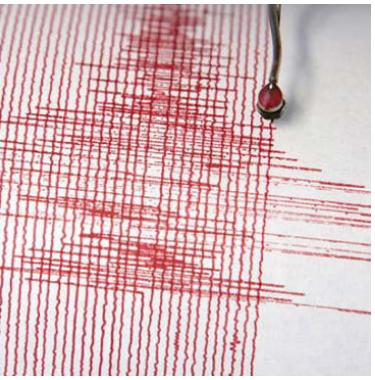
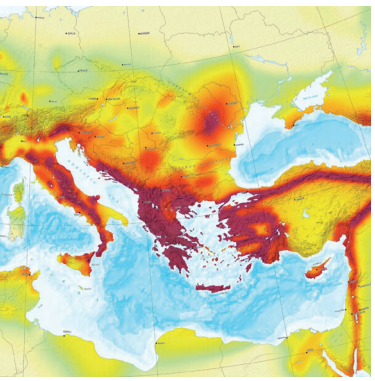
MIGUMAX





Earthquake-resistant expansion joint systems

Designed for extremely high movements, easy installation, all types of finishes, flexible use and heavy loads.

For maximum protection.

MIGUMAX – a comprehensive product range of earthquake-resistant expansion joint systems

For more than 50 years MIGUA has designed, manufactured and supplied premium quality movement joint systems. Thus we are regarded as market leaders throughout Europe. In close co-operation with architects, builders and owners our engineering team designs solutions for special or unique requirements.

MIGUMAX is an earthquake-resistant system designed to eliminate or minimise structural damage and, more importantly, save lives.

Play safe with MIGUA. Bank on our experience in case of projects requiring quakeproof solutions.

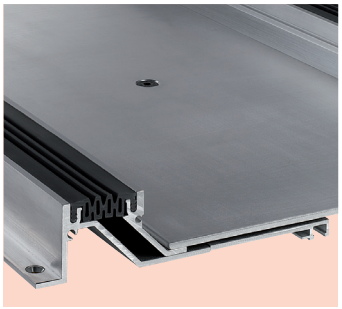
Content

Details about Load capacity

Icon	pedestrian	private cars	trucks DIN 1072	fork-lift trucks DIN 1055	Solid plastic tires

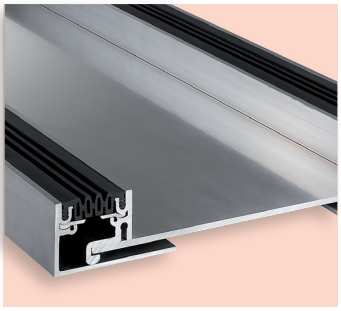
Load capacities for fork lift trucks are based on pneumatic or rubber tires with a contact surface of 200 x 200 mm.

Structure



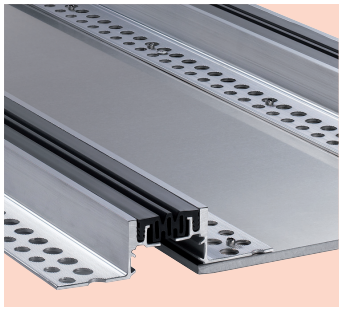
SDPP

Designed for extremely high movements: with MIGUMAX PopUp system and reduced sightline. Optimal for use of all types of finishes.



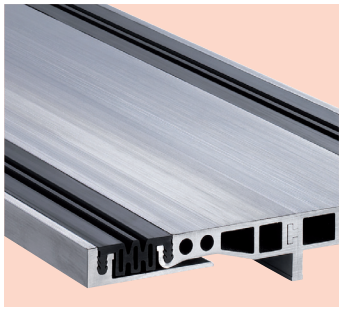
SDFP

Designed for easy installation with High movement capability. Inserts replaceable at any time. Sturdy middle section with special bearing ensures 3D-movement.



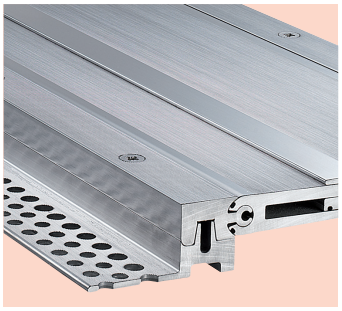
SDP

Cost-effective and long-term solutions, designed for all types of finishes, with replaceable inserts and advanced technologies for Friction-free 3D-movements.



SP

Designed for flexible use with inserts extensively resistant to oils, acids and bitumen. Efficient load-bearing capacity ensured by special profile cores.



FSV

Sturdy aluminium frame designed for heavy loads. MiguJoint technology provides maximum joint movement. Maintenance-free and robust.

General information

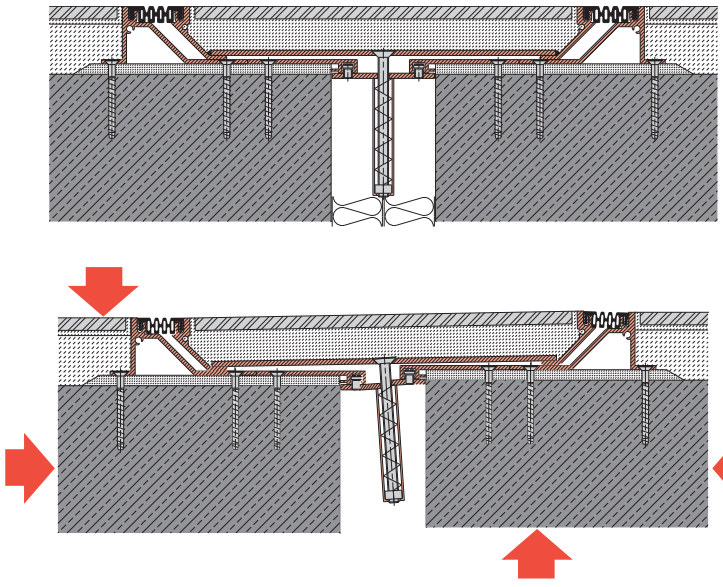
Expansion Joint Systems

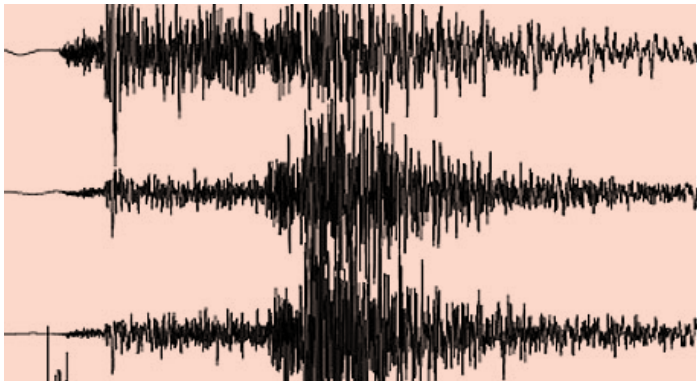
Expansion joint profiles are mostly made of aluminium or steel, either solid metal or assembled together with rubber inserts or gaskets in rubber. They are designed to accommodate the large movements of a construction, including settlement and, sometimes seismic deflections.
Movements may be caused by temperature and drying shrinkage, the supporting substrate, winds forcing the structure to sway or earthquake activity beneath the structure.

