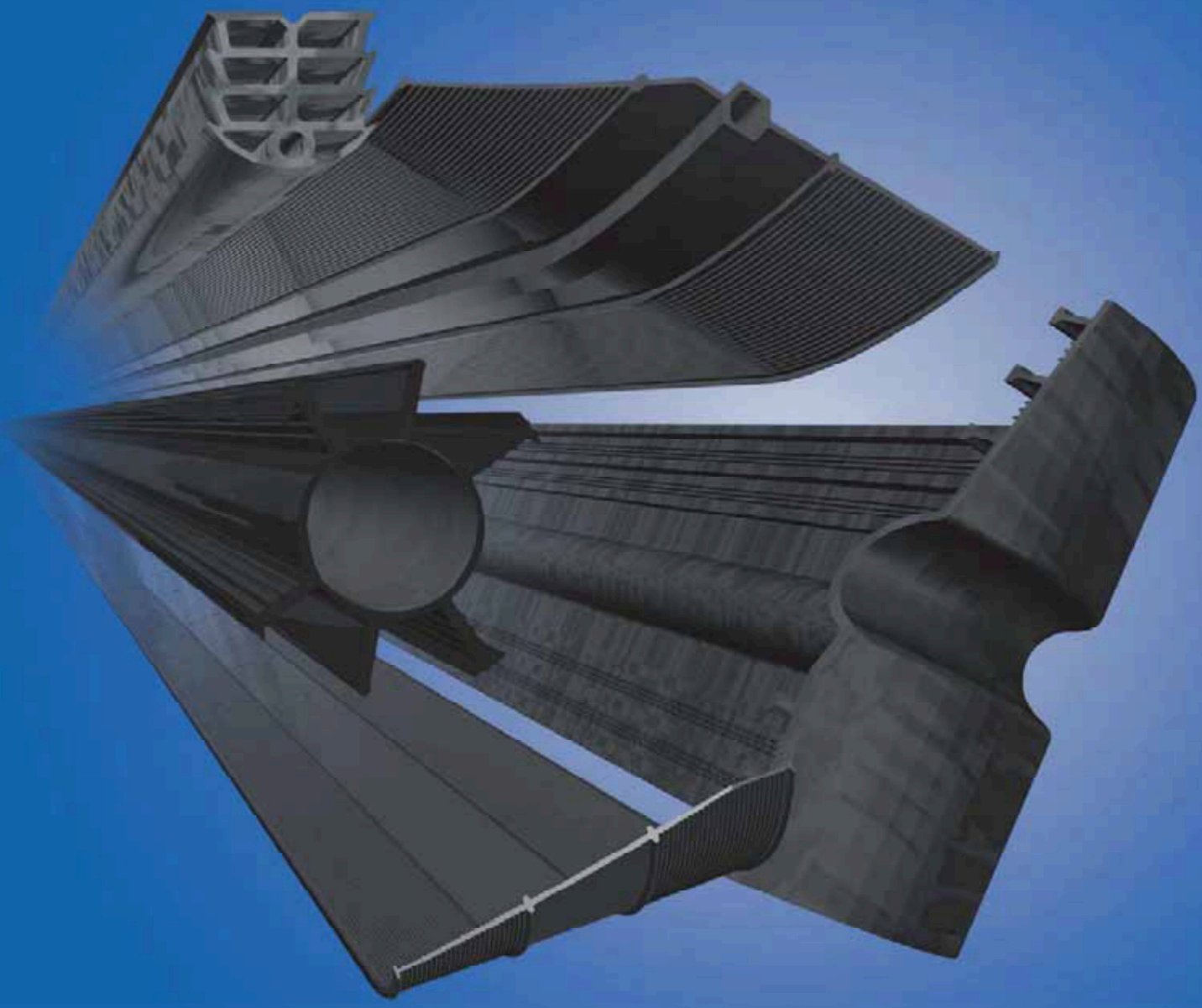
BESAPLAST®
KUNSTSTOFFE GmbH



WATERSTOPS





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2 Planning and installation information

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10 BESAGROUP product range



Company profile - Imprint

Besaplast® Kunststoffe GmbH has always brought together companies that are not only renowned world-wide, but whose range of products could be perfectly integrated into its own range of products.
The activities of the Besagroup are being constantly expanded from the point of view of product variety and worldwide distribution. Not least our own tool manufacturing offers an independent delevopment.



Patents, designs and trademarks underline the quality of the product range. Almost all the products are manufactured at our own factory and are therefore subjected to a special quality control. Our distributors at home and abroad help us with our future-oriented approach, eleborate new requirements and open up new perspectives.

1

Company profile - Imprint

Catalogue data/ applications

All data contained in this catalogue are product descriptions. They represent general information based on our experience and testing without taking account of concrete applications.
No claims for compensation can be derived from the data.
If necessary, consult our technical consultancy department. Individual application-oriented tests for specific characteristics can be performed by us on request.

Technical changes

We reserve the right to make technical changes based on new know-how to profile moulds and material compositions.

Technical instructions

All technical details are not binding and in no way affect the current rules or our general sales and delivery terms.

Dimensional data

The reference dimensions given in the tables are in mm unless otherwise specified.

Drawings

The drawings are diagrammatic and may deviate from the actual installation situation.

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Edition

2017

Imprint

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Planning and installation information

In addition to the instructions given here are basically the details of DIN 18197 in the current version to be observed.

"ARGE Talsperre Leibis Lichte"

Talsperre in Deutschland mit einer Stauhöhe von über 95 m./
Barrage in Germany with a water pressure of more than 95 m.





"ARGE Katzenbergtunnel"

Tunnelprojekt der Deutschen Bahn AG mit Klemmkonstruktionen bis 90 m Wasserdruck/
Tunnelproject of German Railways with clamped constructions up to 90 m water pressure.

"Dubai International Financial Center"

Abdichtung gegen Grundwasser/
Sealing against underground water.



Planning and installation information

2

General information

Waterstops are used for the sealing of structural joints in concrete constructions and must be permanently water-tight. The selection of the suitable waterstop depends on the influences to which the structure is subject:

- *Joint type:*
  Construction-, compression-, expansion joints
- *Movement:*
  From shrinkage, contraction, temperature cycles, dynamic loads, etc.
- *Water pressure:*
  Pressing or not pressing water.
- *Others:*
  For example a contact with chemical media, bitumen.

Proper selection of the waterstop preserves the substance of the structure during its service life and prevents cost-intensive rehabilitation measures ranging from subsequent injection to complete remediation of the concrete. Besides proper selection, another decisive factor is the state-of-the-art planning of the entire waterstop system which can be installed by the supplier as well as by the customer. Complex systems, special mouldings or connections which have to be manufactured on side should in principle always be entrusted to a qualified company with a corresponding experience record.

Dimensions / tolerances

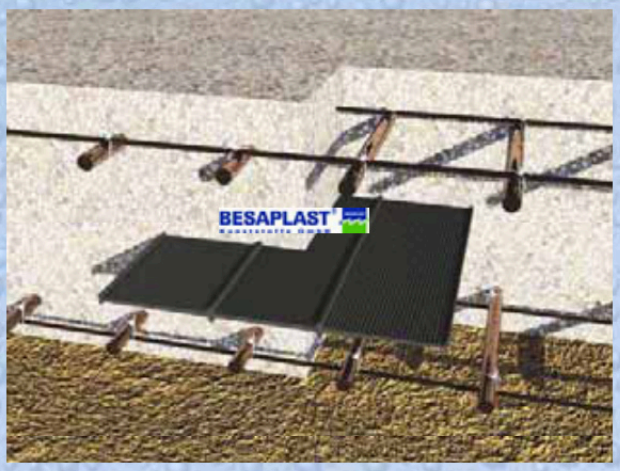
Our products are subject to dimension- and tolerance information in standards, like DIN 18541 and DIN 7865.



Planning and installation information

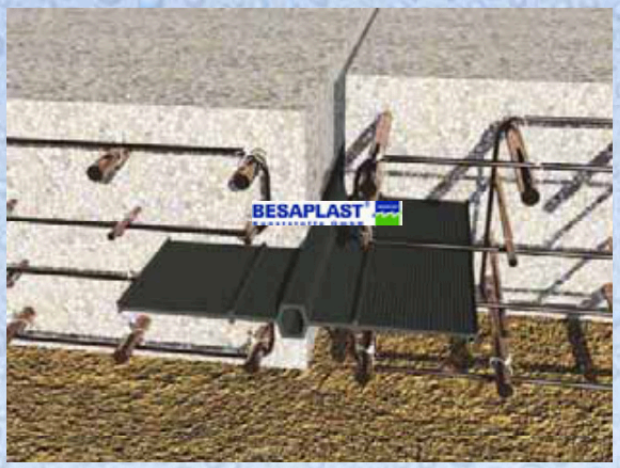
Fugenbandkategorien / *waterstop categories*

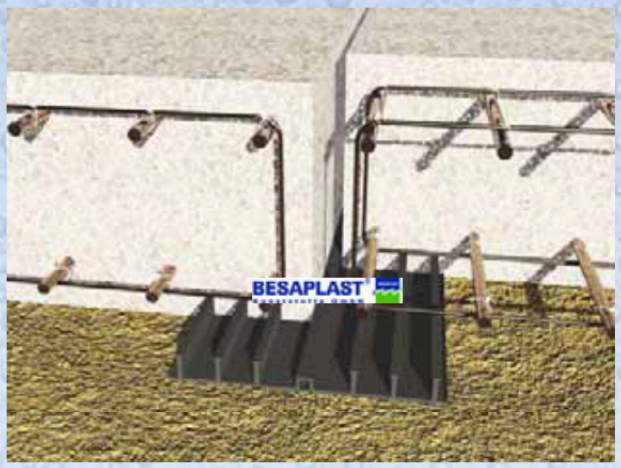
Arbeitsfugenbänder / *construction joint waterstops*



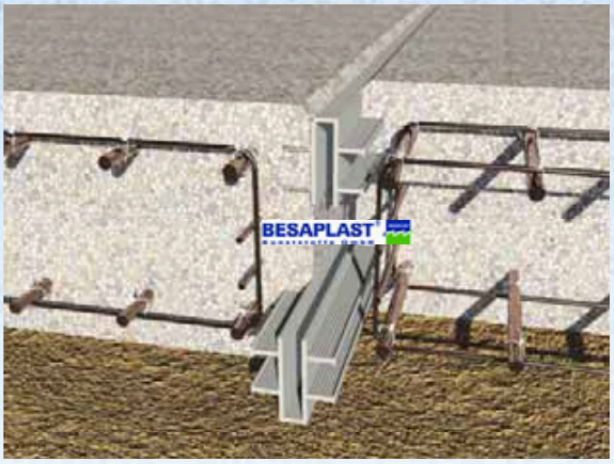


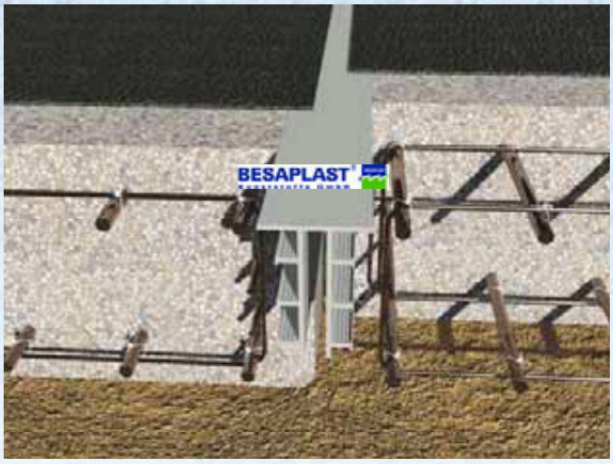
Dehnfugenbänder / *expansion joint waterstops*





Fugenabschlußbänder / *capping joint waterstops*





Planning and installation information

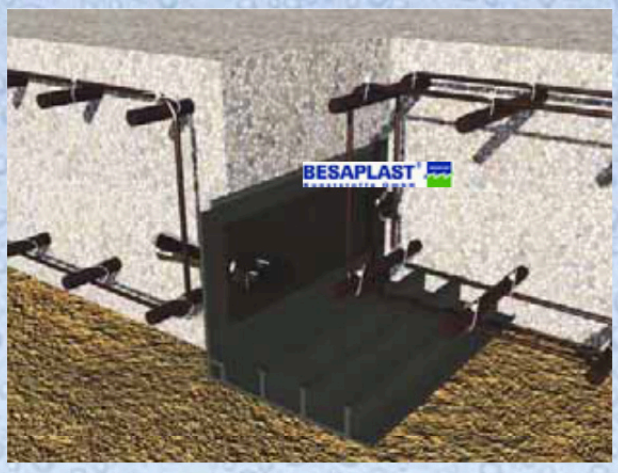
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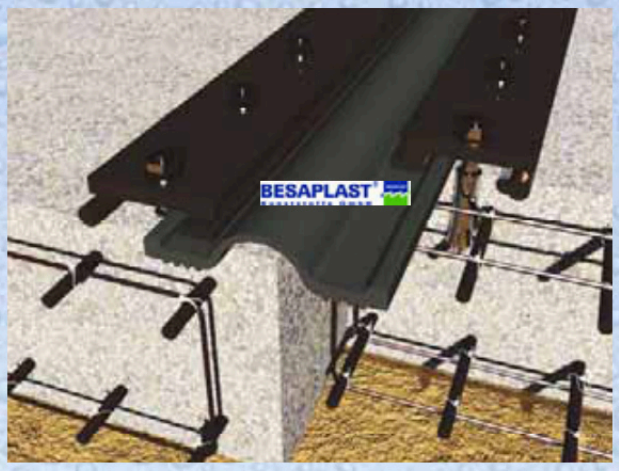
Klemmprofile / *compression profiles*





Klemmfugebänder / *clamped waterstops*





Schwindrohr / *shrinkage tube*



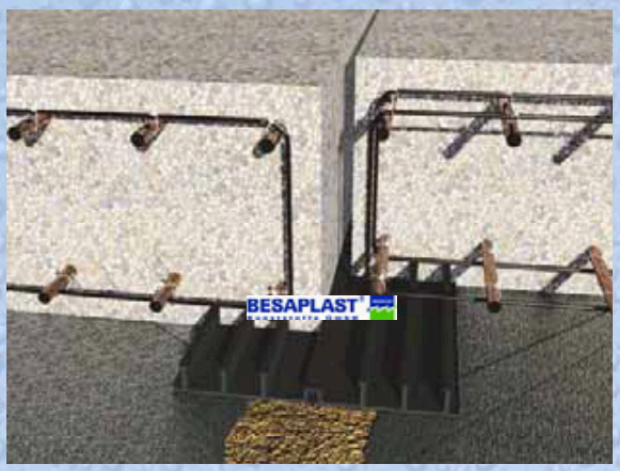


Subject to change. Dimensions in mm unless stated otherwise.



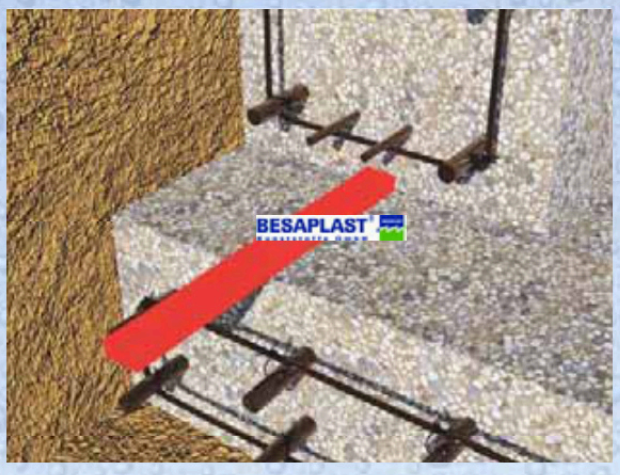
Planning and installation information

Anschweißbänder / *waterstops for welding with sheets*

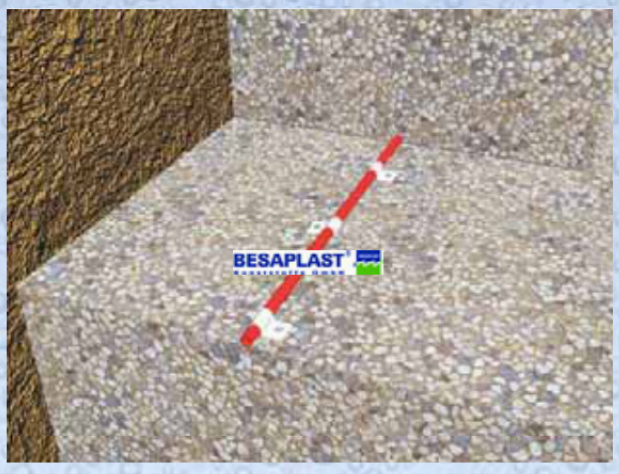




Quellband / *swelling rubber*

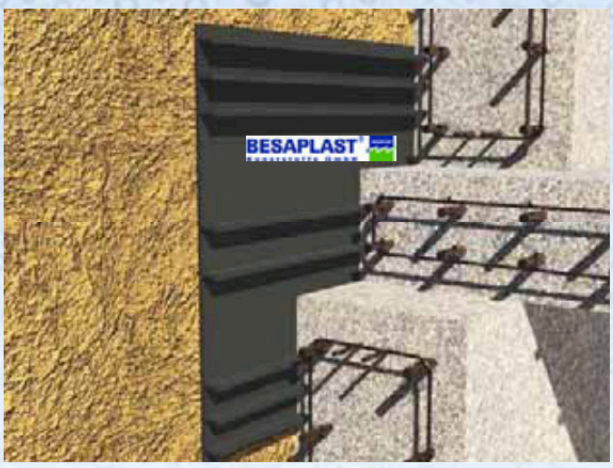


Injektionsschlauch / *injection tube*



Sonderprofile / *special profiles*





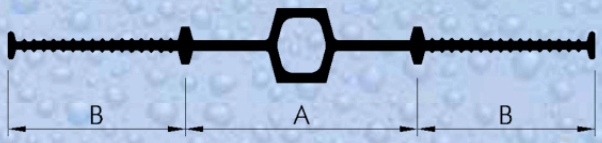
Planning and installation information

2

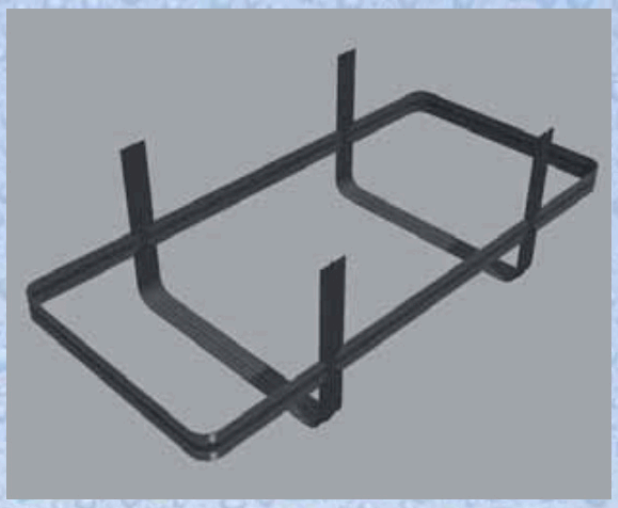
Allgemeine Hinweise / *general instructions*

