

**Smartfloor - Modular Floor System**

# Smartfloor installation & assembly instructions

## General view of the Smartfloor



**Modular floor system**



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## Foreword

Dear reader,

These Installation Instructions serve to provide all information required for a correct and safe installation of the Smartfloor. The Smartfloor is designed and constructed in accordance with state-of-the-art technology and recognised safety standards.

Inspect the underside of the vehicle floor and note wiring, cross members, frames, fuel tanks and other possible obstructions before beginning installation.

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## Guarantee

Only use original spare parts, hardware or spare parts which have been approved by the manufacturer.

If spare parts other than these are used, it can have a negative effect on the specified characteristics, the functionality and safety of the Smartfloor. Using non-original or unauthorised spare parts will render the guarantee null and void.

Contact us to order spare parts or accessories.

## 1. Safety

### Explanation of symbols and signs

To improve understanding, the following conventions should be met for these instructions:



**DANGER!**

Warns of a situation of immediate danger, which will lead to severe or fatal injuries if not avoided.



**WARNING!**

Warns of a potentially dangerous situation, which will lead to severe or fatal injuries if not avoided.



**CAUTION!**

Warns of a potentially dangerous situation, which will lead to slight or minor injuries or material damage if not avoided.



**ATTENTION!**

Indicates a potentially dangerous situation, which can cause material damage if not avoided.



Gives a reference to important information in other sections and documents.



Contains general notes and useful information.

### 1. Safety

The installation company itself is responsible for adherence to the safety regulations when installing the Smartfloor. Installation is carried out at the sole risk of the installation company. The manufacturer will accept no liability whatsoever for damage caused during installation of the Smartfloor. Unless such damage is caused by grossly negligent or intentional breach of contract on the part of the manufacturer. In addition to the information given in these installation instructions, local legislative regulations must be taken into consideration, in particular those regarding safety and accident prevention.

#### Documents

In addition to this manual, the following documents and additional documents are available on the Smartfloor website download section:

- The Sika Aktivator 205, safety data sheet
- The Sikaflex 552 AT, safety data sheet
- The SikaSense 4615, safety data sheet



#### 1.1 Intended use

The Smartfloor described in this manual is only intended for vehicle floor conversion.

Intended use also requires that:

- All data in this manual is observed and understood.
- All safety instructions are observed and understood.
- Floor must be installed over the entire width of the vehicle and travel direction.
- All supplied installation materials must be used.



*Incorrect installation of this product can lead to damage or even personal injury!*

This product may not be used when:

- Any malformation to the product or damage have been discovered.
- Product parts are incomplete.

#### 1.2 Personnel requirements

The Smartfloor must only be installed by Smartfloor trained and certified personnel:

- Who have read and understood these installation instructions.
- Of whom it can be expected, that they will execute the job entrusted to them in a responsible and reliable manner.
- Who have been expressly assigned by the vehicle's owner to install the Smartfloor.

## 2. Product description

### 2.1 General description

Smartfloor is the leading supplier in Europe for robust, durable lightweight floor components and accessories for minibus taxis. Smartfloor offers safe and flexible solutions for all makes and models. Ingenious attachment technologies allow minibus taxis to be switched over in no time at all from a standard multi-passenger to a wheelchair transportation configuration.

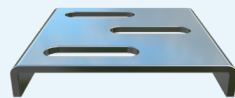
#### Modular floor system

The Smartfloor consists of several aluminium profiles that can be linked together. The length of the profiles is tailored to the length of the vehicles, in which the Smartfloor is installed. The profiles are connected to each other by the use of our assembly plugs.

#### Profiles

The Smartfloor consists out of the following types of profiles and hardware:

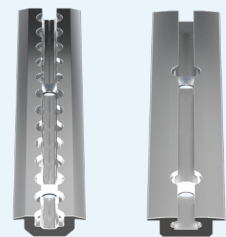
- Basics
- Double Basics
- Single Basics
- Spacers
- End Profiles
- Lock Plate
- Plastic assembly plug



