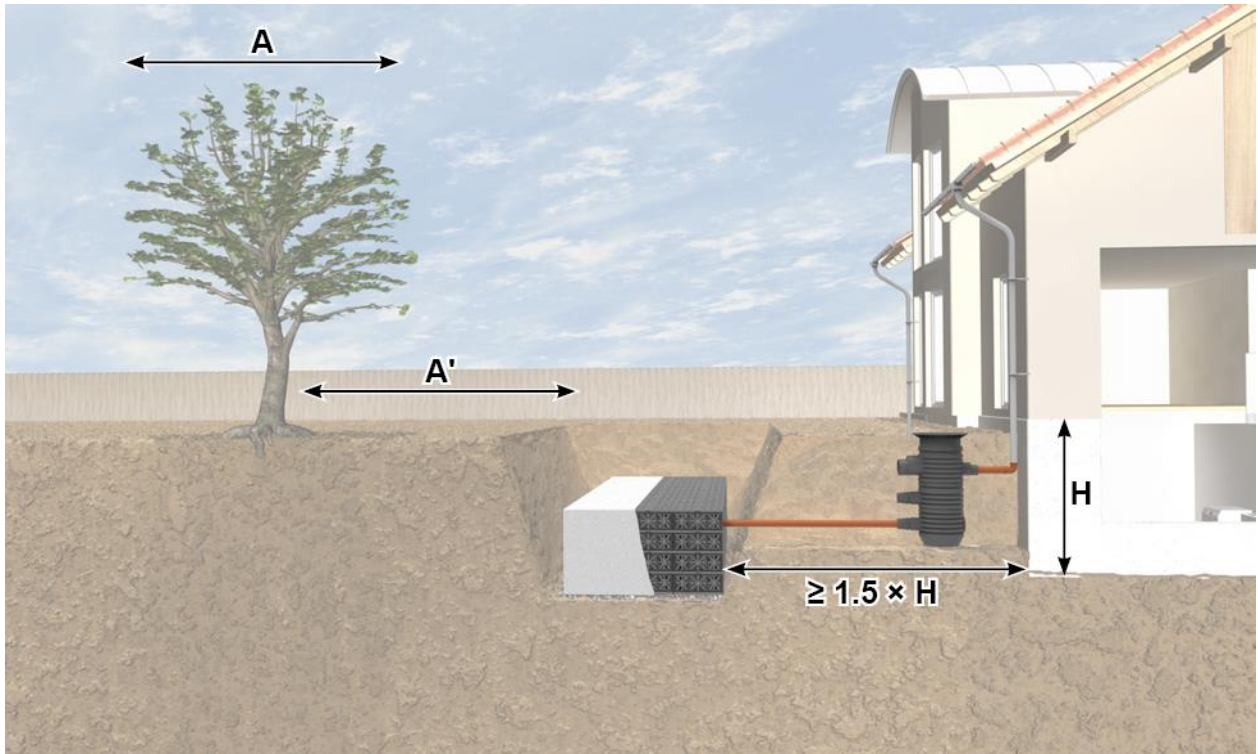
Before installation, the EcoBloc Inspect smart modules and the EcoBloc Inspect smart base plates should be checked for damage. Damaged or defective blocs must not be installed!

5. Location options

5. Location options

5.1 Location

The location of an infiltration system should be such that percolating water does not cause damage to buildings or other installations. To avoid erosion and accumulation, an infiltration system should be located at a distance of at least 1.5 times the installation depth.



The distance between the installation base of an infiltration system and the average highest groundwater level expected must not fall below one metre according to most national standards. If this distance does fall below one metre, approval must be obtained from the relevant authorities.

Distance (A') to existing or planned trees must also be at least the expected crown diameter (A).