The most important criteria when selecting an expansion joint system are the following:

- Gap – the structural engineer has to indicate the anticipated movement of the structure and as a result the joint width based on the static calculation and dynamic analysis.
- Load bearing capacity – knowing the maximum loading the expansion joint system has to withstand is of utmost importance. Exceeding the load capacity of the system will cause it to fail. Loads are specified in DIN 1055 and DIN 1072.
- Movement capacity – precondition of selecting the correct profile is knowing the horizontal and/or vertical movement/s. Consideration must be given to the foundations and settlement in mining and seismic zones. In addition to this information it is important to consider water-tightness and chemical reaction requirements.

Apart from those decisive criteria it is also important to know about requirements on watertightness, chemical attack, etc.



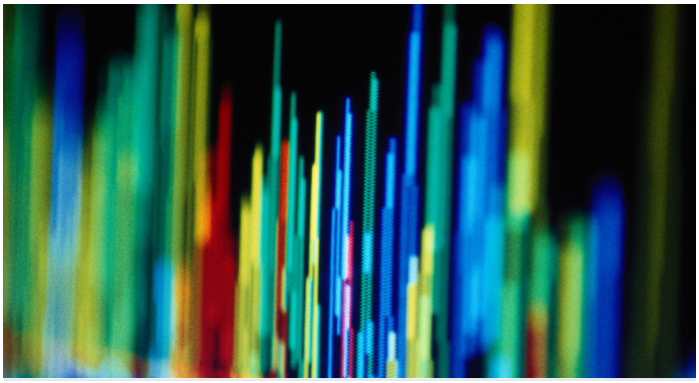


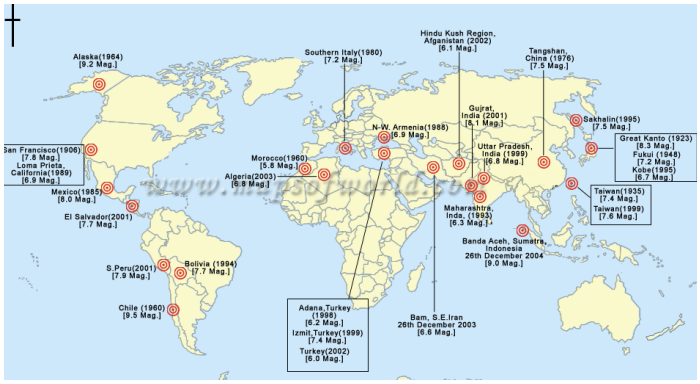
Earthquakes

Earthquakes mainly occur at the boundaries of the tectonic plates forming the Earth´s crust. Hence, they are not only categorized by their magnitude but also by the place where they occur.
The world is divided into more than 700 regions, the more active regions being divided into smaller sub-regions. The less active regions are sub-divided into larger zones.

Over long periods of time the movement of tectonic plates creates severe stress. The plates move continually making it virtually impossible to predict short or medium term earthquakes. The movement of the plates strains or deforms the rocks along the plate boundaries until the rocks can no longer sustain the strain. Then a sudden slip along the faults releases energy that causes earthquake shaking.

Fortunately most earthquake-prone areas occur in sparsely populated regions. However, some densely populated and rapidly growing cities such as Mexico City and Tokyo are in areas of high seismic actvity.





Measuring Earthquakes

Earthquakes are recorded by so called seismometers – the absolute magnitude of a quake is determined by the ground motion for specific seismic waves and recorded by numbers on the Moment magnitude scale (formerly Richter scale).

The report of the magnitude scale is logarithmic, i.e. an earthquake of magnitude 8 is 10 times the amplitude of a tremor of magnitude 7 and 100 times the amplitude for a tremor of 6. Much more impressive when comparing the energy generated: an earthquake of magnitude 8 radiates 30 times the energy of an event of magnitude 7 and 900 times the energy of an event of magnitude 6.

Earthquake damage

Major effects created by earthquakes are shaking and ground rupture. As a result varying degrees of damage occurs to buildings and other rigid structures, depending on the combination of magnitude (strength and duration of shaking), distance from the epicenter and the local geological conditions.
Strength decreases rapidly with distance from the epicenter – it becomes half as strong at a distance of 8 miles and a quarter as strong at a distance of 17 miles.
In terms of geological conditions, shaking is increased in soft, thick, wet soils.

World-wide Earthquakes and their consequences

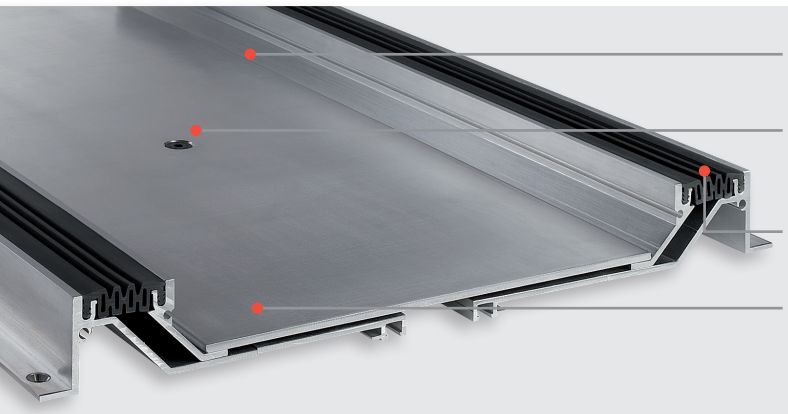
Scientists evaluate around 500.000 earthquakes each year, from which 100.000 can actually be felt. The major part and even the largest one´s take place in the 40.000 km long circum-Pacific seismic belt, well known as the Pacific Ring of Fire.
In the U.S. earthquakes are most common in California and Alaska, but also in Hawaii, Montana, Nevada, Washington, Quebec, etc.

Affected states have already adopted codes requiring some level of protection. As a result of such legislation buildings constructed to the required standards have life saving and damage avoidance/limitation features not found in older buildings.

The various national codes set minimum standards to ensure life safety, but do not reflect on specific damage and loss of function. Today, there are different ways to protect and prepare from severe damage: earthquake engineering, earthquake preparedness, household seismic safety, seismic retrofit (including special fasteners, materials and techniques).
Seismic retrofitting means modification of existing structures to make them more resistant to seismic activity, ground motion or soil failure due to earthquakes.
Among others, preparedness can be achieved by using seismic expansion joint systems, particularly in multi-storey buildings where joints become wider on upper floors in reaction to the increased seismic sway.

