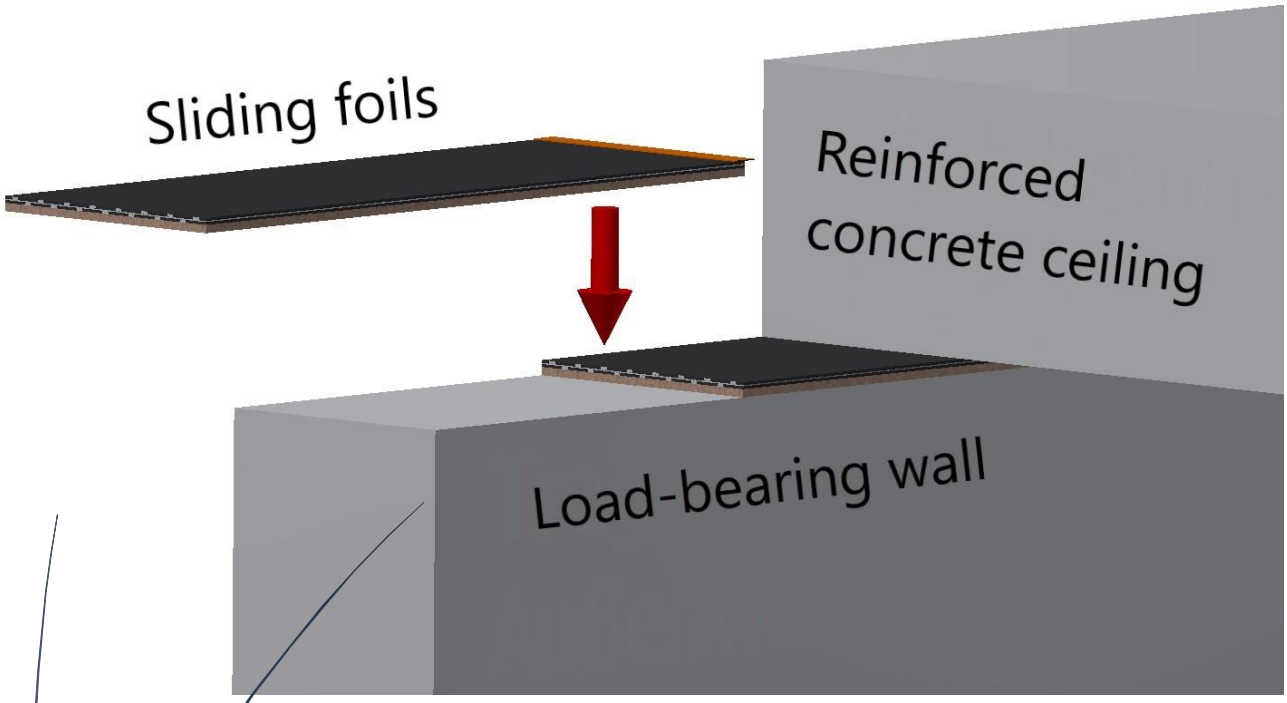
Sliding foils

Product brochure



Applications of sliding foils

Technical solutions for the safe, reliable and durable transfer of loads and displacement.

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Product information

Our sliding foils, sliding bearing strips and fixed bearing strips are available in a wide range of designs to ensure optimum safety and reliability in many different applications. This document introduces our main products and types. For some of these types, it contains details regarding the standard model.

The diagram to the right provides you with a guide for the selection of the best sliding bearing for your purpose, based on the expected load, span and angle of bearing rotation. Depending on the stiffness of the construction part to be placed on the bearing, the boundaries between the various types are not strict delimitations.

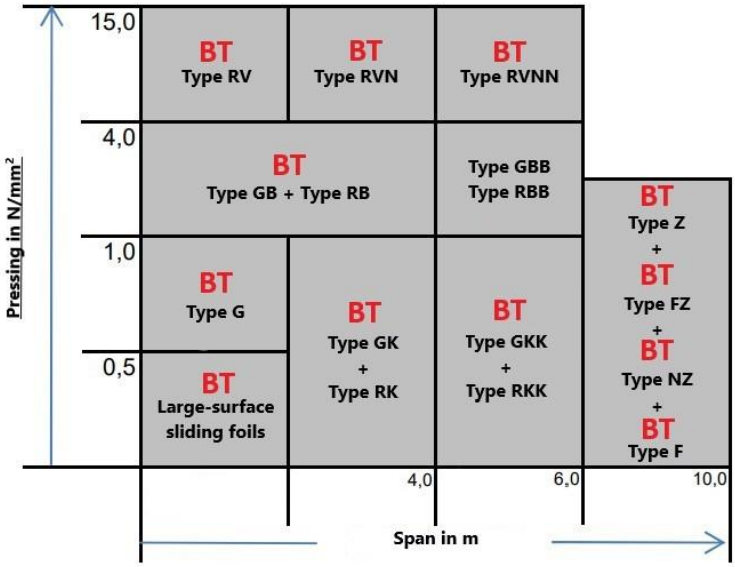

Fig. 1: Applications of sliding foils and sliding bearing strips

Products

Sliding foils	Elimination of constraints between construction components
Sliding bearing strips	Centring of high loads
Point load sliding bearing strips	For significant displacement
Fixed bearing strips	Centring of high loads
Point load fixed bearing strips	For minimum displacement

Services

- Advice
- Technical development & design
- Production
- Installation

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Sliding foils

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Sliding foils

Description

Sliding foils are primarily used in the form of strips in sliding bearings installed between reinforced concrete flat roofs and their supporting walls where they minimise constraint between the building components.

