MFPA Leipzig GmbH

Testing, monitoring and certification body for construction materials, products and systems

Business Division V – Underground Construction
Dr.-Ing. Ute Hornig

Work Group 5.1 – Waterproofing of Buildings

General Building Authority Test Certificate

Test Certificate no.: **P-SAC 02 / 5.1 / 18 - 214**

Object:

MIGUTAN joint covers
Sealing of expansion joints on floor surfaces subject to vehicle traffic in accordance with Building Regulation List A, Part 2, seq. no. 1.13, edition 2015/2 in conjunction with editions 2016/1 and 2016/2: Sealing of expansion joints against pressurized water in the soil and against nonpressurized water on floor surfaces subject to vehicle traffic that are not manufactured with the products according to BRL B, Part 1, seq. no. 1.10.

Applicant:

MIGUA Fugensysteme GmbH
Dieselstraße 20-24
42489 Wülfrath

Date of issue: 20/12/2018

Period of validity: 19/12/2023

This General Building Authority Test Certificate consists of 10 pages and one appendix.

Certification, inspection and testing body recognised in accordance with the State Building Regulations (SAC 02) and the Construction Products Regulation (NB 0800)

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A General provisions

(1) The usability of the construction product in the sense of the State Building Regulations is verified with this General Building Authority Test Certificate. It extends and replaces the General Building Authority Test Certificate P-SAC 02 / 5.1 / 16 – 406.

(2) The General Building Authority Test Certificate does not replace the permits, approvals and certificates legally prescribed for the execution of construction projects.

(3) The General Building Authority Test Certificate is issued notwithstanding the rights of third parties, in particular private property rights.

(4) Notwithstanding further regulations in the "Special provisions", the manufacturer and distributor of the construction product must provide the user of the construction product with copies of the General Building Authority Test Certificate and must point out that the General Building Authority Test Certificate must be available at the place of use. The authorities involved are to be provided on request with copies of the General Building Authority Test Certificate.

(5) The General Building Authority Test Certificate may only be reproduced in unabridged form. The publication of extracts requires the consent of the Material Research and Testing Institute for the Construction Industry Leipzig (MFPA Leipzig). Texts and drawings of advertising brochures must not contradict the General Building Authority Test Certificate. Translations of the General Building Authority Test Certificate must contain the notice "Translation of the German original version – not checked by the MFPA Leipzig".

(6) The General Building Authority Test Certificate is issued revocably. The provisions can subsequently be supplemented and changed, in particular when necessitated by new technical findings.

B Special provisions

1 Object and area of application

1.1 Object

The General Building Authority Test Certificate applies to the manufacture and use of the *MIGUTAN* expansion joint system from MIGUA Fugensysteme GmbH as a directly trafficable expansion joint seal in combination with an area seal on floor areas subject to vehicle traffic according to Building Regulation List A, Part 2, seq. no. 1.13 edition 2015/2 in conjunction with editions 2016/1 and 2016/2: "Sealing of expansion joints against pressurized water in the soil and against nonpressurized water on trafficable floor surfaces that cannot be manufactured with the products according to Building Regulation List B, Part 1, seq. no. 1.10."

The MIGUTAN joint constructions consist of aluminium expansion joint covers, the exchangeable seal insert clamped in the expansion joint covers, stainless steel caps and the long AAS sheets connecting on both sides. The seal inserts are located in the upper system structure and are directly trafficable.

1.2 Area of application

(1) The joint covers listed in Table 1 may be used for the sealing of expansion joints in structural elements made of concrete and steel reinforced concrete on floor areas subject to vehicle traffic in connection with an area seal under the following boundary conditions (2) against:

floor moisture and nonpressurized water.

(2) The joint constructions are usable under the following boundary conditions:

Table 1 Movement capacity of the joint constructions

Joint cover	**visible cover width[1] b_s [mm]**	**Joint width b_1 b_{tmax} [mm]**	**Elongation/ compression (total deformation) [mm]**	**Settlement [mm]**
FPB0	82	45	+10/-5(15)	±10
FPGB0	82	45	±8(16)	±10
FP90	95	60	± 20 (40)	±10
FPG90	95	60	± 10 (20)	±10
FP 110	111	75	± 30 (60)	± 10
FPG 110	111	75	± 20 (40)	± 10
FP 115	115	80	+50 / -30 (80)	± 10
FP 130	133	100	± 45 (90)	± 10
FP 155	155	120	± 60 (120)	± 10

1) Manufacturer data

(3) Use is bound to the observance of the applicant's processing guidelines, Appendix 1 and to the provisions for the execution, paragraph 4.