Funktionsweise des Fugenbandes/
Funktionality of waterstops

A = Dehnteil / *elongation part*
B = Dichtteil / *sealing part*



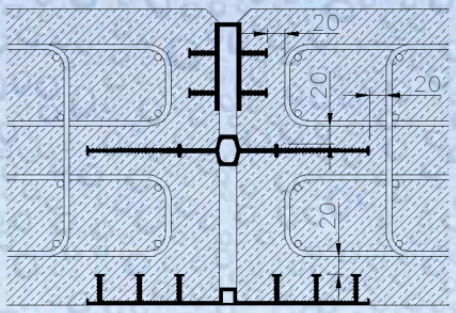
Abdichtungssystem / *Sealing system*



While planning, please ensure that the proofing is a closed system.
Whenever possible, please consider the following:

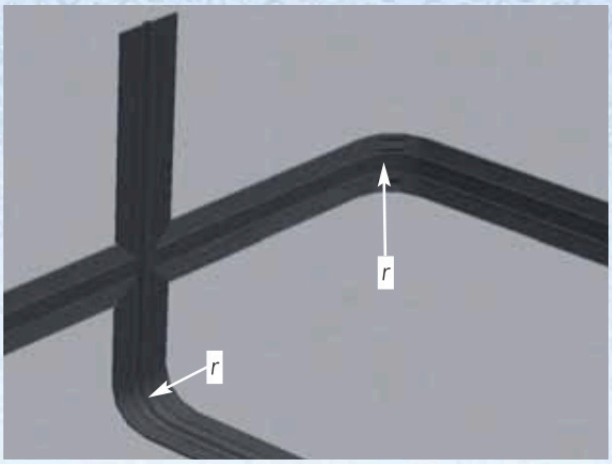
- *straight of joints,*
- *no alternation between internal and external waterstops.*

Betondeckung / *Concrete cover*



Keep a distance of ≥ 20 mm between waterstop and reinforcement.

Biegeradius / *Bending radius*



The following bendingradii (around the x-axis) are to be keeped at waterstops:

- *internal construction joint waterstops: r ≥ 150 mm*
- *internal expansion joint waterstops: r ≥ 250 mm*
- *external waterstops: r ≥ 50 x f mm*
- *capping joint waterstopsr ≥ 30 x a mm*

Subject to change. Dimensions in mm unless stated otherwise.



Planning and installation information

Bemessung / *dimensioning*

Dimensioning

The dimensioning of waterstops is carried out according to DIN 18197 as amended. However, we would like to point out a few basic conditions. Diagrams for the dimensioning are supported by us on request willingly.

General

- *The width of internal waterstops must not exceed the thickness of the structural elements.*
- *Standard joint width w_{nom} of expansion joint waterstops:*
  - *External waterstops: 20 mm*
  - *Internal waterstops: 20 – 30 mm*
  - *Capping joint waterstops: 20 - 30 mm*

Water pressure

The highest water pressure to be expected is taken into account for the dimensioning. (10,00 m ≈ 1,0 bar)

Movement

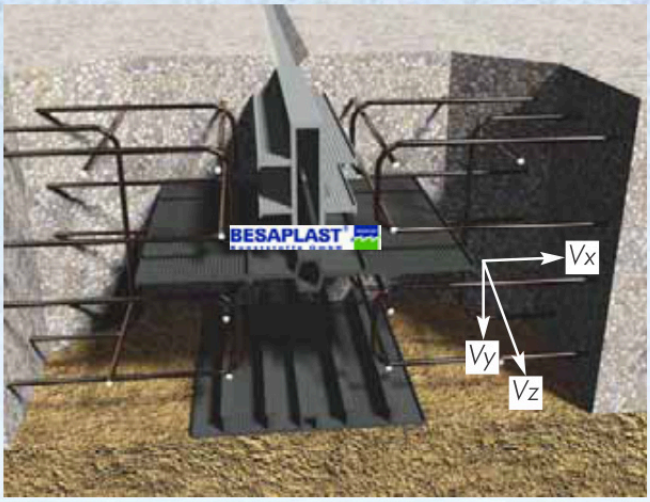
The maximum expected movement is determined as the resultant from all three directions.

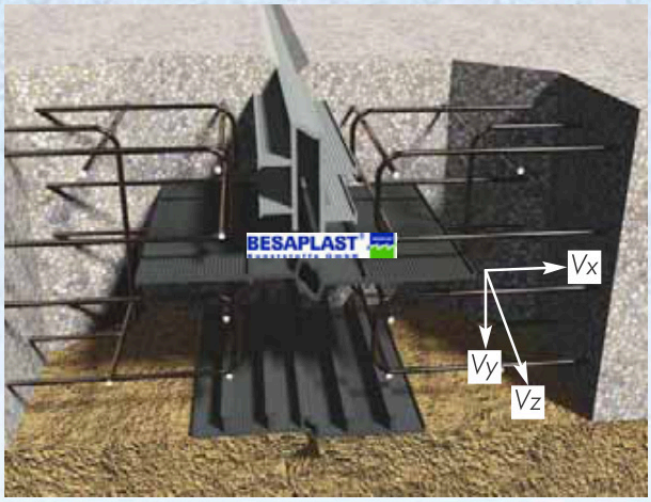
$$v_r = \sqrt{v_x^2 + v_y^2 + z_z^2}$$

n general, the maximum permissible movement is limited as follows:

v_x: at w_{nom} = 20mm: $w_{min} \geq$ 15mm
at w_{nom} = 30mm: $w_{min} \geq$ 20mm
v_y: $\leq w_{nom}$
v_z: $\leq w_{nom}$

v = Movement
w = Joint width





Planning and installation information

Ausschreibungstext / *tender specification*

2

Item _____ Internal*(external)* construction*(expansion)*joint waterstop

BESAPLAST®-waterstop made of:
Besaflex® *(Nitriflex®/ Elastoflex®/ Polyflex / TPE / Besaflex® to BS)*

Type: _____ or comparable.

Inclusive all special fittings, proper and professional installation in accordance with the manufacturer's instructions.

Manufacturer:

BESAPLAST® Kunststoffe GmbH
Einsteinstraße 15
D-46325 Borken
Tel.: +49/ 2861/ 94 39 - 0
Fax: +49/ 2861/ 94 39 - 44
e-mail: info@besaplast.de

_____ m



Planning and installation information

Transport und Lagerung / *transportation and storaging*

Anlieferung / *delivery*

In general the delivery is carried out on pallets.



Prüfung / *checking*

After delivery the goods have to be inspected for completeness and faultless appearance.



Lagerung / *storaging*

The goods have to be stored on solid ground. Thermoplastic waterstops should be stored in a depot to avoid deformations.



Fugenbandsysteme / *waterstop-systems*

Storaging of waterstop-systems (particularly thermoplastic waterstops) should not be for an extended period of time. Changes of length can be the effect of natural thermal conditions.



Planning and installation information

2

Einbau / *Installation*



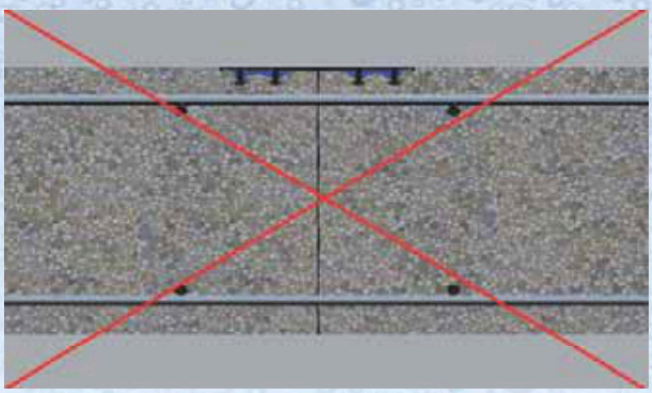
Verformungen / *deformations*

Facile deformations (caused by storage or transport conditions) can be corrected by heat treatments.
⇨ *Thermoplastic waterstops are fusible at approx. 140 °C!*



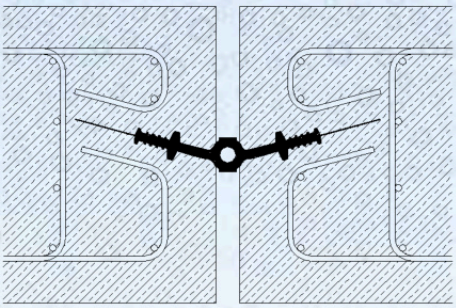
Verlegung / *laying*

The laying must be free of crinkles and distortion.



Lage / *position*

The installation of external waterstops should never be done by putting the achor ribs downside! This could cause blowholes and potential leakage.



Enflüftung / *venting*

For the best venting, the installation of horizontal internal waterstops should be done in V-form (~15°).

Subject to change. Dimensions in mm unless stated otherwise.



Planning and installation information

Befestigung / *fixing*

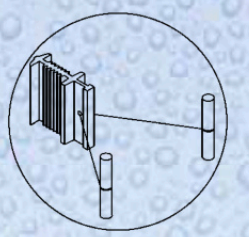


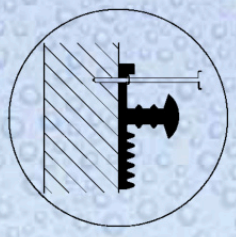
Typ 1 Typ 2 Typ 3



Fixing depends on the type of waterstop:

- *internal waterstops with*
  - → *clips,*
  - → *steel bar reinforcement*
  - → *eyelets.*
- *external waterstops and capping joint waterstops with*
  - → *clips and/ or*
  - → *two-head-nails.*



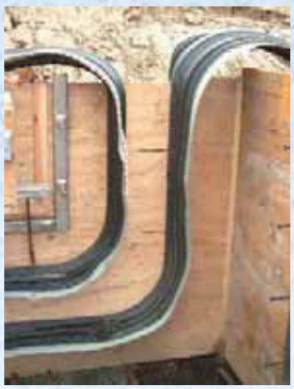


Distance between fixing: ≤ 25 cm

The following is important for installing:

- *secure bedding to avoid slippings,*
- *symmetric to the joint axis.*

Verwahrung / *storage*



The open ends of waterstops have to be protected from damages during storage.

Planning and installation information

2



Ausschalen / *stripping*

Particularly external waterstops have to be protected from damages while stripping the forms.



Kontrolle / *checking*

Check the waterstops for damages after stripping the forms whenever possible.

Subject to change. Dimensions in mm unless stated otherwise.



Planning and installation information

Maßtoleranzen / *general tolerances*

Waterstops consist of a highly elastic material. When temperatures changes and/ or waterstops are upseted or stretched the length can change. Also tolerances of manufacturing and not professional installing can cause differences of length.

The following information are valid for all waterstop-systems with defined dimensions:

1.) Checking
The waterstop systems have to be checked immediately after receipt. Apparent defects in measurement or size have to be reported to us without delay. The delivered goods have to be kept safe and loosely stored.

2.) Installing
At first the whole waterstopsystem has to be installed and after this it has to be fixed. The result is:

- recocnizability of measure differences before concrete is encased.
  Corrections of encased waterstops are difficult and costly.
- that not fixed waterstopends can not shift.
- small deviation can be balanced.

3.) Tolerances
Lenght differences to 3 % are possible due to the properties of the material and can also be caused by improper installation of the waterstop systems.

Measurement differences that allow no correct and safe installation can be remedied by us.

4.) Correction of defects
If the correction is necessary because of wrong delivery from us and the customer has fulfilled his duties mentioned in item 1 and 2, than the correction will be done at our expense. Otherwise we will charge our work according to our price list.

Planning and installation information

2

Fügungen / *connections*

General information

- *On site it is only allowed ot make buttom connections.*
- *Corners, T-pieces, cross section and connecti ons between different waterstop-types have to be done in our factory.*
- *Connections on site have to be made by qualified persons.*
- *Air temperature should be not less than +5 °C. If neccessary a tent has to be pitched.*

Fügemethoden / *methods for connecting*

Methode / methode	Schweißen / welding	Vulkanisieren / vulcanizing
Betrifft folgende Materialien / valid for following materials:	• Besaflex • Nitriflex • Polyflex • TPE • TPEDW	• Elastoflex
Materialeigenschaft / material properties:	schmelzbar / fusible	nicht schmelzbar / not fusible
Fügung ist ausführbar mit / connection can be done by:	• Schweißgerät, • Schweißbeil, • Schweißschwert / • Heißluftfön • welding machine • axe-shape-welding tool / • electric heater blade • hot air blower	• Vulkanisationsgerät / • vulcanizing machine

Mindestabstände / *minimum distance*

The following minimum distances are to keep:

- *Distance among each other:*
  ≥ 50 cm
- *Distance from factory fabricated connections:*
  ≥ 50 cm
- *Distance of ending waterstops:*
  (In case of multiple concrete sections)
  ≥ 100 cm

≥ 100 cm

Subject to change. Dimensions in mm unless stated otherwise.



Material properties

Digest

Besaflex®:	*- Soft-PVC with AbP[1],*
	- Strain: low to normal.
Nitriflex®:	*- PVC/ NBR to DIN 18541,*
	- Strain: high,
	- high chemical resistance.
Elastoflex®:	*- Elastomer to DIN 7865,*
	- Strain: high,
	- high elasticity.
Besaflex® BS:	*- Soft-PVC to company standard,*
	- complies with british requirements (BS).
Polyflex:	*- Polyethylen to company standard,*
	- prefered for connecting with plastic sealing sheets made from PE.
TPE:	*- Thermoplastic elastomer,*
	- similar to Elastoflex, but weldable.

[1] AbP = general building inspectorate test certificate

Besaflex® according to company standard

Besaflex®-waterstop made of plasticized PVC are distinguished by numerous of good characteristics and high economic efficiency.
Plasticized PVC has been in use since the 20th century and is subject to constant monitoring. This material was not used for waterstops until all its positive characteristics, especially its resistance to ageing, had been scientifically verified.
Meeting all normal requirements, Besaflex®-waterstops are up to most structurally imposed strains.
They are resistant to acid and alkaline solutions and decay as well as to all naturally occuring agents.

Nitriflex® according to DIN 18541

The material for our Nitriflex® waterstops to DIN 18541 is manufactured from high-grade base materials and thus has very high reserves which go in part beyond the requirements of the DIN standard.
Nitriflex® waterstops to DIN 18541 specifications are characterized by maximum breaking elongation, outstanding resistance to chemicals and ageing, and permanent elasticity akin to that of rubber.
Nitriflex® waterstops to DIN 18541 specifications are available in all major profile shapes and are thus suitable
for structures of all kinds with the most stringent requirements.

Material properties

3

Elastoflex® according to DIN 7865

Elastoflex® waterstops are made of elastomer. Elastomers are high-polymers cross-linked with coarse meshing (synthetic rubber), which have been vulcanized.
Because of this non-reversible cross-linking, a special type of jointing technique is required.
Elastoflex® waterstops are ideal for use in structures subject to major joint movements, frequently changing loads and low temperatures.
Our Elastoflex® waterstops are manufactured to the DIN 7865 specifications.

Polyflex according to company standard

Polyflex-waterstops have been purpose-development

structural sealing tasks. The waterstops have no connection strips, can be used for sealing joints in concrete irrespective of the plastic sealing sheeting.
Polyflex-waterstops made of modified PE offer the advantage of good weldability, resistance to aggressive chemical media, high durability and resistance to microbes.
The permanent elasticity and expansion characteristics are unaffected by low temperatures.

TPE according to company standard

Waterstops made from thermoplastic elastomers characterized are by maximum elongation at tear, low temperature flexibility, resistance to aging and high UV resistant.
Joints of all kinds are produced fast and economically with the thermoplastic jointing, using standart equipment.

Subject to change. Dimensions in mm unless stated otherwise.



Material properties

Technische Daten /
Technical facts

Thermoplaste / *Thermoplastics*	Besaflex®	Nitriflex®	Prüfmethode / *test methode*
Shore-Härte A / *shore hardness A*	75±5	67±5	ISO 868
Zugfestigkeit / *tensile strength*	≥ 8 N/mm²	≥ 10 N/mm²	DIN EN ISO 527-2
Bruchdehnung / *elongation at break*	≥ 275 %	≥ 350 %	DIN EN ISO 527-2
Herstellung nach / *manufacturing according to*	Werksnorm mit AbP[1]/ *company standard with AbP*[1]	DIN 18541	
Verfügbare Qualitäten / *available qualities*	NB[2], PH[2]	NB[2], BV[2]	

Beide Materialien sind frei von Blei, Cadmium und Formaldehyd. /
Both materials do not contain lead, cadmium and formaldehyde.

