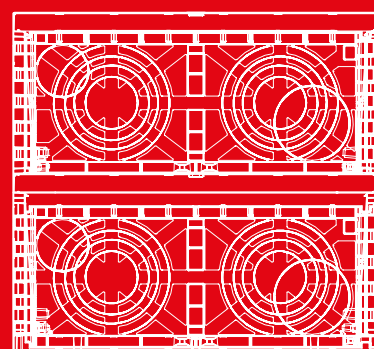




# EcoBloc System

## Stormwater management





Production site in Dachstein (France)



Production site in Teningen (Germany) near Freiburg

## GRAF – Setting standards in quality

Otto Graf GmbH has been supplying high-quality plastic products to its customers for 50 years. In 1974, GRAF developed its first pioneering range of rainwater harvesting products. Today we are market leader in numerous countries for Rainwater Harvesting Systems.

### High Quality Manufacturing

Graf continuously invests in the expansion of its headquarters in Teningen, near Freiburg (Breisgau). The facility has now an approximate area of 155,000 m<sup>2</sup> and is one of the most modern production facilities for plastic products in the world. Our choice of Germany for the new production site was easy. On the one hand, we feel an obligation to the site because of our history. On the other, we would like to offer our customers products of the highest quality.

### Where quality comes first

To ensure consistent high product quality, you need optimised production processes and outstanding quality management. Every individual tank at the new production site in Teningen is checked for dimensional accuracy, wall thickness and weight. All production parameters, e.g. material composition, machine settings and the staff involved in the production process, are documented for each individual product.

### Our goal: your satisfaction

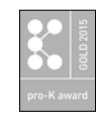
More than 100,000 satisfied customers already benefit from the advantages of GRAF products.



Manufacturing certified according to ISO 9001



Manufacturing certified according to ISO 50001





# Internationally proven: GRAF infiltration technology



Warehouse, Kent (UK)



Housing development, Singapur (SG)



Energy supplier, Warwick (UK)



Daycare centre, Lörrach (DE)



University of Agriculture, Prague (CZ)



Industrial building, Tumeltsham (AT)



# EcoBloc

## Stormwater management system

### Various applications

- ✓ Rainwater infiltration
- ✓ Stormwater attenuation
- ✓ Rainwater harvesting

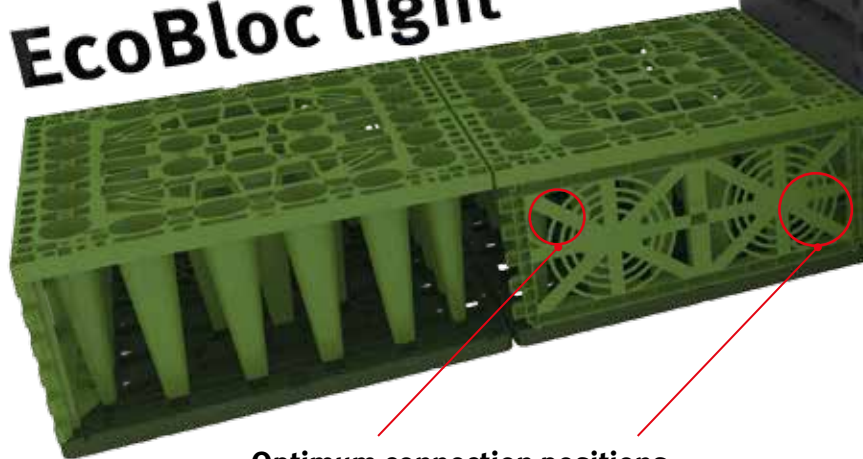


No tools required

### Fully integrated shaft

The Vario 800 flex shaft system (page 12) can be directly installed in an EcoBloc infiltration or infiltration/attenuation system. The connection surfaces of the inspection channels in the Vario 800 flex shaft system are accurately matched to the EcoBloc system.

load ★ ★  
logistics ★ ★ ★ ★ ★  
**EcoBloc light**



### Optimum connection positions

Optimum connection positions ensure full use of infiltration ditch volume.

### High storage volume

GRAF infiltration modules have three times the storage volume of a standard gravel infiltration ditch. One module therefore takes the place of around 1300 kg (1,4 tons) of gravel or a 50 m (164') drainage pipe. Since you don't have to excavate so much soil and enjoy great value for money compared with a standard gravel infiltration ditch, the GRAF modules save you hard-earned cash!

### Service life of over 50 years

A durable product design ensures sustainability. The GRAF EcoBloc system and the Vario 800 flex shaft system is designed for a service life of over 50 years.

### Easy to install

The modules are fitted simply, at speed and in various ways. They can be installed without heavy machinery – one EcoBloc Inspect flex module weighs just 8 kg (17.6 lbs), even only 7 kg (15.4 lbs) for one EcoBloc light



## Lorry-bearing up to 60 tons

The GRAF EcoBloc Inspect flex has a heavy-duty lorry-bearing capacity of 60 tons with an 800 mm (2' 7.5") earth covering.