2 Provisions for the construction product

2.1 Properties and composition

(1) The joint construction has the following basic structure, figs. 1 to 3.

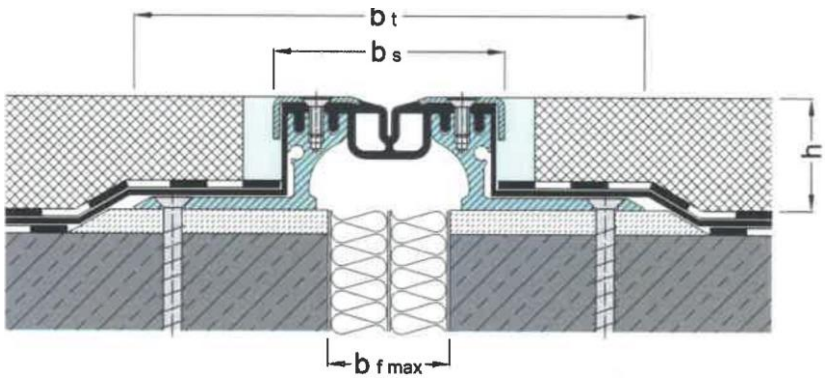


Fig. 1 schematic structure FP 90 NI IF (long sheet), [source: applicant]

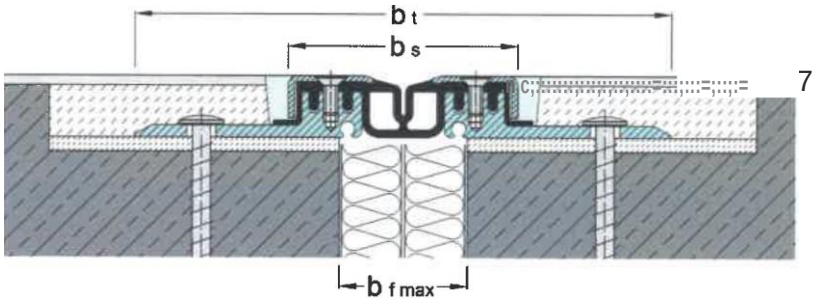


Fig. 2 schematic structure FP 90 NI kF (short sheet), [source: applicant]

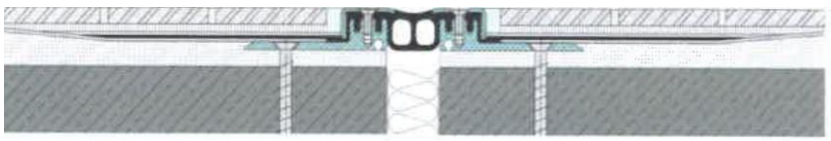


Fig. 3 schematic structure FP 90/25 NI XA (laminated foil), [source: applicant]

(2) The *MIGUTAN* joint constructions each consist of two structurally identical metal expansion joint covers, an exchangeable elastic seal insert clamped in the joint covers (also referred as the centre seal), the stainless steel caps, which have an anti-slip structure on the upper side as well as the long, short or laminated connecting sheets (AAS sheets) which connect on both sides. The seal inserts in different heights are offered with matching aluminium expansion joint covers and combined with the connecting foils depending on the respective joint situation.

offered with matching aluminium expansion joint covers and combined with the connecting foils depending on the respective joint situation.

With the differently profiled expansion joint covers made of a high-strength aluminium alloy ($AlMg_{0,7}Si$: EN-AW 6063 T66 according to EN 573), the joint cover heights vary between 25 mm and 117 mm, measured from the lower edge of the joint cover to the upper edge of the cover cap. The anchoring of trafficable joint constructions in monolithically manufactured concrete floors or additive floors that are subsequently coated takes place by casting the expansion joint covers, which are fitted with movable anchor rods or loop anchors, in the concrete. Steel/stainless steel brackets are used for greater heights, e.g. in the case of insulated structures.

(3) The seal inserts are made from a weldable thermoplastic material. The seal inserts are dimensioned differently depending on the possible joint movements, see Table 2. Whereas seal inserts designated FP … have a shovel shape on the upper side, the inserts designated FPG … have a smooth surface and are specially intended for use in areas with increased hygiene requirements. The seal inserts are all located in the upper system structure and are thus directly trafficable.