For the selection of a suitable sliding foil, the main factors are the actual load V and the angle of bearing rotation α, whereby the bearing rotation is mainly determined by the span and the thickness of the superstructure roof.

With regard to bearing rotation, it must be taken into account that the bearing capacity of sliding foils with a soft padding, for instance made of foam padding as found in our **BT** type GK or **BT** type GKK sliding foils, diminishes as compression increases.

The centre load thus already compresses the padding to a fraction of its original thickness.

For spans of more than 6m, we therefore recommend using **BT** type Z sliding bearing strips or **BT** type NZ point load sliding bearing strips featuring elastomer cores at the centre.

Given the height of these types of sliding bearings, the loads are also transferred to the centre of the wall in the event of rotation of the superstructure. This type of construction thus reliably prevents cracks from shearing and tilting, as well as edge spallings.

In buildings with spans that differ greatly in length, the sliding bearing should be chosen on the basis of the largest span. At first sight, it might appear cheaper to combine different bearing types in such a building. However, differences in installed height, load transfer behaviour and deflection are likely to cause additional engineering costs in connection with static strength calculations, outweighing the initial cost savings.

Apart from choosing the best sliding bearing type, it must always e kept in mind that its proper functioning depends on the correct design and construction of the sliding planes. The movement of the floor element must never be obstructed by render or external façade elements.

In addition, the sliding foils must be installed with great care and according to the installation instructions.

Sliding foils and sliding bearing strips are available in standard masonry widths and a standard length of 1.0m. Other dimensions are of course available on request.

Over the last few years, sliding foils and sliding bearing strips have been used with great success in many sectors of the construction industry:

- Strip bearings for installation under floating building components such as floors, vessel walls and lids, foundation slabs and other superstructures

- Large-surface sliding bearings under skating and curling rinks, swimming pools, foundations or flexible foundation slabs

The sliding bearing foils and strips are used to minimise constraints between building components, and allow for the accurate calculation of the residual stress.

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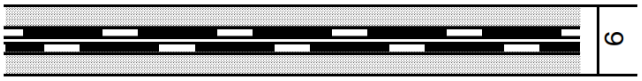
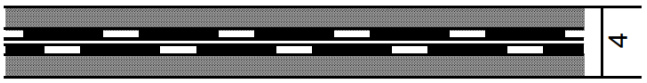
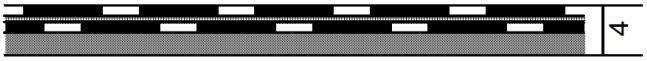
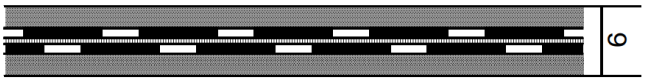
Sliding foils

Series G types

BT Bautechnik GmbH

• Permissible compressive stress **7** N/mm² • High-grade lubricating grease for temporary horizontal deformation

BT type	Design	Application
G	 2-layer sliding foil without foam padding; coefficient of friction µ between 0.04 and 0.15	Sliding bearings under reinforced concrete floors with small spans of up to approx. 2 m. For applications, see *figure 1* Max. mean compression: 1 N/mm² Temperature range: -20° to +70° C
GK	 2-layer sliding foil with single-side foam padding; coefficient of friction µ between 0.04 and 0.15	Sliding bearings under reinforced concrete floors with mean spans of up to approx. 4 m. For applications, see *figure 1* Max. mean compression: 1 N/mm² Temperature range: -20° to +70° C
GKK	 2-layer sliding foil with double-side foam padding; coefficient of friction µ between 0.04 and 0.15	Sliding bearings under reinforced concrete floors with spans of up to approx. 6 m For applications, see *figure 1* Max. mean compression: 1 N/mm² Temperature range: -20° to +70° C
GB	 2-layer sliding foil with single-side elastomer padding; coefficient of friction µ between 0.04 and 0.15	Sliding bearings under reinforced concrete floors with higher loads, medium spans and minimum bearing rotation. Max. mean compression: 4 N/mm² Temperature range: -30° to +70° C
GBB	 2-layer sliding foil with double-side elastomer padding; coefficient of friction µ between 0.04 and 0.15	Sliding bearings under reinforced concrete floors with higher loads, large spans and minimum bearing rotation. Max. mean compression: 4 N/mm² Temperature range: -30° to +70° C
GV	 Reinforced 2-layer sliding foil with PTFE sliding layer; without elastomer padding; coefficient of friction µ between 0.02 and 0.10	Point, large-surface and strip bearings for high load transfer. Max. mean compression: 7 N/mm² Temperature range: -30° to +70° C
GVN	 Reinforced 2-layer sliding foil with PTFE sliding layer and single-side elastomer padding; coefficient of friction µ between 0.02 and 0.10	Point, large-surface and strip bearings for high load transfer. Max. mean compression: 7 N/mm² Temperature range: -30° to +70° C
GVNN	 2-layer sliding foil with PTFE sliding layer and double-side elastomer padding; coefficient of friction µ between 0.02 and 0.10	Point, large-surface and strip bearings for high load transfer. Max. mean compression: 7 N/mm² Temperature range: -30° to +70° C