[1] AbP Allgemeines bauaufsichtliches Prüfzeugnis / *general building inspectorate test certificate*

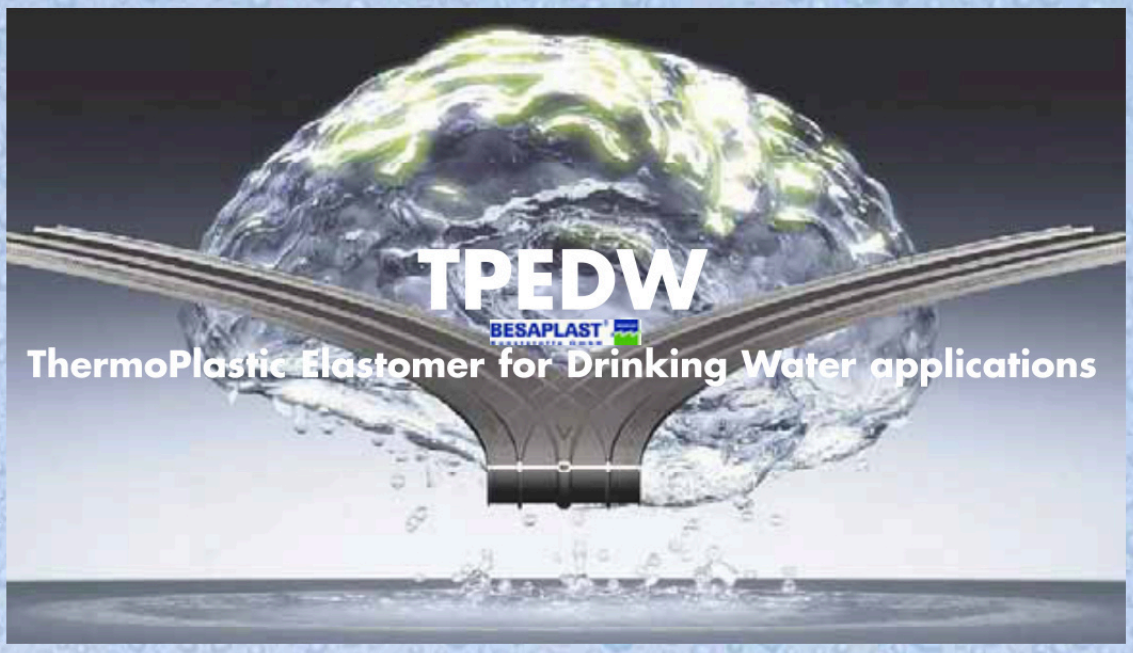
[2] NB Nicht bitumenverträglich / *not compatible with bitumen*
BV Bitumenverträglich / *compatible with bitumen*
PH Physiologisch unbedenklich / *physiologically harmless*

Elastomere / *Elastomer*	Elastoflex®	TPE	Prüfmethode / *test methode*
Shore-Härte A / *shore hardness A*	62±5	62±5	DIN ISO 7619-1
Reißfestigkeit / *resistance to tearing*	≥ 10 N/mm²	≥ 10 N/mm²	DIN 53504
Reißdehnung / *elongation at tear*	≥ 380 %	≥ 600 %	DIN 53504
Druckverformungsrest / *compression set*	≤ 20 %	≤ 35 %	DIN ISO 815
Herstellung nach / *manufacturing according to*	DIN 7865	Werksnorm / *company standard*	

Sonderqualitäten / *special qualities*	Besaflex® BS	Prüfmethode / *test methode*	Polyflex	Prüfmethode / *test methode*
Shore-Härte A / *shore hardness A*	80±5	BS 2782: Part 3 methode 365B	≥ 90	ISO 868
Zugfestigkeit / *tensile strength*	≥ 13 N/mm²	ASTM D638M-93	≥ 17 N/mm²	DIN EN ISO 527-2
Bruchdehnung / *elongation at break*	≥ 285 %	ASTM D638M-93	≥ 700 %	DIN EN ISO 527-2
Herstellung nach / *manufacturing according to*	Werksnorm / *company standard*		Werksnorm / *company standard*	

Beide Materialien sind frei von Blei, Cadmium und Formaldehyd. /
Both materials do not contain lead, cadmium and formaldehyde.

Material properties



Approved acc. to:

- *KTW-requirements*
- *DVGW W 270*
- *WRAS (British Standard 6920)*
- *CS DGS/VS4 2000/232 from 27.04.2000*

Compatibility [1] with:

[Extract]

- *ethanol*
- *methanol*
- *caustic soda*
- *soft soap*
- *sea water*
- *Fat*
- *lactic acid*
- *natric acid*
- *sulphuric acid*
- *hydrogen peroxide*

[1] *The stated compatibilities are merely determined by sample and do not release from the inspection of the goods on your purposes.*

Physikalische Eigenschaften / *Physical properties:*

Material / *Material*	TPEDW	Prüfmethode / *test methode*
Shore-Härte A / *Shore hardness A*	62 ± 5	ISO 868
Bruchdehnung / *Elongation at break*	≥ 800 %	ISO 527-2
Zugfestigkeit / *Tensile strength*	≥ 12 N/mm²	ISO 527-2
Brandverhalten / *Fire resistance*	E	DIN EN 13501-1

Subject to change. Dimensions in mm unless stated otherwise.



Overview

- *Internal construction joint waterstops*
- *Internal expansion joint waterstops*
- *External construction joint waterstops*
- *External expansion joint waterstops*
- *Capping joint waterstops*
- *Compression profiles*
- *Clamped waterstops*
- *Shrinkage tube*
- *Waterstopf for welding with sheets*
- *Swelling rubber*
- *Injection tube*
- *Special profiles*

MPA NRW. Materialprüfungsamt Nordrhein-Westfalen
geprüft + überwacht
Nr.: 220000138

Überwachte Bauprodukte

Monitored construction products

2017

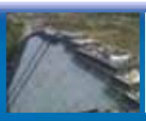
BESAPLAST

MPA NRW.
Materialprüfungsamt Nordrhein-Westfalen
PRÜFEN • ÜBERWACHEN • ZERTIFIZIEREN

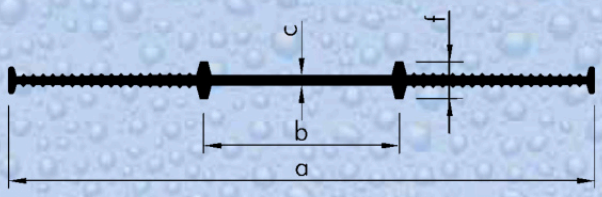
Gültig für die im Vertrag geregelten Produkte!

Valid for the products covered by the agreement!

MPA NRW. Materialprüfungsamt Nordrhein-Westfalen
geprüft + überwacht
Nr.: 220000139

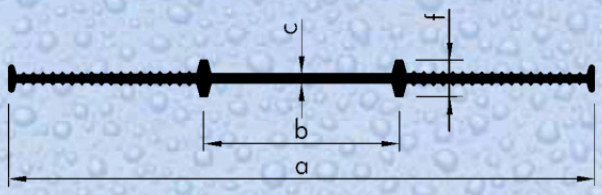




Internal construction joint waterstops



Besaflex® nach Werksnorm
Besaflex® to company standard

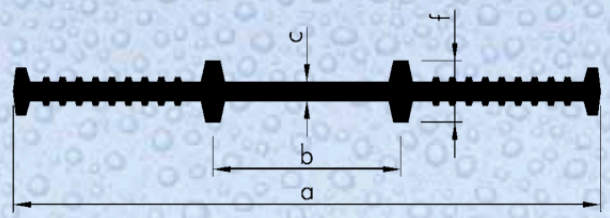
Typ / type	a	b	c	f
A 100	100	40	3,0	10
A 120	120	45	3,0	10
A 150	150	45	3,0	10
A 200	200	70	3,0	15
A 240	240	80	3,5	15
A 320	320	110	4,5	15
A 500	500	150	6,0	20



Nitriflex® nach DIN 18541
Nitriflex® to DIN 18541

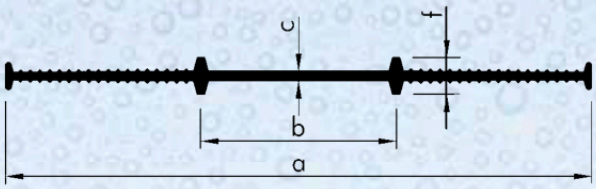
Typ / type	a	b	c	f
A 190 [1]	190	70	3,5	15
A 240	240	80	4,0	15
A 320	320	110	5,0	15
A 500	500	120	6,5	20

[1] nach/ *to* DIN 18541 Teil/ *part* 2



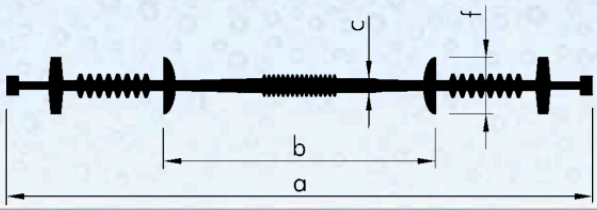
Elastoflex® nach DIN 7865
Elastoflex® to DIN 7865

Typ / type	a	b	c	f
F 200	200	75	7,0	32
F 250	250	80	8,0	32
F 300	300	100	8,0	32
DIN 7865 Teil/ part 2				
F 350-2	350	120	6,0	32



Polyflex nach Werksnorm
Polyflex to company standard

Typ / type	a	b	c	f
AP 200	200	80	3,0	15
AP 240	240	90	3,5	15
AP 320	320	110	4,5	15
AP 500	500	120	6,0	20



Besaflex® nach British standard (BS)
Besaflex® to British standard (BS)

Typ / type	a	b	c	f
CC 150	150	116	5,0	20
CC 200	200	87	5,0	20
CC 250	250	116	6,0	24
CC 300	300	166	7,0	24

Subject to change. Dimensions in mm unless stated otherwise.

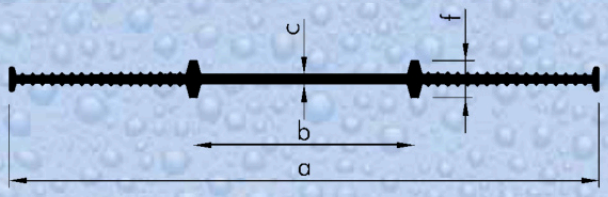


Internal construction joint waterstops

Besaflex® nach Werksnorm
Besaflex® to company standard

Typ / type	a	b	c	f
ASI 200	200	70	3,5	15
ASI 240	240	80	3,5	15
ASI 320	320	100	4,0	15

Mit innenliegender Armierung /
with internal steel bar reinforcement

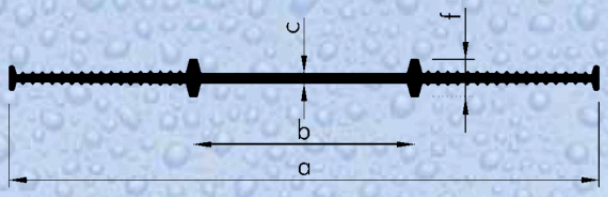


Nitriflex® nach DIN 18541
Nitriflex® to DIN 18541

Typ / type	a	b	c	f
ASI 200 D [1]	200	70	3,5	15
ASI 240 D	240	80	4,0	15
ASI 320 D	320	100	5,0	15

[1] nach/ *to* DIN 18541 Teil/ *part* 2

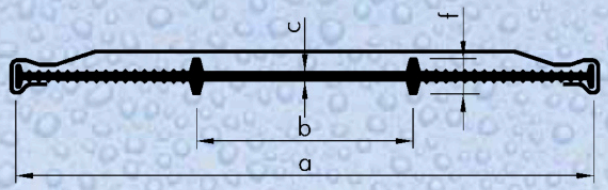
Mit innenliegender Armierung /
with internal steel bar reinforcement



Besaflex® nach Werksnorm
Besaflex® to company standard

Typ / type	a	b	c	f
AS 100	100	50	3,0	10
AS 120	120	60	3,0	10
AS 150	150	60	3,0	10
AS 200	200	70	3,5	15
AS 240	240	80	3,5	15
AS 320	320	100	4,5	15

Mit aussenliegender Armierung /
with external steel bar reinforcement

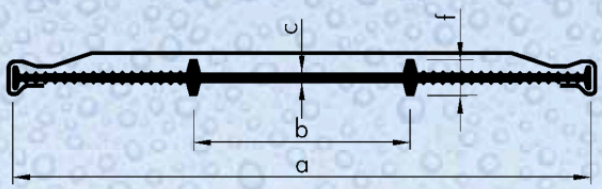


Nitriflex® nach DIN 18541
Nitriflex® to DIN 18541

Typ / type	a	b	c	f
AS 200 D [1]	200	70	3,5	15
AS 240 D	240	80	4,0	15
AS 320 D	320	100	5,0	15

[1] nach/ *to* DIN 18541 Teil/ *part* 2

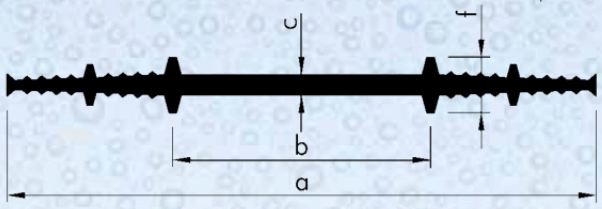
Mit aussenliegender Armierung /
with external steel bar reinforcement



Nitriflex® nach DIN 18541
Nitriflex® to DIN 18541

Typ / type	a	b	c	f
A 260 DBS	260	120	9,0	26
A 320 DBS	320	165	10,0	26
A 400 DBS	400	190	11,0	30

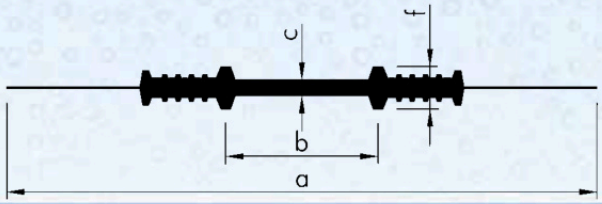
Extra stark dimensioniert /
extra thick profile

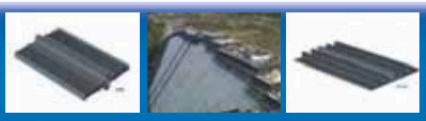


Elastoflex® nach DIN 7865
Elastoflex® to DIN 7865

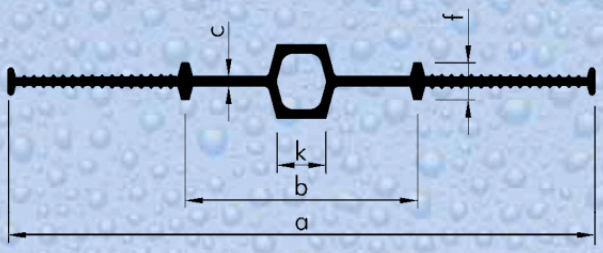
Typ / type	a	b	c	f
FS 310	310	80	10	22

Mit seitlichen Stahllaschen /
with steel plates



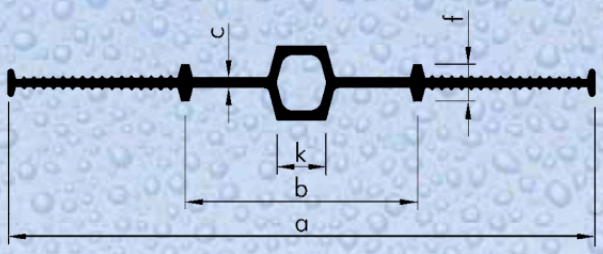


Internal expansion joint waterstops



Besaflex® nach Werksnorm
Besaflex® to company standard

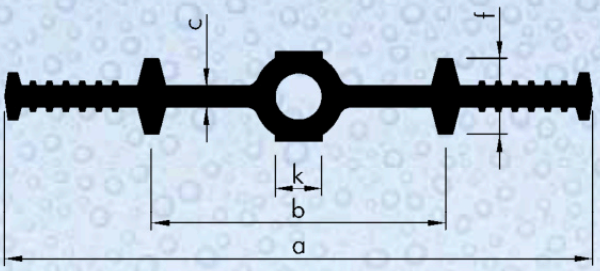
Typ / type	a	b	c	f	k
D 120	120	70	3,0	10	10
D 150	150	70	3,0	10	10
D 200	200	90	3,5	15	10
D 240	240	90	4,0	15	20
D 320	320	110	5,0	15	20
D 350	350	120	5,0	15	20
D 500	500	150	6,0	20	20



Nitriflex® nach DIN 18541
Nitriflex® to DIN 18541

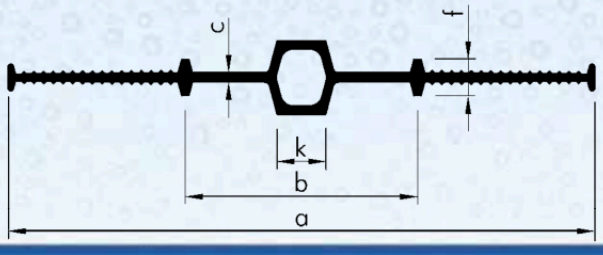
Typ / type	a	b	c	f	k
D 190 [1]	190	75	4,0	15	10
D 240	240	95	4,5	15	20
D 240/6	240	95	6,0	25	20
D 240/9	240	95	9,0	25	20
D 320	320	110	5,5	15	20
D 320/6	320	110	6,0	25	20
D 320/9	320	110	9,0	25	20
D 350	350	120	6,0	15	20
D 500	500	155	6,5	20	20

[1] nach/ *to* DIN 18541 Teil/ *part* 2



Elastoflex® nach DIN 7865
Elastoflex® to DIN 7865

Typ / type	a	b	c	f	k
FM 200	200	110	9,0	32	20
FM 250	250	125	9,0	32	20
FM 300	300	175	10,0	32	20
FM 350	350	180	12,0	38	20
FM 400	400	230	12,0	38	20
FM 500	500	300	13,0	38	20



Polyflex nach Werksnorm
Polyflex to company standard

Typ / type	a	b	c	f	k
DP 200	200	80	3,5	15	10
DP 240	240	90	4,0	15	20
DP 320	320	110	5,0	15	20
DP 500	500	150	6,0	20	20

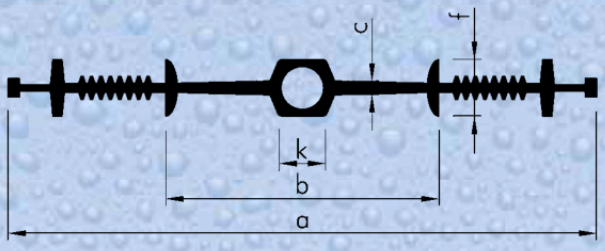
Subject to change. Dimensions in mm unless stated otherwise.