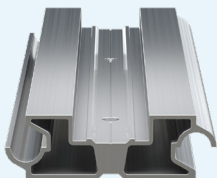
Lock Plate



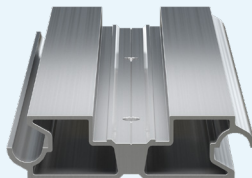
Plastic Assembly Plug



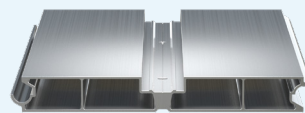
Airline Rail | Straight Rail



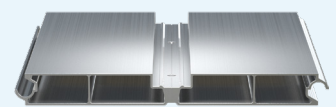
Basic 78



Basic 95



Single Basic 234



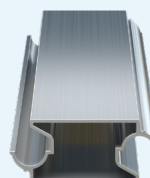
Single Basic 268



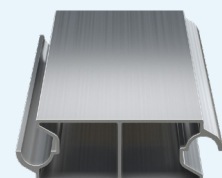
Double Basic 156



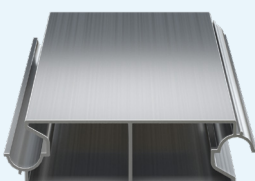
Double Basic 173



Spacer 51



Spacer 78



Spacer 95



Spacer 173



End-Profile



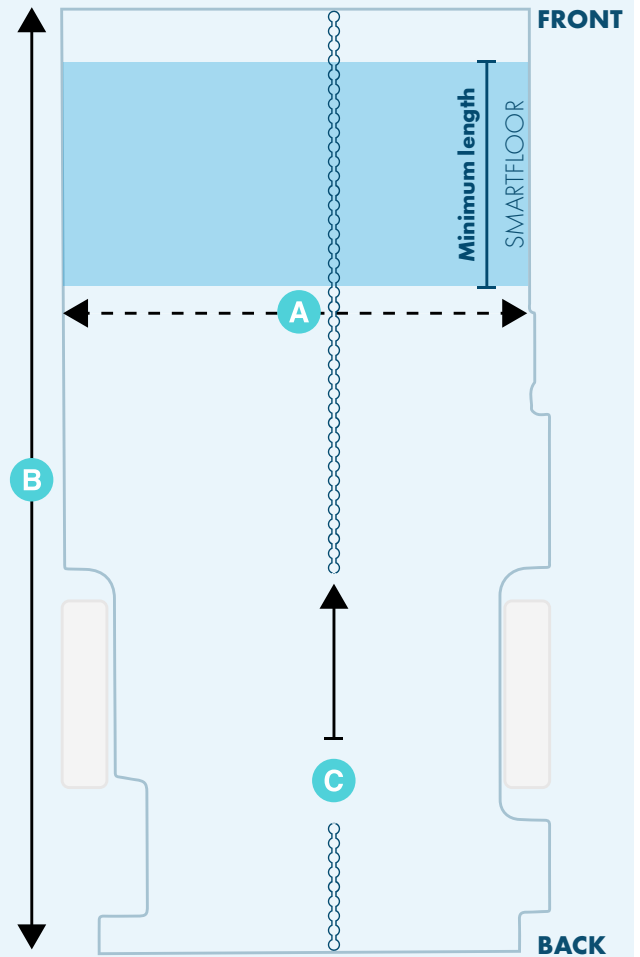
End-Profile

### 2. Product description

#### 2.2 Orientation & placement possibilities of the smartfloor

- The Smartfloor must be installed over the entire width of the vehicle floor (**A**).
- It is permitted to place the Smartfloor at any position over the entire vehicle length (**B**).
- The rail of the smartfloor must always point in the travel direction (**C**).

**i** The minimum Smartfloor length is determined by the type of vehicle and will be around 1 meter. For the specific length see the **R14** document of the vehicle.



Top-view vehicle floor with minimum length of the Smartfloor



Example of a pre-assembled Smartfloor



Example of a packaged Smartfloor construction kit

### 3. Installation

#### 3.1 Safety information for installation



**DANGER!**

Danger through use of unsuitable installation materials. Unsuitable installation materials are unable to withstand the traffic forces encountered during operation of the vehicle. Multiple risks of injury for passengers can arise as a result of this. Material damage can be caused. Therefore:

- Only use the installation materials provided for installation.



**DANGER!**

Danger through bolts becoming loose. If bolts are not tightened to the specified torque, they can loosen during operation of the vehicle. This can result in accidents being caused. Therefore:

- Tighten all fastening bolts to the torque specified in [section 3.7, page 12](#).
- If any of the vehicle's original bolts are loosened or removed for installation of the Smart-floor, they must be re-tightened to the torque specified by the vehicle manufacturer.



**ATTENTION!**

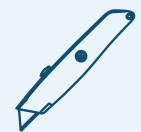
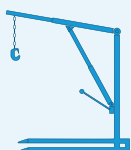
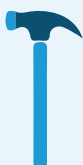
Material damage can be caused by incorrect installation. Therefore:

- Read these Installation Instructions thoroughly before installation, so that you are familiar with the entire installation procedure.

#### 3.2 Checklist before installation

**Tools needed:**

- |   |                              |
|---|------------------------------|
| 1. Hammer   | 7. Hoist crane ( preferred ) |
| 2. Tape measure   | 8. Hand gloves               |
| 3. Drill with bit size Ø 10,5mm                                       | 9. Jig saw ( if applicable ) |
| 4. Wrench/Torque wrench   | 10. Cleaning cloth           |
| 5. Caulking gun ( electric/air pressure, suitable for 600ml sausage ) | 11. Spirit level/Tri square  |
| 6. Steel rod  | 12. Knife ( carpet cutter )  |
|   | 13. Paint roller             |