## High pressure jetting possible

GRAF EcoBloc Inspect flex can easily resist high pressure jetting.



## Easy to inspect

The standard inspection channel allows the entire infiltration/attenuation system to be monitored effectively. The EcoBloc Inspect flex allows access by commercially available inspection cameras. This has been confirmed by several independent testing authorities.



## Up to 97% reservoir volume

The GRAF EcoBloc light has a gross volume of 225 litres (59.4 US gal.) and a reservoir volume of 219 litres (57.9 US gal.). With a reservoir volume in excess up to 97%, it is a market-leading product. The EcoBloc variants maxx and Inspect flex still offer a reservoir coefficient of 96% despite their high load-bearing capacity.

## Installation depth of up to 5 metres (16' 4.8")

Even under very heavy loads, GRAF EcoBloc Inspect flex modules can be installed at a depth of up to 5 metres (16' 4.8"). This means that up to 14 layers are possible. Please consult GRAF when the installation depth is greater than 5 metres.

## GRAF EcoBloc Configurator

Please ask your GRAF sales consultant for your login account information to the GRAF EcoBloc Configurator.



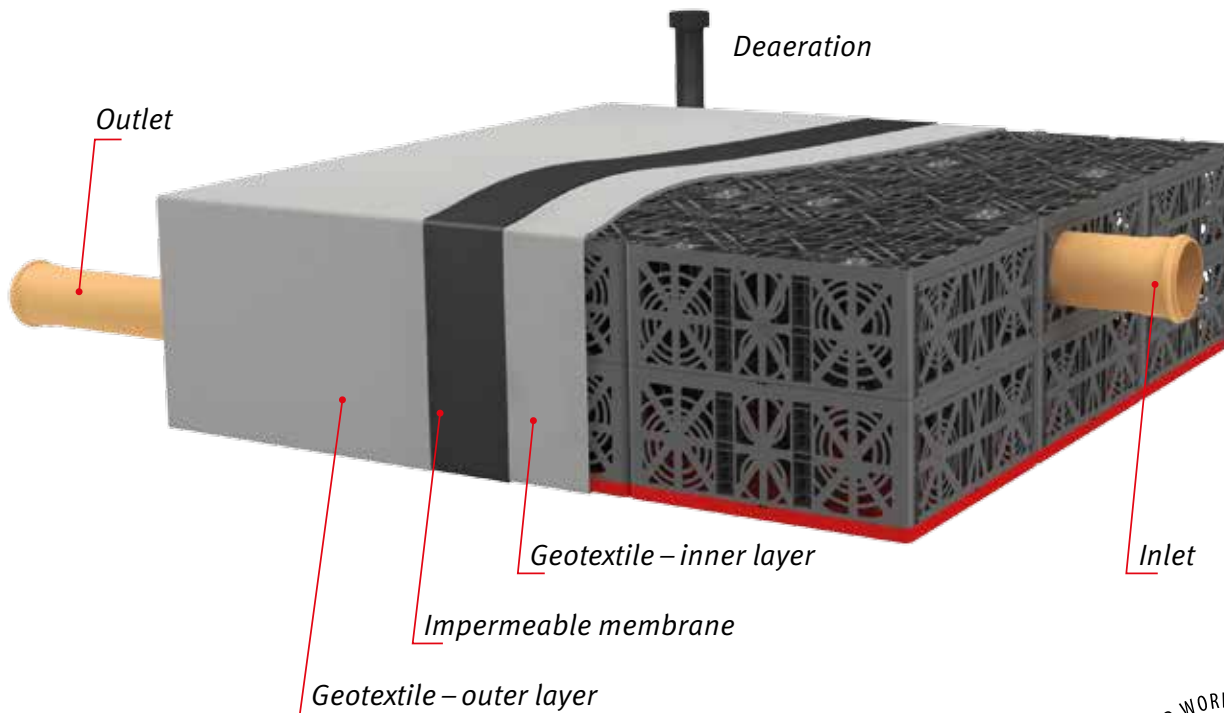
# Application and logistics

## Stormwater attenuation

The controlled discharge of rainwater is increasingly important during heavy rain. The GRAF EcoBloc modules can

be also surrounded by an impermeable membrane, which prevents water from escaping from the system unchecked.

Restricted outflow allows the water to be discharged into the sewage system in a controlled manner.



### 1. Stackable

To save space during transport, the EcoBloc maxx and EcoBloc light modules are stacked into each other. This minimizes transport costs, storage space in stock and CO<sub>2</sub> emissions.

### 2. Easy installation

The EcoBloc base plate forms the foundations of each EcoBloc system. Up to 14 EcoBloc modules can be fitted on one base plate.