Table 2 Geometry of the seal inserts

Joint cover	Width* [mm]	Height* [mm]	Thickness* [mm]	Linear weight [g/m]
FP 80	20.5	20.7	3.9	640
FPG 80	21.8	18.6	3.5	580
FP 90	34.0	22.0	3.3	783
FPG 90	33.0	22.4	3.1	692
FP 110	48.0	32.0	4.1	1,186
FPG 110	50.4	31.4	3.6	1,236
FP 115	54.2	39.9	3.5	1,468
FP 130	72.0	42.5	5.3	1,889
FP 155	97.0	55.5	6.5	3,332

*Determination of the geometry on the expansion part of the respective *MIGUFLEX* seal insert

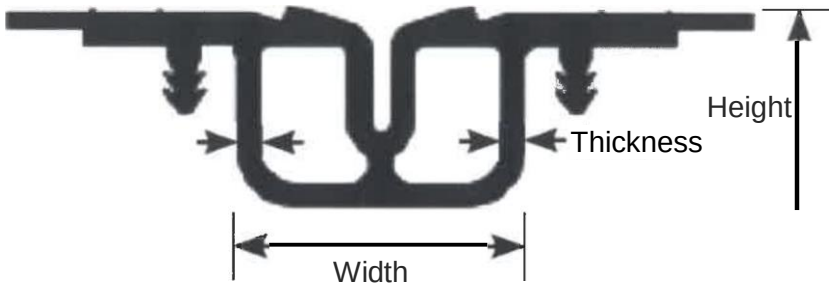


Fig. 4 Geometry of the seal insert [source: applicant]

They have the following properties in the delivery condition:

Material basis	PVC with elastomer content
Density [EN ISO 1183-1]	1.288 g/cm^3
Tensile strength [EN ISO 527-2]	13.7 N/mm^2
Elongation [EN ISO 527-2]	380 %
E-modulus [EN ISO 527-2]	5.6 N/mm^2
IRHD hardness [DIN ISO 48]	70

(4) Different AAS sheets are connected watertight to the joint covers for the connection to the adjoining floor or traffic areas, depending on the formation. The variant with the long AAS sheet is intended for connection to polymer bitumen webs according to DIN SPEC 20000:203 together with mastic asphalt. The short ASS sheet is for connection to floor surfaces with coatings (verified with the epoxy resin-based coating system *STOPOX DV 100).* Like the seal insert, both foil types are made of the unregulated, weldable thermoplastic material (PVC with NBR rubber content). The fleece-laminated MIGUTRIX foil XA is used for connection to liquid plastic (verified with *Triflex ProDetail).*

Both the seal inserts and the connecting AAS sheets are clamped watertight between the metal parts by bolting the stainless steel caps (material no.: 1.4301 or 1.4571) to the expansion joint covers.

(5) Within the scope of the verification of the functionality, the movement capacity of the joint cover specified by the applicant was verified as well as the leak-tightness under the influence of a water pressure of 75 cm water column in different opening states (elongation/compression) and simultaneous maximum vertical settlement. Identification checks have been carried out for the essential components of the joint cover and archived at the testing body. The verification of trafficability
has been carried out at the STUVA with a positive result for at least 500,000 rollovers with a wheel load of approx. 3 t. The test certificates from the MPA NRW are available for the verification of the fire behaviour.

The verification of the usability is based according to the type and scope of the tests on the specifications of the working group of the recognised testing bodies according to BRL A, Part 2, seq. no. 1.13, taking into account the testing principles for joint seals (PG – FBB Part 2, expansion joints). Test report no. PB 5.1 / 18 - 214-2 of 22/10/2018 contains the detailed description of the tests and the illustration of the results.

(6) The MIGUTAN joint constructions must correspond to the systems examined in the usability test. They must possess the technical characteristic data specified in section 2.1. The joint construction may be used only in the way described in section 4 in conjunction with the area seal products named in section 2.1 (4).

2.2 Manufacture, packaging, transport, storage, marking

(1) The joint constructions are manufactured in the factory from externally supplied individual parts. Modifications of the individual components and changes of supplier factories must be reported to the testing body immediately.

(2) Packaging, transport and storage must be carried out so that all individual components belonging to the structure are clearly marked as belonging together and so that the parts are not stored in water and they are not dirty and mechanically damaged.

(3) The details marked on the packaging regarding requirements arising from other legal areas must be observed.