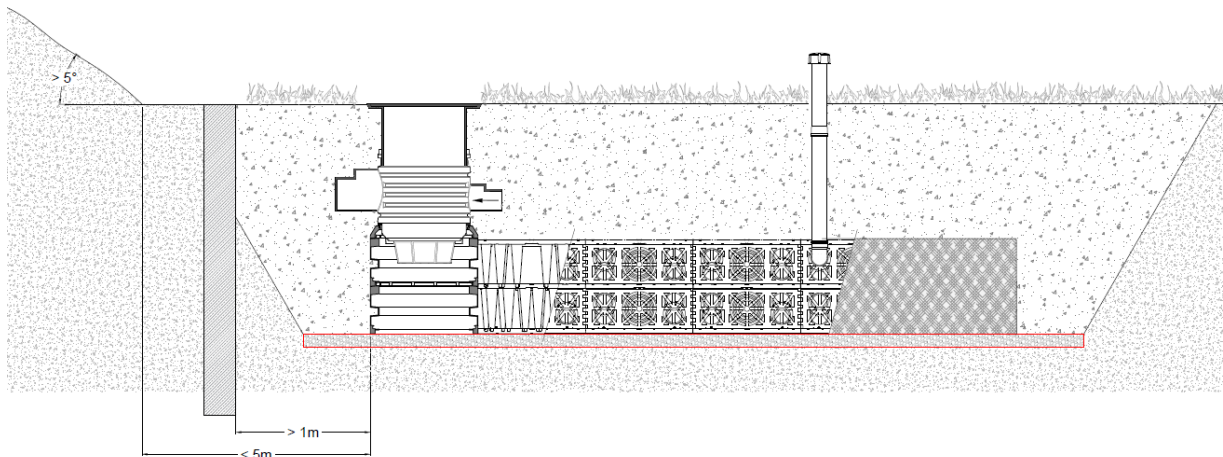
Note:

If you have any questions related to detention systems please contact GRAF technical team.

5. Location options

5.2 Slope

When installing a system at a distance of less than 5 m from a slope, mound or embankment with a gradient of $> 5^\circ$, a statically calculated retaining wall must be erected to absorb the earth pressure. The wall must overhang the installation by at least 0.5 m in all directions and be erected at a minimum distance of 1 m from the system.



5.3 Pre-treatment

Surface and rainwater that enters the infiltration, retention or detention system always requires a treatment stage. This may be an oil separator, silt trap, filter shafts or simple filter which removes oil, dirt & debris from the incoming water. The ingress of dirt should be avoided at all times as this will settle within the infiltration or detention system causing reduced performance, blockage and possible system failure.



Note:

Please contact GRAF technical team for solutions to overcome.

5. Location options

5.4 Installation dimensions

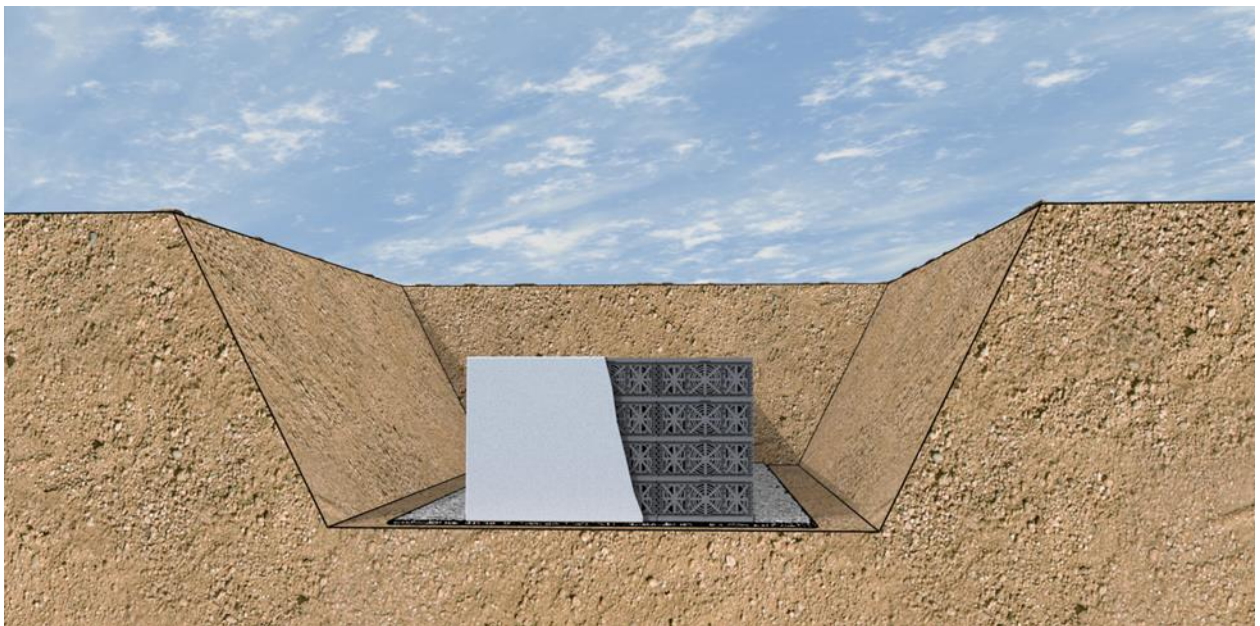
The excavation is sized according to national standards (refer to section 1.1). Please contact GRAF for value engineered design.

