



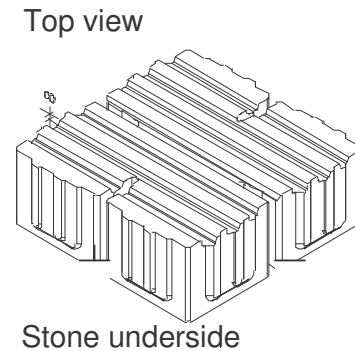
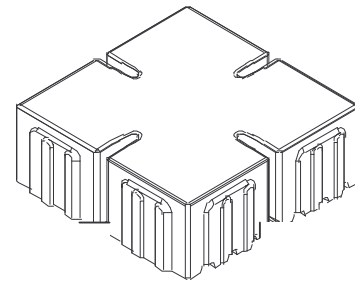
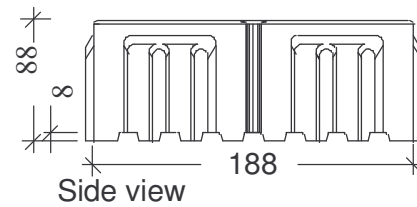
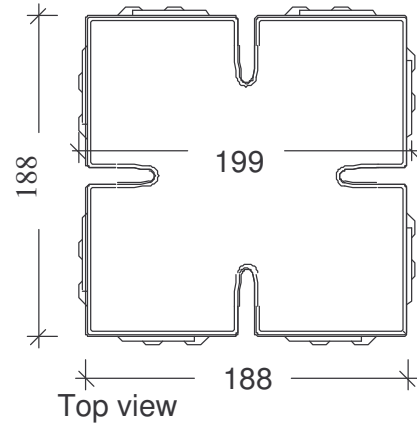
VS 5™ DRAIN

(all dimensions in mm)

Permeable paving system with shift protection and drainage openings for road surfaces

Shape and dimensions

Grid size	200 mm x 200 mm
Size	188 mm (±2 mm)
Outside dimension	199 mm (±2 mm) (incl. spacing aids)
Thickness	80 mm (±3mm)
Stone thickness, overall	88 mm (±2mm) (including profiling on underside)
Opening proportion	approx. 10 % drainage openings
Joint width	visible: 12 mm
Chamfer	1 mm vertical, 3 mm horizontal
shift protection support	7 mm interlocking spacer support for shift resistance
Top side	according to plan, even
Stone side	according to plan, even with interlocking protection support
Underside	profiled, 8 mm



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Permeable paving system with shift protection and drainage openings for road surfaces

Installation tips

Stone requirement

25 stones/m²

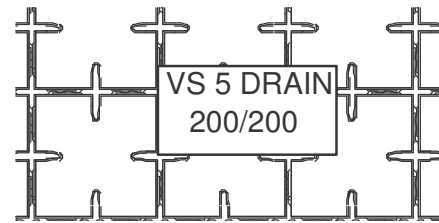
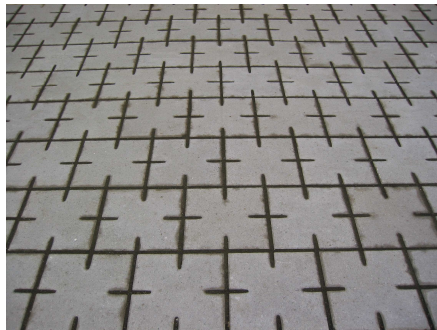
Application

Permeable pavement for vehicle or pedestrian traffic in private, commercial or public areas. For public surfaces with light and slow traffic, walkways and cycle paths.

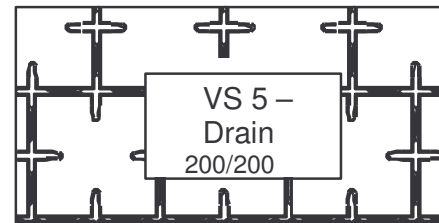
VS5 DRAIN is not suitable for frequent heavy truck loads.

The best possible shift protection is achieved by laying in stretcher or half-bond patterns. The profiling on the underside should run in the main traffic direction.