SDPP – designed for extremely high movements

SDPP 65



High movement capacity
ideal for seismic applications

MIGUMAX PopUp system,
i.e. cover returns and resets after movement

Reduced sightline
minimally visible

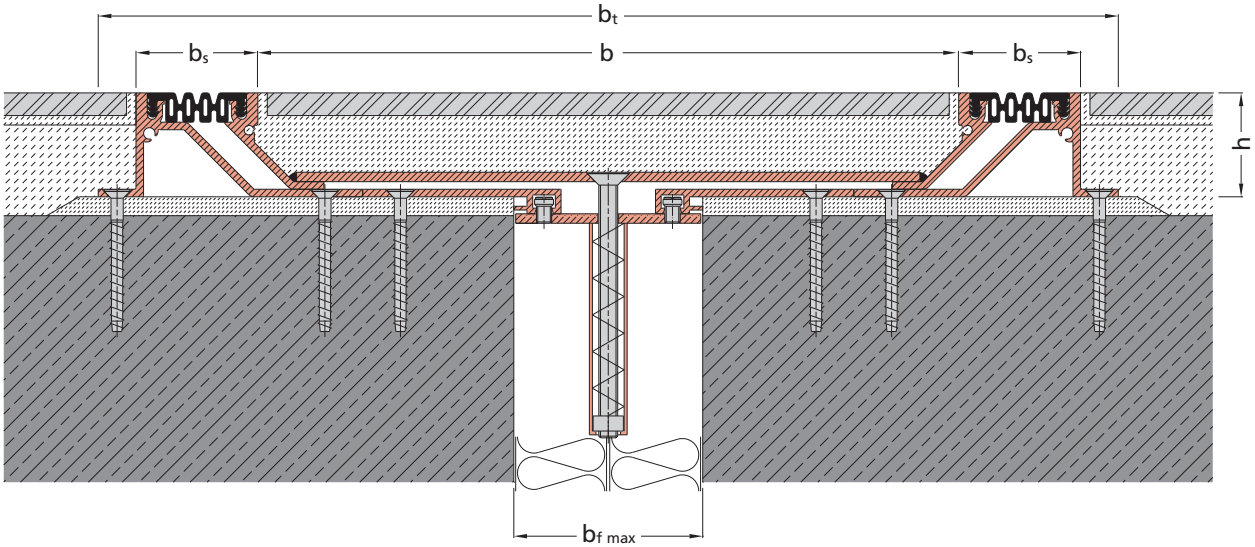
Ideal for use of all types of finishes
(granite, marble, ceramic, carpet, vinyl)

Profile	Joint width max. $b_{f\,max}$ [mm]	Movement **thermal** Δb_f [mm]	Movement **seismic** Δb_f [mm]	Width visible* b_s [mm]	Width inlay **b** [mm]	Width total b_t [mm]	Installation height **h** [mm]	Load capacity
SDPP 100/**65**/55	100	44 (± 22)	240 (+200/ -40)	65	370	540	55	Pedestrian
SDPP 150/**65**/55	150	44 (± 22)	290 (+200/ -90)	65	420	590	55	Pedestrian
SDPP 200/**65**/55	200	44 (± 22)	340 (+200/-140)	65	470	640	55	Pedestrian
SDPP 300/**65**/55	300	44 (± 22)	440 (+200/-240)	65	570	740	55	Pedestrian
SDPP 400/**65**/55	400	44 (± 22)	540 (+200/-340)	65	670	840	55	Pedestrian
SDPP 500/**65**/55	500	44 (± 22)	640 (+200/-440)	65	770	940	55	Pedestrian

*each side

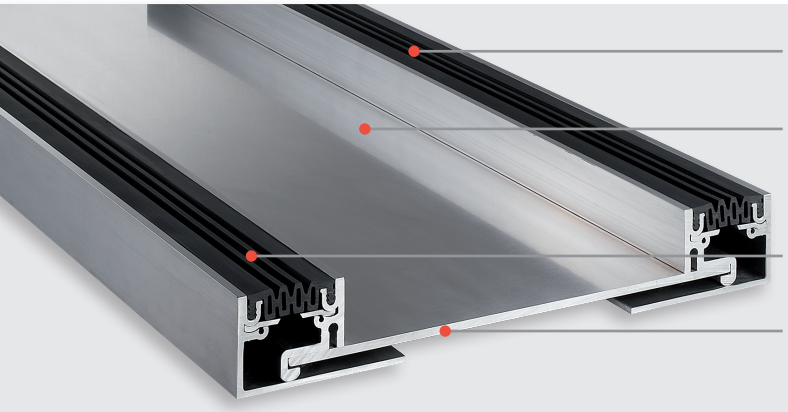
Side plates and middle section made of solid aluminium with flexible Synca inserts.
Corner versions will be designed individually. Details submitted project-wise on request.

Standard-coulors: black, grey, beige
Production length: 4 m



SDFP – designed for easy installation

SDFP 65



Full movement capability
with minimum visibility

Flush joint cover
concealed in the surrounding floor

Ideal for use of all types of finishes

Inserts replaceable
at any time

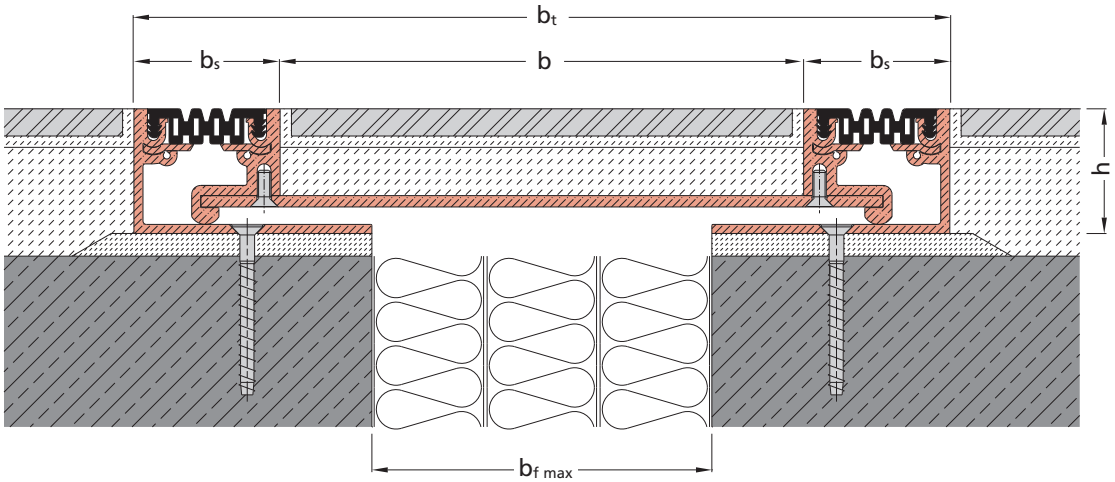
Sturdy middle section with bearing
for horizontal and vertical movement

Profile	Joint width max. $b_{f\,max}$ [mm]	Movement **thermal** Δb_f [mm]	Movement **seismic** Δb_f [mm]	Width visible* b_s [mm]	Width inlay **b** [mm]	Width total b_t [mm]	Installation height **h** [mm]	Load capacity
SDFP 150/**65**/55	150	44 (± 22)	100 (± 50)	65	230	360	55	Pedestrian
SDFP 200/**65**/55	200	44 (± 22)	100 (± 50)	65	280	410	55	Pedestrian
SDFP 300/**65**/55	300	44 (± 22)	100 (± 50)	65	380	510	55	Pedestrian
SDFP 400/**65**/55	400	44 (± 22)	100 (± 50)	65	480	610	55	Pedestrian
SDFP 500/**65**/55	500	44 (± 22)	100 (± 50)	65	580	710	55	Pedestrian

*each side

Side plates and middle section made of solid aluminium with flexible Synca inserts.
Corner versions will be designed individually. Details submitted project-wise on request.

