

# Installation Guideline

## Mass-Spring Systems

### 1. Transport and Storage

The Getzner products (Getzner MSS) for mass-spring systems (MSS) must always be transported in original packaging. The plastic wrapping protects the Getzner MSS from environmental impacts.

Attention has to be paid during transportation to avoid damages. Damaged packaging shall be immediately repaired (using for example plastic foil and adhesive tape).

Full surface Getzner MSS are delivered in rolls and in a width of 1,500 mm and the side mats are delivered on pallets. The elastic mats are usually cut in the factory to the on-site requirements.

The Getzner MSS rolls have to be stored in an upright standing position in order to avoid squeezing of the mats. The storage should be in dry environment in original packaging and protection from direct sunlight is recommended.

The elastic mats should not be stored at temperatures below -20 °C and above +50 °C.

Getzner MSS are subject to normal thermal expansion / shrinking. This physical effect is completely reversible.

The storage conditions should match the installation conditions; in case of big temperature differences between storage and installation area, it's recommended to condition the Getzner MSS for at least 24 h.



### 2. General Description

Getzner MSS are high-tech polyurethane materials able to withstand extreme static and dynamic loads. They exhibit excellent resistance against all chemical substances normally used in railway operations. Getzner MSS passed all serviceability tests in accordance with DIN 45673-7:2010.

Although MSS from Getzner are tough and hard-wearing, some guidance for simple and efficient handling shall be taken into account in order to enable a hassle-free installation and the highest possible performance.



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### 3. Installation Full Surface Getzner MSS

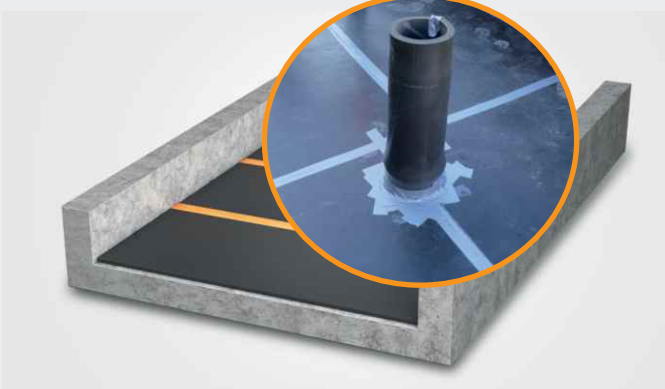
#### 3.1 Preparation of the substructure

The substructure has to be clean and dry, frost-free as well as free of depressions and sharp-edged elevations. Loose objects, e. g. stones, have to be removed with appropriate tools.



#### 3.2 Placing of Getzner MSS

The mats are unrolled transversely to the track axis in order to avoid mat joints in the driving direction of the train. Possible length corrections of the mats or adjustments can be done with a carpet knife (or similar). In case of extreme temperatures and temperature differences, respectively after long storage, the Getzner MSS should at first be unrolled, placed in position and left to settle for a few hours prior to concreting. This allows the material to recover from compression and stretching caused by rolling and on-site handling.



Penetrating objects of any kind (drainage, electrics, etc.) have to be decoupled elastically.

Possibly existing shear keys must also be covered and decoupled without any gap. Adhesive tapes have to be used in order to cover all mat joints and minor gaps if any.

#### 3.3 Connection of Getzner MSS / sealing of mat joints

The joints have to be covered and sealed with a fabric tape (min. 5 cm wide) in order to avoid penetration of concrete or concrete slurry during casting.