The working space around the tank must be the height of the tank divided by 4, but at least 0.5 m.

Therefore, the dimensions of the excavation bed for good working practice are at least:

- Excavation length (sizing) + 0.5 m working space (all round)
- Excavation width (sizing) + 0.5 m working space (all round)

The excavation height depends on the number of layers, traffic loading and planned connection heights / shafts.



The excavation must also be designed in accordance with “Excavation pits and trenches” or similar standards. In particular, this includes the slope angle that has to be selected depending on the soil type for depths of ≥ 1.25 m.

6. Load classes

6. Load classes

6.1 Installation for pedestrian loading

When installing for pedestrian loading, vehicles of any kind must be prevented from driving over the surface through structural measures or cordoning off. The permissible installation depths and max. earth coverings are stated in Table 1 – Installation window.

6.2 Green spaces above the EcoBloc Inspect smart system

If a grass is planted above an infiltration system, the system should be covered with a geotextile or a layer of clay roughly 100 mm thick, otherwise the grassed area may dry out more quickly than other areas.

6.3 Installation for vehicle loading

The minimum and maximum earth coverings depend on the various loading classes are shown in Table 1. Deviating installation situations should always be discussed with GRAF.

Soil properties in accordance with AS4766 for medium dense sand are:

- Density 20 kN/m³
- Angle of internal friction 32°

Table 1 – Installation window

Type	Surcharge / Traffic loads	Mass limit [t]	Earth cover		Max. Installation depth [m]
			Min [m]	Max [m]	
1	Pedestrian loading		0.25	2.70	3.07
2	Passenger vehicle, GVM ≤ 2.5t	2.5	0.25	2.70	3.07
3	Passenger vehicle, 2.5t < GVM ≤ 10t	10.0	0.25	2.60	2.97
4	Common 3 Axle Rigid Truck	22.5	0.55	2.40	2.77
5	Common 6 Axle Semi-trailer	42.5	0.55	2.40	2.77
6	Common 9 Axle B-double	62.5	0.55	2.40	2.77

Notes:
 Type 2 & 3 are AS1170.1 passenger vehicles
 Type 4 – 6 are in accordance with AS5100.2 and NVHR Common Heavy Freight Vehicle Configurations

Table 2 – Mass limits for single axles and axle groups

Axle group	Mass limit [t]
Single axle	6.0
Tandem axle group	16.5
Tri-axle group	20.0

7. Installation

7. Installation

The size of the excavation depends on the dimensions of the EcoBloc Inspect smart system, leaving a working space of at least 0.5 m all the way round, see section 5.4.

7.1 Construction & installation of an infiltration tank

The excavation bed must always be prepared as a horizontal, level pit with load-bearing capacity. Sharp objects, larger stones or similar foreign objects should be removed.

A gravel (grit 8 mm / 16 mm) base, around 80 mm thick, is then applied. This is then drawn out flat and serves as a base for the next stages.