Standard-coulors: black, grey, beige
Production length: 4 m



SDFP – designed for easy installation

SDFP 85

Full movement capability
with minimum visibility

Flush joint cover
concealed in the surrounding floor

Ideal for use of all types of finishes

Inserts replaceable
at any time

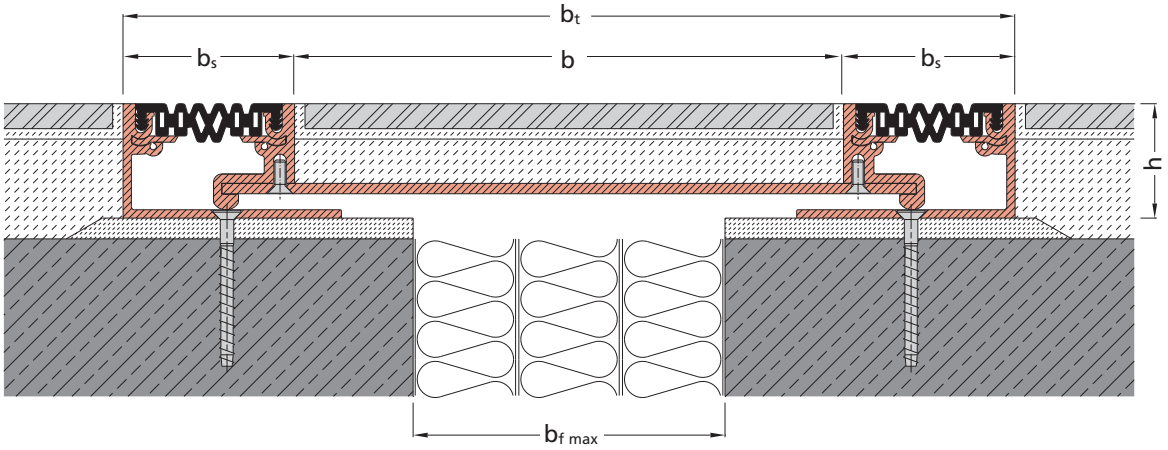
Sturdy middle section with bearing
for horizontal and vertical movement

Profile	Joint width max. $b_{f\,max}$ [mm]	Movement **thermal** Δb_f [mm]	Movement **seismic** Δb_f [mm]	Width visible* b_s [mm]	Width inlay **b** [mm]	Width total b_t [mm]	Installation height **h** [mm]	Load capacity
SFDP 150/**85**/55	150	60 (± 30)	125 (+50/-75)	83	264	429	55	Pedestrian
SFDP 200/**85**/55	200	60 (± 30)	125 (+50/-75)	83	314	479	55	Pedestrian
SFDP 300/**85**/55	300	60 (± 30)	125 (+50/-75)	83	414	579	55	Pedestrian
SFDP 400/**85**/55	400	60 (± 30)	125 (+50/-75)	83	514	679	55	Pedestrian
SFDP 500/**85**/55	500	60 (± 30)	125 (+50/-75)	83	614	779	55	Pedestrian

*each side

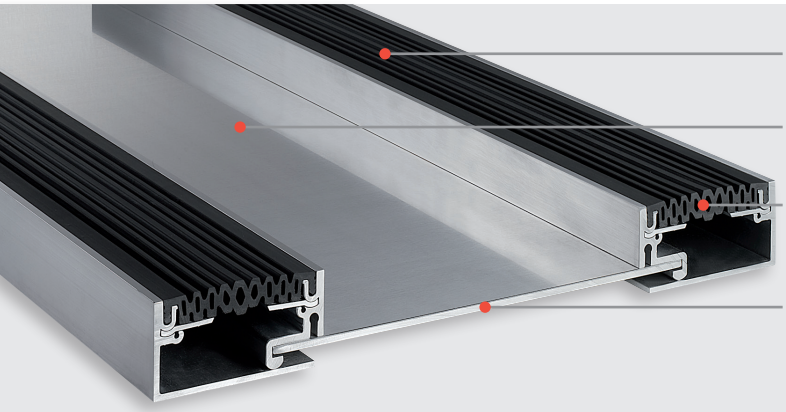
Side plates and middle section made of solid aluminium with flexible Synca inserts.
Corner versions will be designed individually. Details submitted project-wise on request.

Standard-coulors: black, grey, beige on request
Production length: 4 m



SDFP – designed for easy installation

SDFP 105



Highly flexible inserts
provide high movement capacity

Ideal for use of all types of finishes

Inserts replaceable
at any time

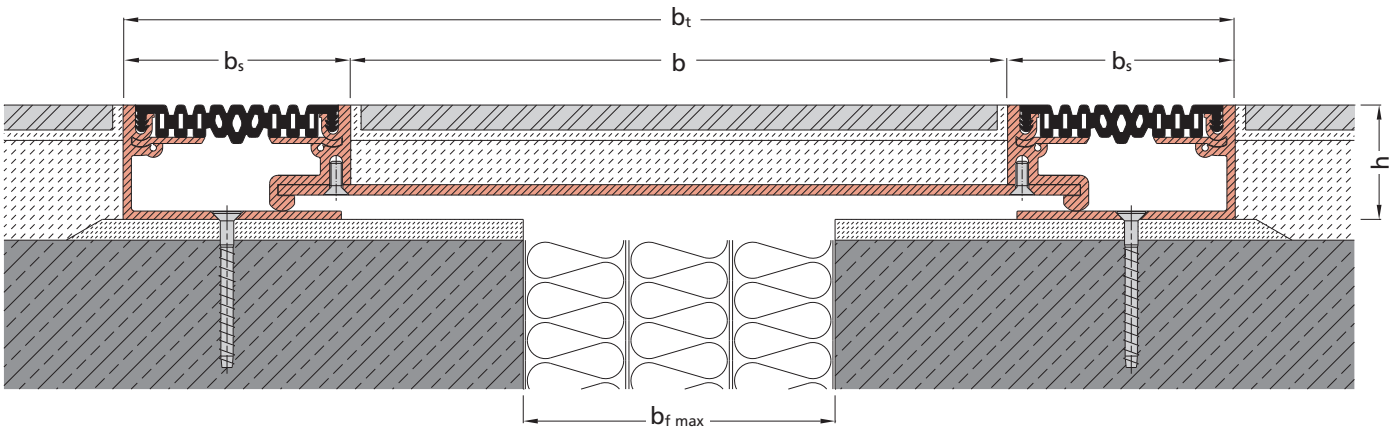
Sturdy middle section with bearing
for horizontal and vertical movement

Profile	Joint width max. $b_{f\,max}$ [mm]	Movement **thermal** Δb_f [mm]	Movement **seismic** Δb_f [mm]	Width visible* b_s [mm]	Width inlay **b** [mm]	Width total b_t [mm]	Installation height **h** [mm]	Load capacity
SDFP 150/**105**/55	150	80 (± 40)	175 (+50/-125)	110	316	535	55	Pedestrian
SDFP 200/**105**/55	200	80 (± 40)	175 (+50/-125)	110	366	585	55	Pedestrian
SDFP 300/**105**/55	300	80 (± 40)	175 (+50/-125)	110	466	685	55	Pedestrian
SDFP 400/**105**/55	400	80 (± 40)	175 (+50/-125)	110	566	785	55	Pedestrian
SDFP 500/**105**/55	500	80 (± 40)	175 (+50/-125)	110	666	885	55	Pedestrian

*each side

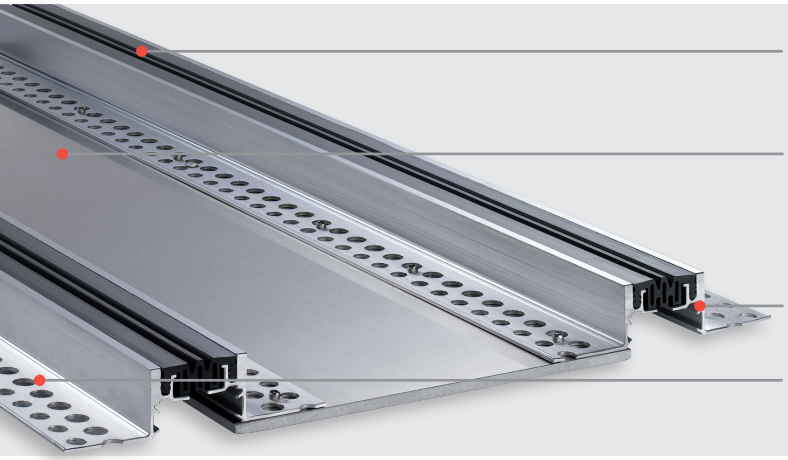
Side plates and middle section made of solid aluminium with flexible Synca inserts.
Corner versions will be designed individually. Details submitted project-wise on request.