### 3. Installation

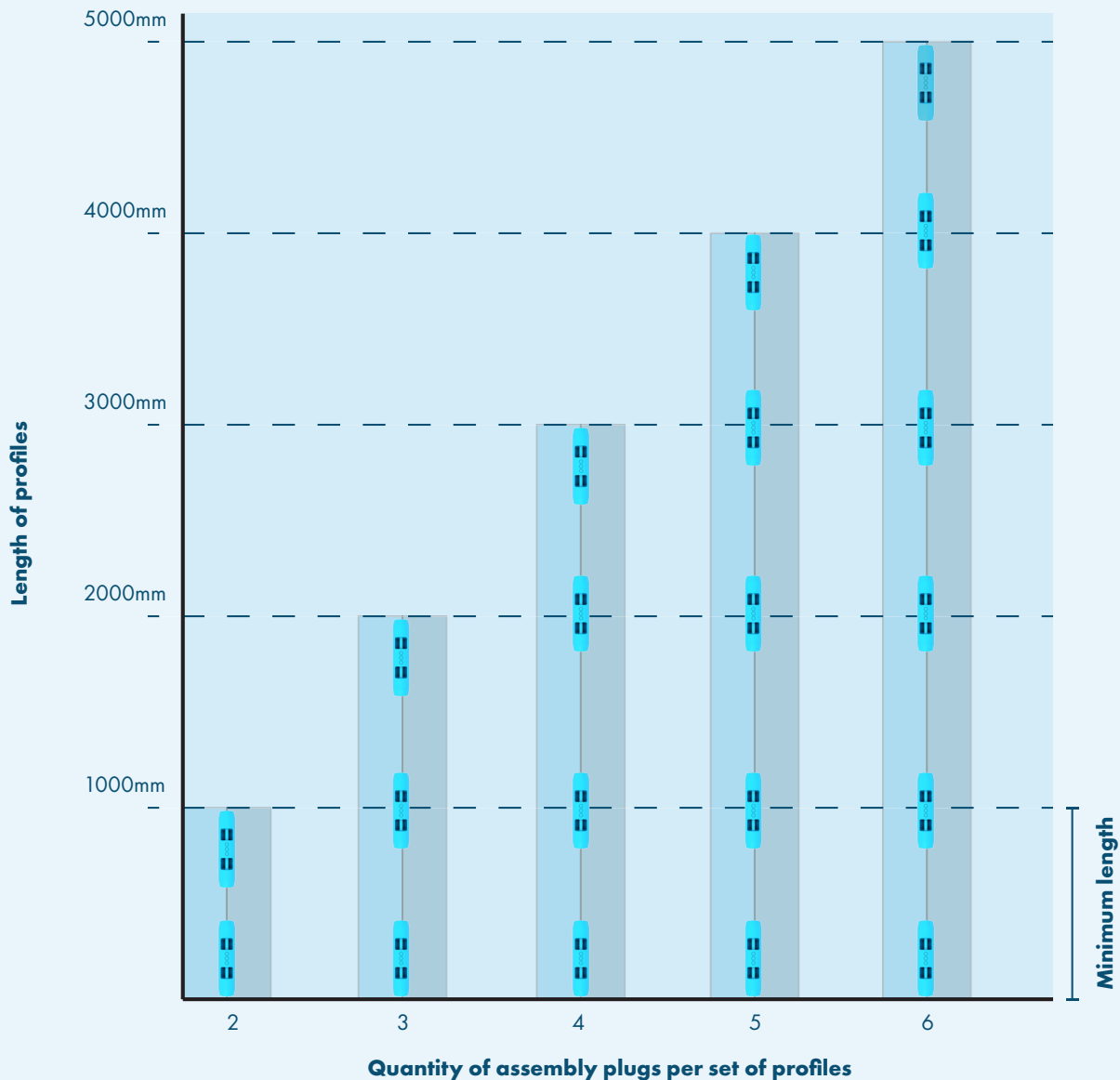
#### Installation materials:

Before starting installation, check the completeness of the supplied installation materials according to the floor drawings:

- ✓ Profiles & hardware
- ✓ Sika Aktivator 205
- ✓ Sikaflex 552AT
- ✓ Assembly plugs ( aluminium or plastic )
- ✓ Silicone sealant ( optional )
- ✓ Floor drawing of the Smartfloor
- ✓ Sika Sens 4615 ( vinyl glue )



*Do not forget to check the expiry date of the Sika products!  
Use these products according to the FIFO method. First in, first out!*



### 3. Installation

#### 3.3 Alignment of the profiles

The Smartfloor is made up of a number of specially designed profiles.

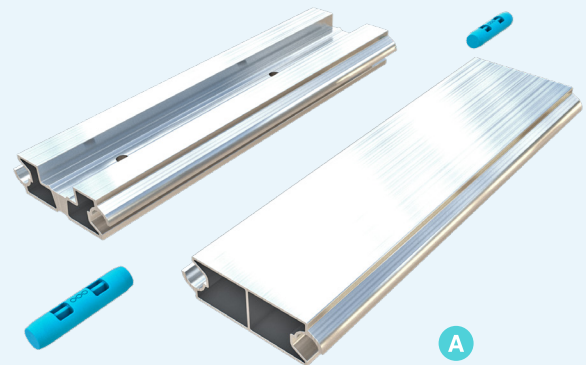
1. Check front and rear of panels, place back side towards you.
2. Position profiles in correct assembly order ( **A** ).

#### How to spot the rear of profiles:

- Left connection surface pointing upwards
- Right connection surface pointing downwards

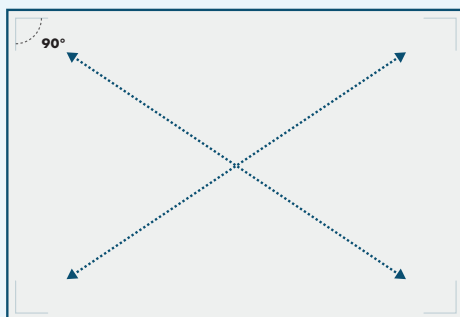


View rear profile

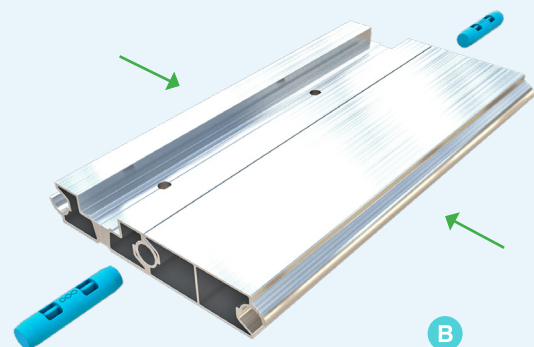


#### 3.4 Connecting the profiles

- Connect the profiles as shown in example ( **B** ).
- Check the perpendicularity of the floor after connecting all profiles and then place the Assembly Plugs.



