

DRAINFIX® BLOC – Installation instruction

Our installation instructions/examples are suggestions that are generally accepted in the trade. Any special installation details required due to local conditions need to be specified by a qualified engineer. The system designer and contractors need to take into account statutory and project-related regulations.

DRAINFIX BLOC elements are suitable as fill material in infiltration systems for stormwater and ground conditions not subject to hazardous pollution, in accordance with worksheet DWA-A 138. HAURATON will supply free-of-charge calculations for determining the dimensions and number of layers of the DRAINFIX BLOC elements to be installed in the infiltration system, based on the above worksheet. If the area above the infiltration system with the DRAINFIX BLOC elements is designed for traffic loads, the construction classes of RStO 01 with respect to deformation module EV2 as well as local ground conditions have to be taken into account. The permeability of compacted ground layers must be at least equivalent to the values for infiltration entered into the calculations. The depth and thickness of layers has to be calculated for load-bearing capacity in order to meet the respective load classes of passenger cars, HGV and SLW loads. In these calculations the depth of invert levels is determined by the existing inherent angle of incline of the surrounding soils as well as the imposed traffic load.

Installation procedure

1 Building pit with granular sub-base

Excavate a building pit of sufficient size for the DRAINFIX BLOC modules and working space, secure against caving in and level off the base. The standards relating to earthworks and the construction of building pits, as well as frost-free depth have to be observed. Lay a granular sub-base 0/8 of approx. 5 cm thickness as base for the DRAINFIX BLOC modules; in case of imposed traffic loads this should be compacted. The permeability of the granular sub-base should be adjusted to the k_f -value for permeability of the surrounding soil. Where the finished infiltration body is to be used for road traffic, the covering layers have to withstand deformation according to the formula $E_{v2} > 45 \text{ MN/m}^2$ and may need levelling layers in accordance with RSTO 01. Where DRAINFIX BLOC elements are to be installed near buildings, the necessary distances need to be observed as specified in DWA-A 138. The minimum distance to the average highest groundwater level is 1 m. The distance of trees to the infiltration structure must be at least half the diameter of the tree's crown when fully mature.



Building pit with granular sub-base

2 Lining the building pit with geotextile

Use the geotextile to line the building pit, making sure that the DRAINFIX BLOC are wrapped up with an overlap of approx. 50 cm at the joints. The required size of the GRK3 fleece will be specified as part of the calculations for the structure.



GRK3 fleece with overlap



Line up and press in the adapters



1 layer with adaptors

3A Installation of DRAINFIX BLOC elements Size 1, covering with fleece

The elements are arranged one beneath the other at right angles, so that they form a closed shear safe surface. In the rectangular openings of the butt joints of the intersecting corners between the individual layers of DRAINFIX BLOC elements Size 1, one adapter is pressed in per BLOC on the edge and in the surface. The hooks in the surface point downwards. The adapters in the surface should always be pressed-in in the same direction in the connecting places, so that a minimum of 2 adapters safely connect a DRAINFIX BLOC Size 1 so that it cannot be pushed sideways. The number of adapters necessary per site is calculated depending on the total area as a service from HAURATON. The hooks of the adapters on the edge surfaces point in the direction of the edge of the ditch for the foundation.



Shearing protection by means of adapter, 1 piece per DRAINFIX BLOC Size 1 in the surface

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Before the wrapping is done with fleece these visible hooks on the outer surfaces of the trench should be separated in order not to damage the fleece. If several layers are put one on top of the other, the elevated connection adaptors protect the individual layers from sliding. Cutting DRAINFIX BLOC elements of Size 1 into lengths is not allowed for stability reasons. After the completion of the laying process the modules are wrapped all over with the geotextile. The joints overlap by about 50 cm and are weighed down with filling material to prevent slipping.

3B Installation of the DRAINFIX BLOC elements Size 2, Wrapping with fleece

The individual modules are laid with their connecting hooks connected with one another so that they form a closed shear safe surface. In the course of this the hooks of the elements point to the edge of the ditch of the foundation and determine the direction of laying (Figures A-D). Before the wrapping with fleece which is done later these visible hooks should be separated in order not to damage the fleece.



Laying several layers with connection adapter



A Link up the smaller side of the DRAINFIX BLOC to the smaller side of the block already installed using the connector hook.



B This will form an open joint along the longer side.



C Engage the connector hooks by lifting the block slightly and moving the longer side against the side of the block already laid.



D Lower the DRAINFIX BLOC again and both sides of the block will be securely linked with resistance against thrust.

If several layers are laid in a row over one another additional connecting adaptors for slide protection of the layers shall be put in the rectangular openings on the upper side of the DRAINFIX BLOC elements. When laying in a row 1 piece is necessary for each intermediate layer and element. Cutting DRAINFIX BLOC elements into lengths is not allowed for stability reasons. After the completion of the laying process the modules are wrapped all over with the geotextile. The joints overlap by about 50 cm and are weighed down with filling material to prevent slipping.

4 Installing inlet and inspection chambers, camera inspection

After installing the inlet and outlet chambers, make an opening in the geotextile and connect the connecting pipes to the DRAINFIX BLOC modules. To do that, cut out the wall blank at the pre-formed place in the DRAINFIX BLOC. Each block element features several pre-formed blanks in DN 100 and DN 150 mm so that there are many options for connecting pipes from the inspection chambers. An opening above the fine filter and one to the DRAINFIX BLOC modules for the pipe connections to inlet/ inspection chambers can be provided at the factory in accordance with specifications. Likewise it is possible for the factory to provide options for camera inspections in positions indicated on the installation plan. At the pipe connection, the edges of the fleece have to be bonded with adhesive to keep out sand. Where the blocks are laid over a wider area, several pipe inlets have to be provided



Opening for camera inspection

to allow for even water distribution.