Standard-coulors: black, grey, beige on request
Production length: 4 m



SDP – designed for all types of finishes

SDP 55



Friction-free movement
with inserts replaceable at any time

Designed for use with high quality finishes

Cost-effective and
long-term solution

Connecting pins
provide easy mounting

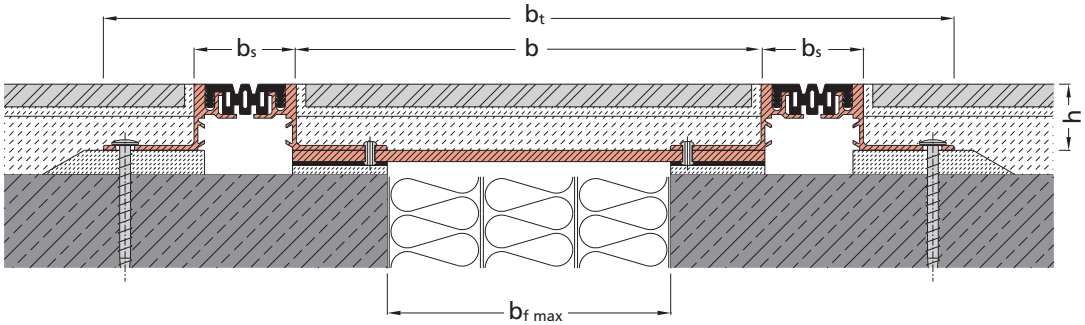
MultiHole sides
provide ideal anchoring and easy mounting

Profile	Joint width max. $b_{f\,max}$ [mm]	Movement **thermal** Δb_f [mm]	Movement **seismic** Δb_f [mm]	Width visible* b_s [mm]	Width inlay **b** [mm]	Width total b_t [mm]	Installation height **h** [mm]	Load capacity
SDP 150/**55**/35	150	32 (± 16)	100 (± 50)	54	246	450	35	Private cars
SDP 150/**55**/50	150	32 (± 16)	100 (± 50)	54	246	450	50	Private cars
SDP 200/**55**/35	200	32 (± 16)	100 (± 50)	54	296	500	35	Private cars
SDP 200/**55**/50	200	32 (± 16)	100 (± 50)	54	296	500	50	Private cars
SDP 300/**55**/35	300	32 (± 16)	100 (± 50)	54	396	600	35	Pedestrian
SDP 300/**55**/50	300	32 (± 16)	100 (± 50)	54	396	600	50	Pedestrian
SDP 400/**55**/35	400	32 (± 16)	100 (± 50)	54	496	700	35	Pedestrian
SDP 400/**55**/50	400	32 (± 16)	100 (± 50)	54	496	700	50	Pedestrian
SDP 500/**55**/35	500	32 (± 16)	100 (± 50)	54	596	800	35	Pedestrian
SDP 500/**55**/50	500	32 (± 16)	100 (± 50)	54	596	800	50	Pedestrian

*each side

Side plates and middle section made of solid aluminium with flexible Synca inserts.
Corner versions will be designed individually. Details submitted project-wise on request.

Standard-coulors: black, grey, beige
Production length: 4 m



SDP – designed for all types of finishes

SDP 63

Friction-free movement
with inserts replaceable at any time

Designed for use with high quality finishes

Connecting pins
provide easy mounting

Cost-effective and
long-term solution

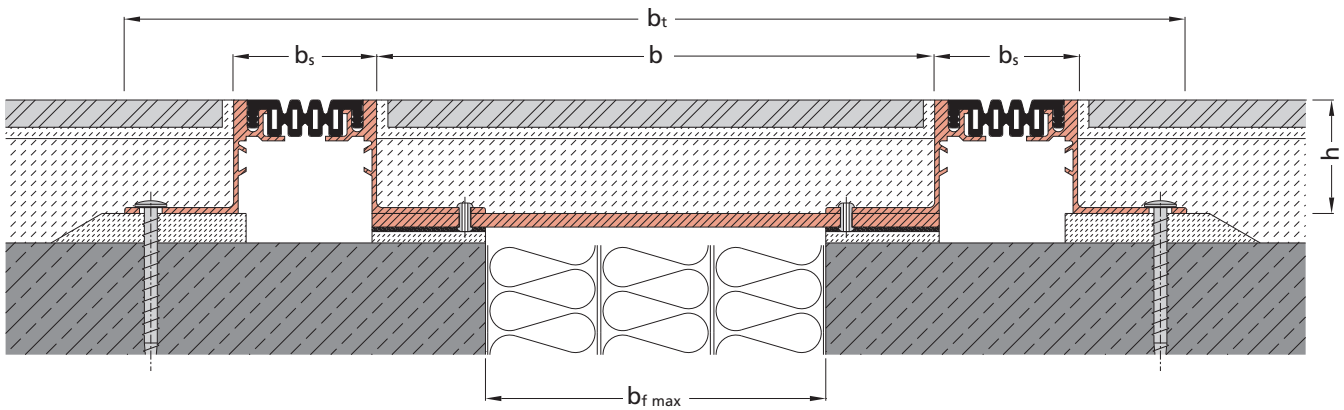
MultiHole sides
provide ideal anchoring and easy mounting

Profile	Joint width max. $b_{f\,max}$ [mm]	Movement **thermal** Δb_f [mm]	Movement **seismic** Δb_f [mm]	Width visible* b_s [mm]	Width inlay **b** [mm]	Width total b_t [mm]	Installation height **h** [mm]	Load capacity
SDP 150/**63**/35	150	44 (± 22)	100 (± 50)	63	246	468	35	Private cars
SDP 150/**63**/50	150	44 (± 22)	100 (± 50)	63	246	468	50	Private cars
SDP 200/**63**/35	200	44 (± 22)	100 (± 50)	63	296	518	35	Private cars
SDP 200/**63**/50	200	44 (± 22)	100 (± 50)	63	296	518	50	Private cars
SDP 300/**63**/35	300	44 (± 22)	100 (± 50)	63	396	618	35	Pedestrian
SDP 300/**63**/50	300	44 (± 22)	100 (± 50)	63	396	618	50	Pedestrian
SDP 400/**63**/35	400	44 (± 22)	100 (± 50)	63	496	718	35	Pedestrian
SDP 400/**63**/50	400	44 (± 22)	100 (± 50)	63	496	718	50	Pedestrian
SDP 500/**63**/35	500	44 (± 22)	100 (± 50)	63	596	818	35	Pedestrian
SDP 500/**63**/50	500	44 (± 22)	100 (± 50)	63	596	818	50	Pedestrian