Top-view floor shape with profiles



#### Inserting the Assembly Plugs

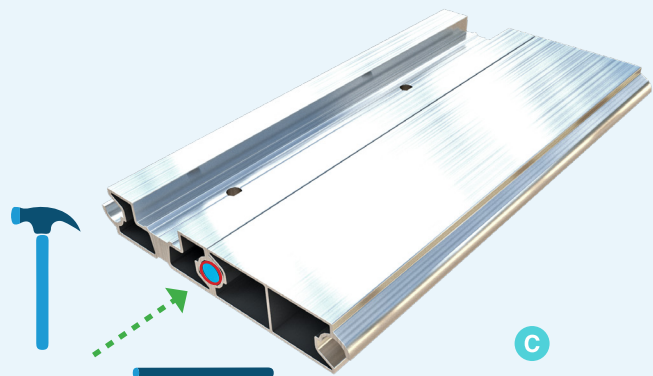
- Place the Assembly Plugs in the round openings formed by the profile connections ( **C** ).
- Hammer the plugs into the desired position, using a hammer and steel rod (see diagram on the previous page).



Check the diagram in [section 3.2 on page 9](#) for the correct positioning of the plugs and for the correct quantities to use.



It is also possible to place the Smartfloor into the vehicle in separate assembled parts. Keep in mind that this will also change the cleaning and gluing process into separate parts and the following steps!



### 3.5 Determine carpet size & glue applying

1. Roll out the chosen carpet to make a cut.
2. Cut off the length size needed for the Smartfloor (**A**).

#### The following steps apply to non self-adhesive carpet:

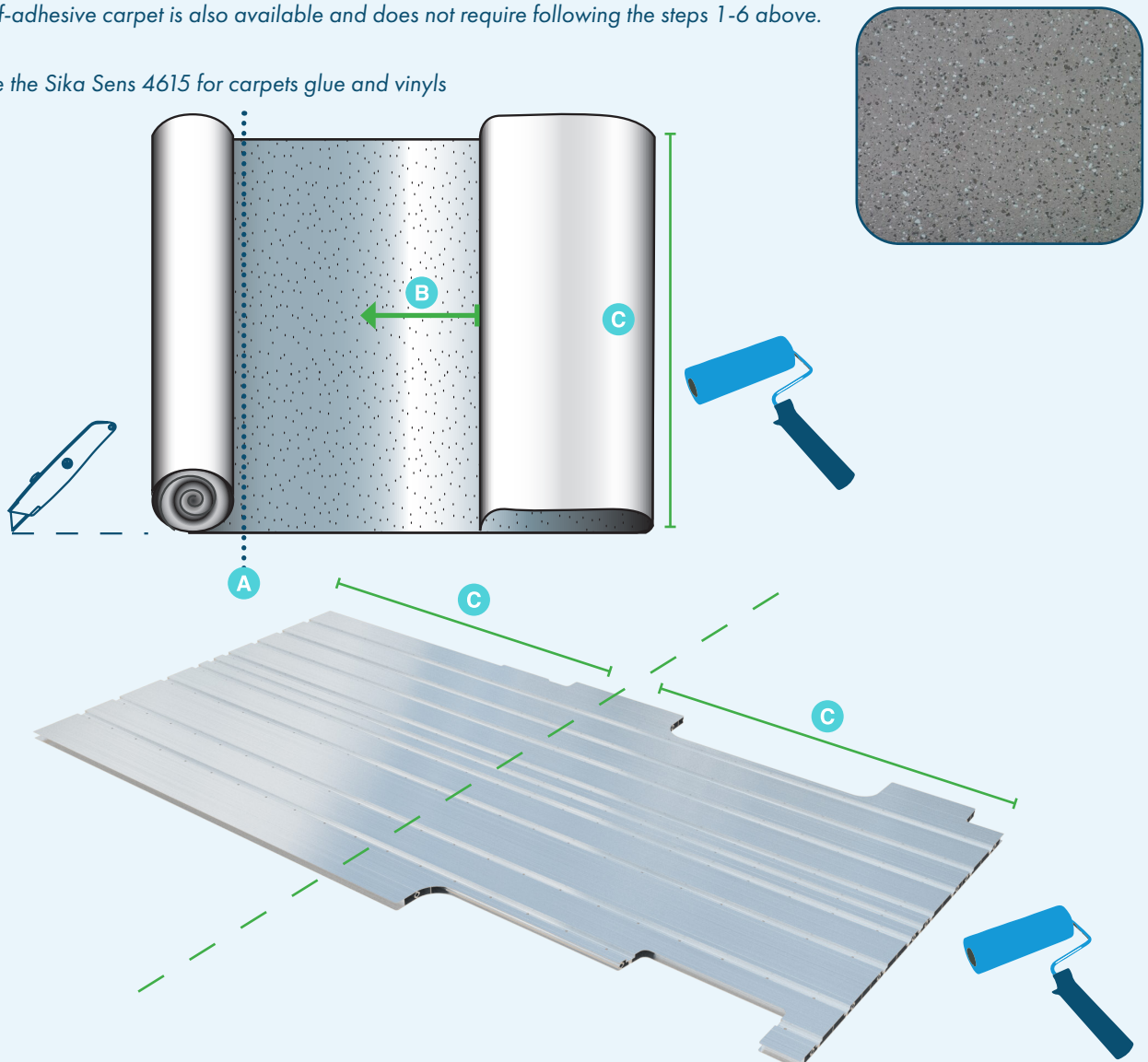
1. Ensure Smartfloor and carpet are free of debris before applying the glue.
2. Fold the carpet half way back to glue underneath the carpet and on top of the aluminium floor (**B**).
3. Apply glue to the surface of the Smartfloor and the carpet (**C**).
4. Wait for approximately 5 minutes to let the glue dry a little bit. ⌚
5. When drying is done fold back the carpet half evenly and in small steps. Push the carpet with pressure onto the Smartfloor.
6. Repeat previous steps for the other carpet half.