7.2 Covering with geotextile

Geotextile forms the protective layer for the EcoBloc Inspect smart system and prevents dirt from entering the system. Damage to the **geotextile** should be avoided.

The **geotextile** is placed lengthwise on the blinding. Ensure it overlaps sufficiently 300 mm at the joints.

Since the entire EcoBloc Inspect smart system will be wrapped with the geo textile later on, sufficient coverage should be ensured at this stage!

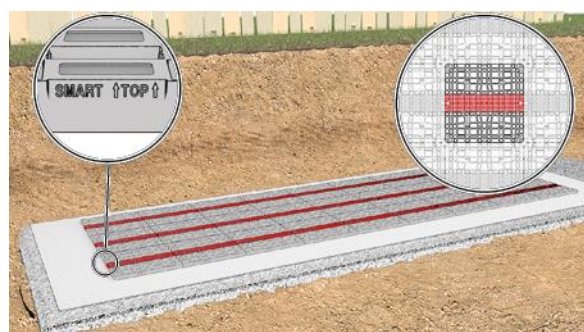


7.3 Positioning of EcoBloc Inspect smart base plates

The base plates are placed on the **geotextile**.

Attention:

The direction of the base plate defines the direction of the Inspection channel. There is an indication at the top side of the base plate.



7.4 Positioning the EcoBloc Inspect smart modules

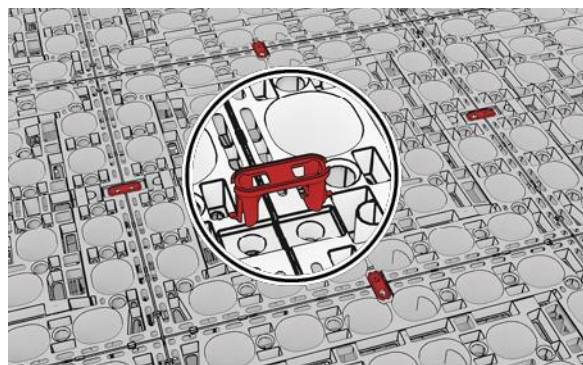
The EcoBloc Inspect smart module is placed on the base plate. The EcoBloc connecting elements are used to secure each layer.

The EcoBloc Inspect smart is preferably laid lengthwise with the Inspection channel (open side).



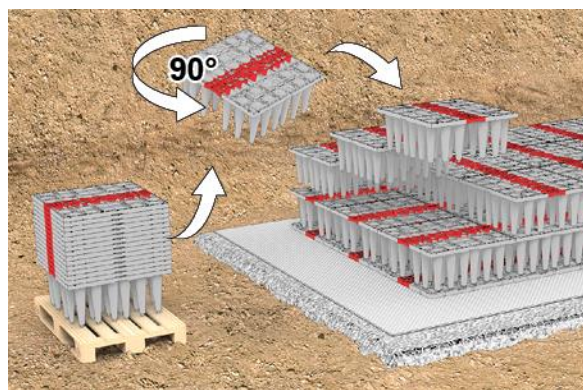
7. Installation

EcoBloc Inspect smart modules must be clipped using connectors with the adjacent module.

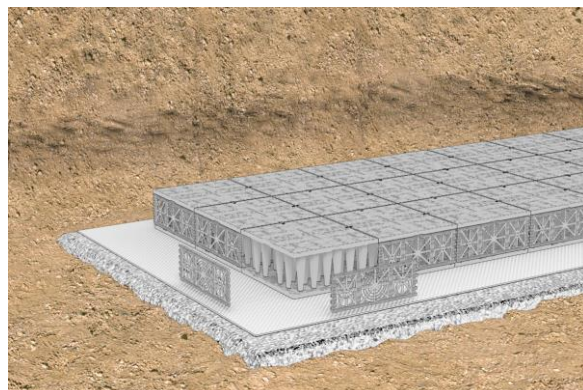


In the second and following layers, the modules are placed on top of modules already in place as shown.