*each side

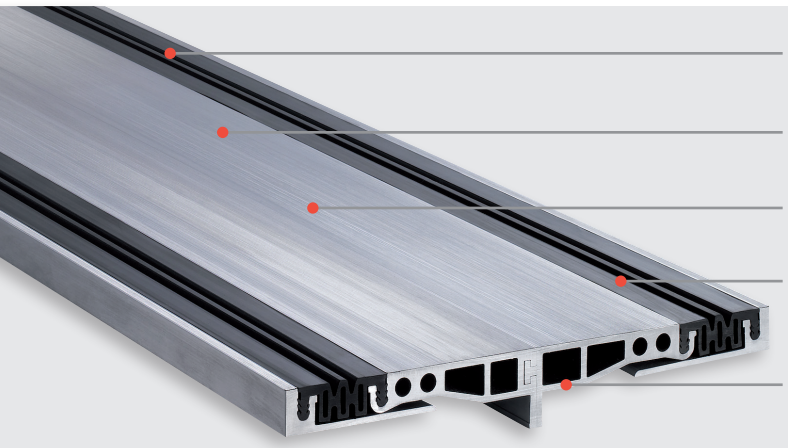
Side plates and middle section made of solid aluminium with flexible Synca inserts.
Corner versions will be designed individually. Details submitted project-wise on request.

Standard-coulors: black, grey, beige
Production length: 4 m



SP – designed for flexible use

SP 55



Insert extensively resistant
to oils, acids and bitumen

Absorbs horizontal and vertical movement

Standard type with 3 mm upstand of insert
for flush cover inlay

Inserts replaceable at any time

Efficient load-bearing capacity by
special profile cores

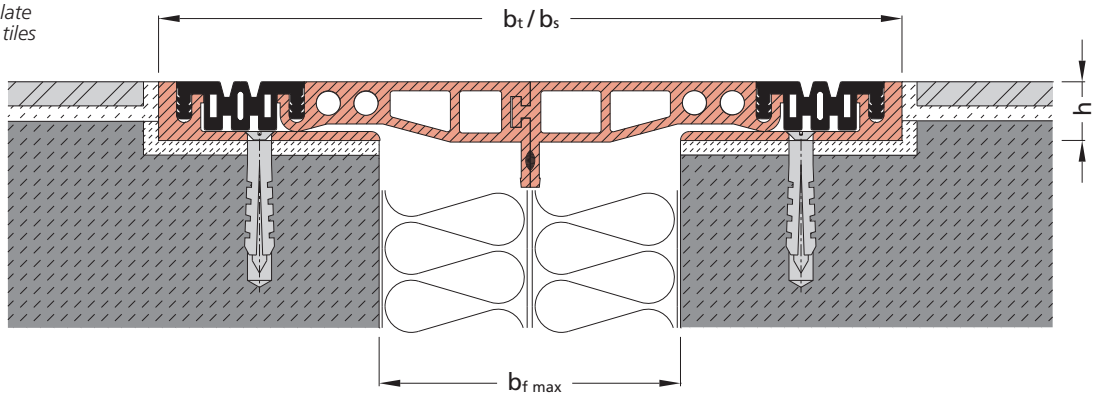
Profile	Joint width max. $b_{f\,max}$ [mm]	Movement **thermal** Δb_f [mm]	Movement **seismic** Δb_f [mm]	Width visible* b_s [mm]	Width total b_t [mm]	Installation height **h** [mm]	Load capacity
SP 100/**55**/20	100	32 (± 16)	65 (+16/-50)	247	247	20	Pedestrian
SP 150/**55**/20	150	32 (± 16)	65 (+16/-50)	297	297	20	Pedestrian
SP 200/**55**/20	200	32 (± 16)	65 (+16/-50)	347	347	20	Pedestrian
SP 250/**55**/20	250	32 (± 16)	65 (+16/-50)	397	397	20	Pedestrian
SP 300/**55**/20	300	32 (± 16)	65 (+16/-50)	447	447	20	Pedestrian
SP 350/**55**/20	350	32 (± 16)	65 (+16/-50)	497	497	20	Pedestrian
SP 400/**55**/20	400	32 (± 16)	65 (+16/-50)	547	547	20	Pedestrian
SP 450/**55**/20	450	32 (± 16)	65 (+16/-50)	597	597	20	Pedestrian

*with Inlay

Side plates and middle section made of solid aluminium with flexible Synca inserts.
Corner versions will be designed individually. Details submitted project-wise on request.

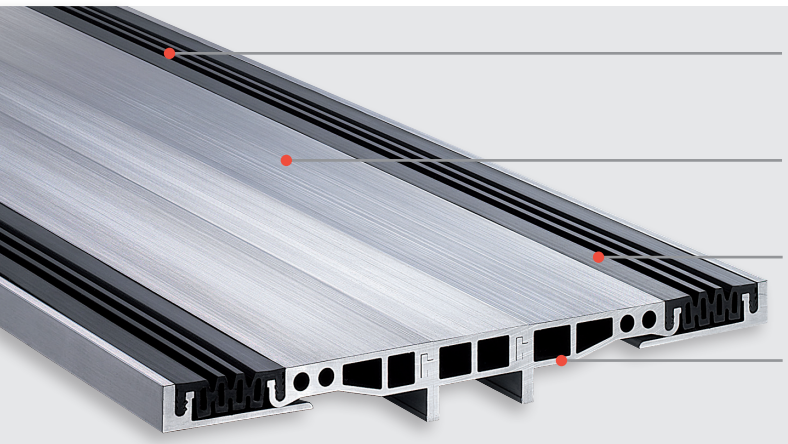
Standard-coulors: black, grey, beige
Production length: 4 m