Recommended Installation pattern



Cross-joint pattern (for non-trafficked surfaces)



Installation in half-bond, stretcher pattern

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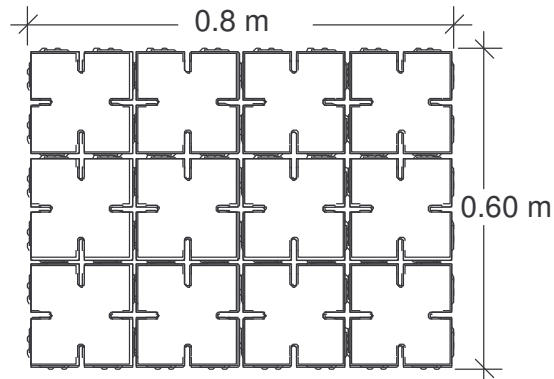
Permeable paving system with shift protection and drainage openings for road surfaces

Shipping formations

VS 5 DRAIN can be installed manually or by machine.

Shipping formation

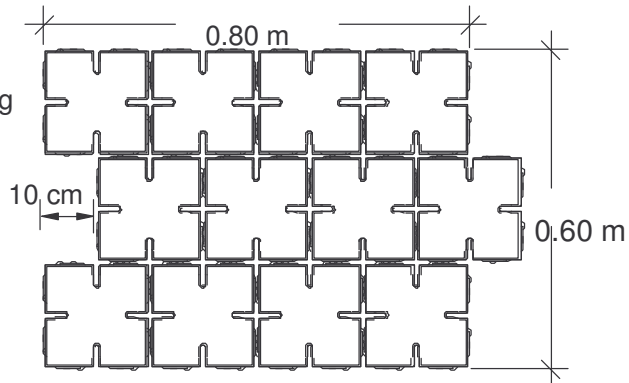
Shipping formation with 12 stones in cross bond



Shipping formation in cross bond

Trafficked areas

For a better interlocking performance, half-bond laying is to be recommended.



Stone row shifting in the laying caliper.

Mechanical laying in trafficked areas

With machine installation, clamps with automatic row adjustment should be used or the adjustment should be done manually.

The shifting degree should be adjusted carefully by prior testing.

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Drainage capability

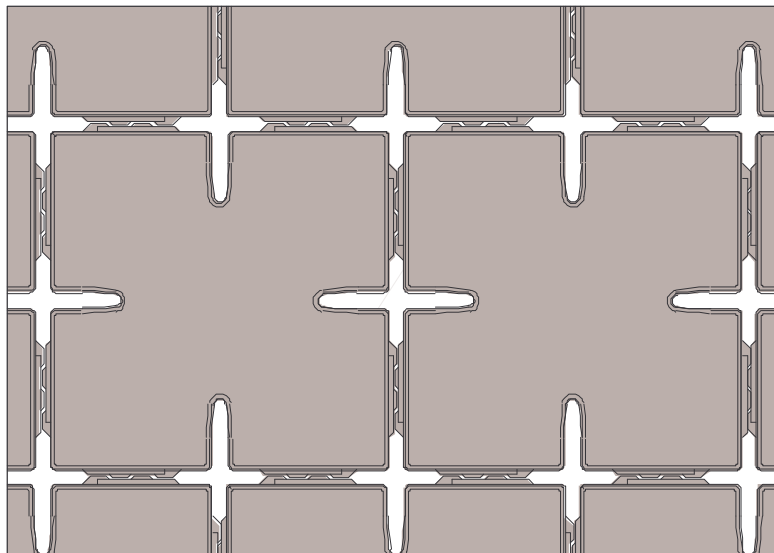
VS 5 DRAIN

Permeable paving system with shift protection and drainage openings for road surfaces

References for design

VS 5 DRAIN 200 x 200 offers high drainage performance due to its high opening proportion of approx. 10%.

The prerequisite for this is the use of suitable joint and bedding material.



approx. 10 % joint proportion

High drainage capability

With the VS 5 DRAIN, the precipitation amounts of the reference rain of 270 l/(s x ha) (3 inches/hour) for the construction of water permeable road surfaces can also be completely drained, even in the long-term, if the correct aggregates are used for joints, bedding and base layer and the basic principles for regular execution of construction work are complied with. Notes on the planning and execution of construction work on the following page.

