



Sealing accessories range

DEBIT-CO®

DEEP flow limiters for flat roofs

European patent N°1054659

Registered trademark



INSTALLATION INSTRUCTIONS

Complies with DTU 43.1

DEBIT-CO® tests were carried out and validated by DEKRA INSPECTION.

CONTENTS

Preamble.....	3
1. DESTINATION	4
2. TERMINOLOGY.....	4
3. PRINCIPLE.....	4
4. DEBIT-CO® INSTALLATION	5
5. MATERIALS.....	7
5.1. Constituents.....	7
5.2. Dimensions	7
5.3. Packaging.....	7
5.4. Storage	7
6. MAINTENANCE.....	8
7. REFERENCE DOCUMENTS	8
8. TESTS.....	9
9. PRODUCT LIABILITY	9
10. ENVIRONMENTAL RESPONSIBILITY	9
11. ADJUSTMENT RANGES.....	10

Preamble :

The increasing sealing of soil, mainly due to urban densification and the resulting increase in peak flows of rainwater, leads to significant risks of flooding during heavy rainfall.

Climate change over the last few decades has increased the frequency of heavy rainfall and the associated risk of flooding.

To prevent rainwater drainage systems from becoming clogged and overflowing, rainwater must be managed, controlled and reduced. Rainwater is no longer discharged directly into the sewerage system.

DEBIT-CO® PR provides an appropriate response to these new rules and recommendations, which promote HQE development.

One of the first solutions sought is to control the run-off of rainwater from the roof, by working as far upstream as possible. To do this, the flat roof plays a key role in limiting the flow by regulating it through specially designed outlets.

Extract from the CERTU guide "La ville et son assainissement - Principes Méthodes et Outils pour une meilleure intégration dans le cycle de l'eau":

- New solutions, using alternative or compensatory techniques, make it possible to get as close as possible to the natural water cycle by delaying its transfer to surface outlets and encouraging its evacuation to underground outlets.
- All these techniques make it possible to significantly reduce peak water flows.
- Limits on discharges can also be imposed by local authorities via local planning documents.



Photo 1 - Retention vegetated terrace



Photo 2 - Gravel terrace with retention system

1. DESTINATION

The DEBIT-CO® flow limiter is designed to regulate the flow of roof water entering the rainwater network in accordance with the recommendations of the specialist design office in charge of the site or by the DPM (Contract Documents and Parts), in accordance with the recommendations of the public sewerage service regulations of each region and in compliance with this document.

2. TERMINOLOGY

DEBIT-CO® is set in the workshop and cannot be modified.

3. PRINCIPLE

The DEBIT-CO® flow limiter is an accessory that is fitted to the EEP roof inlet to regulate the flow of run-off water into the rainwater network.

DEBIT-CO® consists of :

- 1 - Aluminium **base plate** or other specially adapted material (*Photo 3 - 1*)
- 2 - **Fixed open drum** adjusted in the workshop to the required flow rate, then sealed (*Photo 3 - 2*)

These elements are manufactured and assembled in our workshops and are systematically accompanied by a **calculation note**.

DEBIT-CO® is suitable for all types of EEP inlet for roofs and flat roofs up to 230mm diameter. For diameters greater than 230mm, a specific study will be carried out by our services.

The DEBIT-CO® flow limiter is the subject of European patent no. 1054659 and registered trademark no. 10/37.



