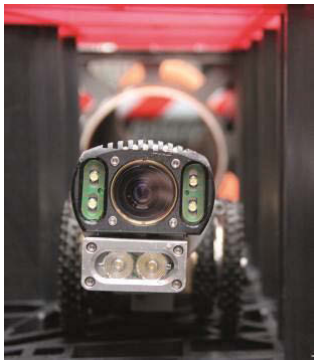
Instructions for maintenance of GRAF EcoBloc Inspect flex, Ecobloc Inspect 230 & EcoBloc Inspect 420

GRAF EcoBloc Inspect



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 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.

Contents

1. General information

1.1 General

Infiltration/attenuation systems are usually subject to official approval processes. 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 German and European standards and work sheets / data sheets of the DWA, always apply.

Only authorised and qualified personnel should install and Inspect the infiltration/attenuation system. The following safety and installation instructions should also be noted.

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

1.2 Safety

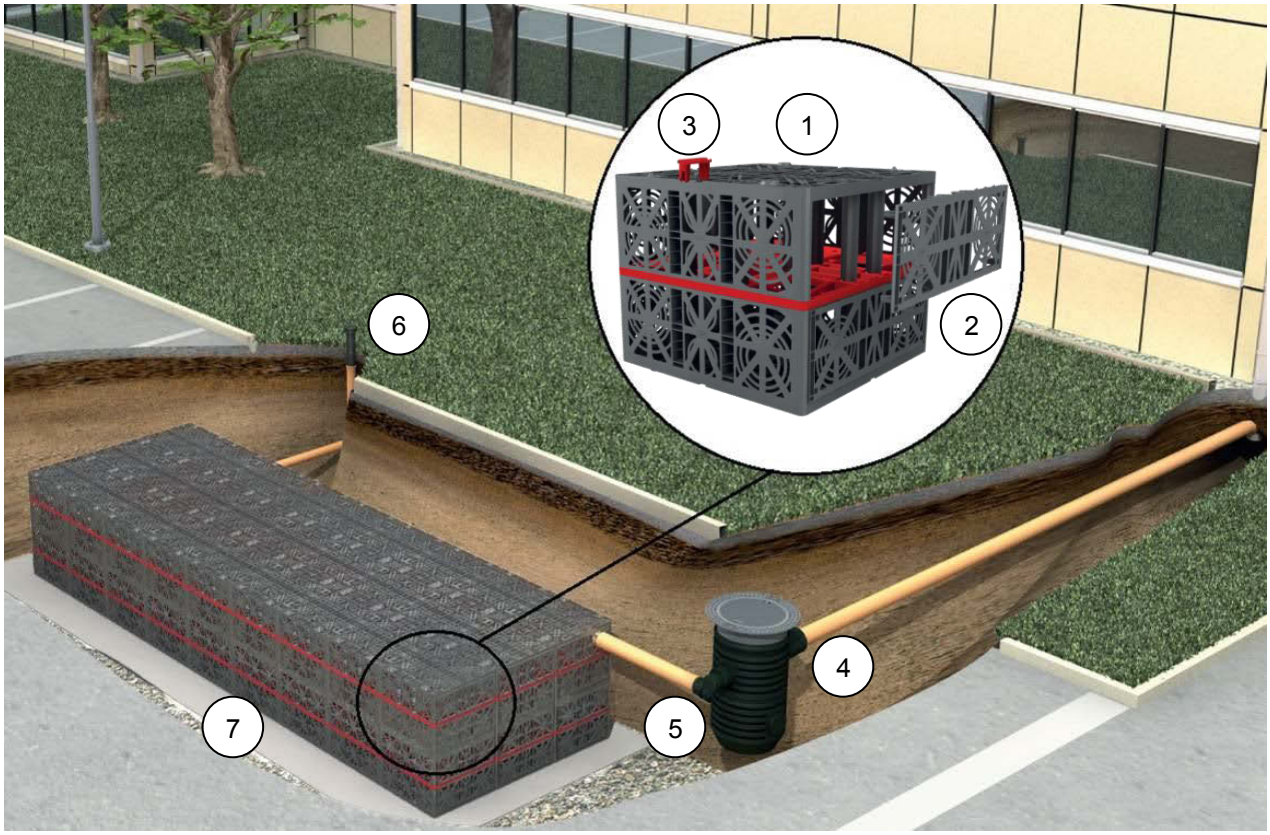
All work should be undertaken in compliance with the relevant accident prevention regulations according to BGV C22. There is an increased risk of slipping on Graf Ecobloc Inspect flex, 230 or 420 in frosty and wet conditions.

GRAF provides an extensive range of accessories, which are all coordinated and can be combined to form complete systems. Using other manufacturers accessories or components may result in the system's reduced performance or failure and liability for damage or costs will not be accepted.

2. General product information

The GRAF infiltration/attenuation range includes the following products:

Product Type		Description	Part #
Infiltration System			
	1	GRAF EcoBloc Inspect	402000
	2	GRAF EcoBloc Inspect end plates	402002
	3	GRAF EcoBloc connecting elements, e.g. 10-piece set	402015
		GRAF EcoBloc Inspect flex primary module	402005
		GRAF EcoBloc Inspect baseplate	402006
Shafts			
	4	GRAF VS inlet module DN 400	330339
		GRAF VS connecting piece DN 400	330341
	5	GRAF VS distributor module DN 400	330340
		GRAF VS inlet module DN 600	330360
		GRAF VS connecting piece DN 600	371003
		GRAF VS distributor module DN 600	330361
Accessories			
	6	4" venting end	369017
		8" Inspection end	340527
	7	GRAF-tex geo textile, roll width 5 metre	231002



3. General legal information

3.1 European and German guidelines for infiltration/attenuation system operators

The person operating an infiltration/attenuation system, usually the owner, is bound by obligations which are laid down in European and German guidelines. Any discharge, by infiltration/attenuation system through layers of soil, of dangerous substances into the water cycle, especially the groundwater, is prohibited by the European Directives 76/464/EEC and 80/68/EEC. Operators of infiltration/attenuation systems are also bound to the German Federal Water Act (WHG) and in terms of the soil layers, the Federal Soil Protection Act and Federal Soil Protection Ordinance.

