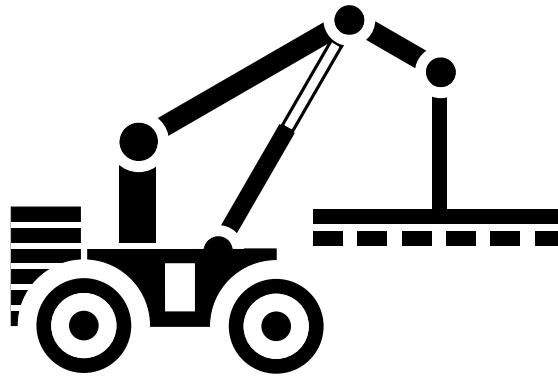
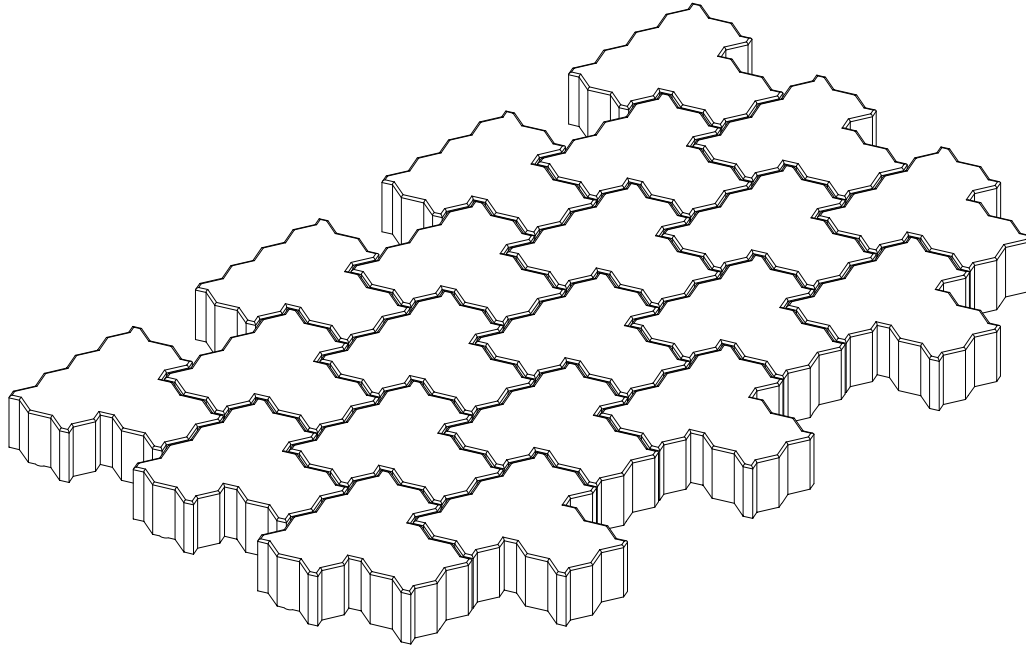




# Matoro<sup>®</sup>-T



Updated: 05/03/2002

## Data sheet

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<b>Matoro<sup>®</sup>-T</b>		<b>Sheet</b>
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	Product group	Date
<small>Datenblatt-MatoroT-eng.fm Freeseemann / Köster</small>	<b>Interlocking Paving and Shaped Stones</b>	<b>05.03.02</b>



<b>General Information</b> Product	<b>Matoro<sup>®</sup>-T</b>		
	Interlock pavement with edging stones, 2/3 and 1/3 stones, and beginning and end stones		
Material	Concrete		
Construction grid (see sketch 3)	Full stone:	224 x 112 (224) mm	
	Edging stone:	224 x 112 (168) mm	
	2/3 stone:	224 x 112 mm	
	1/3 stone:	112 x 112 mm	
	Beginning and end stone:	224 x 112 mm	
Tolerances	Length $\pm$ 3mm Width $\pm$ 3 mm Height $\pm$ 5 mm		
Weight (for stone heights of 80 mm and 100 mm)		H = 80 mm	H = 100 mm
	Full stone:	about 6.5 kg	about 8.1 kg
	Edging stone:	about 5.6 kg	about 7.0 kg
	2/3 stone:	about 4.4 kg	about 5.5 kg
	1/3 stone:	about 2.2 kg	about 2.8 kg
	Beginning and end stone:	about 4.4 kg	about 5.5 kg
Requirement (including joint)	Full stone:	about 26 stones/m <sup>2</sup>	
	Edging stone:	about 4.4 stones/m (31 pieces/m <sup>2</sup> )	
	2/3 stone:	about 3 stones/m (about 39 pieces/m <sup>2</sup> )	
	1/3 stone:	about 3 stones/m (about 78 pieces/m <sup>2</sup> )	
	Beginning and end stone:	about 4.4 stones/m (about 39 pieces/m <sup>2</sup> )	
Marking	"S" - marking on one stone per production unit (as per manufacturer)		
Quality standards	according to DIN 18501, paving stones made of concrete (version 11/82) according to EN/DIN 1338 (expected in 2002/2003) for public and commercial traffic areas of the classes K, D, H, Y		
Copyrights and patent protection	European patent No. 0228496 Matoro is a registered brand of SF-Kooperation GmbH		
Intended use	Streets, urban spaces, industrial areas, generally high-traffic areas (RstO from building class III)		
Installation	Mechanical and manual installation should be performed by expert personnel in accordance with applicable health and safety protection regulations.		
	Product	Sheet	
	Matoro-T	2 from 15	
	Product group	Date	
	Interlocking Paving and Shaped Stones	05.03.02	