2.3 Conformity mark

(1) The construction product must be marked by the manufacturer with the conformity mark (Ü mark) according to the conformity mark regulations of the Federal States. The mark may only be applied if the conditions specified in section 3, Conformity verification, are satisfied. The O-sign with the details prescribed there:

- manufacturing plant
- number of the General Building Authority Test Certificate

is to be attached to the packaging or, if this is not possible, to the delivery note or the information sheet. The mark may only be applied if the conditions specified in section 3 are satisfied.

(2) The following information must be included on the packaging of the construction product or the information sheet:

- product name
- batch number
- purpose of use
- reference to the associated processing specification

3 Conformity verification

(1) General information

In accordance with the Building Regulation List A, Part 2, Section 1, seq. no. 1.13, the verification of the conformity of the construction product to the requirements of this General Building Authority Test Certificate takes place through a declaration of conformity by the manufacturer on the basis of an in-house production control and an initial test of the construction product by a testing body recognised by the building authority prior to confirmation of conformity (initial testing).

(2) Initial testing of the construction product by a recognised testing body

The initial testing can be omitted because the samples for the tests were taken from the running production of the manufacturing plant within the scope of the usability verification.

(3) In-house production control

The manufacturer must set up an in-house production control in accordance with DIN 18200:2000-5. To this end continuous monitoring of the production is required in order to ensure that the products manufactured correspond to the provisions of the General Building Authority Test Certificate.

The in-house production control is comprised of the tests described below. The results determined may not deviate from the technical characteristic data specified in section 2.1 and/or must lie within the specified tolerance ranges.

per delivery batch:

Metal components	- Dimensions	+10% / -5%
Seal/expansion insert	- Linear weight	+10% / -5%
	- Thickness	+ 10% / -5 %
	- Tensile strength	± 10 %

The above test criteria must be met. The results of the in-house production control must be recorded and evaluated. The records must be archived for at least 5 years and submitted to the testing body on demand.

4 Provisions for the execution

(1) Usage is bound to the observance of the applicant's processing guidelines, the health and safety regulations for the handling of the associated sealing products and the taking into account of all technical rules applicable to the respective application case. The joint construction must be located on the floor surface that is subject to vehicle traffic, on the surface not loaded by nonpressurized water, on both sides of the expansion joint in the structure to be sealed.

(2) The manufacturer's processing instructions, appendix 1, apply to the execution. The processing instructions and the General Building Authority Test Certificate must be available at the installation location. Note that the usability verification only concerns the application of the joint construction together with the tested connecting seals (polymer bitumen webs and liquid plastic on an EP or PMMA basis).

The following demands are placed on the sealing substrate:

- Concrete substrate
- Surface firm, clean, even, free from ridges and flaws, without loose components and cement slurry, free from form oil and other release agents or components that disrupt the adhesion – these specifications must be carefully met prior to executing the sealing.
- Minimum concrete age 28 days

(3) The joint construction is fitted, usually by the applicant, in accordance with the work steps illustrated by the applicant in Appendix 1. In deviation therefrom, it is also possible for execution to be performed by an authorised specialist company holding proof of having been trained by the applicant.

(4) The specifications of the respective product manufacturer are decisive for the execution of the adjacent area seal. Note that the connection to a web-shaped bitumen seal requires the use of joint constructions with a long sheet (lF), the connection to coatings requires the use of joint systems with short sheet (kF) and the connection to seals that are applied in liquid form requires the use of joint systems with fleece-laminated connecting foil (XA).

(5) The applicant is obliged to adopt the execution provisions in this section into its processing instructions without contradiction. The installation instructions dated 11/2015 and submitted by the manufacturer have been checked for plausibility and are attached as Appendix 1.

5 Legal basis

This General Building Authority Test Certificate is issued on the basis of § 17 of the Building Regulations of the State of North Rhine-Westphalia (BauO NRW) of 15 December 2016 (§§ 3, 17 to 25, 86 Paragraph 11 and § 87, which came into force on 28 June 2017) in conjunction with the Building Regulations of the State of North Rhine-Westphalia (BauO NRW) in the edition of the announcement of 1 March 2000 – as well as on the basis of the administrative Technical Building Regulations (W TB), circular decree of the Ministry of Building, Housing, Urban Development and Transport - VI A 4 - 408 of 13 June 2017 and the Building Regulation List A Part 3, seq. no. 2.1 Edition 2015/2 as amended by the Notice of Amendment to Building Regulations Lists A and B (Edition 2016/1), as well as the notification of changes to Building Regulation List A, Part 1 (edition 2016/2) in conjunction with Building Regulation List A, Part 2, section 1, seq. no. 1.13.