### 3. Ready

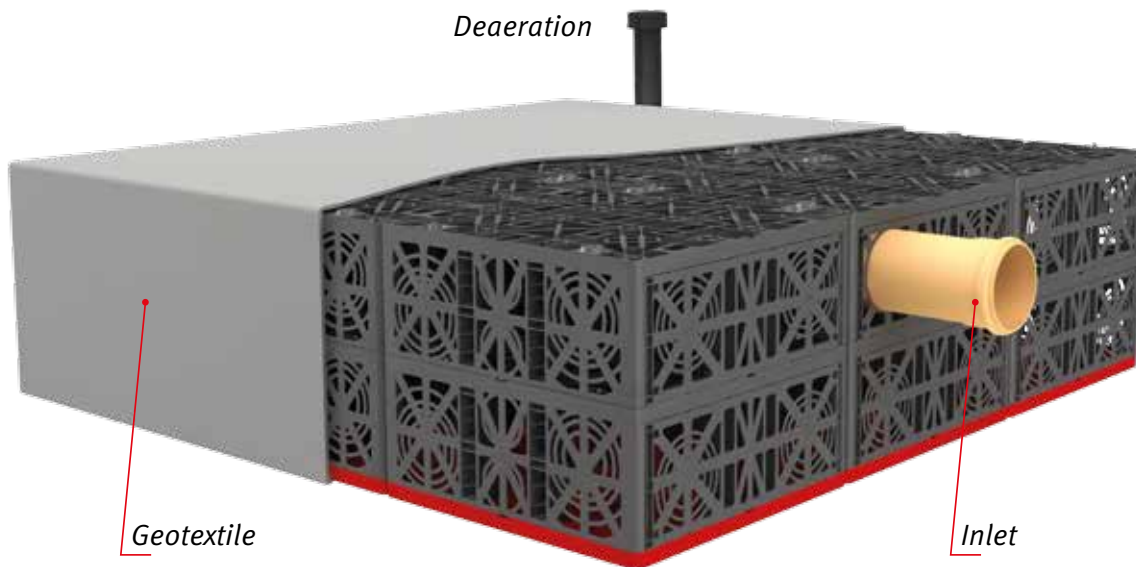
The side faces are sealed with EcoBloc end plates. The EcoBloc system can be adapted to match individual requirements.

## Rainwater infiltration

Local infiltration of rainwater is gaining in importance. As we cover over more and more ground with concrete, we are interrupting the natural water

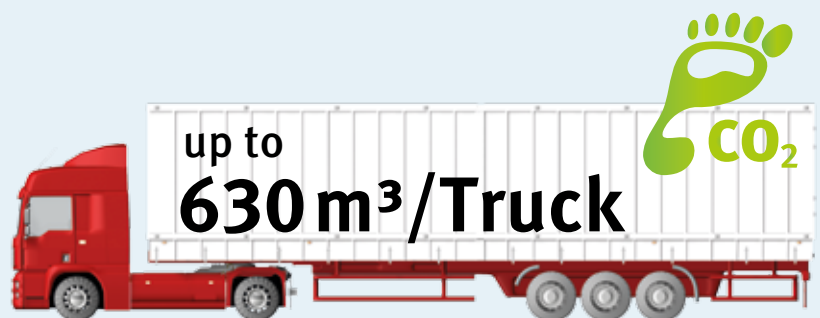
cycle. The GRAF EcoBloc modules combine environmental management of rainwater with the opportunity to protect against flooding. It stores rainwater

and gradually releases it back into groundwater reserves.



## Eco-friendly product – green logistics

One lorry can transport up to 2800 EcoBloc light units. That corresponds to a volume of 630 m<sup>3</sup> (22.250 ft<sup>3</sup>). This reduces carbon emissions during transport by 85 %!

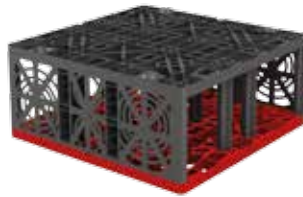




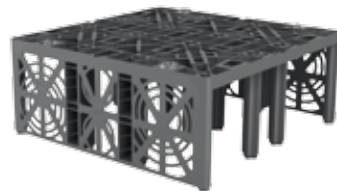
# The system at a glance

## EcoBloc Inspect flex

- Lorry-bearing 60 tons/HS-25
- 150 m³ (5.300 ft³)/Truck
- Inspectable
- High pressure jetting possible



Load ★★★★★  
Logistics ★★★

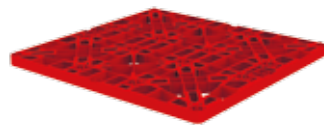


## EcoBloc Inspect flex

DN 100 (4")/150 (6")/200 (8") connecting surfaces

Volume	Length	Width	Height	Weight	Colour	Order no.
205 l (54.2 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	320 mm (12.6")	8 kg (17.6 lbs)	grey	402005

Q Webcode G4107



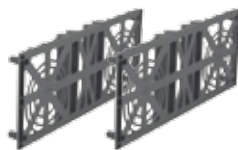
## EcoBloc Inspect flex base plate

Forms the foundation of the EcoBloc Inspect flex system

Volume	Length	Width	Height	Weight	Colour	Order no.
25 l (6.6 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	40 mm (1.6")	4 kg (8.8 lbs)	grey	402006