The actual coefficients of friction might vary within the specified limits, depending on external influences such as uneven surfaces in adjacent building parts, and thermal stress.

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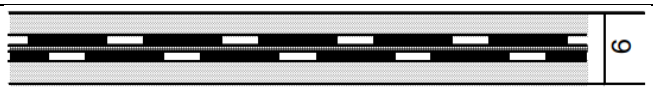
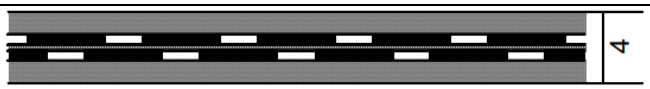
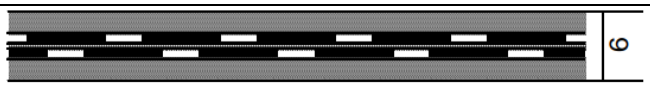
Sliding foils

Series R types

BT Bautechnik GmbH

• Permissible compressive stress **4** N/mm² • PTFE foil for permanent horizontal deformation

BT type	Design	Application
RK	 2-layer sliding foil with PTFE sliding layer and single-side foam padding; coefficient of friction µ between 0.02 and 0.10	Sliding bearings under reinforced concrete floors with small spans of up to approx. 2 m. For applications, see *figure 1* Max. mean compression: 1 N/mm² Temperature range: -20° to +70° C
RKK	 2-layer sliding foil with PTFE sliding layer and double-side foam padding; coefficient of friction µ between 0.02 and 0.10	Sliding bearings under reinforced concrete floors with spans of up to approx. 6 m. For applications, see *figure 1* Max. mean compression: 1 N/mm² Temperature range: -20° to +70° C
RB	 2-layer sliding foil with PTFE sliding layer and single-side elastomer padding; coefficient of friction µ between 0.02 and 0.10	Sliding bearings under reinforced concrete floors with higher loads, medium spans and minimum bearing rotation. Max. mean compression: 4 N/mm² Temperature range: -30° to +70° C
RBB	 2-layer sliding foil with PTFE sliding layer and double-side elastomer padding; coefficient of friction µ between 0.02 and 0.10	Sliding bearings under reinforced concrete floors with higher loads, large spans and minimum bearing rotation. Max. mean compression: 4 N/mm² Temperature range: -30° to +70° C
RV	 Reinforced 2-layer sliding foil with PTFE sliding layer, without elastomer padding; coefficient of friction µ between 0.02 and 0.10	Point, large-surface and strip bearings for high loads. Max. mean compression: 15 N/mm² Temperature range: -30° to +70° C
RVN	 Reinforced 2-layer sliding foil with PTFE sliding layer and single-side elastomer padding; coefficient of friction µ between 0.02 and 0.10	Point, large-surface and strip bearings for high loads. Max. mean compression: 15 N/mm² Temperature range: -30° to +70° C
RVNN	 Reinforced 2-layer sliding foil with PTFE sliding layer and double-side elastomer padding; coefficient of friction µ between 0.02 and 0.10	Point, large-surface and strip bearings for high loads. Max. mean compression: 15 N/mm² Temperature range: -30° to +70° C

The actual coefficients of friction might vary within the specified limits, depending on external influences such as uneven surfaces in adjacent building parts, and thermal stress.