VS 5 DRAIN is not intended to be used as a grass/turf pavement.

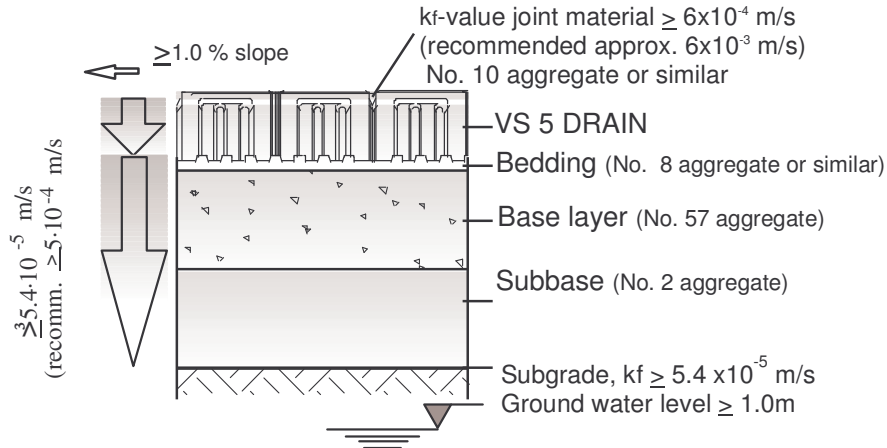
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VS 5 DRAIN

Permeable paving system with shift protection and drainage openings for road surfaces

Construction



Construction design of permeable pavements

Joint material

The water permeability k_f of the joint material must be at least 6×10^{-4} m/s. A 1/3mm broken aggregate with a k_f -value of approx. 6×10^{-3} m/s is recommended. (No. 10 aggregate or similar).

Bedding material

The water permeability k_f of the bedding material must be $\geq 5.4 \times 10^{-5}$ m/s. A 1/5 mm or 1/3 mm broken aggregate with a k_f -value of approx. 5×10^{-4} m/s is recommended. (No. 8 aggregate or similar).

Base and subbase layers

The water permeability k_f of the base and subbase layer must be at least 5.4×10^{-5} m/s. A permeability value of 5.4×10^{-4} m/s is recommended, composed of 0/32 or 0/45 mm broken aggregate with a max. fines content of 5% mass (≤ 0.063 mm grain diameter) in the delivery condition. For the grain composition, the lower area of the sieve lines is to be aimed for. The deformation modulus E_{V2} must not exceed 120 MN/m^2 , with a ratio E_{V2}/E_{V1} of between 2.2 und 2.5. In the case of higher individual loads, bound water permeable base layers with filter fleece can also be used.

Subgrade and sub-soil

The sub-grade and the sub-soil must be prepared with a sufficient gradient and water permeability. The distance to the highest groundwater must be at least 1.0 m.