## EcoBloc Inspect flex end plates

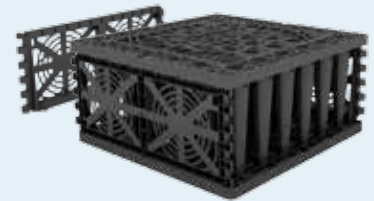
The front ends of an EcoBloc Inspect flex system are sealed by end plates with DN 100 (4")/150 (6")/200 (8") contact surfaces



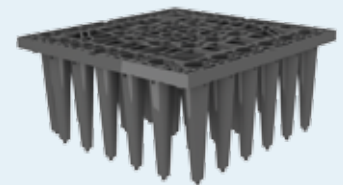
Item	Colour	Order no.
EcoBloc Inspect flex end plates (Set 2 units)	grey	402002

## EcoBloc maxx

- Lorry-bearing 40 tons/HS-20
- 410 m³ (14.480 ft³)/Truck



Load ★★★★★  
Logistics ★★★



## EcoBloc maxx

Connecting surfaces on EcoBloc maxx end plates

Volume	Length	Width	Height	Weight	Colour	Order no.
225 l (59.4 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	350 mm (13.8")	9 kg (19.8 lbs)	grey	402200

Q Webcode G4108



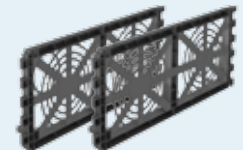
## EcoBloc maxx base plate

Forms the foundation of the EcoBloc maxx system

Volume	Length	Width	Height	Weight	Colour	Order no.
25 l (6.6 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	40 mm (1.6")	4 kg (8.8 lbs)	grey	402201

## EcoBloc maxx end plates

The outside surface of an EcoBloc maxx system is sealed by end plates with contact surfaces DN 100 (4")/150 (6")/200 (8")/250 (10")



Item	Colour	Order no.
EcoBloc maxx end plates (Set 2 units)	grey	402203

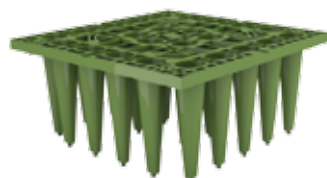


## EcoBloc light

- Lorry-bearing 12 tons
- 630 m<sup>3</sup> (22.250 ft<sup>3</sup>)/Truck



**Load** ★★  
**Logistics** ★★★★★



## EcoBloc light

Connecting surfaces on EcoBloc light end plates

Volume	Length	Width	Height	Weight	Colour	Order no.
225 l (59.4 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	350 mm (13.8")	7 kg (15.4 lbs)	green	402300

[Webcode G4109](#)



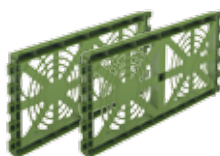
## EcoBloc light base plate

Forms the foundation of the EcoBloc light system

Volume	Length	Width	Height	Weight	Colour	Order no.
25 l (6.6 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	40 mm (1.6")	4 kg (8.8 lbs)	green	402301

## EcoBloc light end plates

The outside surface of an EcoBloc light system is sealed by end plates with contact surfaces DN 100 (4") / 150 (6") / 200 (8") / 250 (10")



Item	Colour	Order no.
EcoBloc light end plates (Set 2 units)	green	402303

## EcoBloc System accessories

### EcoBloc connectors

For horizontal connection



Order no. 402015	Set 10 units
Order no. 402018	Set 25 units
Order no. 402020	Set 50 units
Order no. 402025	Set 200 units

### Deaeration end

DN 100 (4")



Order no. 369017

### Adaptor plate



Order no. 402030	DN 300 (12")
Order no. 402031	DN 400 (16")
Order no. 402032	DN 500 (20")

### GRAF-Tex geotextile

size of 2.50 x 2.50 m (8' 2.4" x 8' 2.4")



Order no. 231006

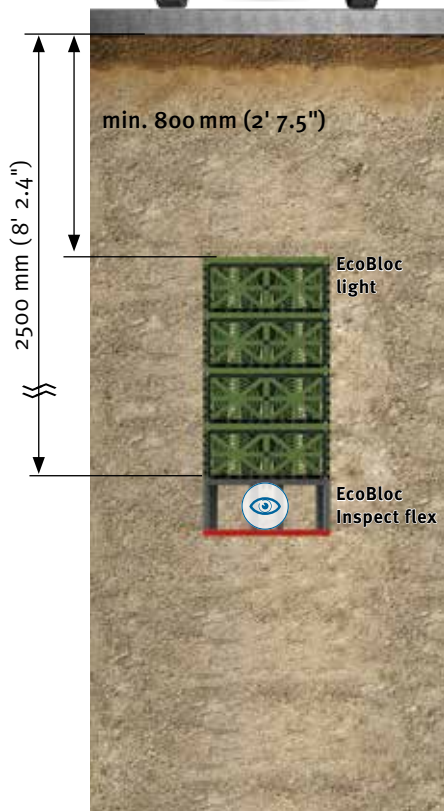
Sold by the metre, roll width 5 m (16' 4.8")