Self-adhesive carpet is also available and does not require following the steps 1-6 above.



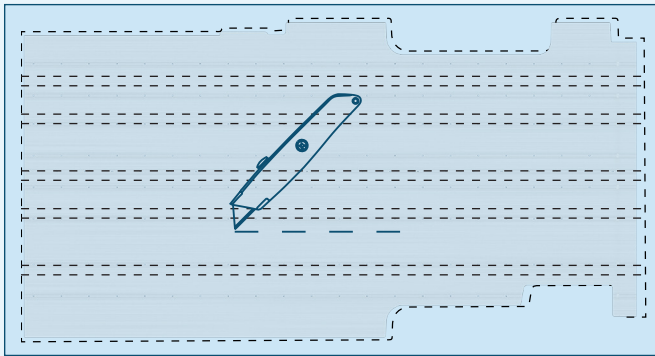
Use the Sika Sens 4615 for carpets glue and vinyls



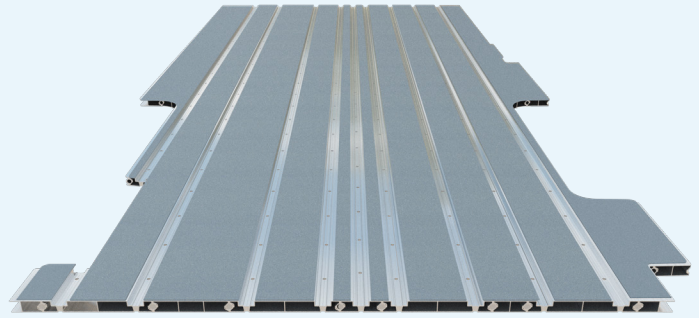
### 3. Installation

#### 3.6 Trimming carpet floor

Remove the unwanted parts of the carpet along the edges of the aluminium floor.  
Also remove unwanted pieces of vinyl from the airlines channels where the airlines will be placed.



Top-view of the carpet cut-out



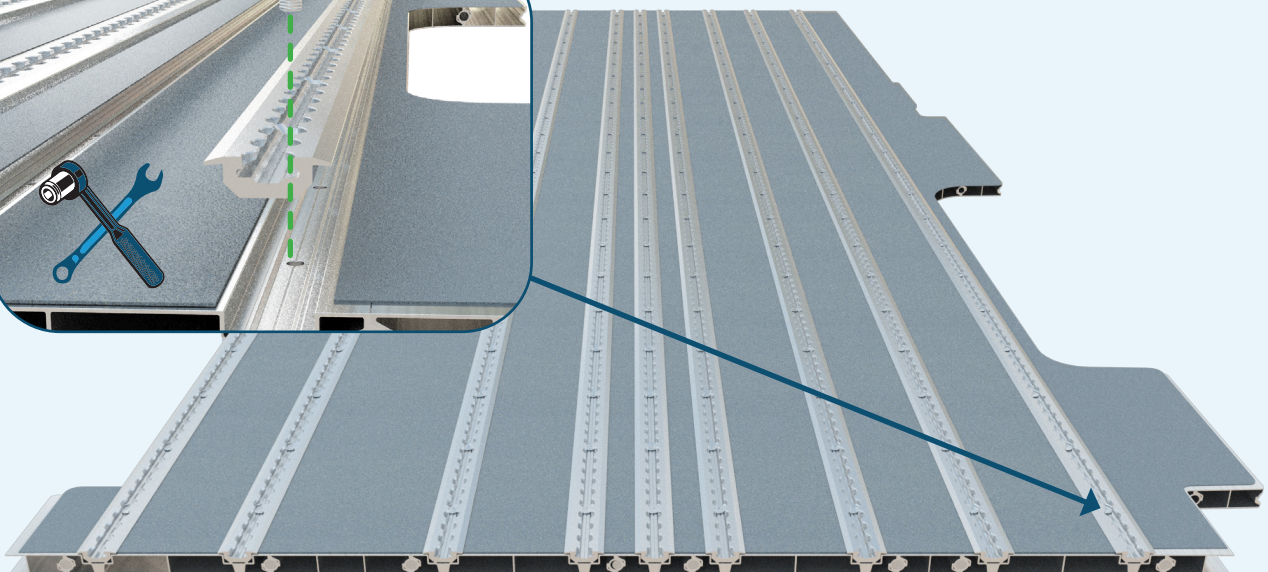
You can skip the above carpet floor trimming step, when the vinyl is delivered cut and CNC machined by Smartfloor.