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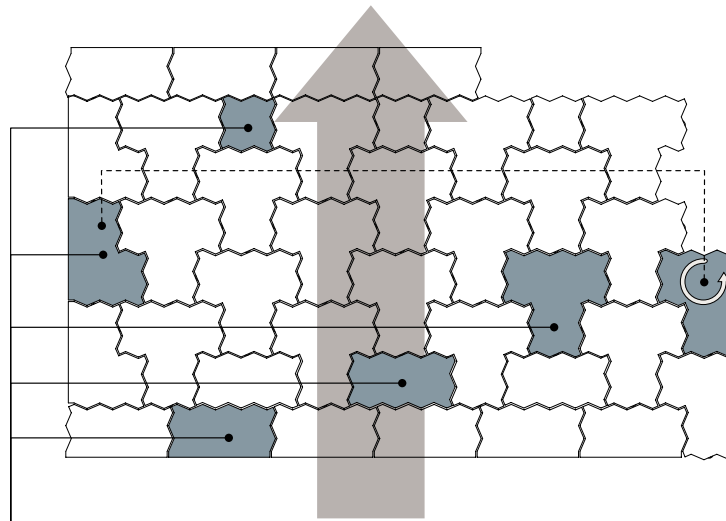


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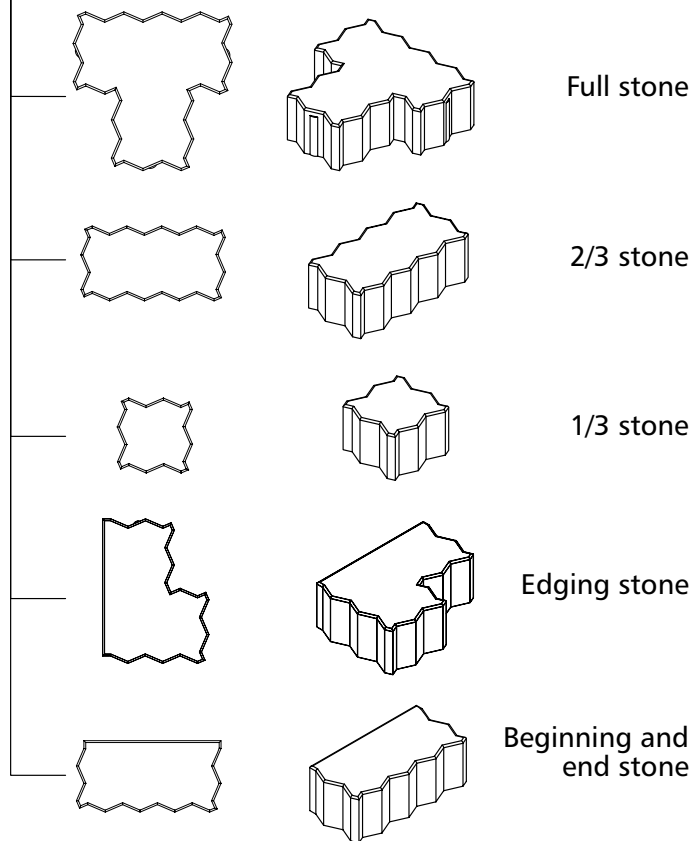
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# Matoro-<sup>®</sup>T

System solution



Sketch 1



Product

**Matoro-T**

Sheet

**3 from 15**

Product group

**Interlocking Paving and Shaped Stones**

Date

**05.03.02**



# Matoro-T<sup>®</sup>

**Product**

Matoro-T is especially suited for mechanical installation because it provides secure clamping and simple installation even with large installation units.

**Product description**

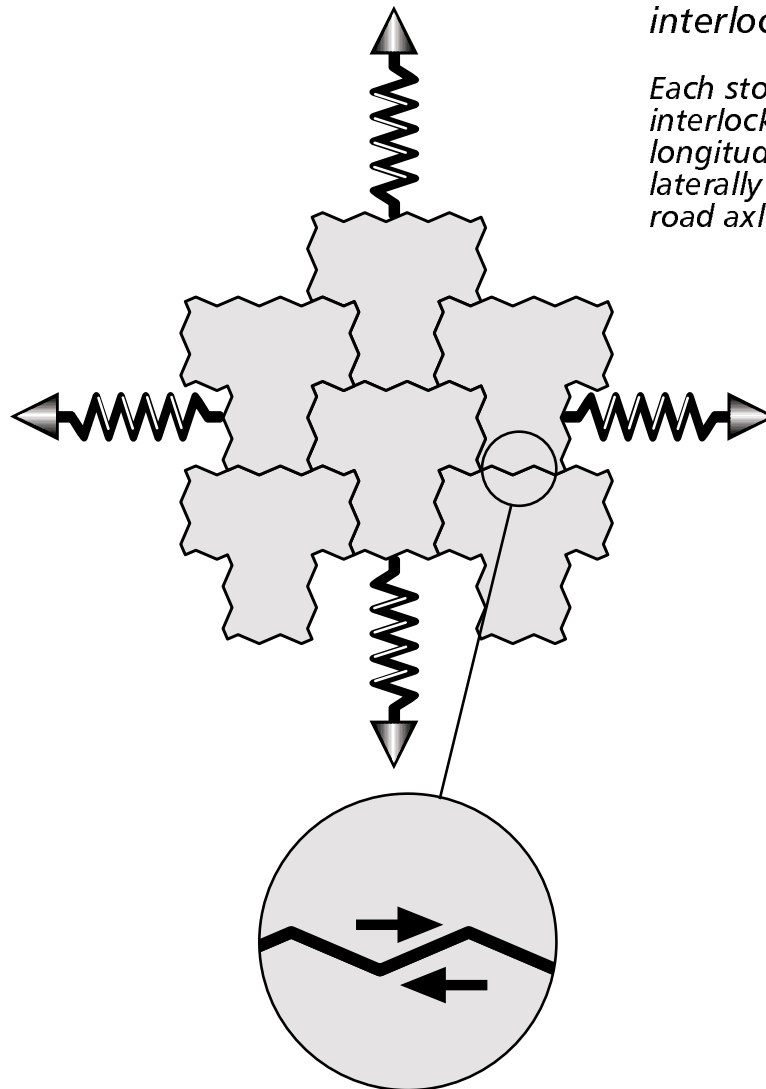
Two-dimensional interlock effect with solid meshing and stable linking in all directions, also between the individual installation units. Staggered stones are able to withstand heavy loads while exhibiting a harmonious, technically flawless appearance.