Internal expansion joint waterstops

Besaflex® nach British standard (BS)
Besaflex® to British standard (BS)

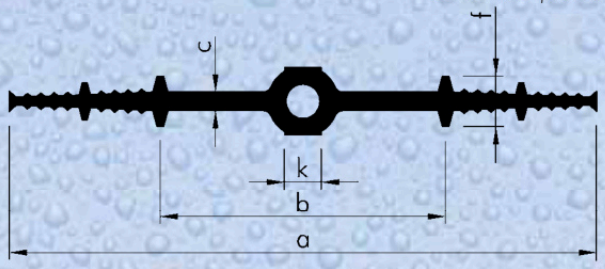
Typ / type	a	b	c	f	k
CE 150	150	116	5,0	20	20
CE 200	200	87	5,0	20	20
CE 250	250	116	6,0	24	20
CE 300	300	166	7,0	24	20



Nitriflex® nach DIN 18541
Nitriflex® to DIN 18541

Typ / type	a	b	c	f	k
D 260 DBS	260	120	9,0	28	20
D 350 DBS	350	170	11,0	30	20
D 400 DBS	400	190	11,0	32	20

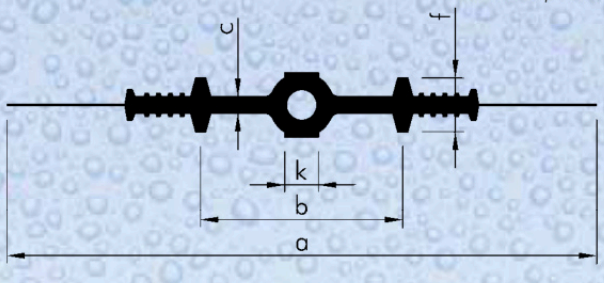
Extra stark dimensioniert /
extra thick profile



Elastoflex® nach DIN 7865
Elastoflex® to DIN 7865

Typ / type	a	b	c	f	k
FMS 350	350	120	10,0	32	20
FMS 400	400	170	11,0	32	20
FMS 500	500	230	12,0	38	20

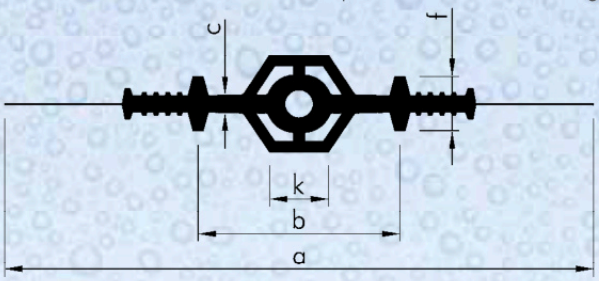
Mit seitlichen Stahllaschen /
with steel plates



Elastoflex® nach DIN 7865
Elastoflex® to DIN 7865

Typ / type	a	b	c	f	k
FMS 400 DS	400	170	11,0	35	32
FMS 500 DS	500	230	12,0	38	32

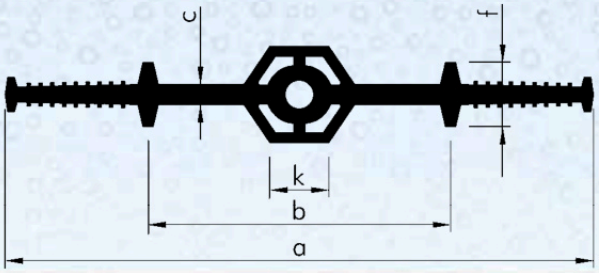
Mit Stahllaschen u. Mittelschlauchummantelung /
with steel plates and tube sheathing



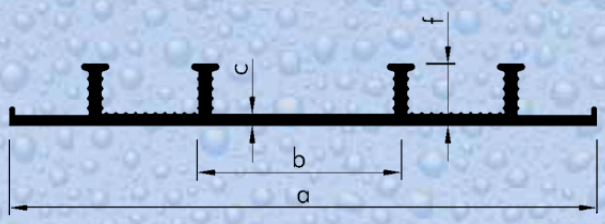
Elastoflex® nach DIN 7865
Elastoflex® to DIN 7865

Typ / type	a	b	c	f	k
FM 350 DS	350	180	12,0	38	35

Mit Mittelschlauchummantelung /
with tube sheathing

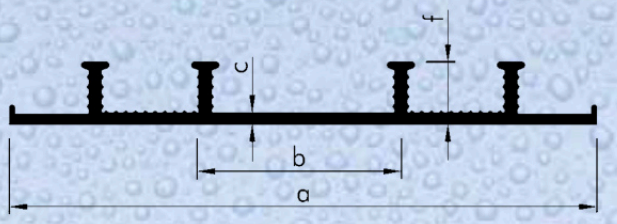


External construction joint waterstops



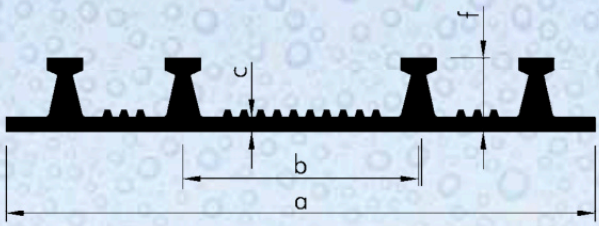
Besaflex® nach Werksnorm
Besaflex® to company standard

Typ / type	a	b	c	f	Anker/ anchor
AA 200	200	80	3,5	20	4
AA 250	240	90	4,0	25	4
AA 250/35	240	90	4,5	35	4
AA 250/45	240	90	4,5	45	4
AA 320	320	110	4,0	25	6
AA 320/35	320	110	4,5	35	6
AA 320/45	320	110	4,5	45	6
AA 500	500	120	4,0	25	8
AA 500/35	500	120	4,5	35	8
AA 625/35	625	300	5,5	35	10
AA 800	800	300	5,5	25	12



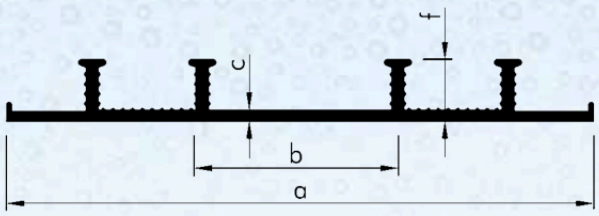
Nitriflex® nach DIN 18541
Nitriflex® to DIN 18541

Typ / type	a	b	c	f	Anker/ anchor
AA 240/25	240	90	4,5	25	4
AA 240/35	240	90	5,0	35	4
AA 240/45	240	90	5,0	45	4
AA 320/25	320	110	4,5	25	6
AA 320/35	320	110	5,0	35	6
AA 320/45	320	110	5,0	45	6
AA 500/25	500	120	4,5	25	8
AA 500/35	500	120	5,0	35	8



Elastoflex® nach DIN 7865
Elastoflex® to DIN 7865

Typ / type	a	b	c	f	Anker/ anchor
A 250	250	100	6,0	31	4
A 350	350	100	6,0	31	6
A 500	500	150	6,0	31	8



Polyflex nach Werksnorm
Polyflex to company standard

Typ / type	a	b	c	f	Anker/ anchor
AAP 240	240	90	4,0	25	4
AAP 320	320	110	4,0	25	6

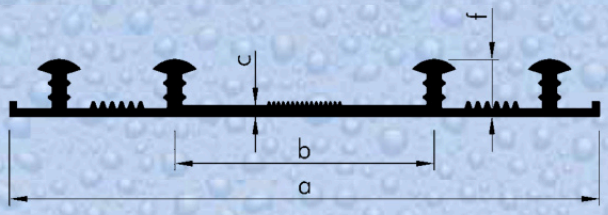
Subject to change. Dimensions in mm unless stated otherwise.



External construction joint waterstops

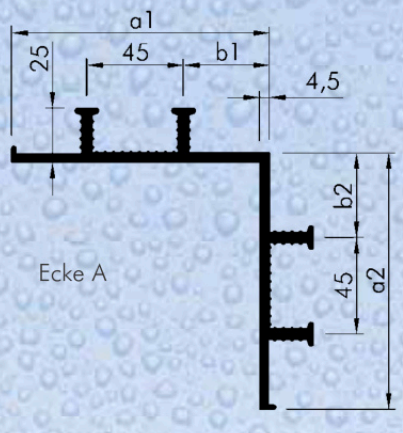
Besaflex® nach British standard (BS)
Besaflex® to British standard (BS)

Typ / type	a	b	c	f	Anker/ anchor
EC 150	150	110	4,5	24	2
EC 200	200	85	4,5	24	4
EC 250	250	110	4,5	24	4
EC 300	300	140	4,5	24	4
EC 330	330	170	4,5	24	4



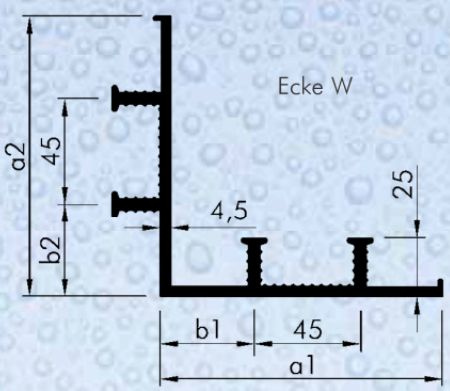
Besaflex® nach Werksnorm
Besaflex® to company standard

Typ / type	a1	a2	b1	b2	Anker/ anchor
AA 240 EA	120	120	45	45	4
AA 240 EW	120	120	45	45	4
AA 320 EA	170	170	55	55	6
AA 320 EW	170	170	55	55	6
AA 320 EI	170	170	100	100	4
AA 500 EA	250	250	85	85	8
AA 500 EW	250	250	85	85	8
AA 500 EI	250	250	85	85	8



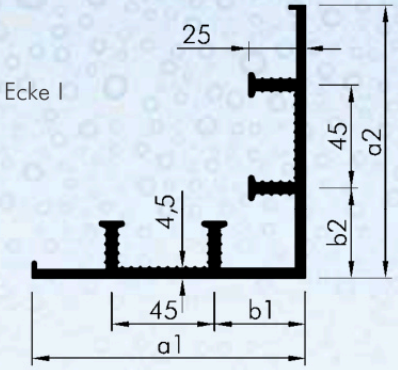
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2

Typ / type	a1	a2	b1	b2	Anker/ anchor
AA 240 EA	120	120	45	45	4
AA 240 EW	120	120	45	45	4
AA 320 EA	170	170	55	55	6
AA 320 EW	170	170	55	55	6
AA 320 EI	170	170	100	100	4
AA 500 EA	250	250	85	85	8
AA 500 EW	250	250	85	85	8
AA 500 EI	250	250	85	85	8

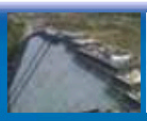


Besaflex® nach British standard (BS)
Besaflex® to British standard (BS)

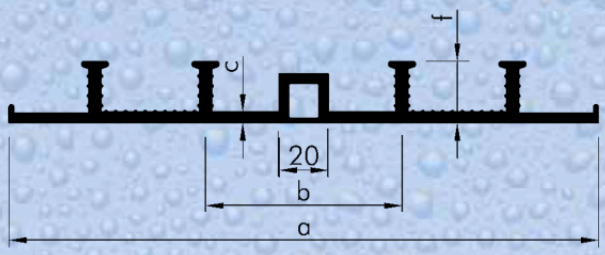
Typ / type	a1	a2	b1	b2	Anker/ anchor
EC 240 EA	120	120	45	45	4
EC 240 EW	120	120	45	45	4



4

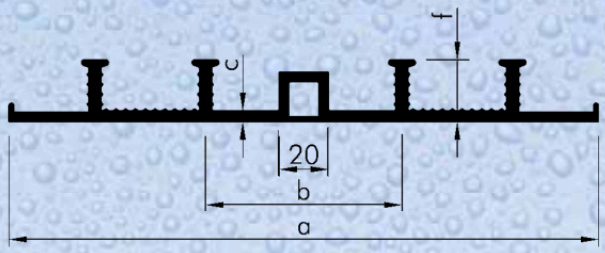




External expansion joint waterstops



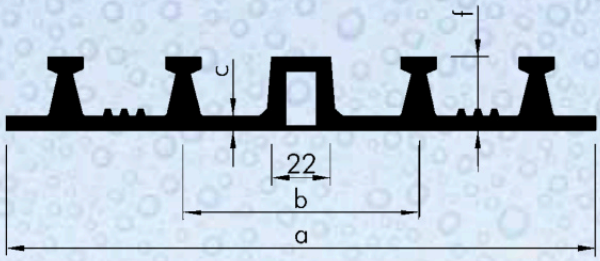
Besaflex® nach Werksnorm
Besaflex® to company standard

Typ / type	a	b	c	f	Anker/ anchor
AD 200	200	80	3,5	20	4
AD 250	240	90	4,0	25	4
AD 250/35	240	90	4,5	35	4
AD 250/45	240	90	4,5	45	4
AD 320	320	110	4,0	25	6
AD 320/35	320	110	4,5	35	6
AD 320/45	320	110	4,5	45	6
AD 500	500	120	4,0	25	8
AD 500/35	500	120	4,5	35	8



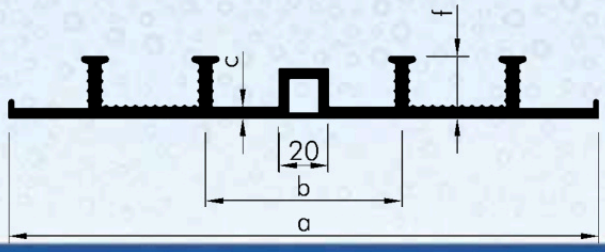
Nitriflex® nach DIN 18541
Nitriflex® to DIN 18541

Typ / type	a	b	c	f	Anker/ anchor
DA 240/25	240	90	4,5	25	4
DA 240/35	240	90	5,0	35	4
DA 240/45	240	90	5,0	45	4
DA 320/25	320	110	4,5	25	6
DA 320/35	320	110	5,0	35	6
DA 320/45	320	110	5,0	45	6
DA 500/25	500	120	4,5	25	8
DA 500/35	500	120	5,0	35	8



Elastoflex® nach DIN 7865
Elastoflex® to DIN 7865

Typ / type	a	b	c	f	Anker/ anchor
AM 250	250	100	6,0	31	4
AM 350	350	100	6,0	31	6
AM 500	500	150	6,0	31	8



Polyflex nach Werksnorm
Polyflex to company standard

Typ / type	a	b	c	f	Anker/ anchor
ADP 240	240	90	4,0	25	4
ADP 320	320	110	4,0	25	6

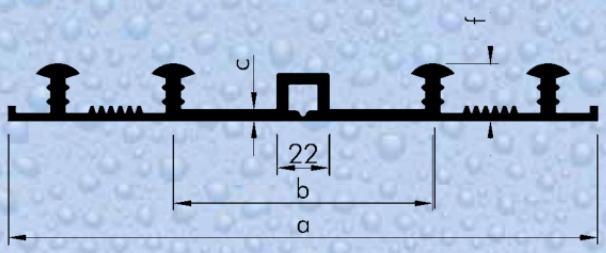
Subject to change. Dimensions in mm unless stated otherwise.