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Sliding foils

Installation instructions

BT Bautechnik GmbH

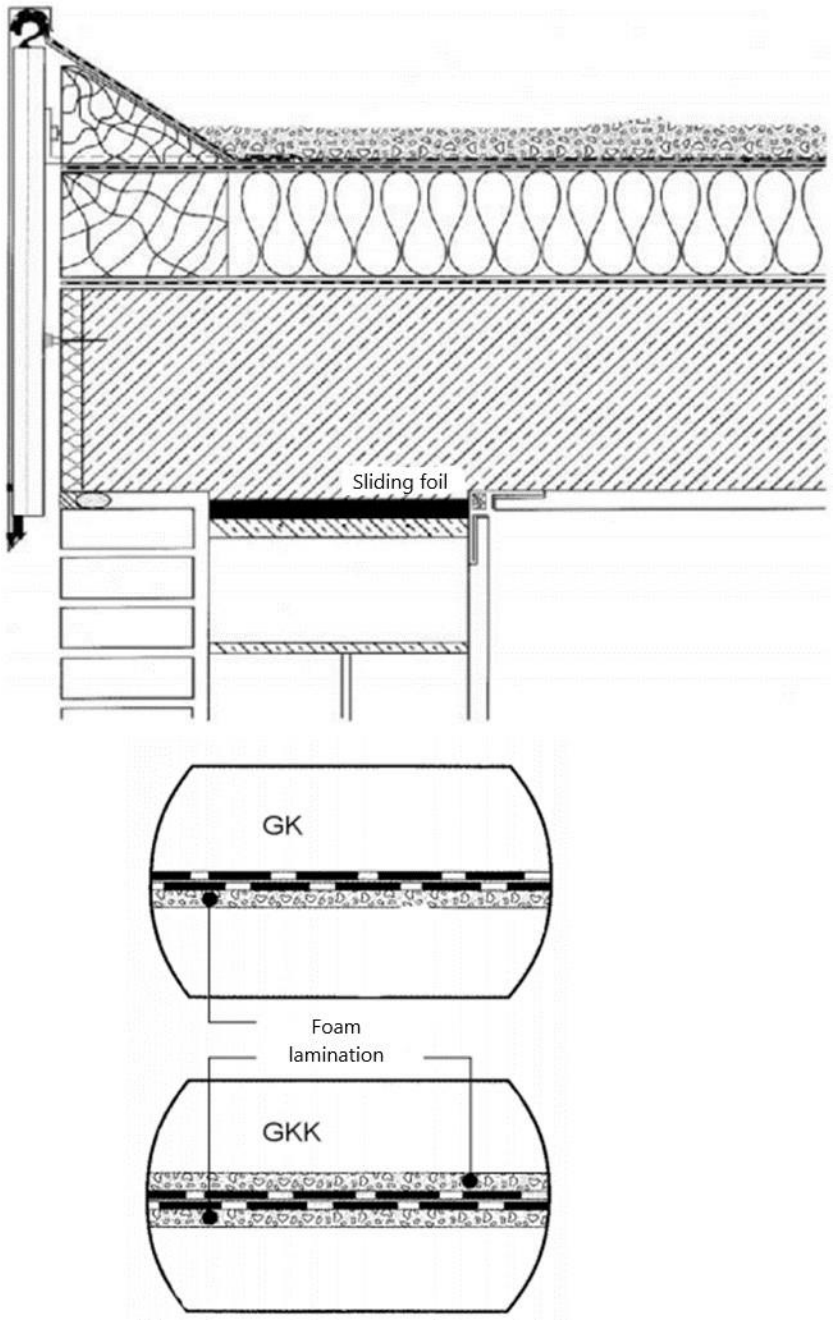

Fig. 2: Installation example - sliding foil **BT type GK & GKK**

To function properly, it is important that sliding foils are installed correctly.

Therefore adhere to all instructions below!

- The bearing surface must be level and smooth.
- The floor slab formwork must be installed by one render layer higher than the upper edge of the coping.
- Install the sliding foil supplied in lengths of 1 m edge to edge.
- Cover the joints with masking tape to prevent laitance ingress.
- Secure the sliding foils against wind.
  Never nail down the foil!
- Sliding foils with single-side padding:
  normally, the padding must face down. (see *figure 2* **GK**)
- Sliding foils without padding (e.g. **BT type G**): cover the coping with a smooth layer of mortar!
- For the proper finishing of sliding joints in the internal plasterwork, we recommend using special plastering profiles.

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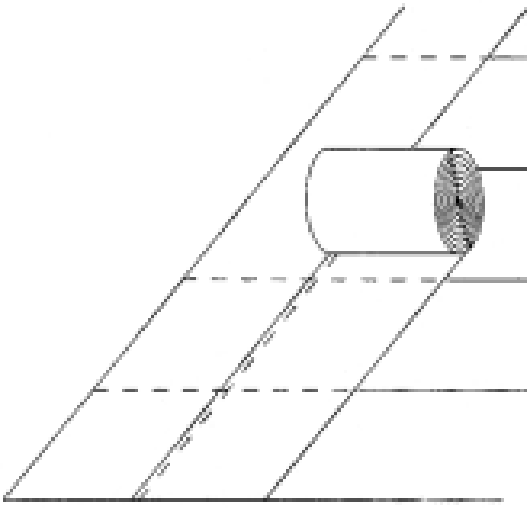
Large-surface sliding foils

Description

In contrast to sliding foils for installation between reinforced concrete floors and the supporting walls, large-surface sliding foils are mainly used in the construction of skating rinks, swimming pools, tank bases and similar structures.



BT large-surface sliding foils are designed to minimise constraint resulting from deformation typical for concrete constructions, by temperature fluctuations or subsidence of the building site.

In order to maintain the low coefficient of friction, the bearing elements must be able to freely move relative to each other. This means that the bearing face must be perfectly level and smooth.

It must be free of dents and bumps, and all construction debris and other dirt must be carefully removed prior to installation of the foil.