The Matoro-T pavement is a complete program that consists of the single stones, as illustrated in sketch 1 on sheet 3. Matoro-T thereby enables an extensive solution system.

*Two-dimensional interlock effect!*

*Each stone is securely interlocked both longitudinally and laterally relative to the road axle.*

Sketch 2



Product

**Matoro-T**

Sheet

**4 from 15**

Product group

**Interlocking Paving and Shaped Stones**

Date

**05.03.02**

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# Matoro-T<sup>®</sup>

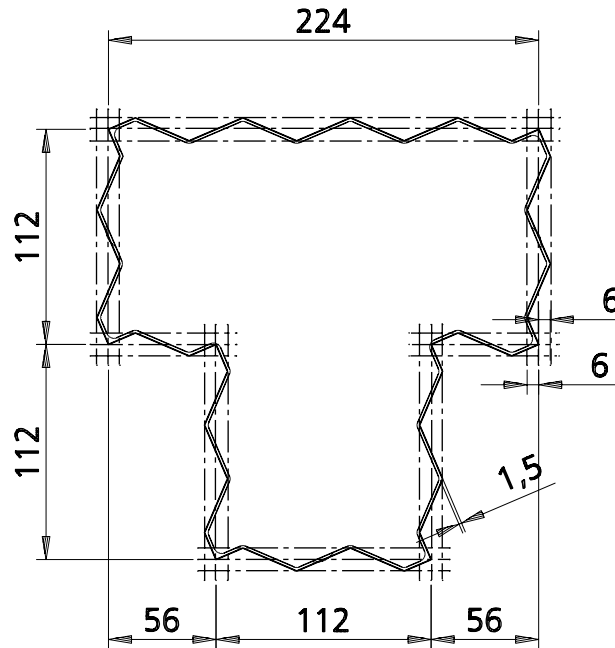
All dimensions in mm

Product

Product description

Construction grid

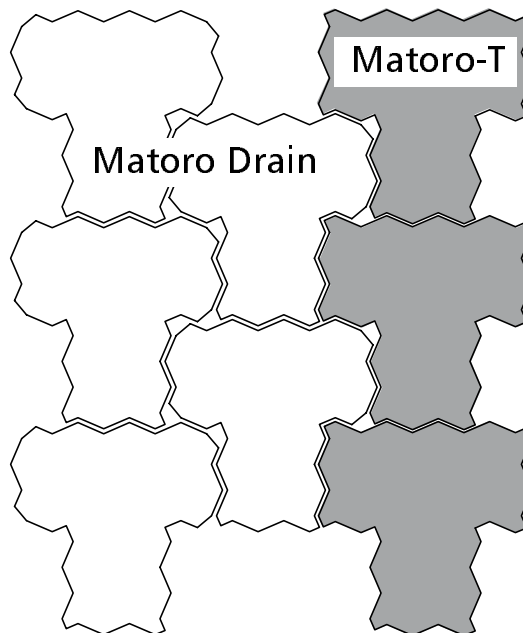
Sketch 3



The grid in sketch 3 details the construction of Matoro-T. It is possible to integrate the Matoro Drain.

Combining Matoro-T with Matoro Drain

Sketch 4



Product

Matoro-T

Sheet

5 from 15

Product group

Interlocking Paving and Shaped Stones

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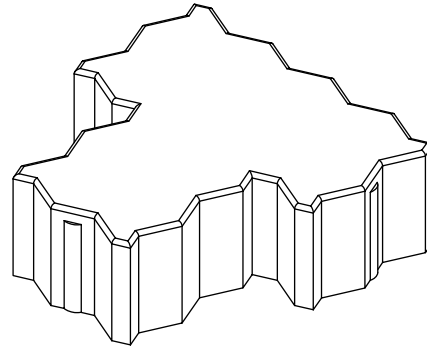
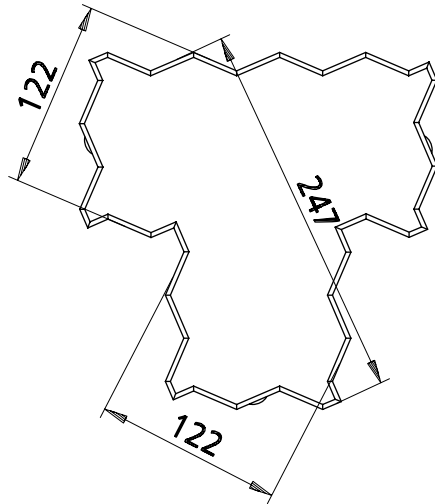
# Matoro-T<sup>®</sup>