External expansion joint waterstops

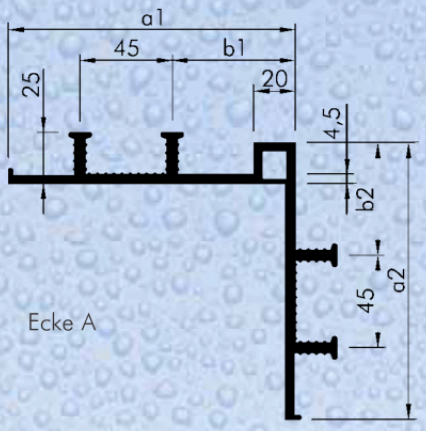
Besaflex® nach British standard (BS)
Besaflex® to British standard (BS)

Typ / type	a	b	c	f	Anker/ anchor
EE 150	150	110	4,5	24	2
EE 200	200	85	4,5	24	4
EE 250	250	110	4,5	24	4
EE 300	300	140	4,5	24	4
EE 330	330	170	4,5	24	4



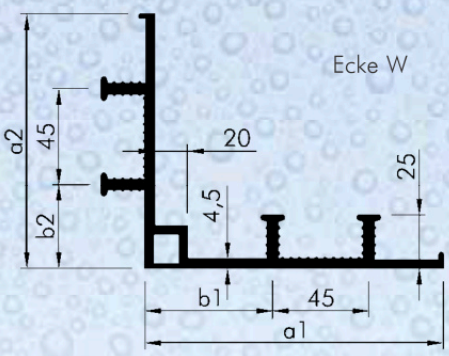
Besaflex® nach Werksnorm
Besaflex® to company standard

Typ / type	a1	a2	b1	b2	Anker/ anchor
AD 240 EA	120	120	50	50	4
AD 240 EW	120	120	50	50	4
AD 320 EA	170	170	60	60	6
AD 320 EW	170	170	60	60	6
AD 500 EA	250	250	90	90	8
AD 500 EW	250	250	90	90	8



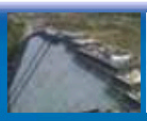
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2

Typ / type	a1	a2	b1	b2	Anker/ anchor
DA 240 EA	120	120	50	50	4
DA 240 EW	120	120	50	50	4
DA 320 EA	170	170	60	60	6
DA 320 EW	170	170	60	60	6
DA 500 EA	250	250	90	90	8
DA 500 EW	250	250	90	90	8



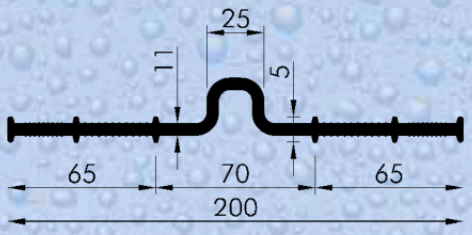
Besaflex® nach British standard (BS)
Besaflex® to British standard (BS)

Typ / type	a1	a2	b1	b2	Anker/ anchor
EE 240 EA	120	120	50	50	4
EE 240 EW	120	120	50	50	4

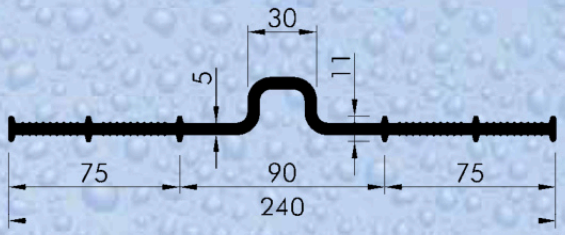




Special profiles

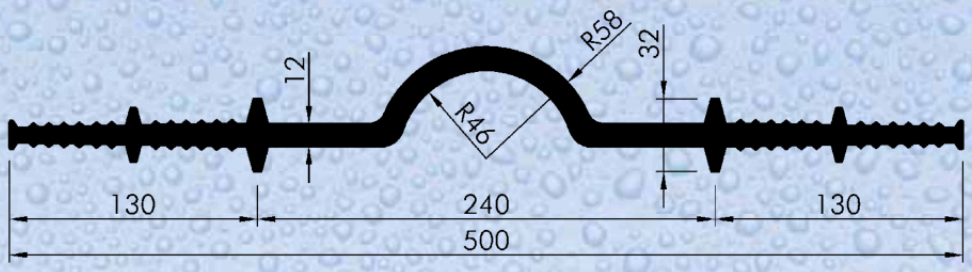
BOD 200 i
Nitriflex® nach DIN 18541 Teil 2
Nitriflex® to DIN 18541 part 2



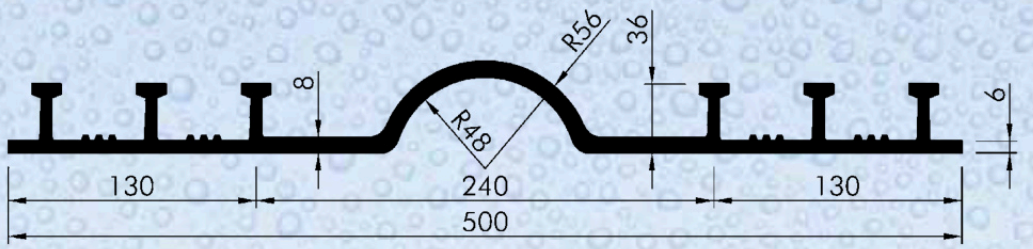
BOD 240 i
Nitriflex® nach DIN 18541 Teil 2
Nitriflex® to DIN 18541 part 2



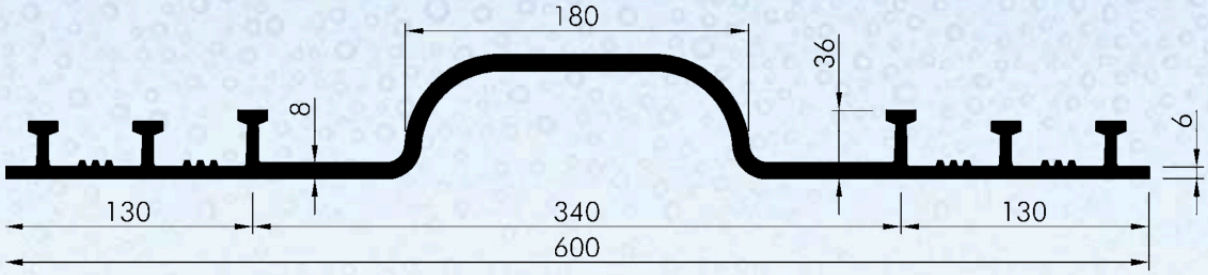
DON 500
Nitriflex® nach DIN 18541 Teil 2
Nitriflex® to DIN 18541 part 2



AAON 500
Nitriflex® nach DIN 18541 Teil 2
Nitriflex® to DIN 18541 part 2



AAON 600
Nitriflex® nach DIN 18541 Teil 2
Nitriflex® to DIN 18541 part 2



Subject to change. Dimensions in mm unless stated otherwise.



Nitriflex V-Series



The newly by BESAPLAST® developed V-series of waterstops seals joints not only by the well known labyrinth concept.

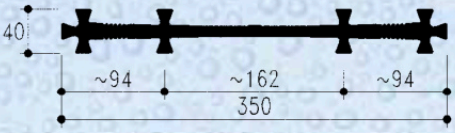
The V-series achieves an additional sealing effect through its special, wedge-shaped waterstop geometry. This unique design is registered by BESAPLAST® and leads to an increasing sealing effect with increasing water pressure and/or movement.

Lager movements of the structural components in combination with water pressure become now possible.

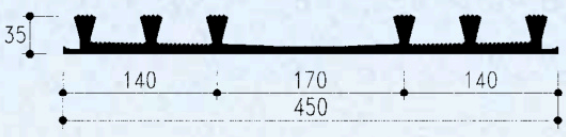




Nitriflex® VAI 350 DIN 18541-2

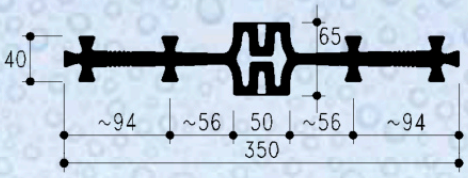


Nitriflex® VAA 450 DIN 18541-2

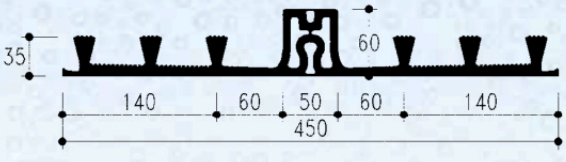




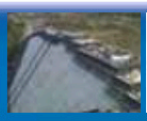
Nitriflex® VDI 350 DIN 18541-2



Nitriflex® VDA 450 DIN 18541-2

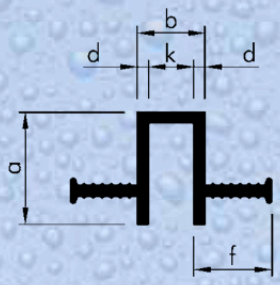




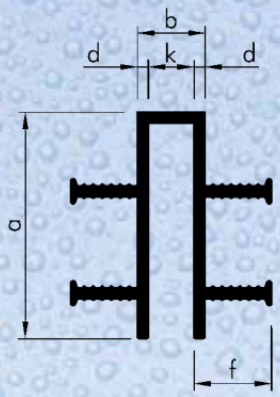




Capping joint waterstops

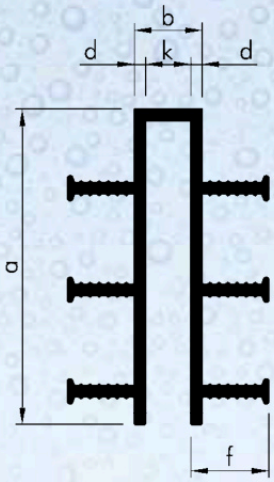
Fugenabschlußband mit 2 Sperranker /
Capping joint waterstop with 2 anchors



Fugenabschlußband mit 4 Sperranker /
Capping joint waterstop with 4 anchors



Fugenabschlußband mit 6 Sperranker /
Capping joint waterstop with 6 anchors



Besaflex® nach Werksnorm
Besaflex® to company standard

Typ / type	a	b	k	d	f	Anker/ *anchor*
FV 20/20	50	20	10	5,0	25	2
FV 20/20/70	70	20	10	5,0	25	2
FV 20/30	50	20	10	5,0	35	2
FV 20/40	70	20	10	5,0	45	2
FV 30/20	50	30	20	5,0	25	2
FV 30/30	50	30	20	5,0	35	2
FV 30/40	70	30	20	5,0	45	2
FV 40/40	70	40	30	5,0	45	2
FV 50/40	70	50	40	5,0	45	2
FV 30/20/2	95	30	20	5,0	25	4
FV 30/30/2	95	30	20	5,0	35	4
FV 40/30/2	95	40	30	5,0	35	4
FV 60/30/2	140	60	50	5,0	35	4
FV 30/20/3	140	30	20	5,0	25	6
FV 30/30/3	140	30	20	5,0	35	6
FV 30/40/3	140	30	20	5,0	45	6
FV 40/30/3	140	40	30	5,0	35	6
FV 70/20/3	140	70	60	5,0	25	6
FV 80/20/3	140	80	70	5,0	25	6
FV 110/20/3	140	110	100	5,0	25	6

Nitriflex® nach DIN 18541
Nitriflex® to DIN 18541

Typ / type	a	b	k	d	f	Anker/ *anchor*
FA 50/10/25 [1]	50	20	10	5,0	25	2
FA 70/10/25 [1]	70	20	10	5,0	25	2
FA 50/10/35 [1]	50	20	10	5,0	35	2
FA 70/10/45 [1]	70	20	10	5,0	45	2
FA 50/20/25	50	30	20	5,0	25	2
FA 50/20/35	50	30	20	5,0	35	2
FA 70/20/45	70	30	20	5,0	45	2
FA 70/30/45	70	40	30	5,0	45	2
FA 70/40/45	70	50	40	5,0	45	2
FA 90/20/25	95	30	20	5,0	25	4
FA 90/20/35	95	30	20	5,0	35	4
FA 90/30/35	95	40	30	5,0	35	4
FA 130/50/35 [1]	140	60	50	5,0	35	4
FA 130/20/25	140	30	20	5,0	25	6
FA 130/20/35	140	30	20	5,0	35	6
FA 130/20/45	140	30	20	5,0	45	6
FA 130/30/35	140	40	30	5,0	35	6
FA 130/60/25	140	70	60	5,0	25	6
FA 130/70/25	140	80	70	5,0	25	6
FA 130/100/25	140	110	100	5,0	25	6

[1] DIN 18541 Teil/ *part* 2

Subject to change. Dimensions in mm unless stated otherwise.



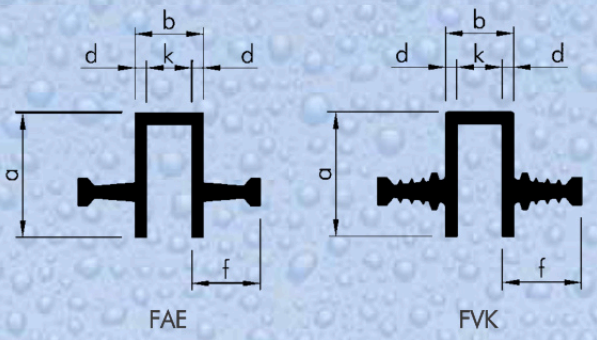
Capping joint waterstops

Elastoflex® nach DIN 7865
Elastoflex® to DIN 7865

Typ / type	a	b	k	d	f	Anker/ anchor
FVK 5/2 *	55	20	10	5,0	35	2
FAE 50	55	30	20	5,0	30	2
FAE 70 *	70	30	20	5,0	30	2
FVK 7/4 *	70	40	30	5,0	45	2
FVK 7/5 *	70	50	40	5,0	45	2
FAE 100	105	30	20	5,0	30	4
FAE 150	155	30	20	5,0	30	6
FVK 15/7 *'**	150	70	60	5,0	35	6

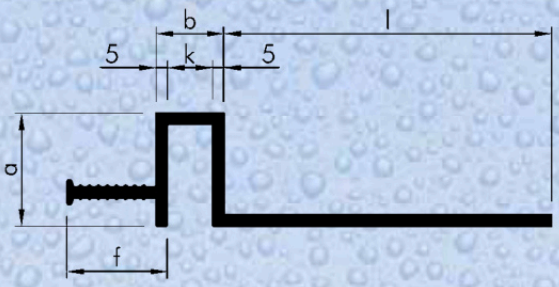
* DIN 7865 Teil/ *part 2*

** Sichtfläche schwarz/ *visible surface in black*



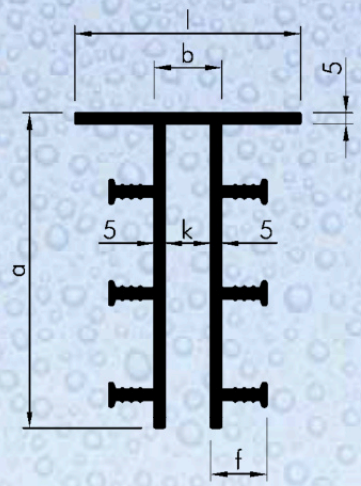
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2

Typ / type	a	b	k	l	f	Anker/ anchor
FA 50/20/45-150	50	30	20	145	45	1
FA 50/10/35-100	50	20	10	95	35	1



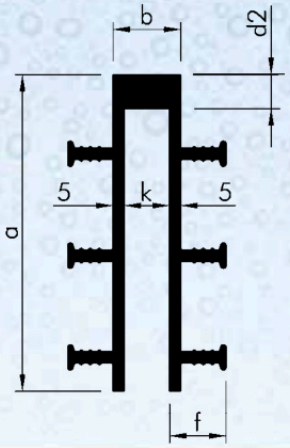
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2

Typ / type	a	b	k	l	f	Anker/ anchor
FA 100/90/20/45	90	30	20	100	45	4
FA 100/130/20/25	140	30	20	100	25	6



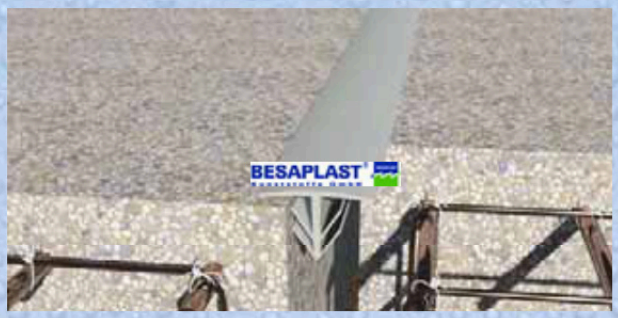
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2

Typ / type	a	b	k	d2	f	Anker/ anchor
FA 130/ 20/25-15	140	30	20	15,0	25	6
FA 130/20/35-15	140	30	20	15,0	35	6

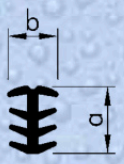




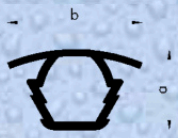
Compression profiles



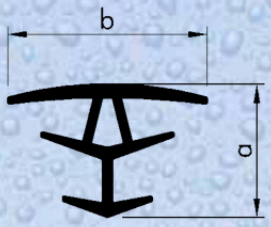
KLP 10
FN 10



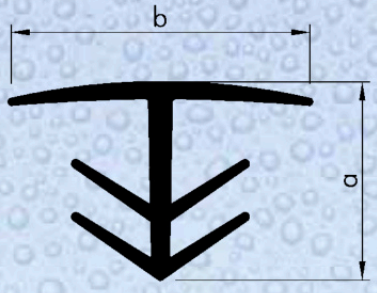
KLP 30



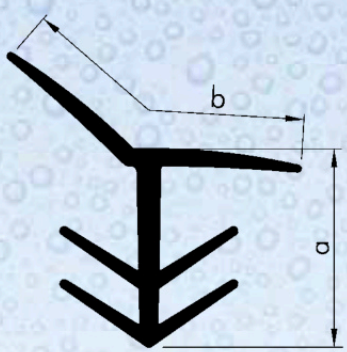
KLP 40

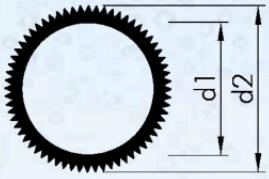


KLP 15 & 20
KLP 25 & 30
KLP 35 & 50
KLP 90
FN 20 & 30
FN 40



KLP 35 Ecke
KLP 60 Ecke
FN 20 Ecke
FN 30 Ecke
FN 40 Ecke





Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2

Typ / type	Fugenbreite/*joint width*	b	a
KLP 10	7-12	17	20
KLP 15	9-14	20	20
KLP 20	13-17	25	25
KLP 25	17-22	30	30
KLP 30	19-25	50	30
KLP 35	19-25	35	35
KLP 40	19-25	60	40
KLP 50	25-34	50	40
KLP 55	24-29	55	45
KLP 60	24-29	60	50
KLP 90	34-40	90	60
KLP 35 Ecke	19-24	40	35
KLP 60 Ecke	25-34	100	35

TPE nach Werksnorm
TPE to company standard

Typ / type	Fugenbreite/*joint width*	b	a
KLP-TPE 10	7-12	17	20
KLP-TPE 15	9-14	20	20
KLP-TPE 20	13-17	25	25
KLP-TPE 25	17-22	30	30
KLP-TPE 30	19-25	50	30
KLP-TPE 35	19-25	35	35
KLP-TPE 40	19-25	60	40
KLP-TPE 50	25-34	50	40
KLP-TPE 55	24-29	55	45
KLP-TPE 60	24-29	60	50
KLP-TPE 90	34-40	90	60
KLP-TPE 35 Ecke	19-24	40	35
KLP-TPE 90 Ecke	25-34	100	35

TPE nach Werksnorm
TPE to company standard

Typ / type	Fugenbreite/*joint width*	b	a
FN 10	8-13	15	22
FN 20	15-25	39	38
FN 30	25-35	55	40
FN 40	35-45	66	43
FN 20 Ecke	15-25	36	45
FN 30 Ecke	25-35	48	53
FN 40 Ecke	35-45	55	43

TPE nach Werksnorm
TPE to company standard

Typ / type	d1	d2
KLS 10/30 Klemmschlauch für Fertigteile/ *clamped tube for prefabricated elements*	40	50

Subject to change. Dimensions in mm unless stated otherwise.