6 Legal information

An objection or complaint may be raised against this General Building Authority Test Certificate in accordance with the legal regulations of the Federal State in which the applicant is domiciled. In the case of a right of objection, the objection must, within one month of receipt of this General Building Authority Test Certificate, be submitted in writing or declared for the record to the Gesellschaft für Materialforschung und Prüfungsanstalt für das Bauwesen Leipzig mbH, Hans - Weigel - Strasse 2 b, 04319 Leipzig. Decisive for the timely receipt of the objection is the time of receipt by the MFPA Leipzig.

Leipzig, 20 December 2018

Dr.-Ing. Ute Hornig
Head of Testing Body

MIGUTAN Watertight expansion joint solutions

Assembly sequence

Example FP 90/45 Ni IF

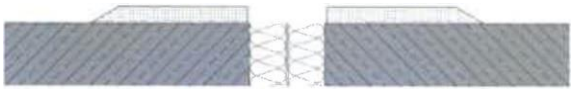
[also applicable to the series FP(G) 80; FP(G) 90; FP(G) 110; FP 130 and FP 155)

1.

Clean and prime the installation recess.

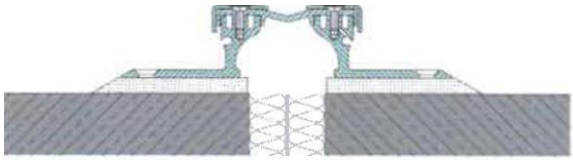
2.

Apply a compensation layer with a pressure-resistant and non-shrinking mortar **in a water-impermeable mix**.



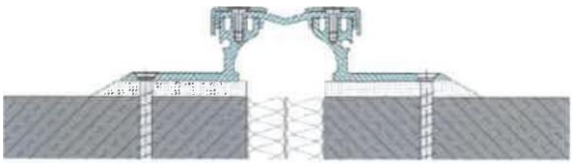
3.

Clean, degrease and prime the aluminium mounting brackets and level the joint cover to the correct height in the still fresh compensation layer
(top edge of joint cover head is level with the top edge of the finished floor).



4.

Following the hardening of the compensation layer, dowel the perforated support bracket on both sides (outer hole row) with shear connectors or anchor bolts (depending on the joint cover type) (spacing 350 mm).

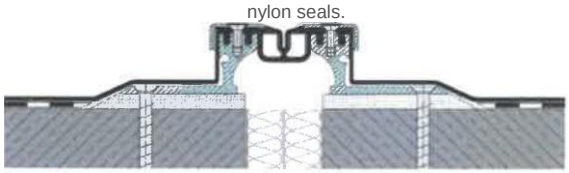


5.

Cut through the spacers.
The round cords and blanking plugs must be dismounted prior to the assembly of the centre seal and long ASS sheets!

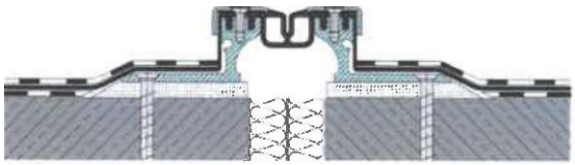
6.

Press in the long AAS sheets and the centre seal and swage with the stainless steel cover caps and countersunk head screws with nylon seals.



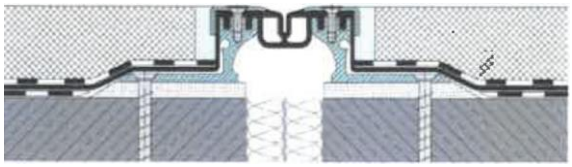
7.

Integrate the long ASS sheets into the structure seal using a sandwich method with polymer bitumen welding web and hot-melt bitumen.



8.

Manufacture a connection joint using suitable filler.



9.

After 10 – 14 days, retighten all fixing screws of the stainless steel caps using a torque wrench (7 Nm).

Prior to the coating of the surface, this assembly sequence is to be given to the client for passing on to the sealing company or handed out directly to the sealing company!

MIGUTAN Watertight expansion joint solutions

Assembly sequence

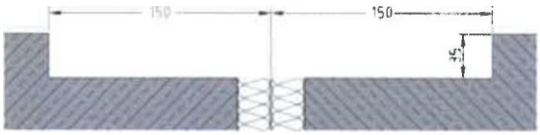
Execution with PU connection joint

Example FP 90/25 Ni kF

[also applicable to the series FP(G) 80; FP(G) 90; FP(G) 110; FP 130 and FP 155)

1.

Clean and prime the installation recess.