All dimensions in mm

Single stones  
(Stone heights: 80 or 100 mm)

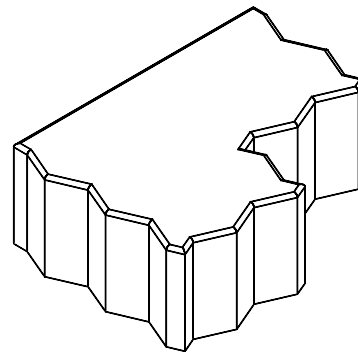
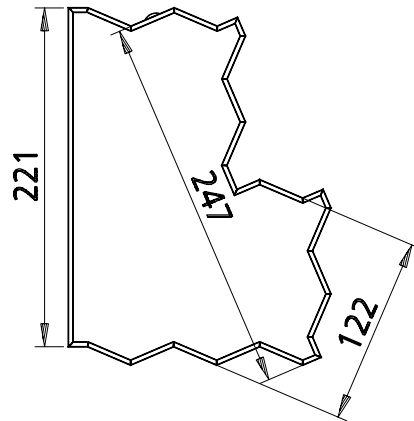
Full stone Dimensions

Sketch 5



Edging stone Dimensions

Sketch 6



Dimensioned drawings of the products are available as an aid for producing moulds.

	Product <b>Matoro-T</b>	Sheet <b>6 from 15</b>
Datenblatt-MatoroT-eng.fm Freeseemann / Köster	Product group <b>Interlocking Paving and Shaped Stones</b>	Date <b>05.03.02</b>

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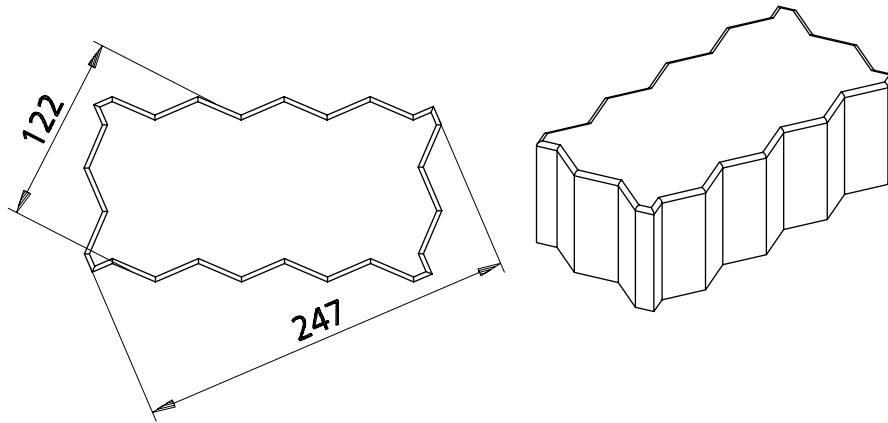
# Matoro-T<sup>®</sup>

All dimensions in mm

Single stones

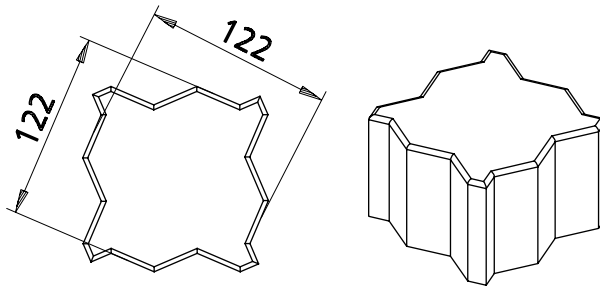
2/3 stone Dimensions

Sketch 7



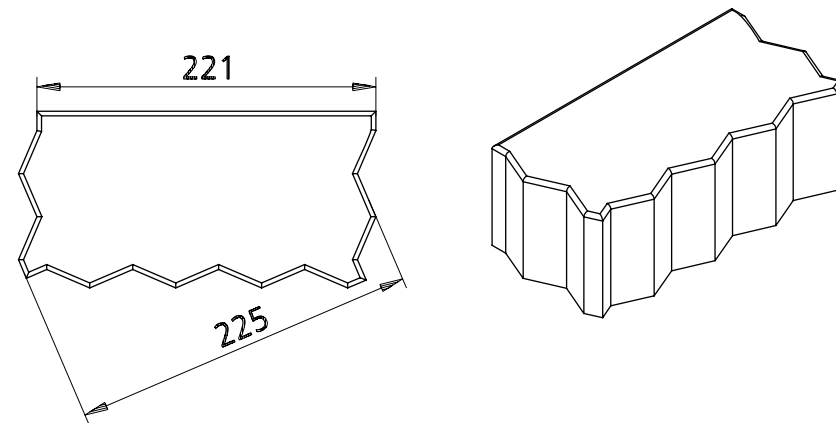
1/3 stone Dimensions

Sketch 8



Beginning and end stone Dimensions

Sketch 9



Dimensioned drawings of the products are available as an aid for producing moulds.