Order no. 231002

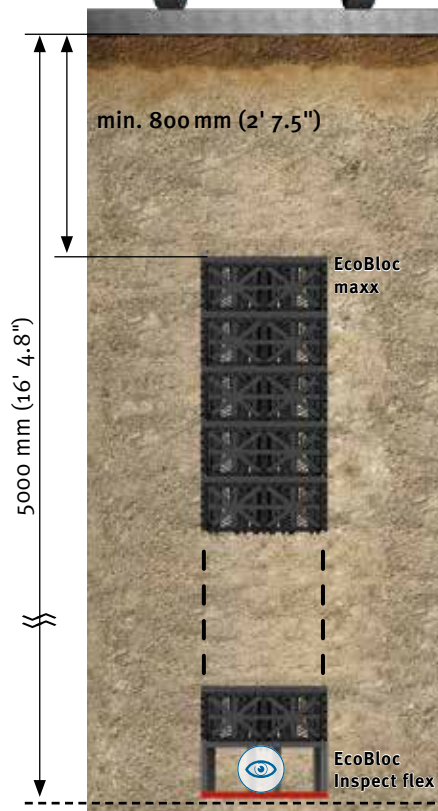
# Applications and loads



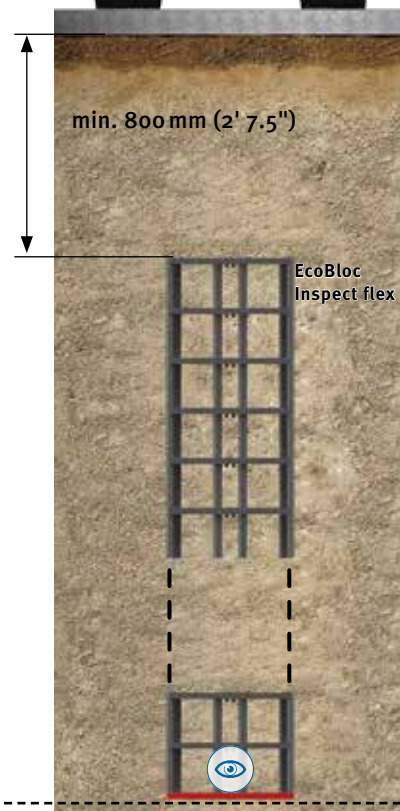
12 tons




40 tons / HS-20



60 tons / HS-25





Infiltration module		EcoBloc Inspect flex	EcoBloc maxx	EcoBloc light
Gross volume		205 l (54.2 US gal.)	225 l (59.4 US gal.)	225 l (59.4 US gal.)
Net volume		195 l (51.5 US gal.)	217 l (57.3 US gal.)	219 l (57.9 US gal.)
Storage coefficient		96 %	96 %	97 %
Inspectable 		•	•	•
High pressure jetting possible		•	•	•
<b>Load</b>				
Load	Short-term	max. 100 kN/m <sup>2</sup>	max. 100 kN/m <sup>2</sup>	max. 75 kN/m <sup>2</sup>
	Long-term	max. 59 kN/m <sup>2</sup>	max. 59 kN/m <sup>2</sup>	max. 35 kN/m <sup>2</sup>
Without traffic load	min. earth covering	250 mm (9.8")	250 mm / 500 mm <sup>1)</sup> (9.8") / (1' 7.7") <sup>1)</sup>	250 mm / o.r. <sup>2)</sup> (9.8") / o.r. <sup>2)</sup>
	max. earth covering	2750 mm (9')	2750 mm / 2000 mm <sup>1)</sup> (9') / (6' 6.7") <sup>1)</sup>	1500 mm / o.r. <sup>2)</sup> (4' 11") / o.r. <sup>2)</sup>
	max. installation depth	5000 mm (16' 4.8")	5000 mm (16' 4.8")	2500 mm (8' 2.4")
	max. number of layers	14	14	6
Vehicle	min. earth covering	250 mm (9.8")	250 mm / 500 mm <sup>1)</sup> (9.8") / (1' 7.7") <sup>1)</sup>	500 mm / o.r. <sup>2)</sup> (1' 7.7") / o.r. <sup>2)</sup>
	max. earth covering	2750 mm (9')	2750 mm / 2000 mm <sup>1)</sup> (9') / (6' 6.7") <sup>1)</sup>	1250 mm / o.r. <sup>2)</sup> (4' 1.2") / o.r. <sup>2)</sup>
	max. installation depth	5000 mm (16' 4.8")	5000 mm (16' 4.8")	2250 mm (7' 4.6")
	max. number of layers	14	14	4
Lorry 12	min. earth covering	500 mm (1' 7.7")	500 mm / 800 mm <sup>1)</sup> (1' 7.7") / (2' 7.5") <sup>1)</sup>	800 mm / o.r. <sup>2)</sup> (2' 7.5") / o.r. <sup>2)</sup>
	max. earth covering	2750 mm (9')	2750 mm / 2000 mm <sup>1)</sup> (9') / (6' 6.7") <sup>1)</sup>	1000 mm / o.r. <sup>2)</sup> (3' 3.3") / o.r. <sup>2)</sup>