#### 3.7 Mount & secure the Airline rails onto the Smartfloor

1. Place the Airline Rail into the designed airline channels of the Basic profiles.
2. Check whether the hole pattern matches between the Basic profiles and the rails.  
If this doesn't correspond, than you have to switch sides and rotate the airline 180 degrees.
3. Mount the Airline Rail into the Smartfloor Basic profiles with the supplied M10x25 A2 stainless-steel bolts (class-70) .



These bolts need to be tightened to a torque between 18Nm - 30Nm.



### 3. Installation

#### 3.8 Cleaning the Smartfloor & vehicle floor

Cleaning/priming of the Smartfloor and vehicle floor with Sika Aktivator 205.

**i** The Sika Aktivator is a 1 component alcohol-based cleaning liquid, which cleans and activates the bonding surfaces.

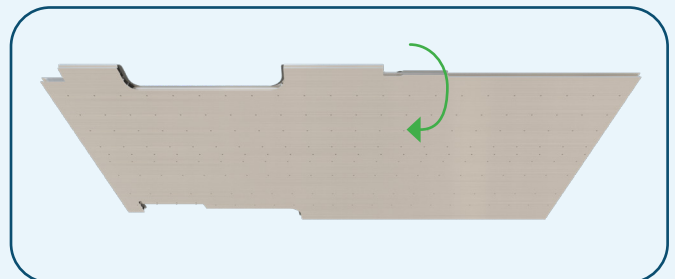
The treated surfaces need to be clean, dry and free of grease, oil and dust.

**!** It is advisable to wear suitable personal protective equipment during the cleaning of the floors.

1. Clean underneath the Smartfloor with a clean cloth & Sika Aktivator 205. Always clean the treated surfaces in 1 direction, from the front to the back.
2. Repeat the previous step on the surface of the vehicle to be glued.

**!** It is critical to let the surface dry for 5 - 10 minutes!

**!** Before accessing the vehicle for glueing, be aware to access vehicle only with clean shoes!



View underneath the Smartfloor



### 3. Installation

#### 3.9 Applying glue and plastic spacers

##### Caulking gun glue preparation

Gather the number of Sikaflex 552AT glue sausages necessary to glue the Smartfloor. Insert the Sikaflex 552AT glue sausage into the caulking gun. Use a Sika nozzle with the recommended diameter of 8 mm and a guide piece of 9 mm length. This controls the flow and height of the glue beads.



Use approximately 600 ml Sikaflex 552AT per m<sup>2</sup>.

##### Vehicle floor filling & height adjustment with spacers

Fill up the lowest areas of the chassis with plastic spacers to adjust the height.

1. Apply glue on those areas of the vehicle floor where the plastic spacers will be installed.
2. Lay the spacers down on top of the glue and press it down. Repeat the steps above throughout the floor.



Plastic spacer placement

##### Apply a layer of glue to the floor surface of the vehicle

Start from the front of the vehicle.

3. Apply glue to all the higher floor surfaces of the vehicle, that will make contact with the Smartfloor and start from the front.
4. Apply glue to all the holes in the vehicle floor, that are out of use. This will block moisture and noise.



Glue with caulking gun

Apply approximately 200-250 mm ( 8-10") 552AT beads evenly and consistently across the floor from left to right. This includes placing glue on top of all the spacers!

Leave an interval of approximately 100-150 mm ( 4-6") between the glue beads.



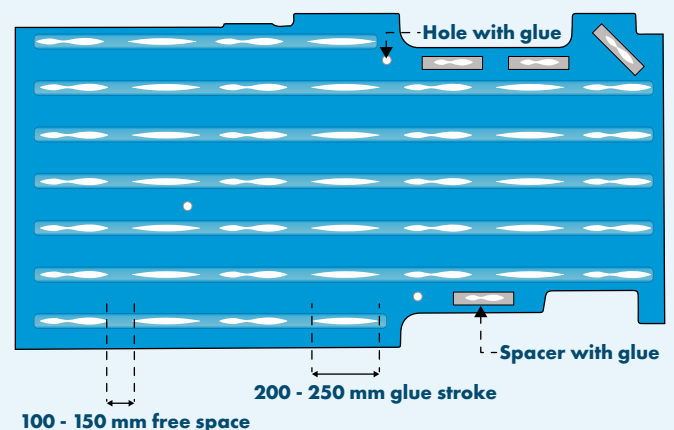
The optimal temperature for gluing the floor is between 15°C ( 59 F ) and 25°C ( 77 F ).  
The usable temperature range is between 5-40°C.



It is critical to install the Smartfloor into the vehicle within the specified skin formation time of the Sika glue.



Please refer to the Sika product data sheet.



Top-view of vehicle floor with glue and spacers

**3. Installation**

**3.10 Placement of the Smartfloor into the vehicle**



For placement of a one piece or 2 halves fully assembled Smartfloor into the vehicle, a minimum of 2 persons are required.



It is very advisable to dry fit the Smartfloor before applying the glue.



**Attach hoist profile to the floor when using a hoist crane**

Use M10 x 30 bolts to attach the hoist profile to the Smartfloor. Make sure that the hoist profile position is in the centre of the Smartfloor.