Photo 3 - DEBIT-CO

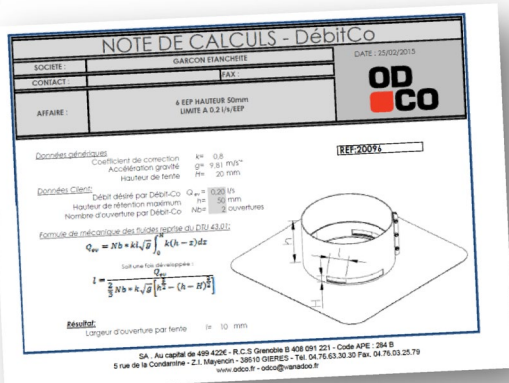


Photo 5 - Calculation

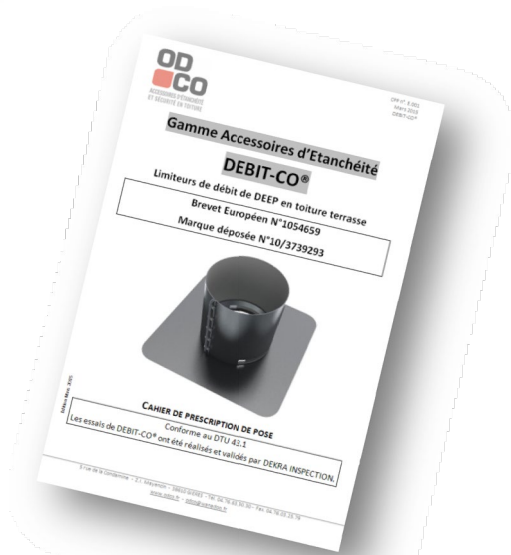


Photo 4 - Installation instructions

4. IMPLEMENTATION OF DEBIT-CO®

Nota bene: The size and number of DEBIT-CO® is defined by the specialist design office in charge of the site or by the DPM (Documents et Pièces du Marché) and does not depend on the roofing and waterproofing contractor, in accordance with DTU 43.1.

- 1) To begin with, the insulation or concrete recess initially planned in accordance with the DTU must be increased by approximately 10mm in the area of the PEs in order to absorb the extra thickness generated by the application of DEBIT-CO® and thus avoid a mini-retention which could slightly distort the actual retention height.
- 2) visually check that :
 - the DEBIT-CO® has not been damaged in any way during transport or storage,
 - the seal rivet is present and undamaged, showing that the adjustment has been carried out and checked in our workshops.
 - the marking is present and legible.



Photo 6 - DEBIT-CO

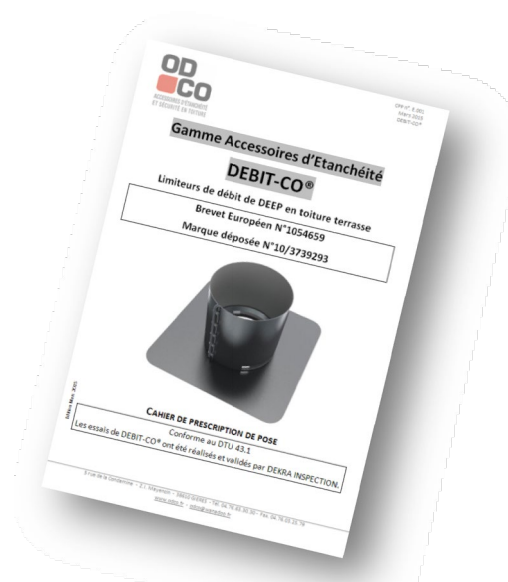


Photo 4 - Installation instructions

- 3) Check that the DEBIT-CO® settings marked on the drum (flow rate and retention height) are those defined by the specialist Design Office in charge of the site or by the DPM (Contract Documents and Packages) in accordance with the order.
- 4) Position DEBIT-CO®, taking care to centre it on the existing EP inlet (Photo 7).

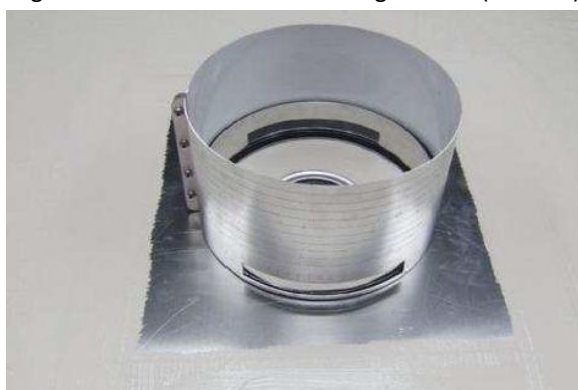


Photo 7 - Centring the DEBIT-CO® on existing EP

- 5) Connect the plate to the existing cladding using the appropriate waterproofing system.
The DEBIT-CO is set at the factory. Generally, the height of the mobile drum corresponds to the retention height.

- 6) A gravel barrier (Photo 8) must be installed around the DEBIT-CO® in accordance with DTU 60.11, series 40, series 43 and the rules of the trade.
The gravel barrier must be adapted to the defined retention height. The standard heights of the gravel guards supplied by us are 100mm and 200mm.
The gravel barrier can be supplied and sold by us on request as a complement to the DEBIT-CO®.