	max. installation depth	5000 mm (16' 4.8")	5000 mm (16' 4.8")	2250 mm (7' 4.6")
	max. number of layers	13	13	4
Lorry 30	min. earth covering	500 mm (1' 7.7")	500 mm / 800 mm <sup>1)</sup> (1' 7.7") / (2' 7.5") <sup>1)</sup>	800 mm / o.r. <sup>2)</sup> (2' 7.5") / o.r. <sup>2)</sup>
	max. earth covering	2500 mm (8' 2.4")	2500 mm / 1750 mm <sup>1)</sup> (8' 2.4") / (5' 8.9") <sup>1)</sup>	1750 mm / o.r. <sup>2)</sup> (5' 8.9") / o.r. <sup>2)</sup>
	max. installation depth	5000 mm (16' 4.8")	5000 mm (16' 4.8")	2500 mm (8' 2.4")
	max. number of layers	13	13	13
Lorry 40/HS-20	min. earth covering	500 mm (1' 7.7")	800 mm (2' 7.5") <sup>1)</sup>	800 mm (2' 7.5") <sup>1)</sup>
	max. earth covering	2250 mm (7' 4.5")	2250 mm / 1500 mm <sup>1)</sup> (7' 4.5") / (4' 11") <sup>1)</sup>	1500 mm / o.r. <sup>2)</sup> (4' 11") / o.r. <sup>2)</sup>
	max. installation depth	5000 mm (16' 4.8")	5000 mm (16' 4.8")	5000 mm (16' 4.8")
	max. number of layers	13	11	11
Lorry 60/HS-25	min. earth covering	800 mm (2' 7.5")	800 mm (2' 7.5")	800 mm (2' 7.5")
	max. earth covering	2250 mm (7' 4.5")	2250 mm (7' 4.5")	2250 mm (7' 4.5")
	max. installation depth	5000 mm (16' 4.8")	5000 mm (16' 4.8")	5000 mm (16' 4.8")
	max. number of layers	13	13	13
<b>Connections</b>				
DN 100 (4")		•	•	•
DN 150 (6")		•	•	•
DN 200 (8")		•	•	•
DN 250 (10")		–	•	•
DN 300 (12")		• 3), 4)	• 3), 4)	• 3), 4)
DN 400 (16")		• 3), 4)	• 3), 4)	• 3), 4)
DN 500 (20")		• 4)	• 4)	• 4)
<b>Measurements</b>				
Length		800 mm (2' 7.5")	800 mm (2' 7.5")	800 mm (2' 7.5")
Width		800 mm (2' 7.5")	800 mm (2' 7.5")	800 mm (2' 7.5")
Height		320 mm (12.6")	350 mm (13.8")	350 mm (13.8")
Weight		8 kg (17.6 lbs)	9 kg (19.8 lbs)	7 kg (15.4 lbs)

<sup>1)</sup> When combined with EcoBloc Inspect flex

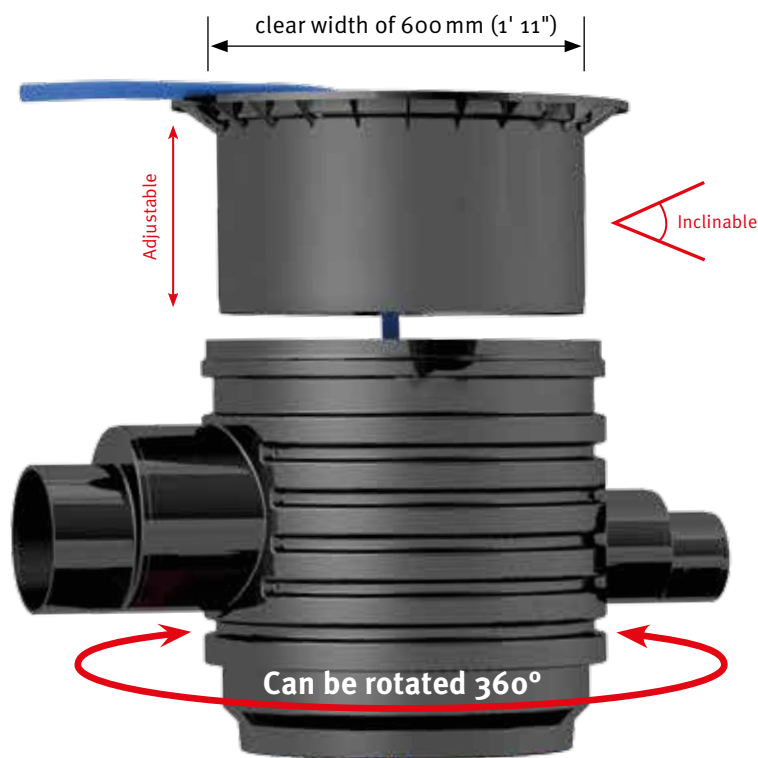
<sup>2)</sup> Values on request when combined with EcoBloc Inspect flex