Compression profiles

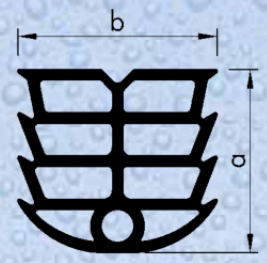
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2

Typ / type	Fugenbreite/ *joint width*	b	a
KLM 10	7-12	15	20
KLM 20	12-17	20	20
KLM 25	17-21	25	27
KLM 30	18-24	30	28
KLM 40	28-34	40	35
KLM 50	38-44	50	40
KLM 60	48-54	60	45
KLM 70	58-64	70	45
KLM 80	68-74	80	60
KLM 120	85-105	120	75



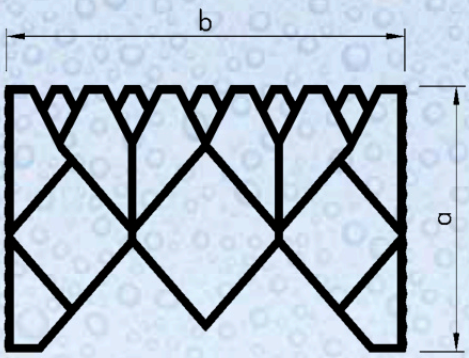
TPE nach Werksnorm
TPE to company standard

Typ / type	Fugenbreite/ *joint width*	b	a
KLM-TPE 10	7-12	15	20
KLM-TPE 20	12-17	20	20
KLM-TPE 25	17-21	25	27
KLM-TPE 30	18-24	30	28
KLM-TPE 40	28-34	40	35
KLM-TPE 50	38-44	50	40
KLM-TPE 60	48-54	60	45
KLM-TPE 70	58-64	70	45
KLM-TPE 80	68-74	80	60
KLM-TPE 120	85-105	120	75



KLM,
HK

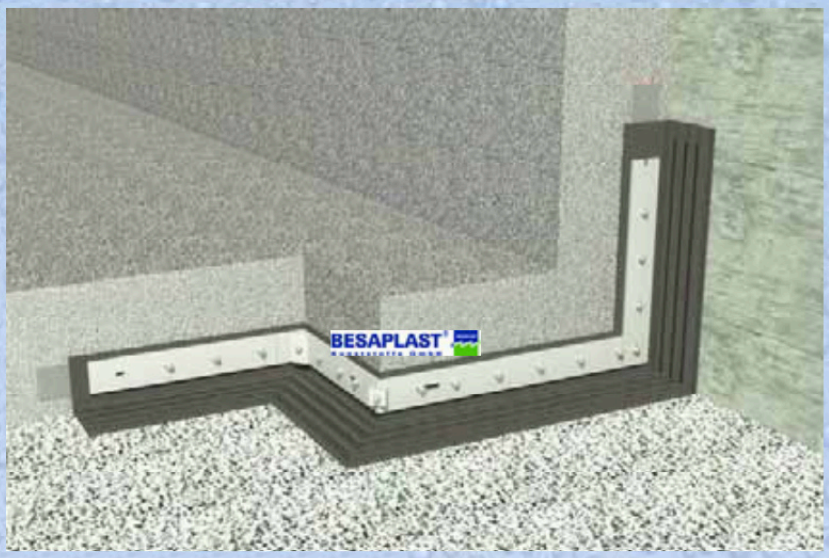
KLM 120



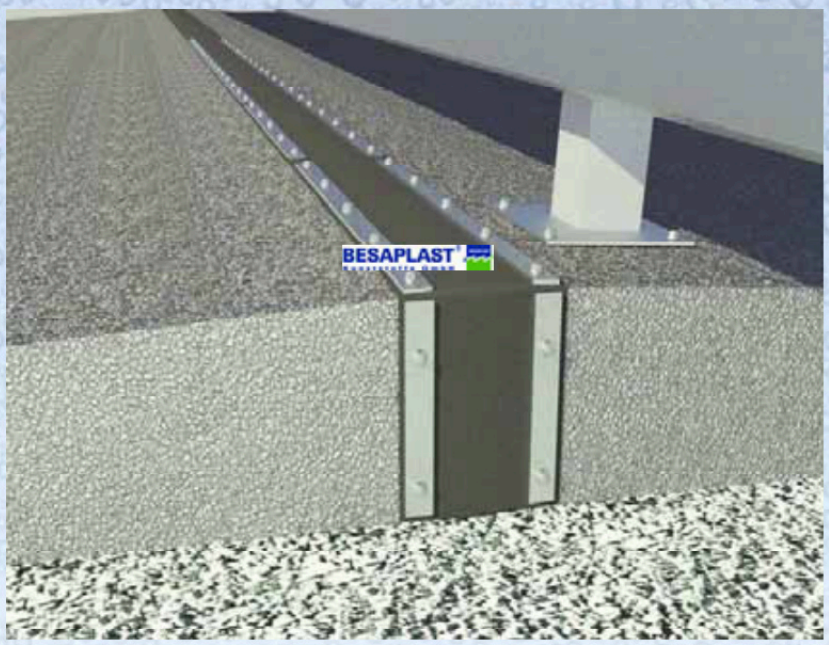
Elastoflex® nach DIN 7865 Teil 2
Elastoflex® to DIN 7865 part 2

Typ / type	Fugenbreite/ *joint width*	b	a
HK 15	8-13	15	22
HK 25	13-20	25	25
HK 30	20-25	30	25
HK 37	25-32	37	30
HK 43	30-38	43	35
HK 50	37-42	50	40
HK 60	43-52	60	50
HK 75	50-60	75	60

Clamped waterstops



Standard sitation
- *Raw rubber stripe 80 x 4,0 mm*
- *Clamped waterstop*
- *Steel rail*
- *Clamp corner inside & outside*
- *Drop rod & chemical glass capsule*



Example according to the design drawing RiZ-ING Fug 6 of the Federal Highway Research institute
- *Clamped waterstop type Elastoflex FLK nach DIN 7865*
- *Steel rail 40 x 6,0 mm*
- *Drop rod & chemical glass capsule M10*

Subject to change. Dimensions in mm unless stated otherwise.



Clamped waterstops

Rohkautschukstreifen / *Raw rubber stripe*

- 80 x 4,0 mm
- 100 x 4,0 mm



Klemmflansch / *Steel rail*

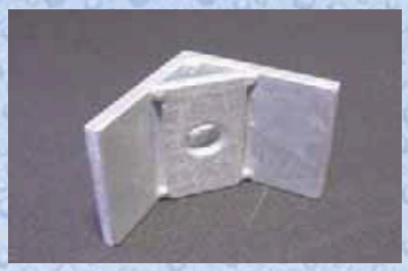
- 40 x 6 x 1000 mm V4A, Lochabstand / *hole spacing* 200 mm
- 80 x 10 x 1300 mm V4A, Lochabstand / *hole spacing* 150 mm
- 80 x 10 x 1450 mm verzinkt / *galvanized*, Lochabstand / *hole spacing* 150 mm



Klemmflanschecke Innen / *Clamp corner inside*

- Klemmflanschecke Innen verzinkt Schenkellänge: 100 mm
- Klemmflanschecke Innen V4A Schenkellänge: 100 mm

- *Clamp corner inside galvanized* *Length per side: 100 mm*
- *Clamp corner inside V4A* *Length per side: 100 mm*



Klemmflanschecke Außen / *Clamp corner outside*

- Klemmflanschecke Außen verzinkt Schenkellänge: 200 mm
- Klemmflanschecke Außen V4A Schenkellänge: 200 mm

- *Clamp corner outside galvanized* *Length per side: 200 mm*
- *Clamp coner outside V4A* *Length per side: 200 mm*



Mörtelpatrone / *Chemical glass capsule*

- M10
- M12
- M16



Ankerstange / *Drop rod*

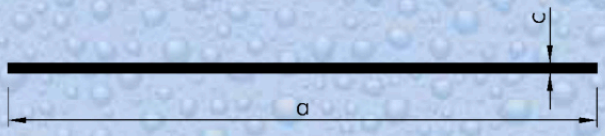
- M10 x 110 mm V4A
- M12 x 160 mm *galvanized*
- M12 x 160 mm V4A
- M16 x 230 mm *galvanized*
- M16 x 230 mm V4A





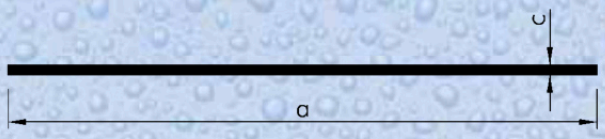


Clamped waterstops



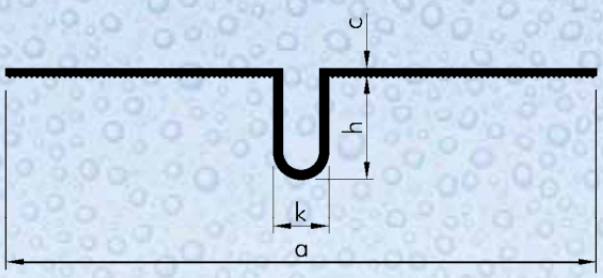
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2

Typ / type	a	c
FL 100	100	4,0
FL 200	200	4,0
FL 250	250	4,0
FL 280	280	4,0
FL 300	300	4,0
FL 350	350	4,0
FL 400	400	4,0
FL 500	500	4,0



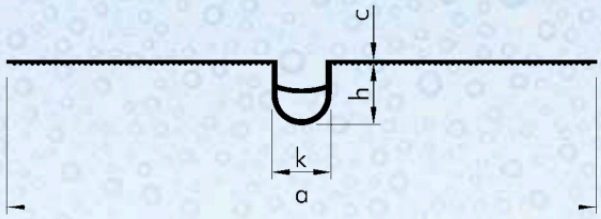
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2

Typ / type	a	c
FLK 100	100	4,0
FLK 200	200	4,0
FLK 250	250	4,0
FLK 280	280	4,0
FLK 300	300	4,0
FLK 350	350	4,0
FLK 400	400	4,0
FLK 500	500	4,0



Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2

Typ / type	a	c	k	h
BOD 240	240	5,0	30	50
BOD 320	320	5,0	30	55
BOD 360	360	5,0	35	55
BOD 500	500	6,0	50	55



Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2

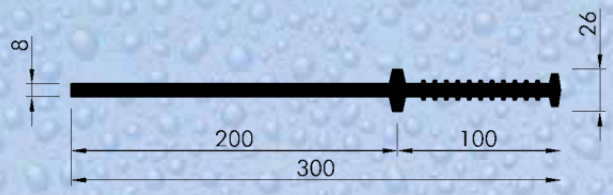
Typ / type	a	c	k	h
BOD 300	300	2,5	28	30
BOD 400	400	5,0	80	25

Subject to change. Dimensions in mm unless stated otherwise.

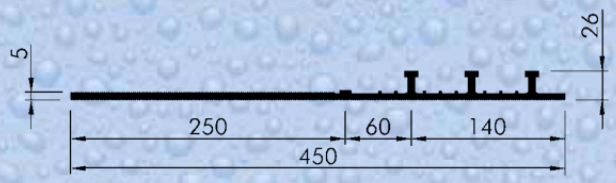


Clamped waterstops

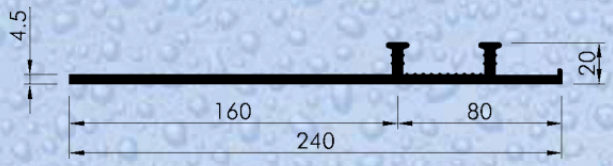
KFB 330
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



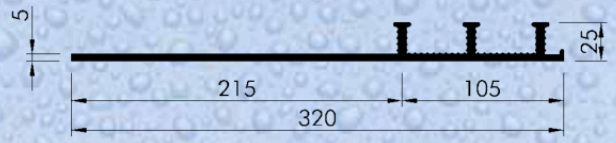
A 450 KL
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



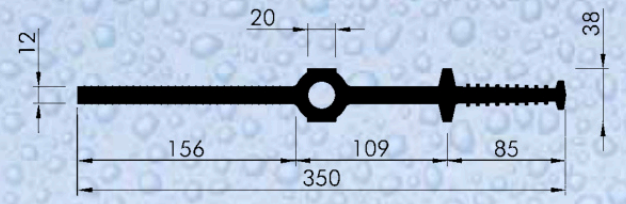
AA 240 eins. glatt / *one side smooth*
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2



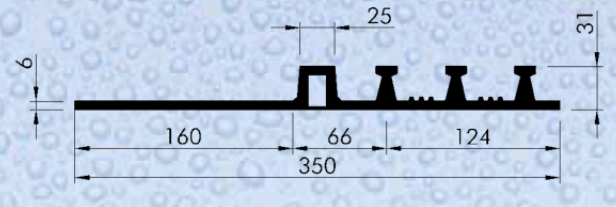
AA 320 eins. glatt / *one side smooth*
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2



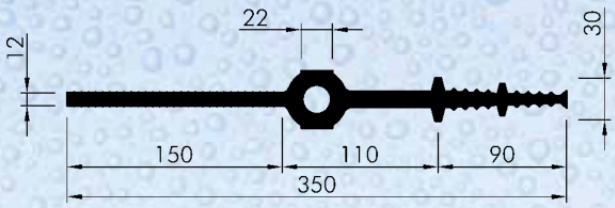
FM 350 KF
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



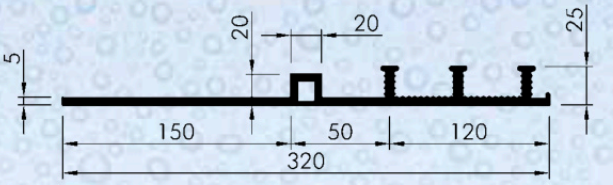
AM 350 eins. glatt / *one side smooth*
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



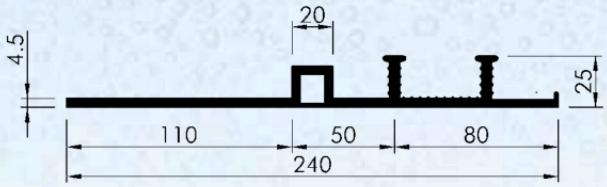
D 350 eins. glatt / *one side smooth*
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2



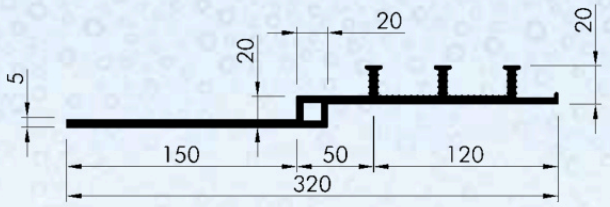
DA 320 eins. glatt oV / *one side smooth oV*
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2



DA 240 eins. glatt / *one side smooth*
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2



DA 320 eins. glatt mV / *one side smooth mV*
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2