To protect the foil against damage during construction, we offer a range of protective paddings.

The standard delivery length for large-surface foils is 10 m.

Our **R** type foils are equipped with a high-grade PTFE sliding layer that further enhances the already excellent friction properties. This product is therefore the perfect solution with regard to the stringent requirements to be met by large-surface foils.

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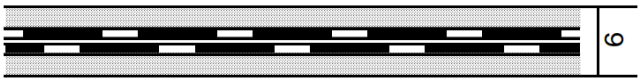
Large-surface sliding foils

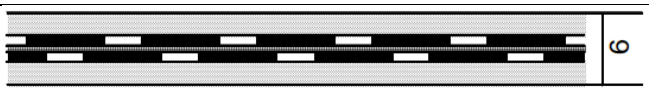
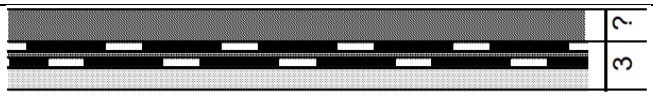
Series U types

BT Bautechnik GmbH

• Max. permissible compressive stress **0.5** N/mm² • High-grade lubricating grease for temporary horizontal deformation

BT type	Design	Application
U	 2-layer sliding foil without padding; coefficient of friction µ between 0.04 and 0.15	Large-surface sliding bearings under skating rinks, and similar large construction surfaces. Without protective padding Temperature range: -30° to +70° C
UK	 2-layer sliding foil with single-side padding; coefficient of friction µ between 0.04 and 0.15	Large-surface sliding bearings under skating rinks, and similar large construction surfaces. Bottom-side protective padding Temperature range: -30° to +70° C
UKK	 2-layer sliding foil with double-side padding; coefficient of friction µ between 0.04 and 0.15	Large-surface sliding bearings under skating rinks and similar large construction surfaces. Double-side protective padding Temperature range: -30° to +70° C

• Max. permissible compressive stress **0.5** N/mm² • PTFE foil for permanent horizontal deformation

BT type	Design	Application
RUK	 2-layer sliding foil with PTFE sliding layer and single-side padding; coefficient of friction µ between 0.02 and 0.10	Same applications as UK, but with significantly improved sliding properties thanks to high-grade PTFE layer. Temperature range: -30° to +70° C
RUKK	 2-layer sliding foil with PTFE sliding layer and double-side padding; coefficient of friction µ between 0.02 and 0.10	Same applications as UKK, but with significantly improved sliding properties thanks to high-grade PTFE layer. Temperature range: -30° to +70° C
RUKS	 2-layer sliding foil with PTFE sliding layer and single-side padding; coefficient of friction µ between 0.02 and 0.10	Same applications as above, but offering greater protection against mechanical impact thanks to elastomer padding at the top of the foil. Temperature range: -30° to +70° C

The actual coefficients of friction might vary within the specified limits, depending on external influences such as uneven surfaces in adjacent building parts, and thermal stress.

The type and composition of the padding must be chosen on the basis of the expected mechanical load. Apart from standard foam padding, we also offer foils with fleece covers, and products with elastomer padding of various thicknesses. Please contact us for more information.