Sectional drawing
with visible middle plate
in combination with tiles



SP – designed for flexible use

SP 63



Insert extensively resistant
to oils, acids and bitumen

Absorbs horizontal and vertical movement

Inserts replaceable at any time

Efficient load-bearing capacity by
special profile cores

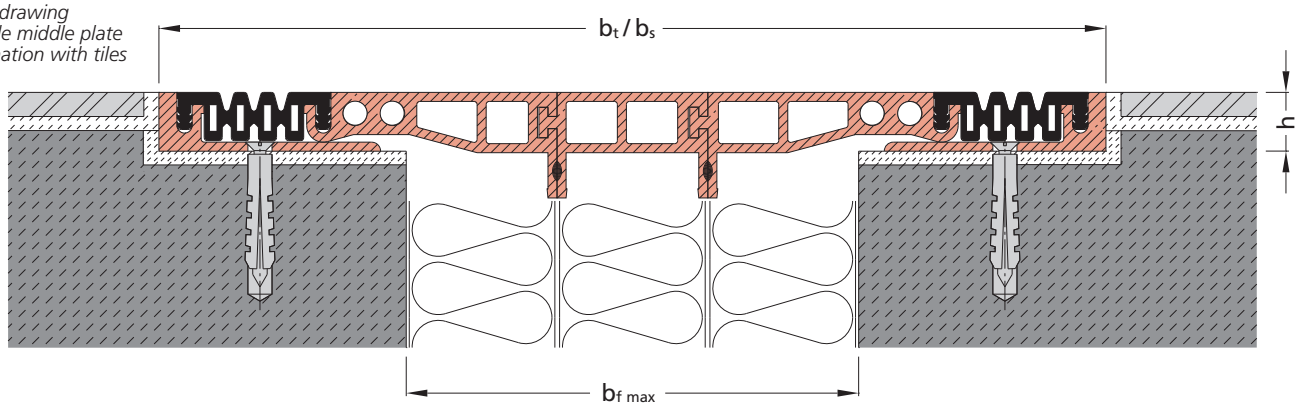
Profile	Joint width max. $b_{f\,max}$ [mm]	Movement **thermal** Δb_f [mm]	Movement **seismic** Δb_f [mm]	Width visible* b_s [mm]	Width total b_t [mm]	Installation height **h** [mm]	Load capacity
SP 100/**63**/20	100	44 (± 22)	72 (+22/-50)	264	264	20	Pedestrian
SP 150/**63**/20	150	44 (± 22)	72 (+22/-50)	314	314	20	Pedestrian
SP 200/**63**/20	200	44 (± 22)	72 (+22/-50)	364	364	20	Pedestrian
SP 250/**63**/20	250	44 (± 22)	72 (+22/-50)	414	414	20	Pedestrian
SP 300/**63**/20	300	44 (± 22)	72 (+22/-50)	464	464	20	Pedestrian
SP 350/**63**/20	350	44 (± 22)	72 (+22/-50)	514	514	20	Pedestrian
SP 400/**63**/20	400	44 (± 22)	72 (+22/-50)	564	564	20	Pedestrian
SP 450/**63**/20	450	44 (± 22)	72 (+22/-50)	614	614	20	Pedestrian

*with Inlay

Side plates and middle section made of solid aluminium with flexible Synca inserts.
Corner versions will be designed individually. Details submitted project-wise on request.

Standard-coulors: black, grey, beige
Production length: 4 m

Sectional drawing with visible middle plate in combination with tiles



FSV – designed for heavy loads

FSV 280

Solid aluminium design:
hard wearing, maintenance-free, long lasting

Profile Head removable
at any time

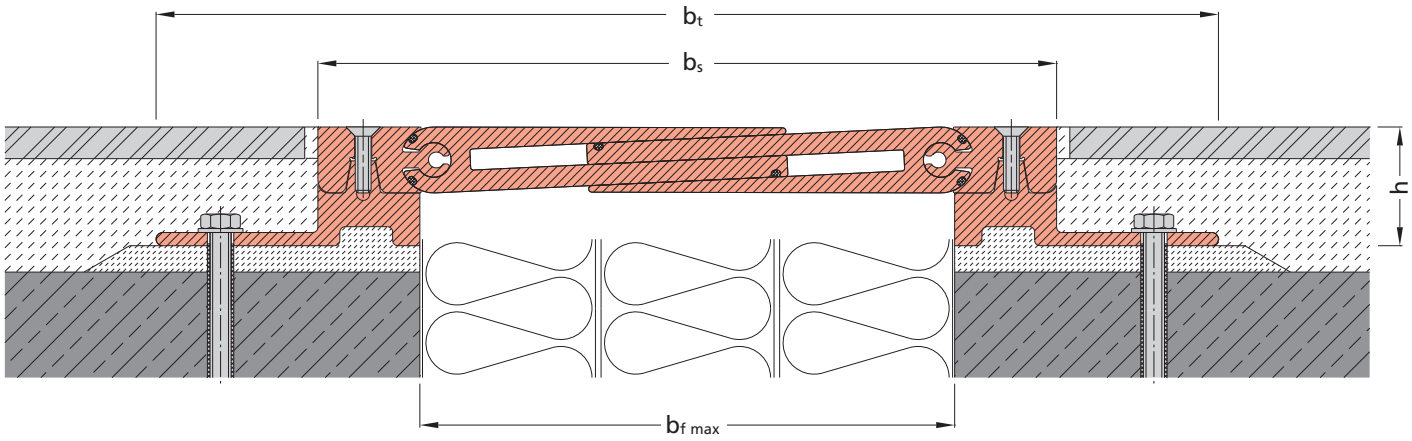
Middle section with MiguJoint technology
provides high horizontal and maximum vertical movement

Easy and safe installation by
MultiHole sides

Profile	Joint width max. $b_{f\,max}$ [mm]	Movement **thermal** Δb_f [mm]	Movement **seismic** Δb_f [mm]	Width visible b_s [mm]	Width total b_t [mm]	Installation height **h** [mm]	Load capacity / [kN]	Load capacity [kg/mm width of wheel]
FSV 280/ 45	200	85 (± 42,5)	85 (± 42,5)	280	403	45	35	6,5
FSV 280/ 80	200	85 (± 42,5)	85 (± 42,5)	280	403	80	35	6,5
FSV 280/130	200	85 (± 42,5)	85 (± 42,5)	280	403	130	35	6,5

Solid aluminium cover with striated top surface, perforated and striated mounting brackets and flexible rubber cords.
Corner versions will be designed individually.
Details submitted project-wise on request.

Production length: 3 m



FSV – designed for heavy loads

FSV 285

Solid aluminium design:
hard wearing, maintenance-free, long lasting

Extremely low height
available for renovation purposes

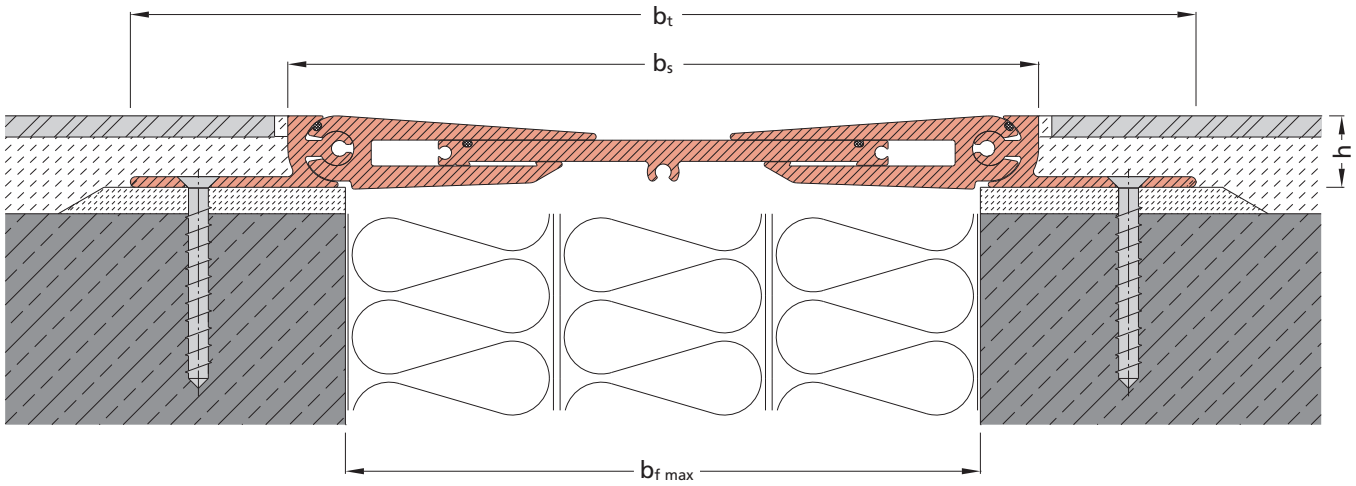
Middle section with MiguJoint technology
provides high horizontal and maximum vertical movement

Easy and safe mounting by
MultiHole sides

Profile	Joint width max. $b_{f\,max}$ [mm]	Movement **thermal** Δb_f [mm]	Movement **seismic** Δb_f [mm]	Width visible b_s [mm]	Width total b_t [mm]	Installation height **h** [mm]	Load capacity
FSV 285/27	240	100 (± 50)	100 (± 50)	284	404	27	Private cars
FSV 285/40	240	100 (± 50)	100 (± 50)	284	404	40	Private cars
FSV 285/80	240	100 (± 50)	100 (± 50)	284	404	80	Private cars

Solid aluminium cover with striated top surface, perforated and striated mounting brackets and flexible rubber cords.
Corner versions will be designed individually.
Details submitted project-wise on request.