<sup>3)</sup> Optionally available with Vario shaft (page 12)

<sup>4)</sup> Optionally available with adaptor plates (page 9)



# Vario 800 flex shaft system



## Flexible use

The GRAF Vario 800 shaft provides easy access to all EcoBloc modules. It can be used in many different ways:

- ✓ As an inspection shaft
- ✓ As an inlet shaft
- ✓ As a filter shaft
- ✓ As a flow control shaft

## Easy to inspect

The Vario 800 shaft allows easy access to the EcoBloc system by commercially available inspection cameras. This has been confirmed by several independent testing authorities.

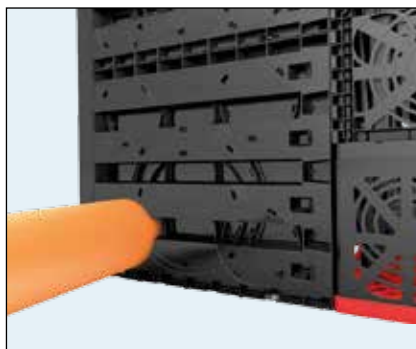


No tools required



## Lorry-bearing up to 60 tons

The GRAF Vario 800 shaft has a heavy-duty lorry-bearing capacity of 60 tons with an 800 mm (2' 7.5") earth covering. The fibreglass reinforced material gives the shaft extra strength.



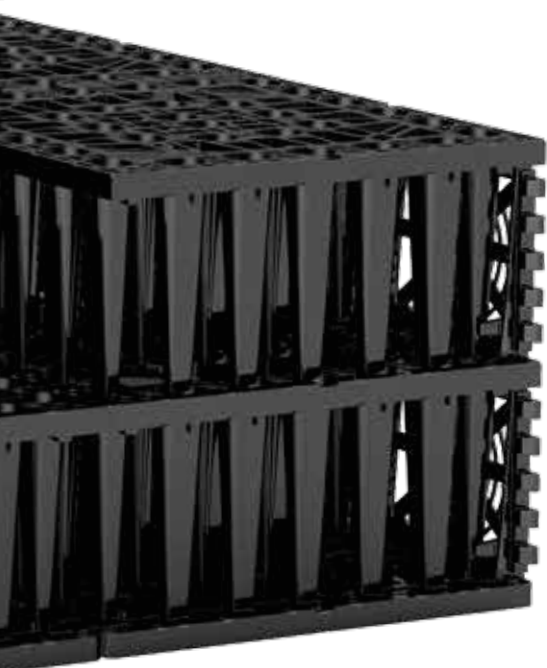
## Connection surfaces up to DN 400 (16")

The Vario 800 comes with DN 200 (8"), DN 300 (12") and DN 400 (16") connection surfaces. The optional, freely rotating inlet module can be connected to pipes of sizes DN 150 (6"), DN 200 (8"), DN 250 (10") and DN 300 (12").



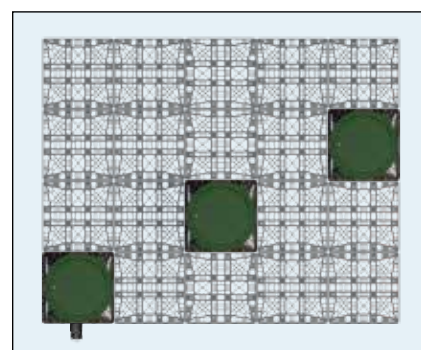
## Wide access

The Vario 800 is terminated at the top by GRAF telescopic dome shafts. With a clear width of 600 mm, it gives easy access to the shaft. The base of the shaft itself is 800 x 800 mm (2' 7.5") x (2' 7.5") in size, providing sufficient space for all possible applications.



## No additional excavation

The Vario 800 flex shaft system can be directly installed in an EcoBloc infiltration or detention system. The connection surfaces of the inspection channels in the Vario 800 flex shaft system are accurately matched to the EcoBloc system.



## Can be positioned in any location

The dimensions of the Vario 800 shaft enable free positioning within the EcoBloc system. The corner position enables the connection of large pipe diameters of up to DN 400 (16") on the two side panels. The central position offers ideal access to the inspection camera from all directions. Using the optional inlet module, a connection of up to DN 300 (12") can be made with a freely defined angle.