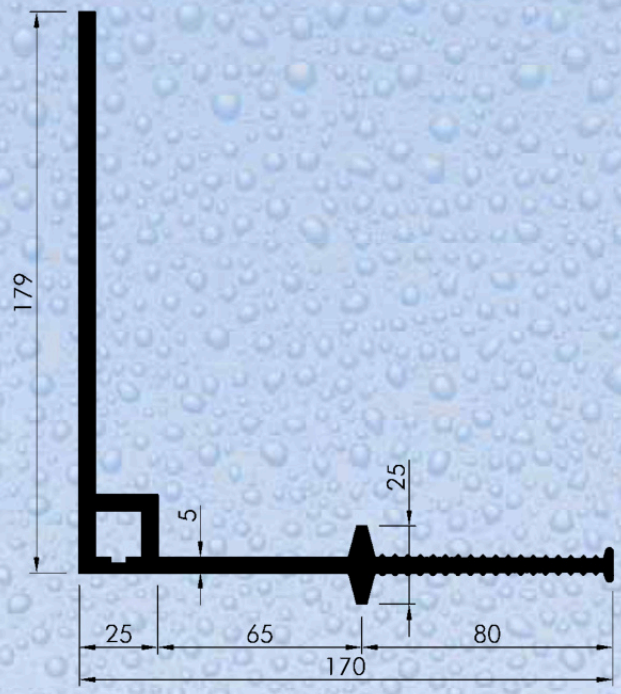
4



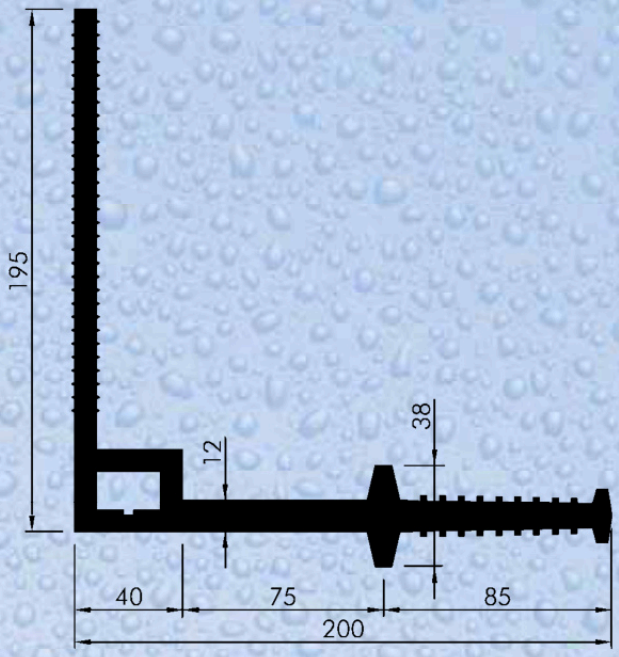
Clamped waterstops

4

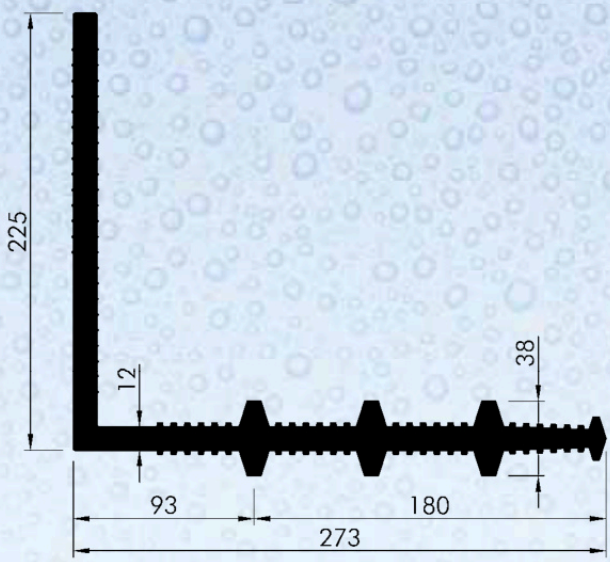
D 330 Ecke eins. glatt / *one side smooth*
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2



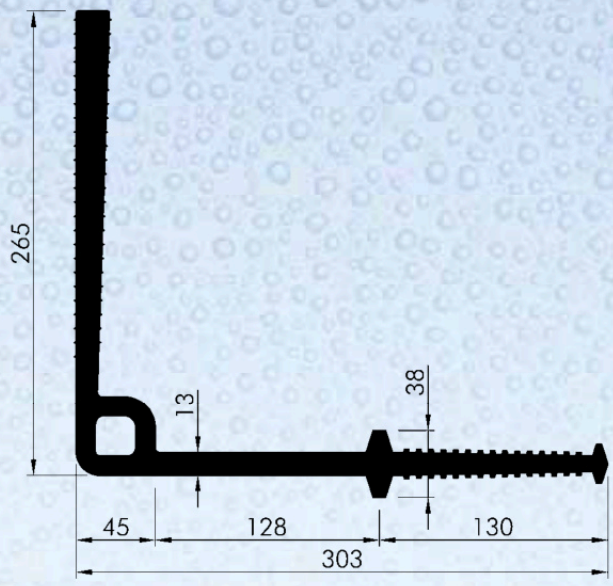
FM 350 K
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



F 500 K
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



FM 500 K
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2

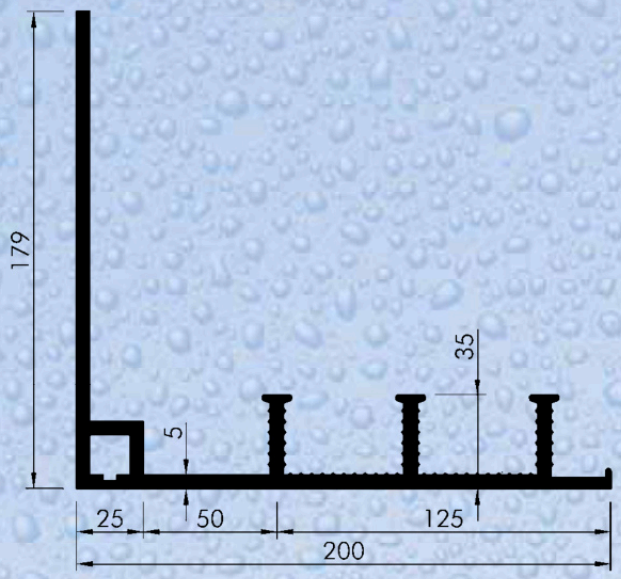


Subject to change. Dimensions in mm unless stated otherwise.

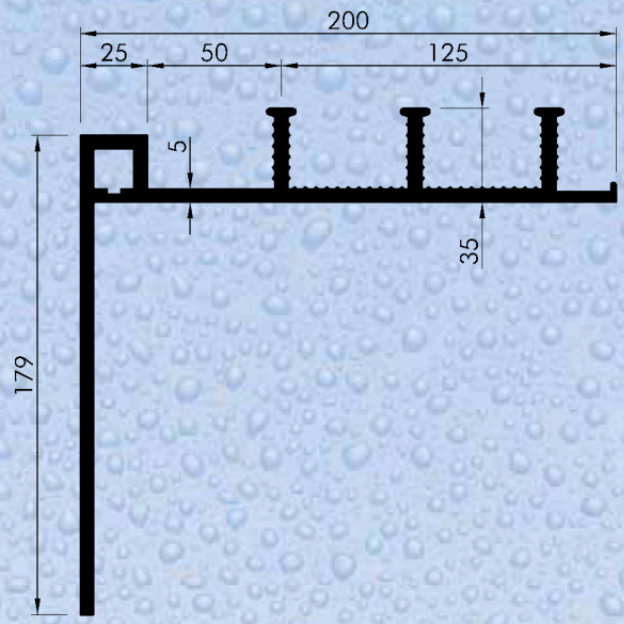


Clamped waterstops

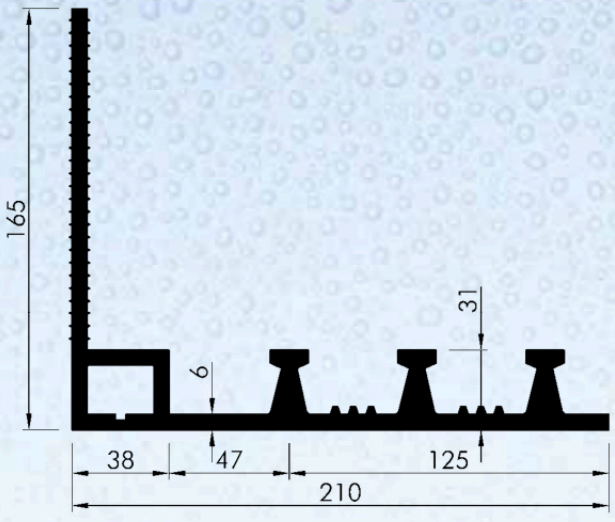
DA 330/35 Ecke eins. glatt / *one side smooth*
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2



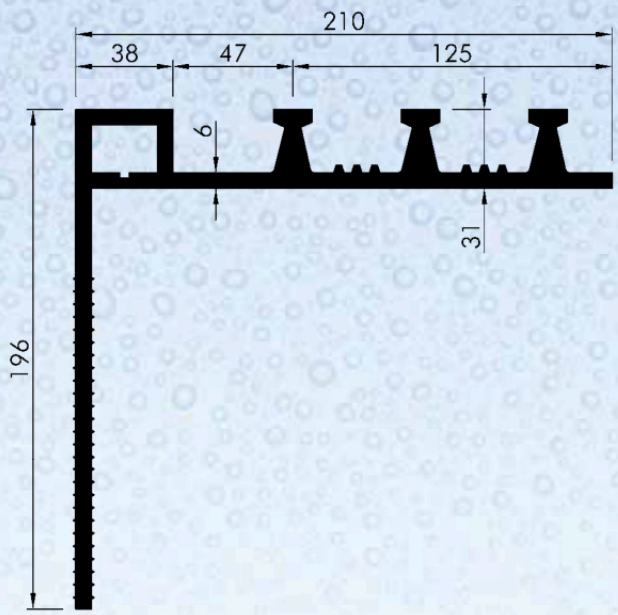
DA 330/35 Ecke A eins. glatt / one side smooth
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2



AM 350 K
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



AM 350 KA
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2

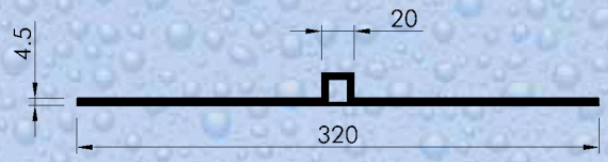


4

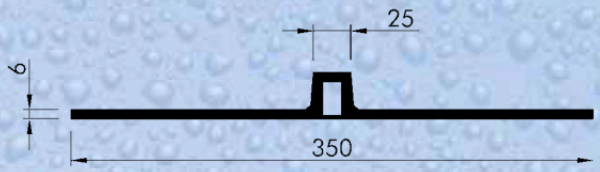


Clamped waterstops

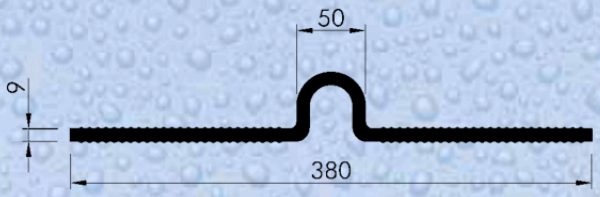
DA 320 beids. glatt / *both side smooth*
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2



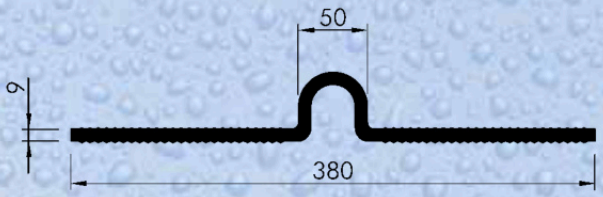
AMG 350
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



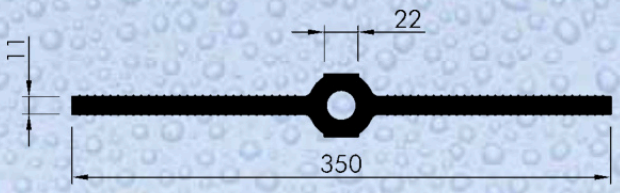
Omega 380
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



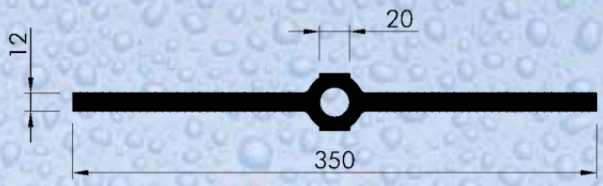
Omega 380 mit Gewebe / *with incorporated textile*
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



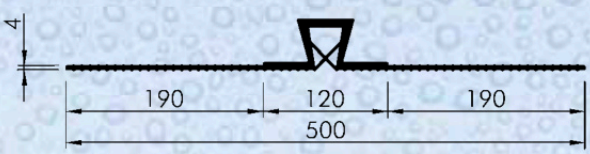
D 350 beids. glatt / *both side smooth*
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2



FM 350 KF2
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



A 500 KL
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



Beispiel: Aufbau einer Klemmkonstruktion mit Losflansch /
Example: mounting of clamped construction with loose-type flange



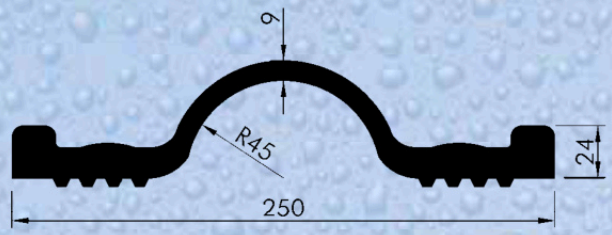
1 Klemmflansch / *steelrail*
2 Fugenband / *waterstop*
3 Rohkautschuk / *rubber stripe*
4 Bolzen / *capsule anchors*

Subject to change. Dimensions in mm unless stated otherwise.

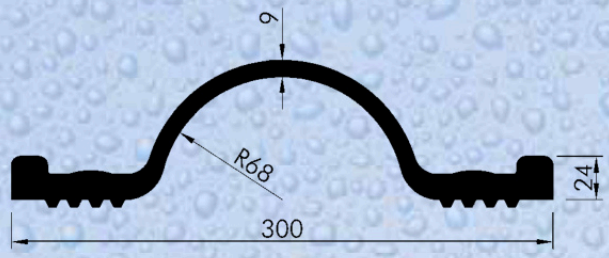


Clamped waterstops

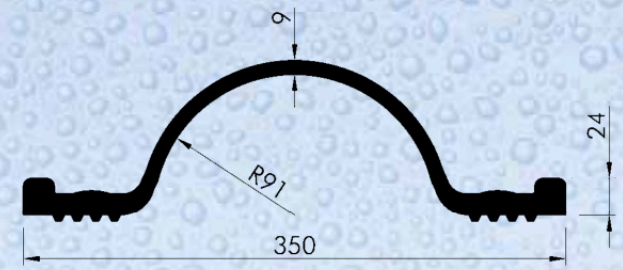
OK 25
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



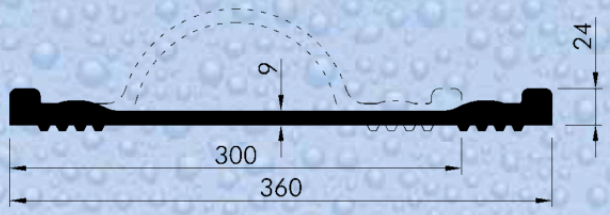
OK 30
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



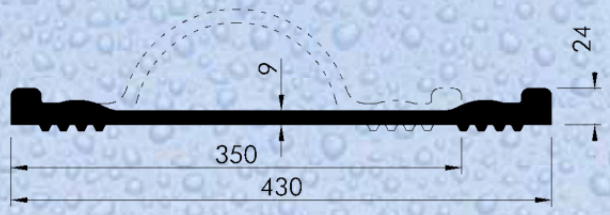
OK 35
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



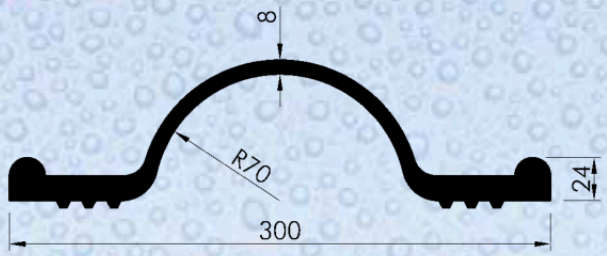
OKB 30 flach mit Gewebe /
OKB 30 flat with incorporated textile
Elastoflex® nach DIN 7865, Teil 2 / *Elastoflex® to DIN 7865, part 2*



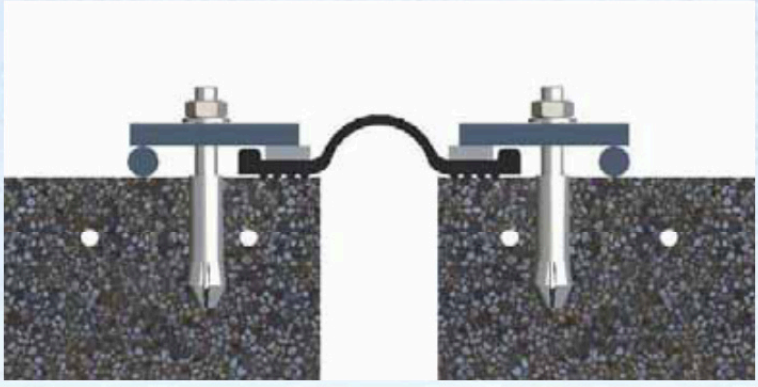
OKB 35 flach mit Gewebe /
OKB 35 flat with incorporated textile
Elastoflex® nach DIN 7865, Teil 2 / *Elastoflex® to DIN 7865, part 2*



OKB 30 mit Gewebe / *OKB 30 with incorporated textile*
Elastoflex® nach DIN 7865, Teil 2
Elastoflex® to DIN 7865, part 2



Beispiel: Aufbau einer Klemmkonstruktion mit Kippflansch /
Example: mounting of clamped construction with canted flanges



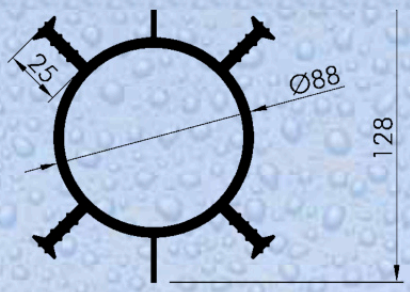
1 Klemmflansch / *steelrail*
2 Fugenband / *waterstop*
3 Bolzen / *capsule anchors*



Shrinkage tube

Besaplast®-shrinkage tubes are used to create predetermined breaking points in concrete structures. The structural element is thereby weakened and while hereby sealed by anchors. In combination with triangle-profiles (see formwork accessoires) which are used outside of structural members, crack courses will be even.