According to DWA-A 138, one inlet chamber can be connected to an area of approx. 500 m². The structure can be vented via the inlet/ inspection chamber. If no vent pipes are connected to the chambers, a vent pipe must be fitted at the top of the DRAINFIX BLOC structure to achieve the same effect. In this configuration, a pipe can also have the function of an emergency overflow (e.g. from a swale above the infiltration structure).

5 Backfilling the work space, covering the structure, traffic loads

Backfill the periphery of the building pit with filter-effective non-cohesive fill material, in layers, and compact with suitable equipment. Layers to be compacted should be limited to 20 cm; vibrator plates are suitable for compacting. Compacting rollers should not be used for compacting. Where the soil conditions are suitable, 4 layers of DRAINFIX BLOC modules are possible in pits with a max. depth of 5 m and covering layers of max. 3.50 m, e.g. for passenger car loading. However, construction details required and/or specified by the system designer have to be included, such as choice of suitable fill material or devices for reducing ground pressure. In order to remain functional for the purpose of infiltration, the fleece must not be damaged during backfilling or compacting the building pit.



Laying the covering layers in the front-dumping method to allow vehicles to drive on the structure.

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Where infiltration structures are situated under areas exposed to traffic, the depth of covering layers and the deformation modules are determined by the requirements of RStO 01.

The minimum thickness of covering layers and the maximum depth of installation are calculated for the project with a computer-aided program, taking account of the anticipated traffic loads. It is not permitted to drive directly on the modules. The covering layers over the DRAINFIX BLOC modules are to be deposited using the front-dumping method. From a layer thickness of 50 cm it is possible to drive on the structure with HGV with a gross vehicle weight rating of 12 tonnes or equivalent construction machines.



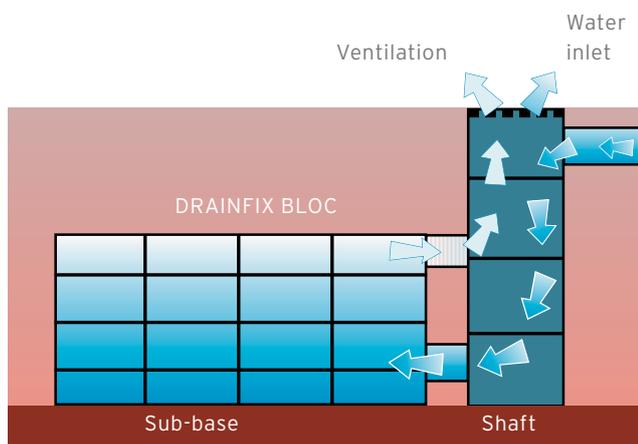
When the covering layer has reached a thickness of 50 cm it can support HGV of 12 t gross vehicle weight rating.

From a layer thickness of 60 cm and after compacting suitable levelling layers to $E_{v2} > 45 \text{ MN/m}^2$ the remaining top layers can be laid in accordance with RStO 01. Any deviations from the above require confirmation by the system designer or soil expert and may require additional measures.

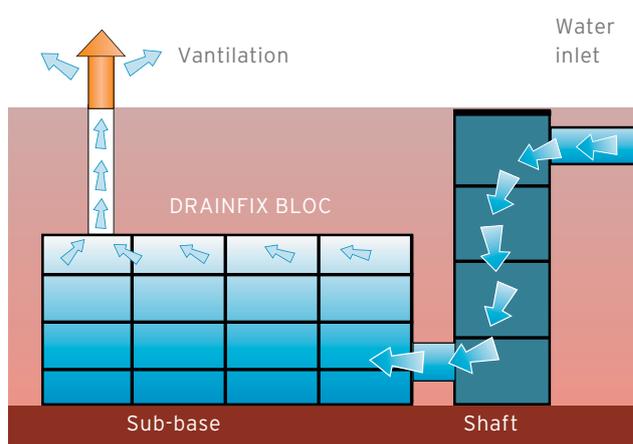
6 Inspection and maintenance of the infiltration structure

The infiltration structure should be inspected for its water level at least every six months. As an additional safeguard it is possible to carry out camera inspections. The filter function of the filter pipe at the inlet chamber should be checked as required, but particularly after heavy rainfall. It is important to ensure that no dirt or loose soil enters the infiltration structure during the installation or thereafter as this could curtail the long-term function of the infiltration structure. If the inlet chamber is used as a sedimentation chamber, the chamber should be cleaned out at least every six months, depending on the volume of sedimentation.

Note: The information provided here represents our best knowledge and experience to date. We reserve the right to make changes as technology advances and for the purpose of continuing product development. Users of the products are responsible for checking the functions and application options of these products by consulting with qualified engineers. The mentioning of trade names does not constitute a recommendation and does not preclude the use of other products that have been tested in the same way. For further information please refer to the respective safety data sheets or application areas, e.g. for elastic sealing compounds. Any new edition of this publication renders older editions invalid. Date: 07/11



Version 1: venting via chamber



Version 2: venting via vent pipe