- Apply the necessary torque to the bolts to keep the hoist profile straight and tight. This will keep the Smartfloor flat.
- Avoid any deformation of the Smartfloor during placement.



Hoist profile

**Place Smartfloor onto the vehicle floor**

1. Move the Smartfloor diagonally into the vehicle ( figure A ).
2. Lower the Smartfloor onto the glue layer and vehicle floor.
3. Walk over the whole floor surface to put extra pressure for optimal glue connection.
4. Then check if the Smartfloor lays flat with a straight profile or tri square.



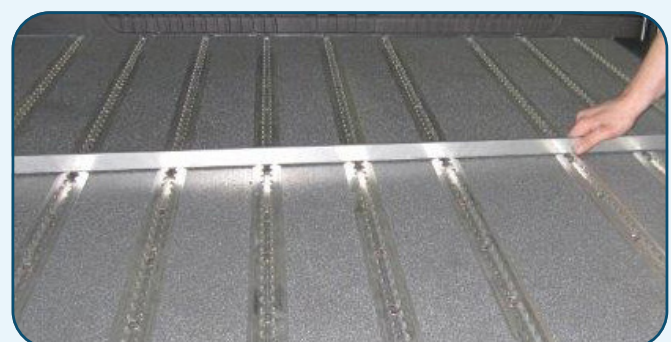
Do not force the Smartfloor in its final position!



Keep in mind that adjusting the Smartfloor position after placing it onto the glue layer isn't possible!



Hoist crane



Check with a straight profile or tri square

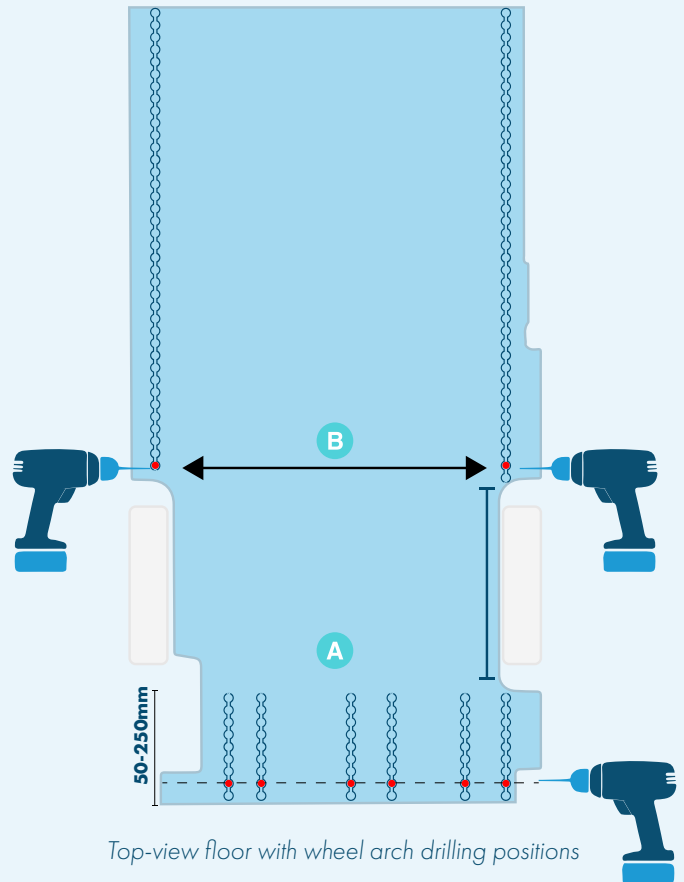
### 3. Installation

#### 3.11 Drilling positions through vehicle floor

Each rail must be thoroughly secured to the vehicle with a Lock Plate at the end of each rail. This also applies to rails terminating in front of a wheel arch. See position **(A)** and **(B)** at the figure on the right. The Lock Plate distance from the backside of the Smartfloor is between 50–250 mm (1.96"–9.84") or after the first next possible position.

- Check underneath the vehicle for the most suitable position to drill without any obstacles.
- Use 1 of the first 3 holes in the rail of the Smartfloor to determine the drilling positions at the backside of the vehicle.
- Drill completely through the Smartfloor and vehicle floor with size  $\varnothing 10,5$ .
- After drilling use anti-corrosion spray on the vehicle floor to protect against corrosion.

These drilled holes will be the Lock Plate mounting positions for the next step.



**3. Installation**

**3.12 Mounting the Lock Plates**

For securing the Smartfloor to the vehicle, use the supplied Lock Plates and M10x60 bolts A2 stainless-steel with nuts (class-70).

**i** If required, M10x200 bolts can be supplied with the Smartfloor kit.

**!** The bolts with lock nuts need to be tightened, until the Lock Plates lay flat underneath against the vehicle floor. Also the Smartfloor should stay level and flat during mounting.

**Lock Plate orientation**

It is preferred to position the Lock Plates in the same direction that the vehicle is traveling. The other way is to mount the Lock Plate with a 90 degree rotation from the travel direction. It is not allowed to mount the Lock Plate upside down!

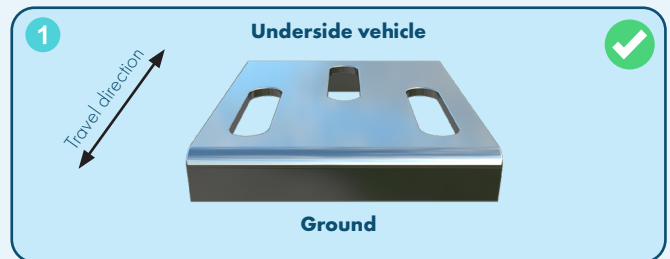
**!** Do not place and mount the Lock Plate upside down!