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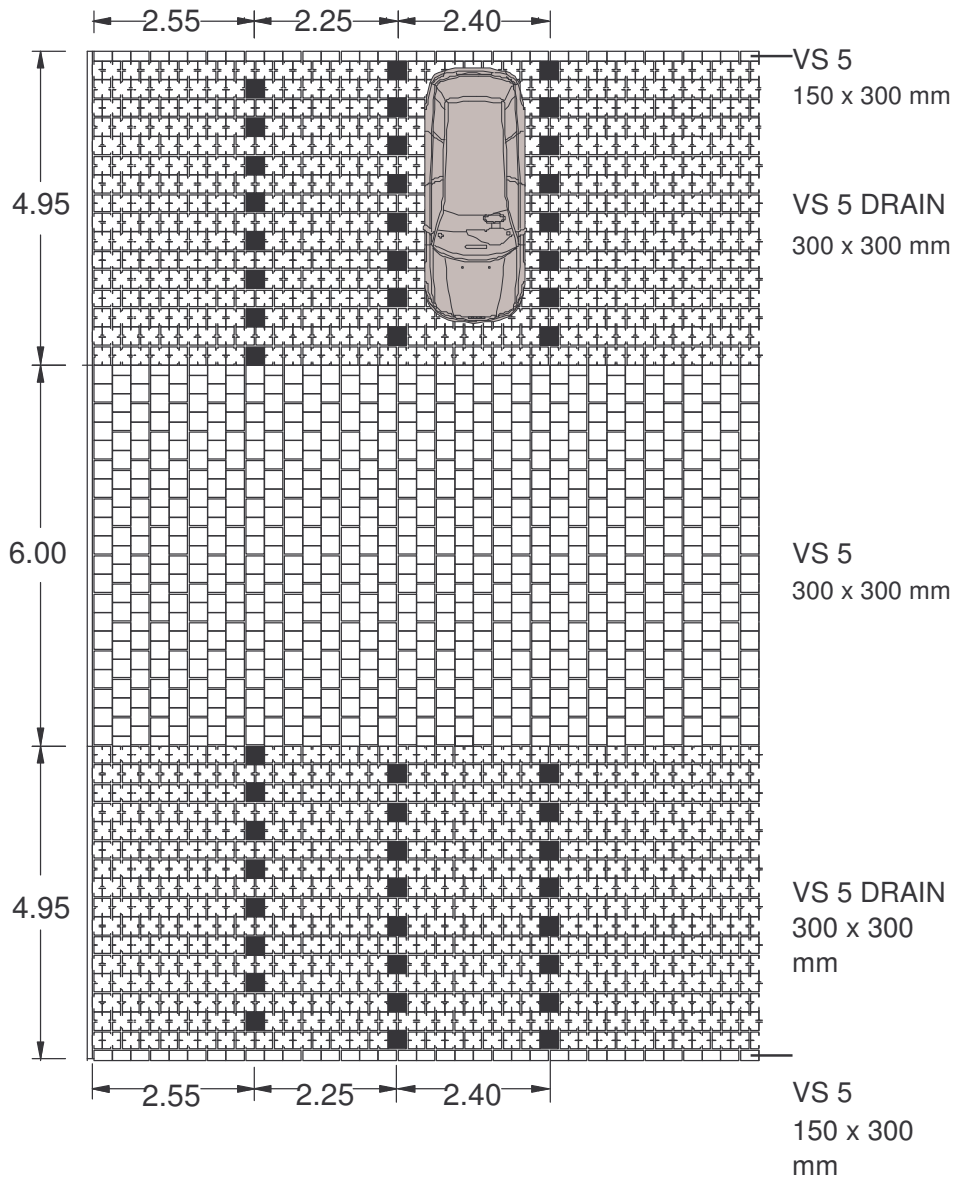


VS 5 DRAIN

Permeable paving system with shift protection and drainage openings for road surfaces

Parking lot with bays of varying widths (Example: VS 5 Drain 300 x 300)

Example of Parking lot Design



Info sheet technical data

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**Product
data sheet**

VS DRAIN

**Permeable paving system with shift protection
and drainage openings for road surfaces**

VS 5 DRAIN 288 / 288 / 100	
	Regular stone
Sizes and tolerances - Length [mm] - Width [mm] - Thickness [mm]	188 ±2 188 ±2 80 ±2
Grid size [mm]	200
Stone size [mm] Stone thickness overall [mm]	188 / 188 / 80 88 ±2
Joint ratio	approx. 10 %
Chamfer	1 mm vertical, 3 mm horizontal
Spacer	Projection size: min 4 mm, max 7 mm
Conicity	according to plan, none, max. 1 mm
Top side	according to plan, even
Underside	profiled
Lateral surfaces	according to plan, even with spacer
Colors	in accordance with manufacturers specification
surface treatment	in accordance with manufacturers specification
Composition and Manufacture	VS 5 Drain is made of a “no slump” concrete mix. Compressive strength is greater than 8000 psi, a water absorption maximum of 5% and will meet or exceed ASTM C-936 and freeze-thaw testing per Section 8 of ASTM C-67.

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