	Product <b>Matoro-T</b>	Sheet <b>7 from 15</b>
Datenblatt-MatoroT-eng.fm Fresemann / Köster	Product group <b>Interlocking Paving and Shaped Stones</b>	Date <b>05.03.02</b>

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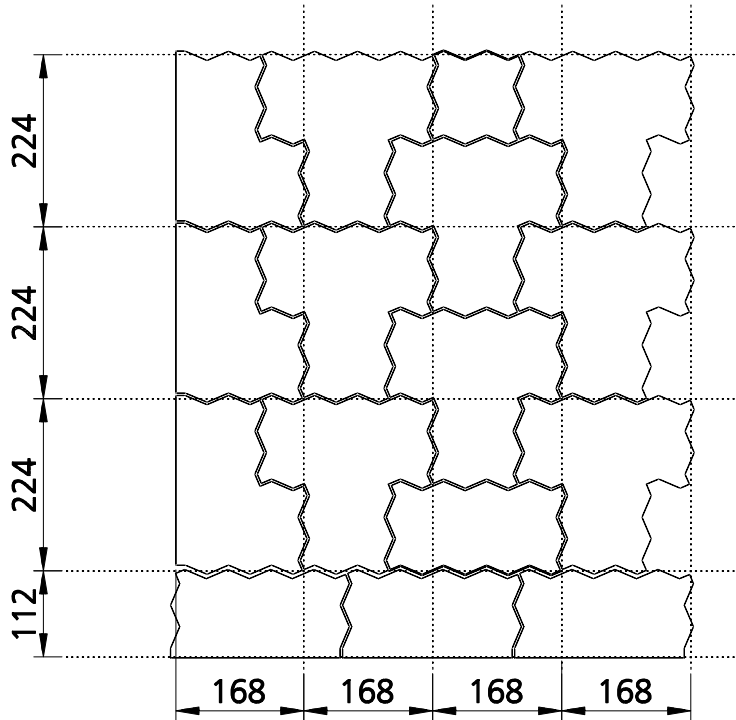
# Matoro-T<sup>®</sup>

All dimensions in mm

Grids

Grid sizes

Sketch 10



Sketch 10 depicts the grid sizes of a completed Matoro-T surface. The dimensions on the grid drawings extend from "joint center to joint center". The joint width of this product is about 3 mm.

	Product <b>Matoro-T</b>	Sheet <b>8 from 15</b>
Datenblatt-MatoroT-eng.fm Freesemann / Köster	Product group <b>Interlocking Paving and Shaped Stones</b>	Date <b>05.03.02</b>

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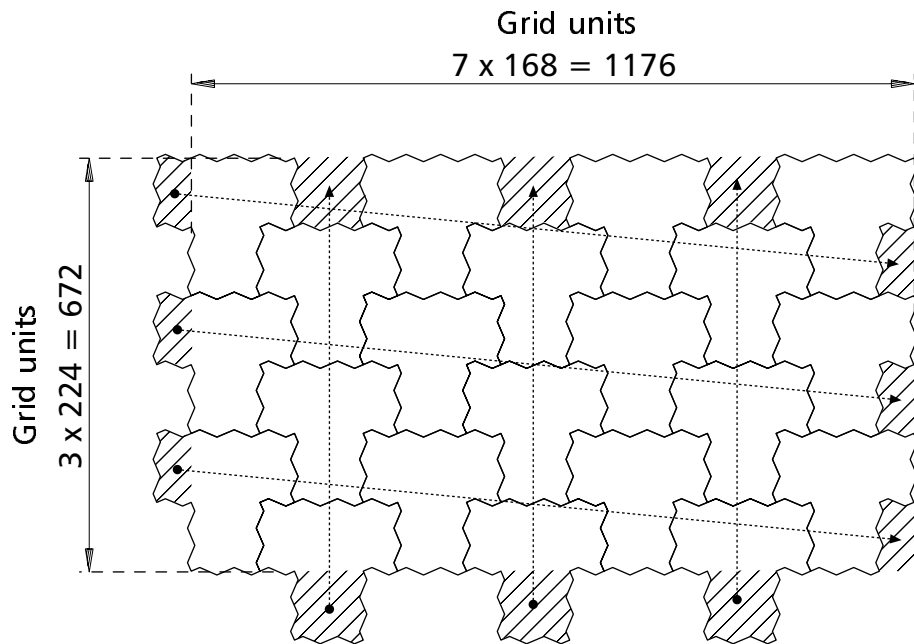
# Matoro-T<sup>®</sup>

All dimensions in mm

**Installation**

Installation unit  
(21 stones)