# Vario 800 flex shaft system



## Vario 800 flex, type 1

shaft body for one or more layer of EcoBloc system

Volume	Length	Width	Height	Weight	Colour	Order no.
230 l (60.7 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	355 mm (1' 2")	16 kg (35.3 lbs)	grey	450050

 **Webcode** G9303



## Vario 800 flex, type 2

shaft body for two or more layer of EcoBloc system

Volume	Length	Width	Height	Weight	Colour	Order no.
420 l (113.5 US gal.)	800 mm (2' 7.5")	800 mm (2' 7.5")	660 mm (2' 2")	27 kg (59.5 lbs)	grey	450051



## Vario 800 flex, base/cover set

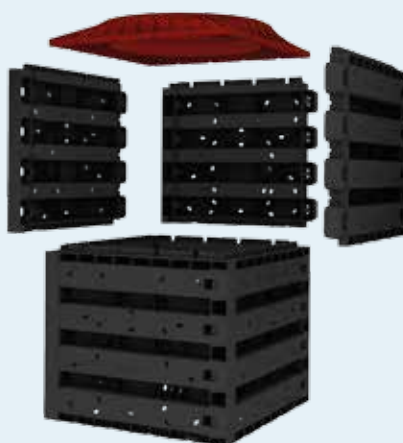
base- and cover for Vario 800 flex shaft

Item	Colour	Order no.
set consisting out of Vario base- and cover plate	grey	450052



### 1. Stackable

To save space during transport and storage, the parts of the Vario 800 are stacked into each other. This minimizes transport costs and CO<sub>2</sub> emissions.



### 2. Easy installation

Groups of four wall elements are connected in a few simple steps and without tools to form a single height unit of the Vario 800. The height can be easily adjusted to the EcoBloc tank depth. A shaft cover and base plate complete the element.



### 3. Ready

GRAF accessory components can now be added to the Vario 800 shaft as required.





## Shaft components

### Infiltration filter strainer DN 600 (24")

Made entirely from stainless steel, mesh width 0.75 mm (0.03")

Order no. 340523



### Infiltration inlet module DN 600 (24")

Incl. profile seal for telescopic dome shaft; DN 150 (6")/ DN 200 (8")/ DN 250 (10")/ DN 300 (12") connections

Order no. 330360



### Infiltration connecting piece 1000 DN 600 (24")

With DN 200 (8") contact surface, incl. profile seal, length 1000 mm (3' 3.3"), 750 mm (2' 5.5"), 500 mm (1' 7.7")

Order no. 371015



### Infiltration connecting piece 1000 DN 600 (24")

With DN 200 (8") pipe connections, incl. profile seal, length 1000 mm (3' 3.3"), 750 mm (2' 5.5"), 500 mm (1' 7.7")

Order no. 371016



## Retention accessories

### Choke drain DN 100 (4")

Incl. emergency overflow and DN 100 (4") connector seal; flow rate of 1.0 l (0.26 US gal.)/sec. up to 6.5 l (1.72 US gal.)/sec.

Order no. 330547



### Choke drain DN 150 (6")

Incl. emergency overflow and DN 150 (6") connector seal; flow rate of 2.0 l (0.53 US gal.)/sec. up to 16 l (4.22 US gal.)/sec.

Order no. 330598



## Tank Covers

### Mini telescopic dome shaft

Suitable for pedestrian loading, height adjustable from 140 – 340 mm (5.5" – 13.4")

Order no. 371010



### Maxi telescopic dome shaft

Suitable for pedestrian loading, height adjustable from 140 – 440 mm (5.5" – 17.3")

Order no. 371011



### Cast iron telescopic dome shaft

Suitable for vehicle loading, height adjustable from 140 – 440 mm (5.5" – 17.3")

Order no. 371020



### Telescopic dome shaft lorry

Suitable for lorry-bearing loading, height adjustable from 140 – 440 mm (5.5" – 17.3")

Order no. 371021



Cover and compensating ring to be provided on site

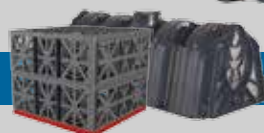




## RAINWATER HARVESTING



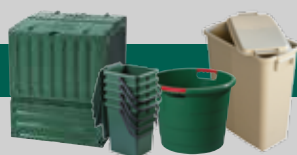
## INFILTRATION



## WASTEWATER TREATMENT SOLUTIONS



## MULTIPURPOSE CONTAINERS



Your expert specialist dealer:

### Rainwater harvesting solutions

For more information about our rain-water harvesting solutions, ask for our catalogue.

#### Prices:

A price list with our export conditions is available on request.

#### Warranty clause:

The warranty mentioned in this brochure only refers to the tank in question and not to the accessories. Within the warranty period we grant free replacement of the material. Further benefits are excluded. Pre-condition for warranty benefits are proper handling, assembly and installation according to the mounting guidelines.

N.B. Protect tanks from frost when installed above ground! In case of groundwater installation, please contact us for further information prior to purchase!

For all dimensions and abstracts provided in this brochure, we reserve a tolerance of  $\pm 3\%$ . Depending on the connection type, the useful volume of the underground tanks may be up to 10% below the tank capacity.

Subject to technical modifications and errors. Design details, methods and standards of individual products may change as a result of technical advancements and environmental regulations.

For all our offers and conclusions of contract, only our General Terms and Conditions of Business dated 01/10/2012 shall apply, which we will send to you on request.

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