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Large-surface sliding foils

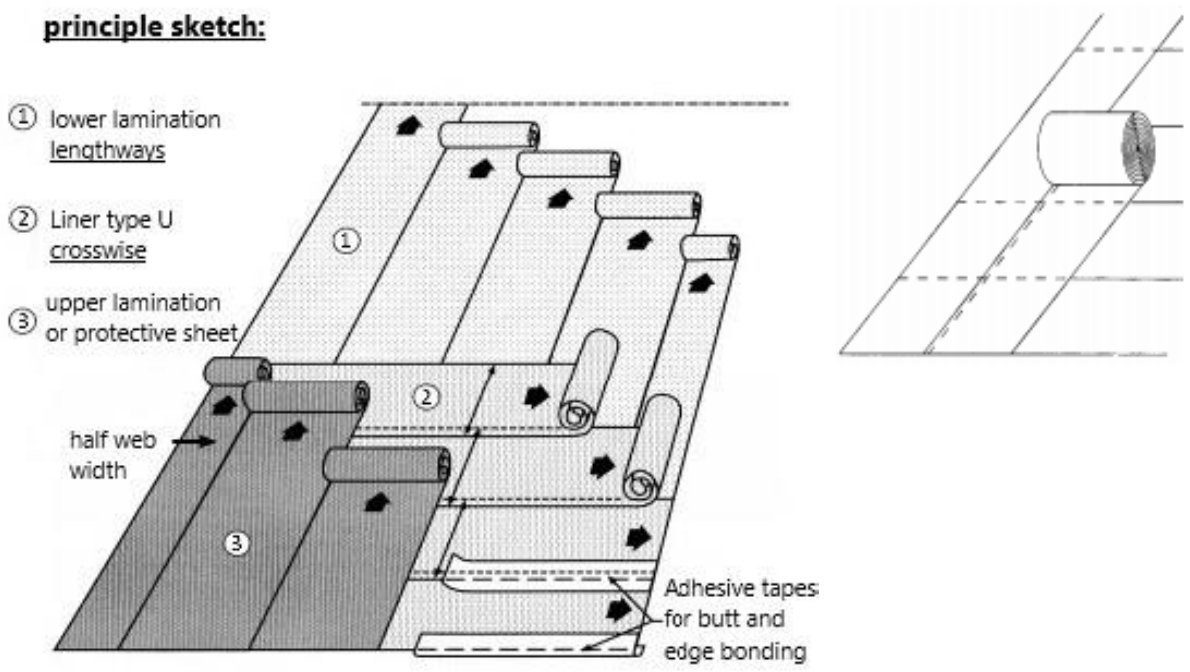
Installation instructions

BT Bautechnik GmbH

To function properly, it is important that sliding foils are installed correctly!

Please adhere to all the instructions below:

For **BT** large-surface sliding foils, the two-layer sliding foil and the padding are supplied separately. The sliding foils normally measure 10 m x 1 m. Depending on its type and composition, the padding is available on rolls of various size.



(1) **The underside padding web** must be rolled out parallel to the long side of the building part. The adjacent sections must be installed edge to edge and secured to each other by adhesive tape strips placed at suitable points.

(2) **The sliding foil** must be installed at right angles to the underside padding. The sections must overlap by approx. 10 cm. In order to prevent ingress of laitance, all joints must be sealed with adhesive tape on the upper side.

(3) **The topside padding web** must be installed at right angles to the sliding foil, parallel to the underside padding and, like the underside padding, edge to edge. In order to prevent the joints in the underside and top side padding web being positioned right on top of each other, we recommend installing the web by starting with a section of half the web width (cut from the last underside web section). The individual web sections must also be secured to each other with adhesive tape to prevent shifting. The padding web must also be protected against gusts of wind by weighing it down with suitable weights.

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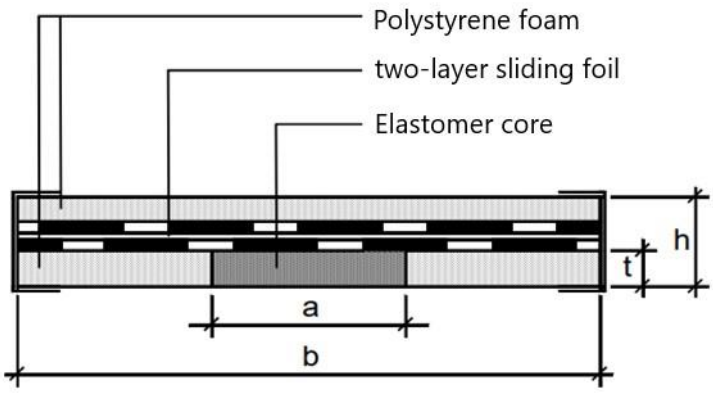
Sliding bearing strips type Z

Description

The installation of sliding bearings under reinforced concrete floors and other floating large-scale construction elements is today considered best practice.
Sliding bearing strips whose design ensures centred load transfer enhance the safety of buildings, especially where there are some imperfections in the construction.
In order to provide long-term high load capacity, we use elastomer cores made from synthetic rubber. The integration of high-grade sliding elements (PE-HD foils) and approved lubricants ensure lasting sliding function.
By using top-quality materials, we have been able to achieve coefficients of friction of less than 10%. The centre elastomer strips ensure load transfer to the centre of the load-bearing construction element.
Excessive edge compression or load eccentricities, which inevitably lead to spalling or tilt cracks in the masonry, are thus effectively prevented.
The individual types are defined on the assumption that the load is transferred exclusively via the core. The maximum permissible compression on the core is 3 N/mm².



a	=	width of elastomer core see table
b	=	width of sliding bearing strip variable
t	=	thickness of elastomer core 5 and 10 mm
h	=	installation height of sliding bearing strips 8 and 13 mm

When choosing the required strip type, it must be ensured that the maximum permissible compression on the adjacent construction parts is not exceeded (for instance in the case of installation on non-reinforced masonry).

BT type	**Max. load**	**Elastomer core**		**Compression at max. load**	**Max. angle of rotation**
		a	**t**		
	kN/m	*mm*	*mm*	*N/mm²*	*‰*
Z-1	**75**	25	5	3.0	40
Z-2	**150**	50	5	3.0	20
Z-3	**225**	75	5	3.0	13
Z-4	**300**	100	5	3.0	10
Z-5	**375**	125	5	3.0	8
Z-6	**450**	150	5	3.0	6
Z-11	**150**	50	10	3.0	40
Z-12	**225**	75	10	3.0	26
Z-13	**300**	100	10	3.0	20
Z-14	**375**	125	10	3.0	16
Z-15	**450**	150	10	3.0	13

Contact us for special designs or fire safety requirements.