Examples of some applications:



*(1)

Synthetic membrane waterproofing system



*(1)

Elastomeric bitumen waterproofing system



*(1)

Liquid waterproofing system (SEL)

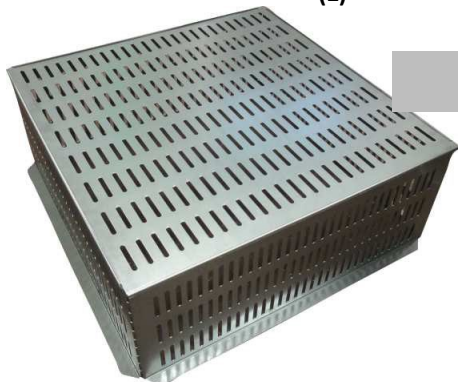
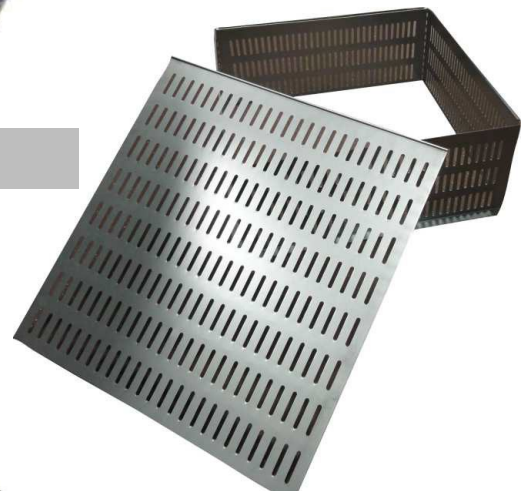
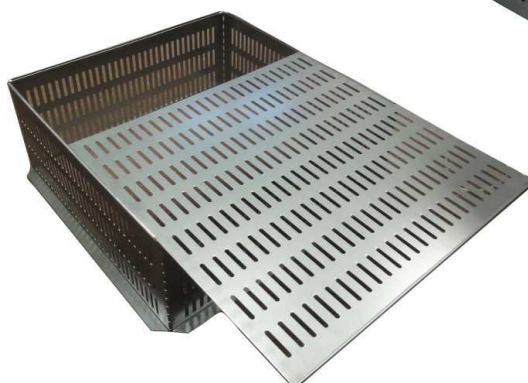


Photo 8 - Installation of a gravel barrier



(1) For the purposes of the photos and understanding the installation, the gravel guards are not fitted with their covers, which are however necessary and compulsory for the DEBIT-CO® to function perfectly.



5. MATERIALS

5.1. Constituents

	Qty	Material*	Thickness
1 - Platinum	1	Aluminium grade 5754 H111*	1.5mm
2 - Guide cylinder	1	Aluminium grade 5754 H111*	1.5mm
3 - Drum	1	Aluminium grade 5754 H111*	1mm
4 - Seals	1	EPDM* foam	2mm
5 - Pop rivets	5	Stainless steel	

*Or another suitable material that complies with current regulations.

5.2. Dimensions

	Dimensions (mm)	Thickness
1 - Turntable (<i>standard</i>)**	500 x 500 - drilling \varnothing 235	1.5mm
2 - Guiding cylinder (<i>standard</i>)** (<i>optional</i>)	H 50 x \varnothing 235 mm	1.5mm
3 - <i>Standard</i> drum	H 150 x \varnothing 255 mm	1mm
4 - Seals	H 50 mm	3mm
5 - Pop rivets	\varnothing 6mm x20 mm	

**Non-contractual dimensions. They may be modified by our services.

For any specific studies or constraints not covered by these specifications, please contact us.

5.3. Packaging

During manufacture, the DEBIT-CO® is marked in the workshop.

The DEBIT-CO® is permanently and unchangeably marked with the flow rate requested by the customer, together with a serial number indicating its date of manufacture and quality control.

DEBIT-CO® is individually packaged in cartons marked with the contents.

5.4. Storage

DEBIT-CO® must be stored away from bad weather and major temperature variations, and away from any corrosive products.

NB: depending on how it is stored, the aluminium may show whitish corrosion marks which in no way affect the operation of the DEBIT-CO®. These are merely defects in appearance, which is why we recommend storage in a sheltered place.

6. MAINTENANCE

Maintenance must comply with DTU series 43 standards and be carried out by a qualified company with a thorough understanding of the characteristics and operation of the DEBIT CO®.

One of the conditions for the durability and good operation of DEBIT-CO® is directly linked to its maintenance in accordance with DTU series 43 and its installation instructions.

During the periodic (seasonal) roof maintenance visit(s), the operator will check that the DEBIT-CO® is in good condition (no deformation, dents or other marks from blows), that it is in the right place and that its plate is perfectly sealed against the existing cladding.

The operator should of course check that nothing is blocking the DEBIT-CO® gills, that no objects or detritus are obstructing the DEBIT-CO® overflow and that the adjustment is still in place.