Together with local guidelines, the operator is subject to the following obligations:

- Dangerous substances must not enter the water cycle
- If there is a risk of dangerous substances entering the water cycle, appropriate countermeasures (treatment with filter or swale) should be taken
- Should ensure that the infiltration/attenuation system is operated correctly at all times.

An information brochure detailing the methods required (oil separators, filters, silt traps, swale etc.) for pre-treatment is usually available from the local authority or water board responsible. This will also contain information about infiltration/attenuation not requiring a licence and the licence issued under water law for infiltration/attenuation which may have to be obtained.

4. Technical data

	Double unit	Single unit
Volumen (gross/net)	**(111/107 US-gal.)**	**(54.2/51.5 US-gal.)**
Dimensions (LxWxH)	(31.44” x 31.44” x 25.98”)	(31.44” x 31.44” x 12.6”)
Connections	(8) 8"/6"/4" + (8) 4"	(4) 8"/6"/" + (4) 4"
Weight	17 kg (37.5 lbs)	8 kg (17.6 lbs)
Material	100 % polypropylene (PP), recycled material	
Load capacity		
Short term	max. 100 kN/m² (14.5 psi)	
Long term	max. 59 kN/m² (8.55 psi)	

5. Treating Surface & rainwater

5.1 Treating surface & rainwater

To ensure perfect operation of the infiltration/attenuation system, filters of sufficient sizes should usually be fitted. These filters are required to be installed upstream of the infiltration/attenuation system.

In special cases, multi-stage filter systems with coarse and fine filters are used to treat the rainwater. The exposure and size of the collection surfaces can be used to determine whether a multi-stage system is needed and the size of filter required. We would be happy to help you select an appropriate filter/filter shaft. GRAF provides an extensive range of such products.

Work sheet DWA A-138 and data sheet DWA M-153 also contain sizing examples and information about filter stages upstream of infiltration/attenuation systems.

5.2 Filter units

The DWA data sheet M-153 provides various recommendations for working with rainwater. An overview is provided in Table 1.

Table 1

Groundwater intake	Retention soil filters	Sedimentation systems	Filters
Swales	Sand filters	Silt traps	Coarse filters
Surface infiltration	Ponds	Purification basins for rainwater	Fine filters
			Substrate filters

In areas with high concentrations of pollutants, several filter systems can also be combined to form one overall filter. This firstly filters out coarse particles and then retains dissolved substances.

The layers of soil which the rainwater penetrates during the infiltration process before it reaches the groundwater also have a filtering effect. A distance of one metre between the bed of the infiltration system and average groundwater level should therefore be maintained during the planning phase and/or when setting up the system in accordance with DWA A-138.

6. Maintaining the infiltration/attenuation system

6.1 Collection surfaces

Maintenance begins at the start of the rain cycle. A very dirty collection surface may produce an increased amount of dirt for the system which then requires a lot of effort to filter out later on. To extend the service life of the filters, we would therefore recommend maintaining the collection surfaces to remove large pieces of dirt (leaves, grit etc.).

6.2 Filter unit

All kinds of filter units, see chapter 5, require maintenance to ensure the infiltration/attenuation system operates perfectly. Perfect operation is essential for avoiding damage to the infiltration/attenuation system and maintaining performance.

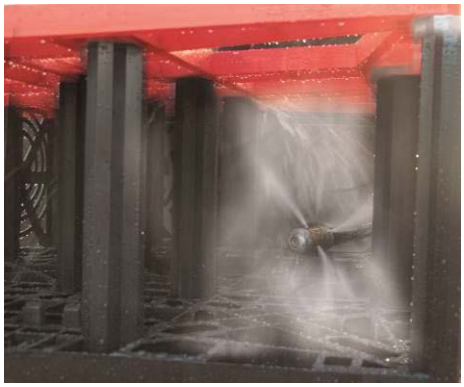
The pollutant levels depend on seasonal factors. During these periods, we would therefore recommend checking the filter units for overflows or full sludge and dirt buckets. Increased dirt levels will arise in the event of

- snow melt
- build-up of grit
- high pollen levels
- heavy rainfall during storms
- autumn leaf drop

The details provided by the manufacturer on maintaining and servicing the filter units used should also be followed.

6.3 Inspection & performance of system

Regularly checking the infiltration/attenuation system will ensure high performance and guarantee the rapid distribution of surface & rainwater in the event of heavy rainfall of a high intensity.



Jet washing the system

Inspection with camera

7. Maintaining the infiltration/attenuation system

As described above, dirt may reduce the performance of the infiltration/attenuation system. Drops in performance can be checked using e.g. tests with a defined volume.
The volume and duration for a test can be estimated and compared using the sizing documents according to DWA A-138.

If the infiltration performance deviates by ≥ 25 %, we would recommend using inspection equipment to check the system. Coarse particles or dirty geo textile impairing the infiltration performance can be removed with appropriate high-pressure purging probes. The general condition, for example, correct installation or changes to the system over time, can also be checked with Inspection equipment.

Local drain Inspection companies can inspect and rinse the systems.

8. Other applications

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

Should special requirements apply, we would also recommend contacting architects or planners with knowledge of hydrology and geology.