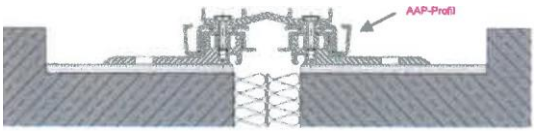


2.

Apply a compensation layer with a pressure-resistant and non-shrinking mortar in a **water-impermeable mix.**

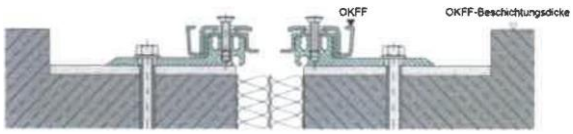
3.

Clean, degrease and prime the aluminium mounting brackets and level the joint cover to the correct height in the still fresh compensation layer **(top edge of joint cover head is level with top edge of the finished floor and thus above the adjoining cover by the thickness of the coating).**



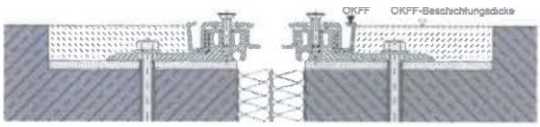
4.

Following the hardening of the compensation layer, dowel the perforated support bracket on both sides (outer hole row) with shear connectors or anchor bolts (spacing 350 mm) and dismount the spacers.



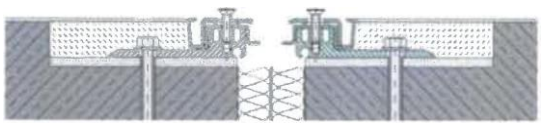
5.

Fill the installation recess with a pressure-resistant and non-shrinking mortar in a **water-impermeable mix** and draw off level with the surface.



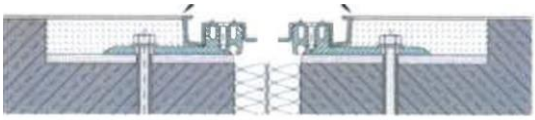
6.

Process the surface coating **up to the outer edge and upper edge of the AAP joint cover.**



7.

Dismount the AAP joint covers
If necessary (e.g. when reworking with coating material)
Cut the AAP joint covers free
(not part of the general assembly sequence).



8.

Press in the centre seal and short AAS sheets and swage with the stainless steel cover caps and countersunk head screws.
Fill the connection joints on both sides with PU sealant (3-flank adhesion).

9.

After 10 – 14 days, retighten all fixing screws of the stainless steel caps using a torque wrench (7 Nm).

Prior to the coating of the surface, this installation instruction is to be given to the client for passing on to the coating company or handed out directly to the coating company!

MIGUTAN Watertight expansion joint solutions

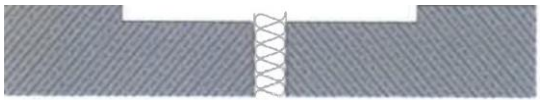
Assembly sequence

Example FP 90/25 Ni XA

[also applicable to the series FP(G) 80; FP(G) 90; FP(G) 110; FP 130 and FP 155)

1.

Clean and prime the installation recess.



2.

Apply a compensation layer with a pressure-resistant and non-shrinking mortar **in a water-impermeable mix.**

3.

Clean, degrease and prime the aluminium mounting brackets and level the joint cover to the correct height in the still fresh compensation layer **(top edge of joint cover head is at the level of the top edge of the finished floor).**

4.

Following the hardening of the compensation layer, dowel the perforated support bracket on both sides (outer hole row) with shear connectors or anchor bolts (spacing 350 mm).

5.

Cut through the spacers.

The round cords and blanking plugs must be dismounted prior to the assembly of the centre seal and laminated ASS sheets!

6.

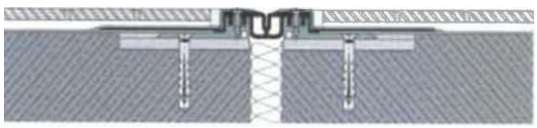
Press in the laminated AAS sheets and the centre seal and swage with the stainless steel cover caps and countersunk head screws with nylon seals.
Work the laminated sheets into the seal in the sandwich.

7.

Mount the tiles.
A connection joint with PU sealant is to be manufactured on both sides between the tiles and joint cover.

8.

After 10 – 14 days, retighten all fixing screws of the stainless steel caps using a torque wrench (7 Nm).



This assembly sequence is to be given to the client for passing on to the sealing company or handed out directly to the sealing company!