DEBIT-CO® requires at least seasonal maintenance. Once a quarter, the DEBIT-CO® must be cleaned and checked:

- thoroughly clean the perimeter of the gravel trap and its cover,
- slide the grate used to cover the gravel trap into the open position
- check the presence of the rivet on the DEBIT-CO®.
- remove fines and sediment,
- carefully close the gravel barrier.

At each visit, it is also advisable to check that the marking is still legible.



PLEASE NOTE:

Any DEBIT-CO that is not marked, does not have a setting indicator or whose seal has been damaged will be considered non-compliant.

The DEBIT-CO® will not operate if it is not maintained.

7. DOCUMENTS REFERENCES

NF P40-202 (DTU 60.11) - Calculation rules for sanitary plumbing installations and rainwater drainage systems.

NF P84-204 (DTU 43.1) - Waterproofing of flat roofs and pitched roofs with load-bearing masonry elements in lowland climates.

NF P84-206 (DTU 43.3) - Installation of waterproofed corrugated sheet steel roofs.

NF P84-207 (DTU 43.4) - Roofs with load-bearing elements made of wood and wood-based panels with waterproofing.

NF P84-208 (DTU 43.5) - Repair of waterproofing on flat or sloping roofs.

NF (DTU 43.6) - Waterproofing of interior masonry floors using hydrocarbon products

"LA VILLE ET SON ASSAINISSEMENT Principes Méthodes et Outils pour une meilleure intégration dans le cycle de l'eau" - Edition CERTU 2003.

Regulations for regional sanitation utilities.

8. TESTS

Flow tests were carried out on our production site in the presence of DEKRA Inspection, represented by Mr FLANDIN.

The aim of these tests was to verify the k coefficient (flow coefficient) of the DTU 43.1 obtained between the theoretical calculation of flow rate as a function of the opening of the louvres and the height of water and the actual measurements in situ. This coefficient was previously determined by internal tests of the same type.

The purpose of the presence of DEKRA Inspection is to validate the method used to determine this coefficient and the veracity of the tests carried out.

Numerous tests over a wide range of settings (opening and height) enabled us to compare theoretical and actual flow rates. The k coefficient was therefore determined for our slot geometry. This result allows us to justify the leakage flow rate values as a function of retention height and slot opening, which we transcribe in a calculation note supplied with each DEBIT-CO®.

9. CIVIL LIABILITY MANUFACTURER

DEBIT-CO® is covered by manufacturer's liability insurance.

This does not include installation and waterproofing work, which remains the responsibility of the qualified contractor installing DEBIT-CO®.

10. ENVIRONMENTAL RESPONSIBILITY

DEBIT-CO® is manufactured in accordance with HQE (High Environmental Quality) criteria.

DEBIT-CO® is made entirely of aluminium, which is fully recyclable.

DEBIT-CO® was developed with a view to working on a simple, single-component product using stapling and crimping rather than heat welding.

The packaging has been designed to reduce the environmental impact, using simple recycled cardboard, with no plastic or polystyrene packaging.

With normal maintenance and use, the reliability and service life of DEBIT-CO® is not limited.

11. SETTING RANGES

<i>Retention height (50mm minimum)</i>	<i>Minimum leakage rate achievable per Flow-CO</i>	<i>Maximum leakage rate achievable per Flow-Co</i>
50mm	0.10L/sec	3.20L/sec
55mm*	0.11L/sec	3.39L/sec
60mm	0.11L/sec	3.58L/sec
65mm*	0.12L/sec	3.76L/sec
70mm	0.12L/sec	3.92L/sec
75mm*	0.13L/sec	4.08L/sec
80mm	0.13L/sec	4.24L/sec
85mm	0.14L/sec	4.39L/sec
90mm	0.14L/sec	4.53L/sec
95mm*	0.15L/sec	4.67L/sec
100mm	0.15L/sec	4.81L/sec
110mm	0.16L/sec	5.07L/sec
120mm	0.17L/sec	5.32L/sec
130mm	0.17L/sec	5.55L/sec
140mm	0.18L/sec	5.78L/sec
150mm	0.19L/sec	6.00L/sec
160mm	0.19L/sec	6.21L/sec
170mm	0.20L/sec	6.41L/sec
180mm	0.21L/sec	6.61L/sec
190mm	0.21L/sec	6.80L/sec
200mm	0.22L/sec	6.99L/sec
210mm	0.22L/sec	7.17L/sec
220mm	0.23L/sec	7.35L/sec
230mm	0.24L/sec	7.52L/sec
240mm	0.24L/sec	7.69L/sec
250mm	0.25L/sec	7.86L/sec

**Standard range*

"Table of minimum and maximum achievable values as a function of retention height".