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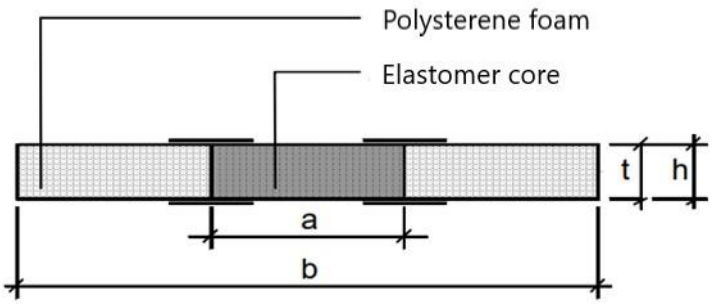
Fixed bearing strips type FZ

Description

BT Bautechnik GmbH

The installation of elastomeric bearing strips under reinforced concrete floors and other floating large-scale construction elements is today considered best practice. Fixed bearing strips whose design ensures centred load transfer enhance the safety of buildings, especially where there are some imperfections in the construction. In order to provide long-term high load capacity, we use elastomer cores made from synthetic rubber. The integration of high-grade sliding elements (PE-HD foils) and approved lubricants ensure the sliding function.
By using top-quality materials, we have been able to achieve coefficients of friction of less than 10%. The centre elastomer strips ensure load transfer to the centre of the load-bearing construction element.
Excessive edge compression or load eccentricity, which inevitably lead to spalling or tilt cracks in the masonry are thus effectively prevented.
The individual types are defined on the assumption that the load is transferred exclusively via the core. The maximum permissible compression on the core is 3 N/mm².



a	=	width of elastomer core see table
b	=	width of sliding bearing strip variable
t	=	thickness of elastomer core 5 and 10 mm
h	=	installation height of sliding bearing strips 5 and 10 mm

When choosing the strip type, it must be ensured that the maximum permissible compression on the adjacent construction parts is not exceeded (for instance in the case of installation on non-reinforced masonry).

BT type	**Max. load**	**Elastomer core**		**Compression at max. load**	**Max. angle of rotation**
		a	**t**		
	kN/m	*mm*	*mm*	*N/mm²*	*‰*
FZ-1	**75**	25	5	3.0	40
FZ-2	**150**	50	5	3.0	20
FZ-3	**225**	75	5	3.0	13
FZ-4	**300**	100	5	3.0	10
FZ-5	**375**	125	5	3.0	8
FZ-6	**450**	150	5	3.0	6
FZ-11	**150**	50	10	3.0	40
FZ-12	**225**	75	10	3.0	26
FZ-13	**300**	100	10	3.0	20
FZ-14	**375**	125	10	3.0	16
FZ-15	**450**	150	10	3.0	13

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Point load sliding bearing strips NZ

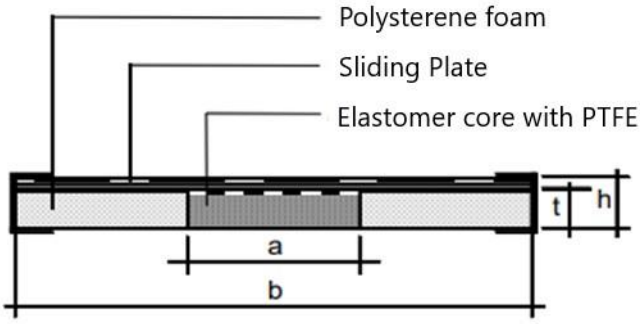
The individual types are defined on the assumption that the load is transferred exclusively via the core. The maximum permissible compression on the core is 5 N/mm².

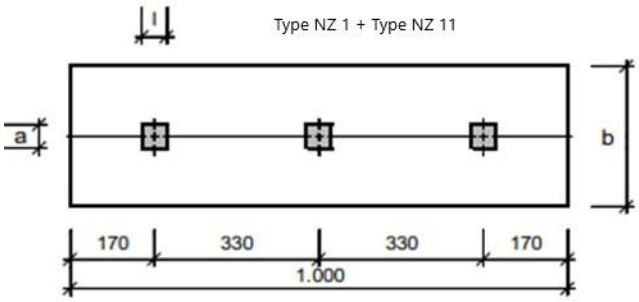
The **BT** type **NZ** point load sliding bearing strips are elastomeric deformation gliding bearings for structural, civil and industrial engineering projects which, due to their high-quality construction, reach exceptionally low coefficients of friction of < 5%.

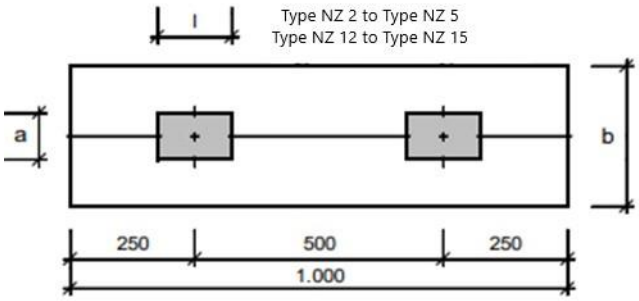
For standard applications, we offer the **BT** types **NZ-1** to **NZ-5** strips with an installation height of 6 mm, and the **BT** types **NZ-11** to **NZ-15** with an installation height of 11 mm, all catering for loads of up to 210 kN/m.