See descriptions below and the figures on the right side with 3 different Lock Plate orientations:

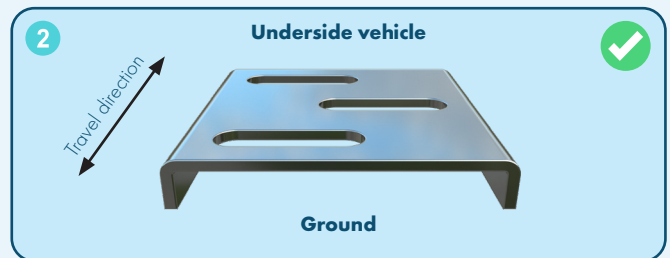
- 1. Orientation in travel direction.
- 2. In a 90 degree angle rotation.
- 3. **WRONG EXAMPLE: upside down placement**



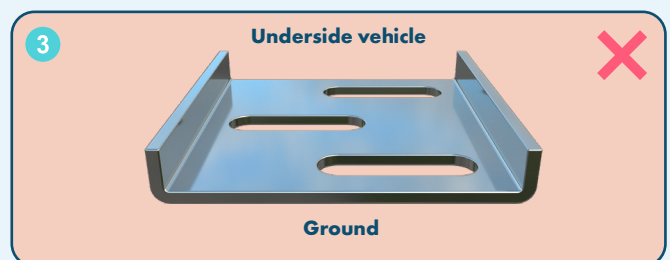
View from underneath vehicle with Lock Plates



View of the Lock Plate with example of the correct placement in travel direction



View of the Lock Plate with example of the correct placement with 90 degree rotation



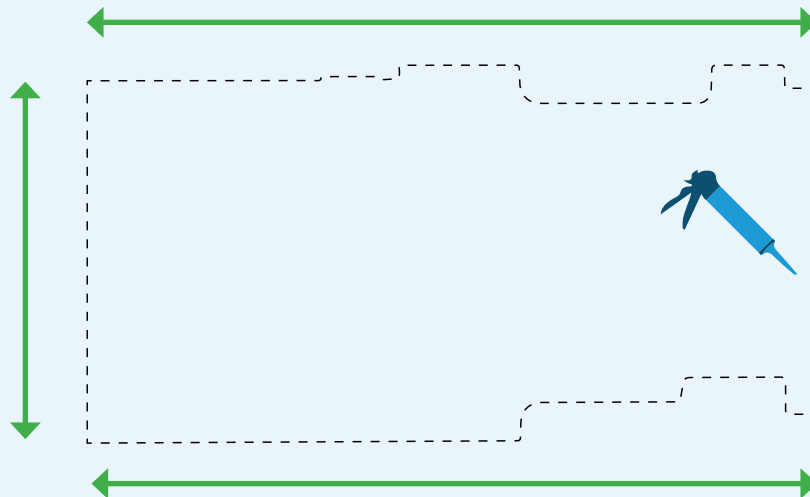
View of the Lock Plate with example of the incorrect placement upside down

**3. Installation**

**3.13 Finalizing installation process**

**Applying Silicone ( optional )**

For the finishing touch after the Smartfloor is installed, apply an evenly amount of silicone along the outer edges.



**Floor End Cover Strip ( optional )**

Mount and apply a cover strip at the backside of the Smartfloor for the final touch to cover the profile holes and finishing look.

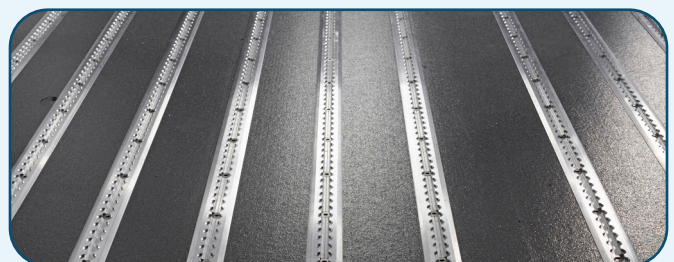


**Installation complete!**

**Contact and support**

For service and technical support please contact us:

**Smartfloor B.V.**  
Bedrijvenpark Twente 415  
7602 KM Almelo  
The Netherlands



## 4. Maintenance

### 4.1 Cleaning instructions

1. Check airline rail and anchorages for cleanliness.
2. Remove any debris or obstruction.
3. Perform a dry cleaning method first ( see next section 4.2 ).
4. Perform a wet cleaning if necessary and let the floor dry before use ( see next section 4.2 ).

The following cleaning products are not allowed to use when cleaning the Smartfloor:

- Harsh detergents
- Oily soaps
- Concentrated bleach products



*Do not use harsh chemicals!  
This can lead to damage of the floor and rails.*



*Do not use excessive water or a water hose ( garden hose ) when cleaning!  
The water can leak underneath the floor and can cause the floor to loosen.*

### 4.2 Cleaning methods

#### Dry cleaning method:

1. Vacuum cleaner.
2. Compressed air.

#### Wet cleaning method with a mild detergent:

1. Moist mop or sweeper.
2. Damp cloth with tepid water.