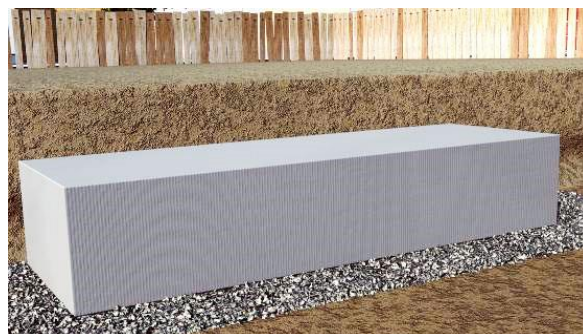
The modules must be arranged in one direction, laid in same direction creating inspection tunnels. Through the integrated catches, the modules can only be positioned in one direction.



Then the end plates are fitted. These can simply be snapped into the opening on the EcoBloc Inspect smart. The end plates must be inserted, so that GRAF Logo is in accordance with the writing direction. DN 100, DN 150 or DN 225 connections can be connected straight in the end plate of the EcoBloc Inspect smart. A hole-saw or a similar tool can be used to drill on the end plate.



Once all the blocks are positioned, the system is fully wrapped in **geotextile**. This prevents the ingress of dirt particles into the system.

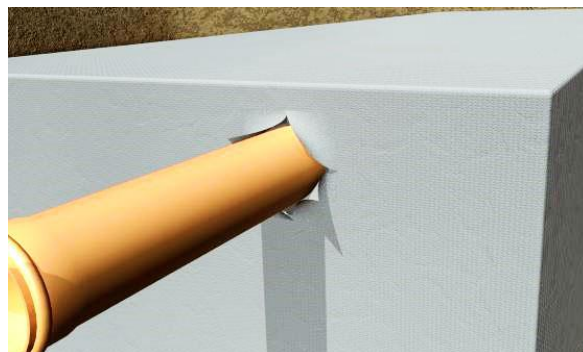


There is an increased risk of slipping on EcoBloc Inspect smart system during wet conditions.

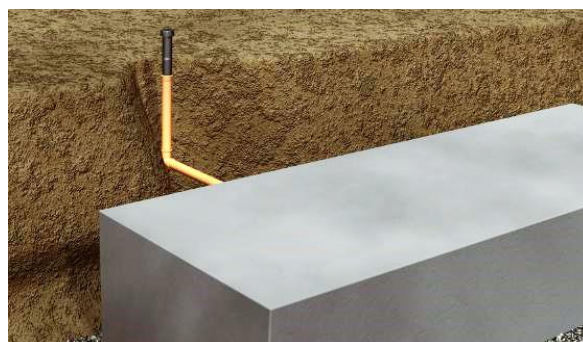
7. Installation

7.5 Fitting inlet

On the inlet surface, an X is cut into the geo textile. The **fitting around inlet** is slid in around 200 mm and the rest of the X cut glued or **solvent weld** to the pipe.



The vents needed are produced in the same way. The vertically aligned vents can be produced on the horizontal drill surface using a 90° bend (plastic pipe bend).



The required number as well as the size of the vents depend on the diameter of the inlet pipe and the number of inlets.

Table 3 – Number and size of vents depending on the size of the inlet pipe

Inlet pipe*	Number of vents		
	DN 100	DN 150	DN 225
DN 100	1		
DN 150	1		
DN 225	2	1	
DN 300	3	2	1

* If more than one inlet pipe is used, the number of vents increases correspondingly.



How to read Table 3:

If one inlet pipe DN 225 is connected to the GRAF EcoBloc system two DN 100 vents or one DN 150 vent are required.

7. Installation

7.6 Covering the EcoBloc Inspect smart system

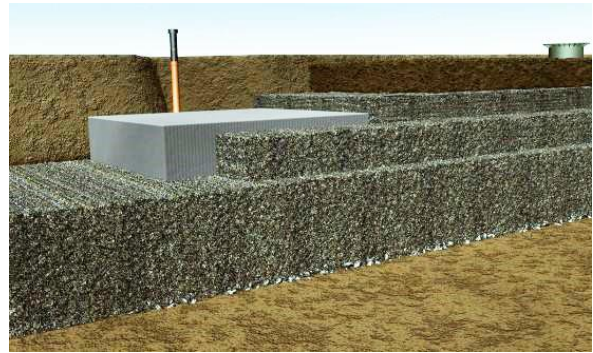
Before filling the installation, all inlets, vents and shafts must be connected. Before backfilling ensure that the **geotextile** is not pulled apart. Overlaps must remain in place when filling.