Special designs with customised bearing numbers and sizes are of course available on request.

BT type **NZ** point load sliding bearing strips feature spaced elastomer cores, similar to **BT** type **Z** sliding bearing strips, and therefore also cater for controlled load transfer, combined with unobstructed horizontal movement and rotation of the load part.







a	=	width of elastomer core see table
b	=	width of sliding bearing strip variable
l	=	length of elastomer core see table
t	=	thickness of elastomer core 5 and 10 mm
h	=	installation height of sliding bearing strips 6 and 11 mm

BT type	**Max. load**	**Elastomer core**		**Compression at max. load**	**Bearings per metre**
		a	**l**		
	kN/m	*mm*	*mm*	*N/mm²*	*Units*
NZ-1	**22.5**	50	50	3.0	3
NZ-2	**50**	75	75	4.5	2
NZ-3	**100**	100	100	5.0	2
NZ-4	**150**	100	150	5.0	2
NZ-5	**200**	100	200	5.0	2
NZ-11	**25**	75	75	3.0	3
NZ-12	**60**	100	100	4.5	2
NZ-13	**108**	100	150	5.0	2
NZ-14	**160**	100	200	5.0	2
NZ-15	**210**	100	250	5.0	2

Contact us for special designs or fire safety requirements.

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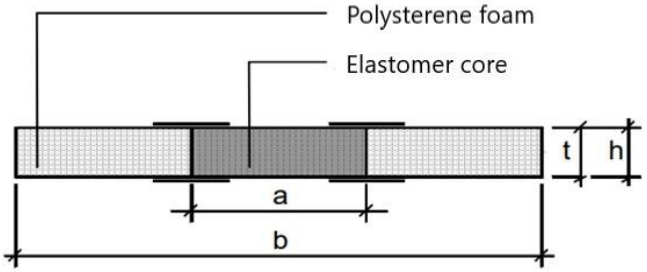
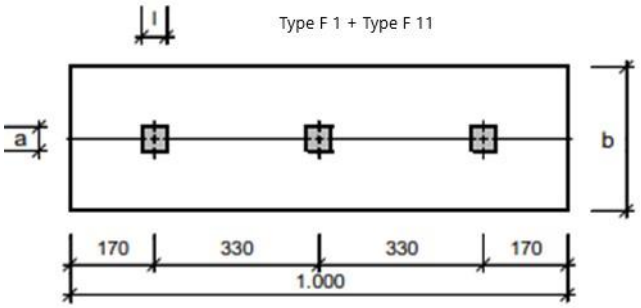
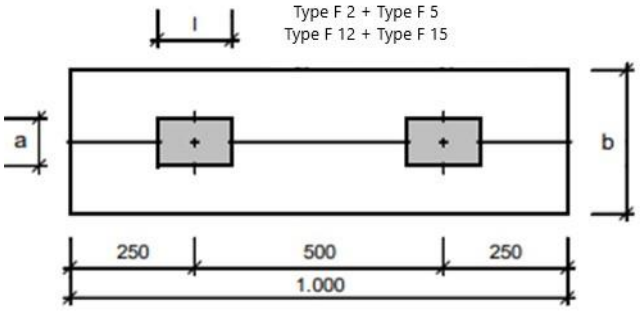
Point load fixed bearing strips type F

BT Bautechnik GmbH

The individual types are defined on the assumption that the load is transferred exclusively via the core. The maximum permissible compression on the core is 5 N/mm².
The **BT** type **F** point load fixed bearing strips are elastomeric deformation gliding bearings for structural, civil and industrial engineering projects.
For standard applications, we offer the **BT** types **F-1** to **F-5** strips with an installation height of 5 mm, and the **BT** types **F-11** to **F-15** with an installation height of 10 mm, all catering for loads of up to 210 kN/m. Special designs with customised bearing numbers and sizes are of course available on request.
Due to the spaced elastomer cores, type F point load fixed bearing strips allow for controlled and exactly defined load transfer as well as unobstructed rotation of the load part.







a	=	width of elastomer core see table
b	=	width of sliding bearing strip variable
l	=	length of elastomer core see table
t	=	thickness of elastomer core 5 and 10 mm
h	=	installation height of sliding bearing strips 6 and 11 mm

BT type	**Max. load**	**Elastomer core**		**Compression at max. load**	**Bearings per metre**
		a	**l**		
	kN/m	*mm*	*mm*	*N/mm²*	*Units*
F-1	**22.5**	50	50	3.0	3
F-2	**50**	75	75	4.5	2
F-3	**100**	100	100	5.0	2
F-4	**150**	100	150	5.0	2
F-5	**200**	100	200	5.0	2
F-11	**25**	75	75	3.0	3
F-12	**60**	100	100	4.5	2
F-13	**108**	100	150	5.0	2
F-14	**160**	100	200	5.0	2
F-15	**210**	100	250	5.0	2

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