Production length: 3 m



FSV – designed for heavy loads

FSV 500

Solid aluminium design:
hard wearing, maintenance-free, long lasting

Profile Head removable
at any time

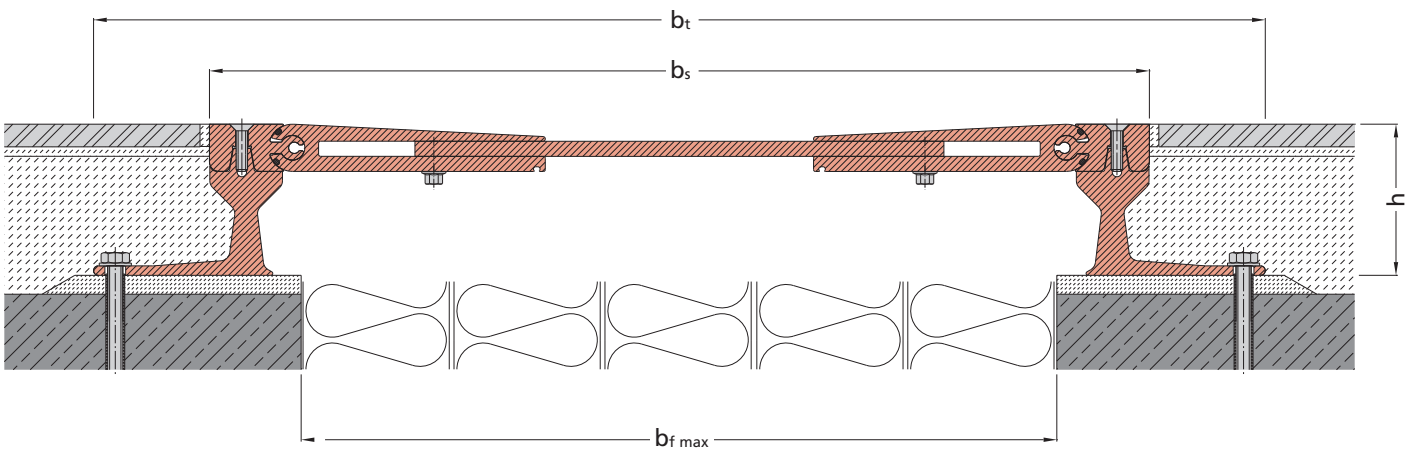
Middle section with MiguJoint technology
provides high horizontal and maximum vertical movement

Easy and safe mounting by
MultiHole sides

Profile	Joint width max. $b_{f\,max}$ [mm]	Movement **thermal** Δb_f [mm]	Movement **seismic** Δb_f [mm]	Width visible b_s [mm]	Width total b_t [mm]	Installation height **h** [mm]	Load capacity
FSV 500/45	400	100 (± 50)	200 (± 100)	498	620	45	Pedestrian
FSV 500/80	400	100 (± 50)	200 (± 100)	498	620	80	Pedestrian
FSV 500/130	400	100 (± 50)	200 (± 100)	498	620	130	Pedestrian

Solid aluminium cover with striated top surface, perforated and striated mounting brackets and flexible rubber cords.
Corner versions will be designed individually.
Details submitted project-wise on request.

Production length: 3 m



Notes

MIGUA.
Market leader in Europe for more than 50 years.

MIGUA is completely focussed on expansion joint systems. Leading architects, designers and general contractors specify our products for national and international projects. We will gladly provide you with a list of references, on request.

MIGUA expansion joint systems are used from Abu Dhabi to Zurich providing protection, functionality and architectural excellence on a permanent basis.

They are used in many different building types, e.g. shopping malls, airports, exhibition halls, hospitals, industrial plants, storage facilities, car parks and pedestrian bridges. It is our passion to be innovative, to supply perfect quality and to develop solutions according to our customers requirements.

MIGUA Headquarters Wuelfrath

Technology. Innovative from experience.

Competence does not appear by chance. More than 10 million metres of MIGUA movement joint systems have, over decades, been installed worldwide to the satisfaction of architects, designers, builders and owners. We are leaders in technological development in Europe as witnessed by numerous patents and test certificates.

MIGUA engineers are, on an ongoing basis, designing and developing new profiles with enhanced characteristics which lead to time and cost saving installations.
Through the use of special materials safety features are improved and stringent performance tests are conducted on all new products.

Quality. Made in Germany.

MIGUA products combine optimum solutions with excellence in design, high quality materials and safety features which are supported by our standard warranties.

Quality makes the pre-condition for product safety.That is why MIGUA develop and manufacture in Germany. Only products on the highest standard achieve the necessary durability and allow required warranties. Due to this reason MIGUA is able to offer such warranties.

Beyond the technical quality of our products the main target of the MIGUA quality management is the utmost satisfaction of our customers. Each operation and work step is described and will be recorded. From the first idea through research and development up to successful market launch.

Just this makes MIGUA successful.

Solutions. Which work.

By ensuring the technical quality of our products MIGUA can attain its primary goal of complete customer satisfaction. New products are only launched after extensive tests and product and market research. Our products are supported by a national network of technical advisers and our world-wide partners and experienced international team - available at all times to assist you.

MIGUA Movement Joint Systems are simply the best!

Contact

MIGUA offers a comprehensive product portfolio of expansion joint covers and systems with outstanding features.

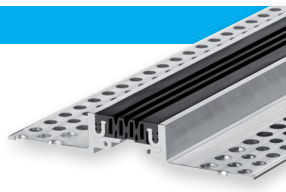
Increasing architectural requirements as well as new construction materials and processes demand optimized expansion joint systems. For this reason, MIGUA is your experienced partner since we offer more than 600 different profiles for a wide range of applications.

Our product range covers 5 application orientated product groups as detailed below. In addition to standard profiles our R&D engineers provide highly sophisticated solutions for special or non-standard applications.

MIGUA provides solutions for extraordinary challenges.

MIGUTEC

Expansion joint profiles

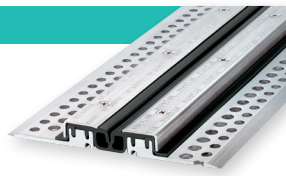


MIGUTRANS

Heavy duty expansion joint systems

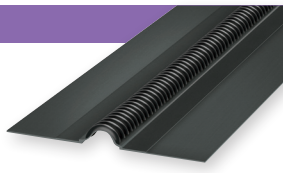
MIGUTAN

Watertight expansion joint systems for traffic



MIGUPREN

Watertight expansion joint systems for roofs



MIGUMAX

Earthquake resistant expansion joint systems

MIGUA
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Subject to technical change.
02/2011 - 5000 GB