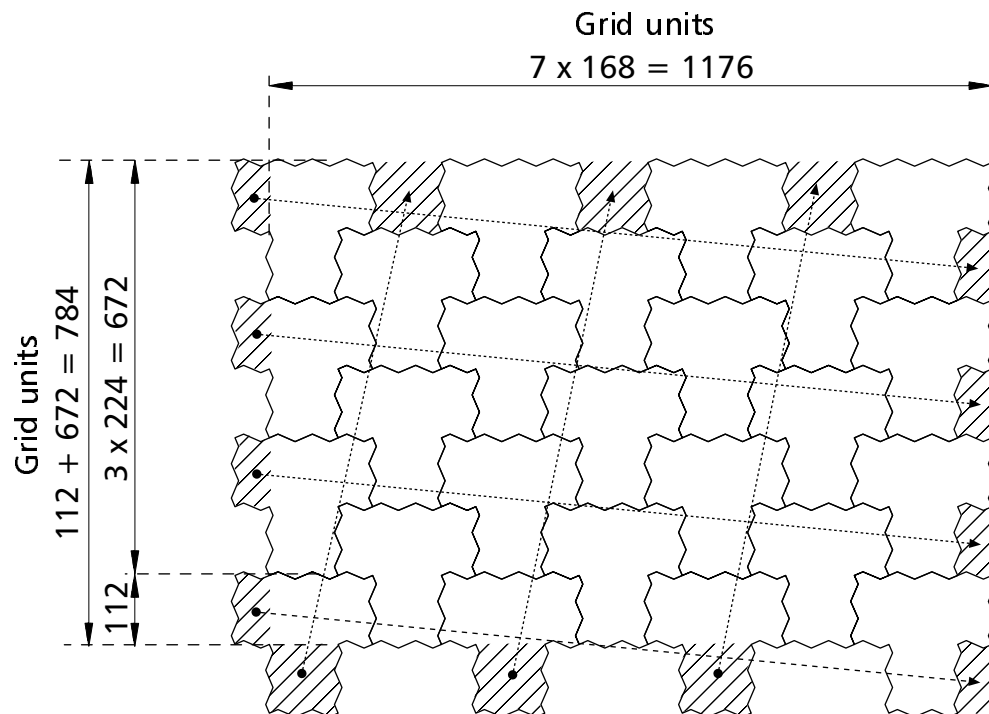
Sketch 11



The installation unit depicted in sketch 11 is produced using the SF Kooperation rental mould.

Alternative installation unit  
(25 stones)

Sketch 12



Product

Matoro-T

Sheet

9 from 15

Product group

Interlocking Paving and Shaped Stones

Date

05.03.02

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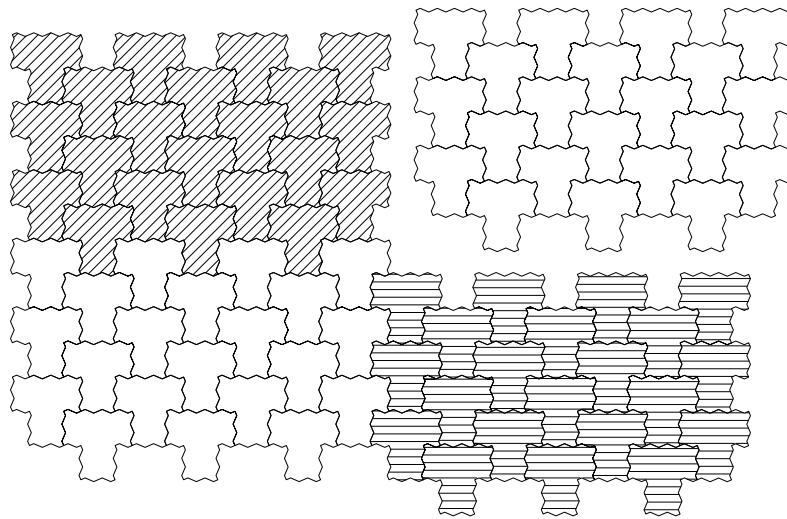
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# Matoro-T<sup>®</sup>

## Installation

Interlock effect between the individual installation units



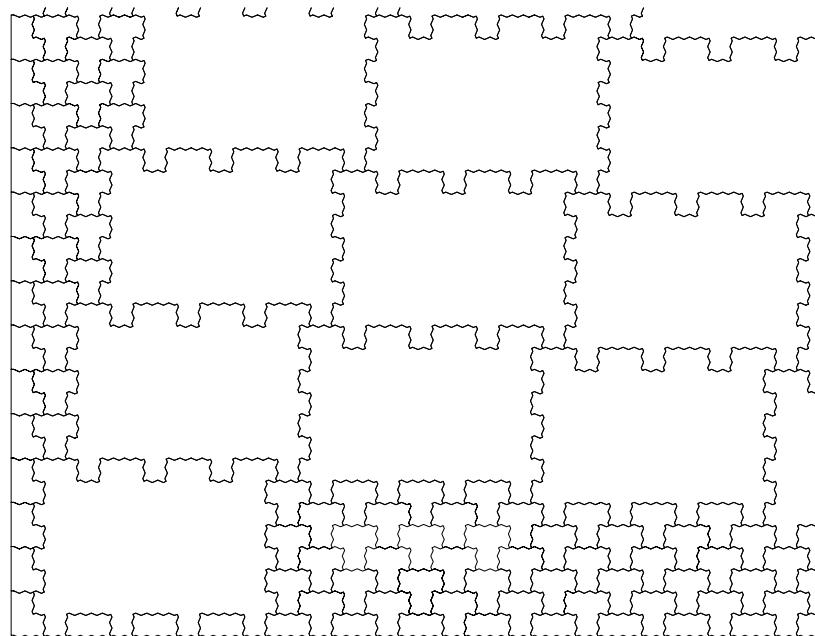
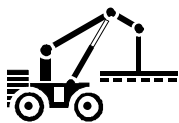
Sketch 13

Sketch 13 illustrates that there is also an interlock effect between the individual Matoro-T installation units. This design avoids the creation of "continuous joints" that would considerably reduce the appearance and stability of the entire surface.