**Not properly sealed joints can cause sound bridges and the vibration isolation may totally fail.**

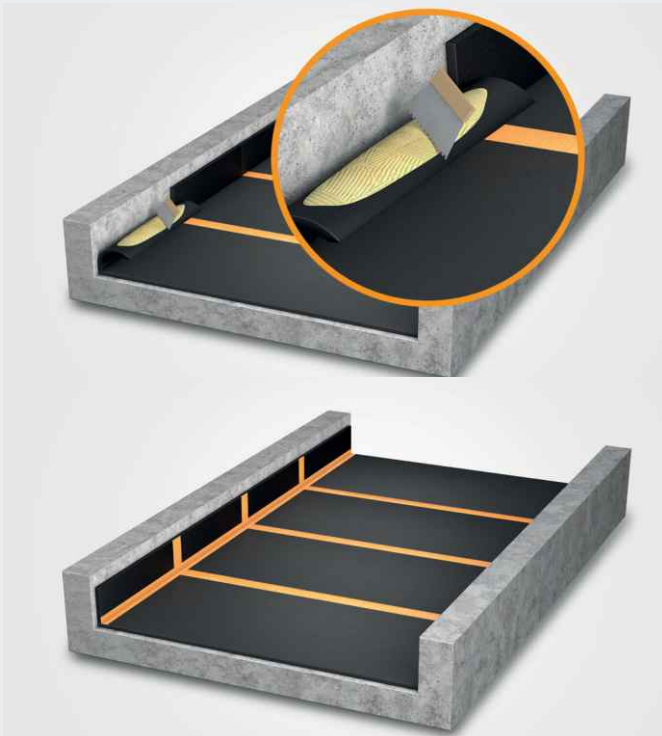


For extra safety a plastic foil may be applied in addition to the sealing with the adhesive tapes.

If radii are very narrow, some special measures have to be taken (e. g. correction cuts on site). Please refer to the separate document "Installation Instructions for MSS in Curves".

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### 3.4 Installation of side mats

Depending on the type of material, mounting of vertical mats can be done in various ways (e. g. adhesive bonding, using mounting brackets).

When gluing, the mat is coated over the whole surface with a two-component solvent-free polyurethane adhesive by means of a notched trowel.

The adhesive type to be used depends on the respective ambient temperature (not less than +5 °C). It can be supplied directly by Getzner Werkstoffe.

Roughly 1.0 kg adhesive per m<sup>2</sup> side mat is required.

After completing the installed section it is recommended to visually check the sealed mat joints again.

### 3.5 Reinforcement

After the above mentioned preparation, the spring layer serves as a lost formwork. The armoring, which is calculated by the authorised company (structural engineer), is placed according to the reinforcement plan, again ensuring that the mats are not damaged. Excessive surface loads or deflections have to be avoided by using appropriate load distribution layers (wood or plastic panels).



### 3.6 Pouring of concrete

Prior to the concrete process a final inspection and approval may be necessary.

The concrete for the slab is brought in, compressed and levelled.

The execution is incumbent on the responsible company.



### 3.7 Continuation of works

After the supply of the concrete, superstructure construction works can continue like on any other railway construction site (e. g. finishing surface, elastic sealing of the joints).



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### 4. Installation Getzner Discrete and Strip Bearings

#### 4.1 Preparation of the substructure

The substructure has to be clean and dry, frost-free as well as free of depressions and sharp-edged elevations. Loose objects, e. g. stones, have to be removed with appropriate tools.

#### 4.2 Placing of Getzner MSS

The bearings are placed on the sub base (directly on the smooth ground or - in case of uneven ground - on a smoothly concreted foundation) as indicated in the installation plan. The installation of the side mats is carried out as described under 3.4.

Joints between the mats must be sealed with an adhesive tape (min. 5 cm wide).

Concreting the track slab for discrete or strip bearings can be done in 3 different ways:

- Option 1: Lost formwork
- Option 2: In-situ slab on separation layer and lifting the slab after curing, placing the discrete bearings
- Option 3: With filling material.

The execution of the slab is incumbent on the responsible company.



#### 4.2.1 Option 1: Lost formwork

The lost formwork (prefabricated slab elements, timber formwork or metal plates) is placed on the bearings.

All connections have to be sealed in order to prevent concrete from penetrating into the cavities (by using e. g. mortar, construction foam or foil).

Attention has to be paid while concreting to avoid any damage to the seals and connections.

#### 4.2.2 Option 2: In-situ slab on separation layer

The slab is created by pouring the concrete on a separation layer. After curing of the concrete the slab has to be lifted from the concrete subbase (e. g. with hydraulic jacks) and the discrete bearings can be installed.



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### 4.2.3 Option 3: With filling material

The surface between the bearings should be filled with soft material (e. g. Sylomer® SR11).

If accessibility is required after installation the surface can also be filled with temporary filling material (e. g. sand, void formwork).

For soft or low density material it is important to avoid adverse compression induced by spaces supporting heavy reinforcement. Therefore, the contact area should be increased by using a suitable spacer.

The concrete can be poured directly on the bearings. Depending on the filling material it is advisable to divide the concreting process into several steps.

If temporary filling material was used, it has to be removed after the concreting process is finished.



## 5. Recycling

Any waste generated during installation can be recycled in standard waste containers.

At the end of the lifetime of the superstructure the Getzner MSS can be removed from the substructure mechanically and recycled thermally. All our materials are non-hazardous to the environment.

## 6. Disclaimer

This guideline only serves to support the customer or his authorised specialist in the installation of Getzner MFS. Getzner Werkstoffe draws the attention to known design errors and problems. This guideline was compiled with the utmost care based on Getzner's current knowledge.

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