The EcoBloc Inspect smart system must not be driven over directly with construction machinery.

When backfilling the excavation pit, the installation conditions described in section 6.3 must always be observed and followed.

If the installation situation does not require any special backfill materials, the EcoBloc Inspect smart installation is filled with non-cohesive, compressible loose rock (gravel, crushed stone, sand, etc.) at least up to the top edge of the EcoBloc Inspect smart system.

If applicable, the excavated soil or similar can be used above the top edge to cover the EcoBloc Inspect smart system. Sharp objects, larger stones or similar foreign objects should be removed.



8. Construction & installation of on-site detention tank

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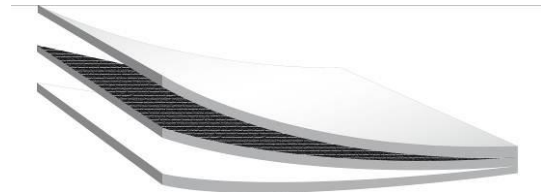
8.1 Installation of detention tank

Sections 7.1 and 7.2 describe how to prepare the excavation and lay the first layer of **geotextile**.

8.2 Laying geomembrane and geotextile

Further steps follow laying the first layer of **geotextile**.

The water-impermeable geomembrane is placed on the first sheet of **geotextile**, followed by another layer of **geotextile**. This three-layered surround provides protection and a water-tight shell.



GRAF and your local trading partner remain at your service for any further information or advice concerning waterproof film.

8.3 Construction & installation of detention tank

For use as a detention tank, a flow controller or a drainage throttle should be installed in a separate shaft.

GRAF and your local trading partner remain at your service for any further information or advice.

Please note:

When setting up a detention tank, it is essential to note the groundwater level. An accumulation of groundwater may cause uplift, resulting in damage to the system and its surroundings. If you intend to install in groundwater conditions, please consult GRAF beforehand. Please note it is customer's responsibility to provide relevant information about construction (soil cover, groundwater level, loading, application etc.).

Depending on the soil type, heavy rainfall may cause local rises in standing groundwater, particularly in the filling material of the trench. When installing the retention system, check again that no compression of the subsoil or silting-up has taken place during the construction phase. It may be necessary to install extra drainage. GRAF will be happy to provide advice on this.

9. Use of construction machinery in the installation phase

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Various construction machinery may be used to fill the excavation. Given the additional dynamic loads they cause, compression equipment must not be driven directly over the EcoBloc Inspect smart system and compression equipment with activated vibration motors must not be taken over the area.

Table 4 – Compression equipment

Earth covering in [m]	Properties	Max. approvals
min. 0.1 m	<i>Lightweight walk-behind roller</i> Total weight: Distributed: Dimension:	approx. 700 kg evenly, over 2 rollers 0.9 m x 0.7 m
min. 0.2 m	<i>Lightweight earthwork roller</i> Total weight: Distributed: Dimension:	approx. 2.5 t evenly, over 2 rollers 1.2 m x 3.2 m
min. 0.5 m	<i>Roller compact, excavator</i> Total weight: Distributed: Dimension:	approx. 12t evenly, over 2 rollers 5.9 m x 2.3 m

Please contact GRAF in the event of deviation from the materials and equipment stated here.

10. Other applications

10. Other applications

This documentation only relates to use of the GRAF EcoBloc Inspect smart for infiltration and detention systems for retaining, storing or infiltrating surface or rainwater. Any other use of the EcoBloc Inspect smart system must be agreed with Otto GRAF GmbH from a technical, material and/or static consideration.

If special requirements may need to apply, GRAF team also recommend to engage architects or planners with hydrology and/or geology expertise.