Installing the individual units

It is not possible to lay the Matoro-T installation units bluntly next to each other. Instead, they must be "linked" together. This method of installation establishes the interlock effect across the individual installation units in the entire surface.

Sketch 14



Product

**Matoro-T**

Sheet

**10 from 15**

Product group

**Interlocking Paving and Shaped Stones**

Date

**05.03.02**

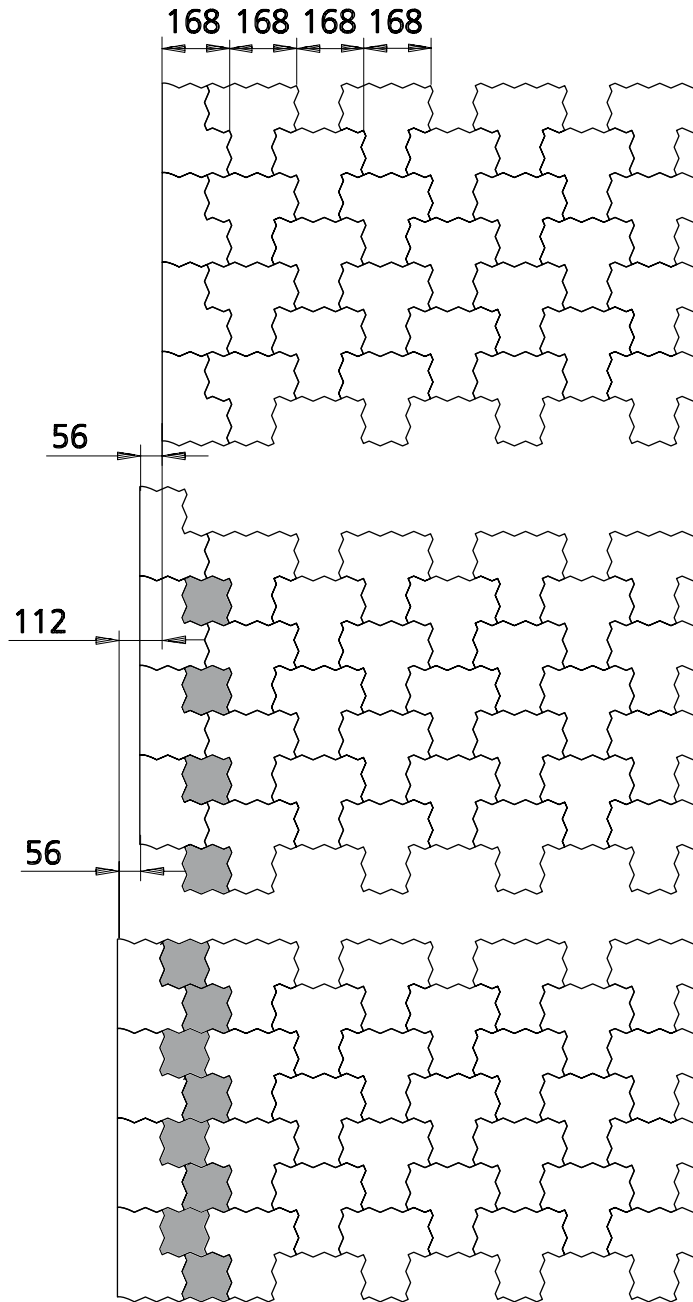


# Matoro-T<sup>®</sup>

All dimensions in mm

Installation  
Edgefinish

Sketch 15



To reduce time intensive cutting at the edge of a pavement surface, Matoro-T can be installed by inserting 1/3 stones at the edge with a very small grid size of 56 mm.

	Product <b>Matoro-T</b>	Sheet <b>11 from 15</b>
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## Sales arguments

**Matoro-T<sup>®</sup>****Marketing aids****Installation units that conform to standards do not contain partial stones**

Matoro-T installation units do not contain partial stones. They contain only full stones – and only this type of installation unit conforms with the standard (VOB part C / DIN 18318). This is what makes Matoro-T installation units different from the installation formations that have existed up to this time.

**Interlock effect in two directions: Stability when installed**

Matoro-T is an interlocking pavement stone with a two-dimensional interlock effect. The horizontal interlocking effect prevents individual stones from turning and tilting even under the load of heavy automobiles. Even under difficult conditions, the individual stones remain stable in their positions.

**Interlocking effect in the entire pavement surface**

Matoro-T creates an interlocking effect not only between single stones, but also among the installation units in the entire pavement surface (from edge to edge). This interlocking effect is possible only due to the fact that the installation units do not contain partial stones.

**Mechanical installation and installation for complete interlocking**

It is not possible to install Matoro-T by placing the installation units bluntly next to each other. Instead, they must be interlinked with each other as installation progresses. Unlike other products, additional manual adjustments like exchanging or turning individual stones, are not necessary with Matoro-T.

**Easy installation**

There are no spacers on the outer edge of the installation units in order to ensure that mechanical installation can proceed as rapidly and easily as possible. This is what makes installation of Matoro-T installation units as quick and easy as possible.

	Product	Sheet
	<b>Matoro-T</b>	<b>12 from 15</b>
<small>Datenblatt-MatoroT-eng.fm Fresemann / Köster</small>	Product group	Date
	<b>Interlocking Paving and Shaped Stones</b>	<b>05.03.02</b>



Sales arguments	<h1 style="text-align: center;">Matoro<sup>®</sup>-T</h1> <h2 style="text-align: center;">Marketing aids</h2> <p><b>Pavement surface quality increases by 100% while total costs increase by less than 1%.</b> Even when installing only 5,000 m<sup>2</sup> per year, the installation costs will be only about 2,81 €/m<sup>2</sup>. A 10% increase in installation costs equals 0,28 €/m<sup>2</sup>. The total cost of a complete industrial surface is about 38,35 €/m<sup>2</sup>. The increased cost of 0,28 €/m<sup>2</sup> is only 0.73% of this amount.</p> <p>However, by spending about 0.75% more, the owner of the property will receive an industrial pavement of considerably higher quality.</p> <p><b>System solution with edging stones and expansion stones</b> Edging stones, beginning and end stones, as well as 1/3 and 2/3 stones (all designed to fit with Matoro-T full stones) are available for special applications and expansions.</p> <p><b>Uncomplicated shape – clear pavement pattern</b> The uncomplicated T-shape of Matoro-T creates a clearly structured, orderly pavement pattern.</p> <p><b>Low-noise surface</b> The geometry of Matoro-T ensures that all vehicles travel diagonally to the bed joint. This results in a lower level of rolling noise than if vehicles would travel perpendicularly to the bed joint. The chamfer (specially adapted to the application type) and the practice of installing the pavement in accordance with accepted standards with a joint of 3 – 5 mm are others reasons for the low noise level – whether caused by cars in parking areas, commercial vehicles at logistics centers, or even by shopping carts at a supermarket.</p> <p><b>Possible combinations with Matoro-Drain</b> It is easy to integrate Matoro Drain into Matoro-T. Install both stones in the same grid size. Matoro Drain is a T-shaped composite pavement stone for drained joint pavements. The drain stone has seep openings on four corners of the stone. The expanded joints for these stones are filled with grit 1/3 mm, making them water-permeable.</p>	
	Product <b>Matoro-T</b>	Sheet <b>13 from 15</b>
<small>Datenblatt-MatoroT-eng.fm</small> Freeseemann / Köster	Product group <b>Interlocking Paving and Shaped Stones</b>	Date <b>05.03.02</b>

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## Safety and Health Notes

Matoro-T<sup>®</sup>

## Notes regarding safety and health protection

When installing Matoro-T, always observe the stipulations of the "Arbeitsschutzgesetz" [worker safety law] and the "Verordnung über Sicherheit und Gesundheitsschutz auf Baustellen" [Ordinance on Safety and Health Protection at Construction Sites].

This also includes implementation of the EC guideline 90/269/EWG with regards to safety and health protection during manual handling of loads. Also applicable is "Beurteilung von Lasthandhabungen anhand von Leitmerkmalen" [Judging Load Handling Work on the Basis of Certain Characteristics] according to "Handlungsanleitung zur Beurteilung der Arbeitsbedingungen beim Heben und Tragen von Lasten, LV9, des Länderausschusses für Arbeitsschutz und Sicherheitstechnik" [Instructions for Judging Working Conditions During Lifting and Carrying of Loads, LV9, of the Regional Committee for Worker Protection and Safety Mechanisms]:

Time weighting	Regular repetition of short lifting and moving procedures	Work in m <sup>2</sup>	Continuous carrying or holding over long periods of time
1	< 10 times per shift	up to 0.4 m <sup>2</sup>	Total duration < 30 min.
2	10 to < 40 times per shift	up to 1.5 m <sup>2</sup>	Total duration 30 min. to < 1 hr.
4	40 to < 200 times per shift	up to 7.7 m <sup>2</sup>	Total duration 1 hr. to < 3 hr.
5	200 to < 500 times per shift	up to 19 m <sup>2</sup>	Total duration 3 hr. to < 5 hr.
6	≥ 500 times per shift	from 19 m <sup>2</sup>	Total duration ≥ 5 hr.

Load weighting	Posture weighting	Execution weighting	Σ 1 - 3	x Time weighting	Point value
1	4	0	5	6	30
1	4	0	5	5	25
1	4	0	5	4	20
1	4	0	5	2	10
1	4	0	5	1	5

**Result:**

*Point value 30 and 25:*

Considerably elevated strain, possibility of bodily over-exertion even for normally resilient persons. Conformation measures are recommended.

*Point value 20 and 10:*

Elevated strain, possibility of over-exertion for persons of diminished resiliency. Conformation measures are advisable for persons in this category.

*Point value 5:*

Minimal strain, health endangerment due to bodily over-exertion is unlikely.

In general, employ mechanical installation if possible.

Product

Matoro-T

Sheet

14 from 15

Product group

Interlocking Paving and Shaped Stones

Date

05.03.02



**Literature references**  
Standards,  
guidelines,  
rules

# Matoro<sup>®</sup>-T

**Fundamentals for durable paving surfaces**, proper installation of concrete paving stones; with video, edition 01/1997 (currently out of print, will be updated).

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	Product <b>Matoro-T</b>	Sheet <b>15 from 15</b>
<small>Datenblatt-MatoroT-eng.fm Fresemann / Köster</small>	Product group <b>Interlocking Paving and Shaped Stones</b>	Date <b>05.03.02</b>