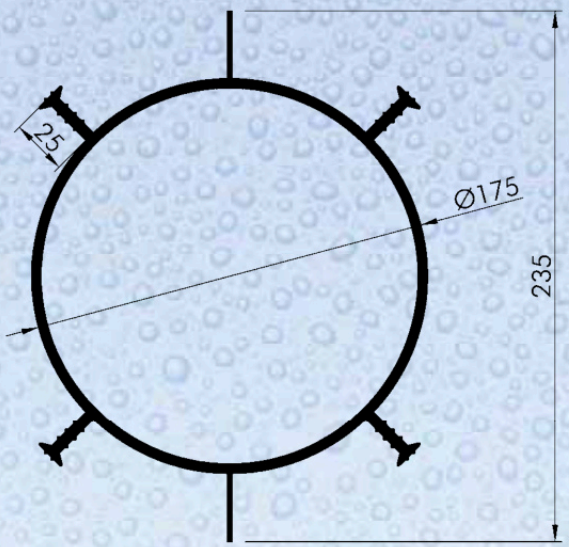
4



S1

Material:	Besaflex®
Wandstärken:	240 bis 350 mm
Standardlängen:	2,50 m; 2,75 m; 3,00 m; 4,00 m; 5,00 m

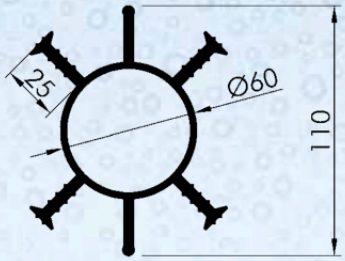
Material:	*Besaflex®*
Wall thickness:	*240 up to 350 mm*
standard length:	*2,50 m; 2,75 m; 3,00 m; 4,00 m; 5,00 m*



S2

Material:	Besaflex®
Wandstärken:	350 bis 500 mm
Standardlängen:	2,50 m; 3,00 m; 4,00 m; 5,00 m

Material:	*Besaflex®*
Wall thickness:	*350 up to 500 mm*
standard length:	*2,50 m; 3,00 m; 4,00 m; 5,00 m*



S3

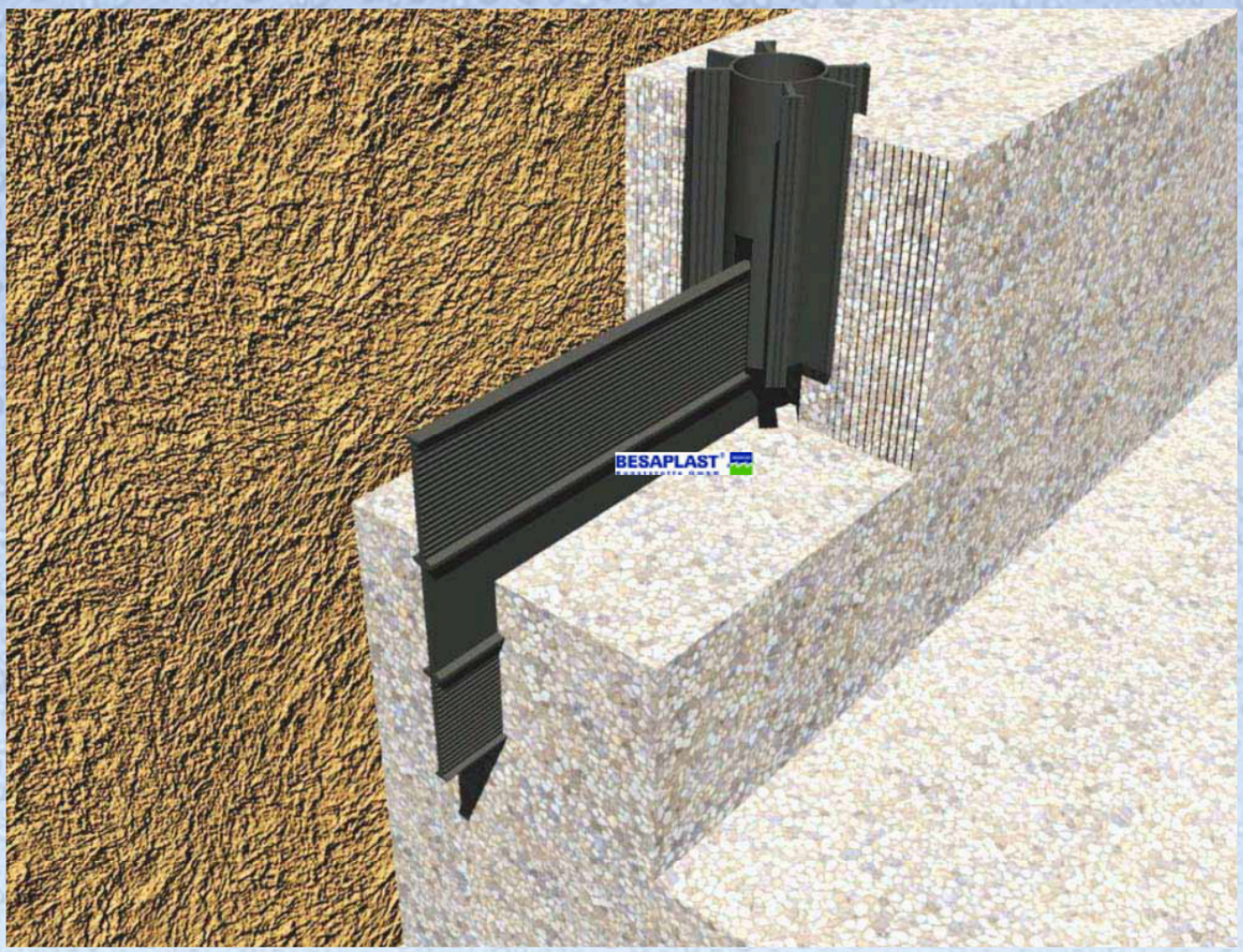
Material:	Besaflex®
Wandstärken:	170 bis 240 mm
Standardlängen:	2,50 m; 2,75 m; 3,00 m; 4,00 m; 5,00 m

Material:	*Besaflex®*
Wall thickness:	*170 up to 240 mm*
standard length:	*2,50 m; 2,75 m; 3,00 m; 4,00 m; 5,00 m*

Subject to change. Dimensions in mm unless stated otherwise.

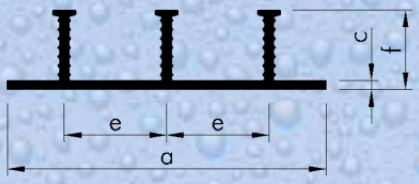


Shrinkage tube



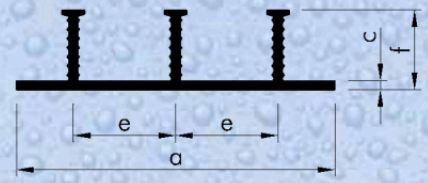


Waterstops for connection with sheets



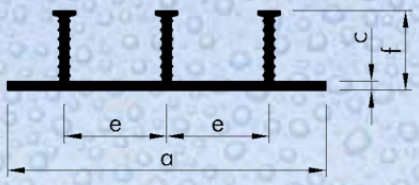
Besaflex® nach Werksnorm
Besaflex® to company standard

Typ / type	a	e	c	f	Anker/ anchor
FAP 60	60	40	4,0	20	2
FAP 80	80	50	4,0	20	2
FAP 100	100	60	4,0	20	2
FAP 140/3	140	50	4,0	20	3
FAP 140/30/3	140	50	4,0	30	3



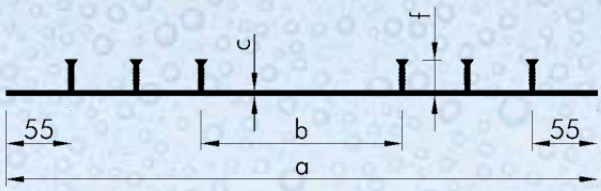
Nitriflex® nach DIN 18541, Teil 2
Nitriflex® to DIN 18541, part 2

Typ / type	a	e	c	f	Anker/ anchor
FAPN 60	60	40	4,0	20	2
FAPN 80	80	50	4,0	20	2
FAPN 100	100	60	4,0	20	2
FAPN 140/3	140	50	4,0	20	3
FAPN 140/30/3	140	50	4,0	30	3



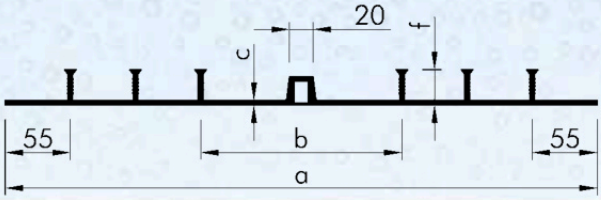
Polyflex nach Werksnorm
Polyflex to company standard

Typ / type	a	e	c	f	Anker/ anchor
AAP 60	60	40	4,0	20	2
AAP 80	80	50	4,0	20	2
AAP 100	100	60	4,0	20	2
AAP 140/3	140	50	4,0	20	3
AAP 140/30/3	140	50	4,0	30	3
Alle Profile sind auch in HDPE lieferbar / *All profiles can be also dilevered in HDPE.*					



Polyflex nach Werksnorm
Polyflex to company standard

Typ / type	a	b	c	f	Anker/ anchor
SAA 400	400	110	4,0	30	6
SAA 500	500	170	4,0	30	6
SAA 600	600	270	4,0	30	6



Polyflex nach Werksnorm
Polyflex to company standard

Typ / type	a	b	c	f	Anker/ anchor
SDA 400	400	110	4,0	30	6
SDA 500	500	170	4,0	30	6

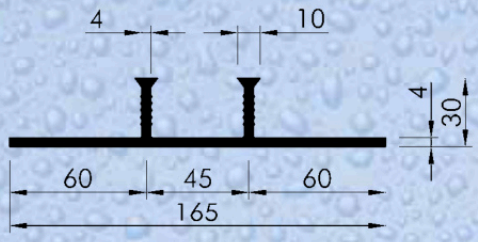
Subject to change. Dimensions in mm unless stated otherwise.



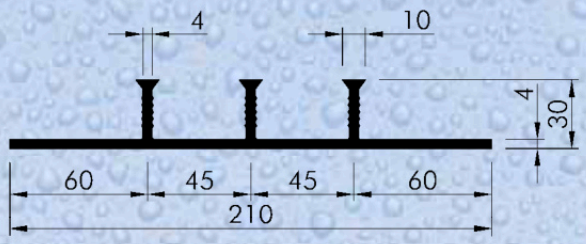
Waterstops for connection with sheets

The "Deutsche Bahn AG" (german railways) is regulating thermoplastic waterstops for conection with sheets in guideline 853.
We produce profiles (see below) made from PVC or PE according to the requiments of guideline 853 of DB Nezt AG (publisher). The material will be settled by Besaplast with the plastic sheets.

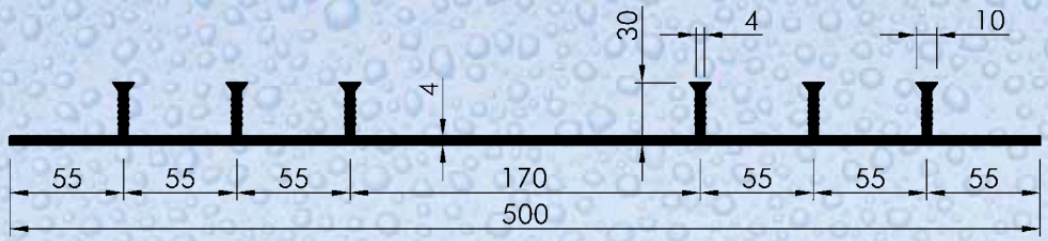
Anschlußband nach Modul 853.4101 SA 165



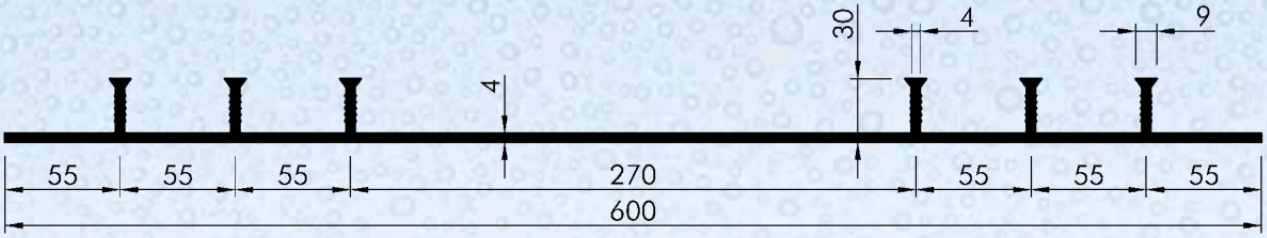
Anschlußband nach Modul 853.4101 SA 210



Anschlußband nach Modul 853.4101 SAA 500



Anschlußband nach Modul 853.4101 SAA 600

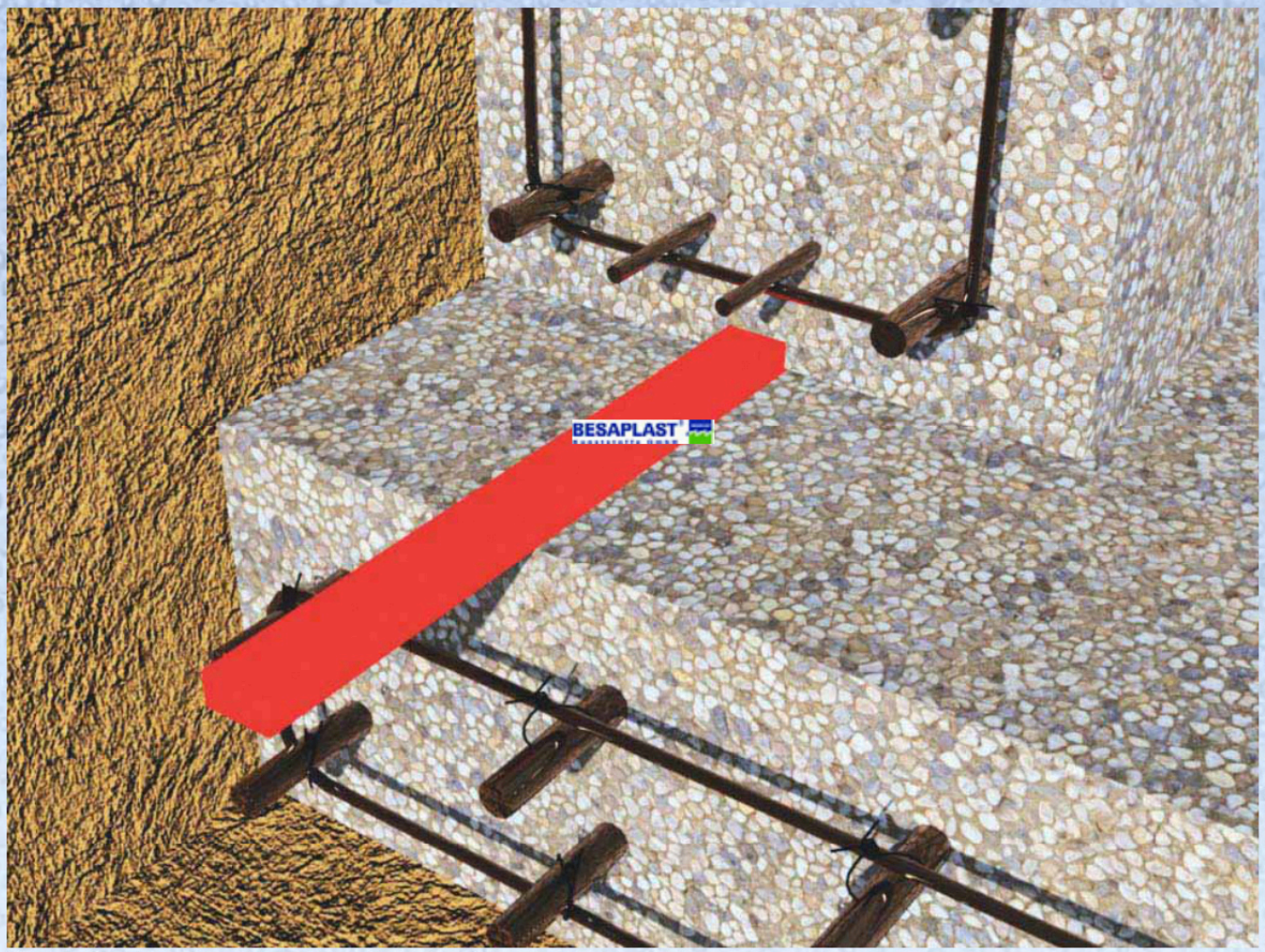






Swelling rubber

Besaplast®-swelling rubber are used for sealing construction joints. They swell on contact with water and owing on this fact construction joints are sealed.



Subject to change. Dimensions in mm unless stated otherwise.



Swelling rubber

Field of application:
Besaplast®-swelling rubber are used in construction joints for sealing against pressurised and damming water.

Material:
Our swelling rubber is based on thermplastic elastomere (TPE). Due to this extremly elastic material a welling rate up to 300% is possible Hereby the joint is sealed without breaks.

Before installation:
- *The swelling rubber has to by storaged dry and save. Otherwise process of swelling will start before installation and sealing in the end will be disabled.*
- *Mounting should be shy of concreting. Only herewith an anticipated swelling is provented.*

Installation:
- *Subsurface has to be clean.*
- *Stagnat water must be scaled.*
- *Asperities have to be planed.*

Constructional explanations:
- *Concrete cover must be more than 10 cm.*
- *The position is in the middle of structural member.*
- *Fixing is done with gluten or mechanicaly. The distance should be not more than 20 cm.*

Lieferung / delivery				
Abmessungen [mm] / Dimensions [mm]	5 x 20	10 x 20	15 x 20	20 x 25
Lieferlänge [m] / Delivery length [m]	25,00	10,00	5,00	5,00
Mindestabnahme [m] / Minimum quantity [m]	1000,00	1000,00	500,00	500,00

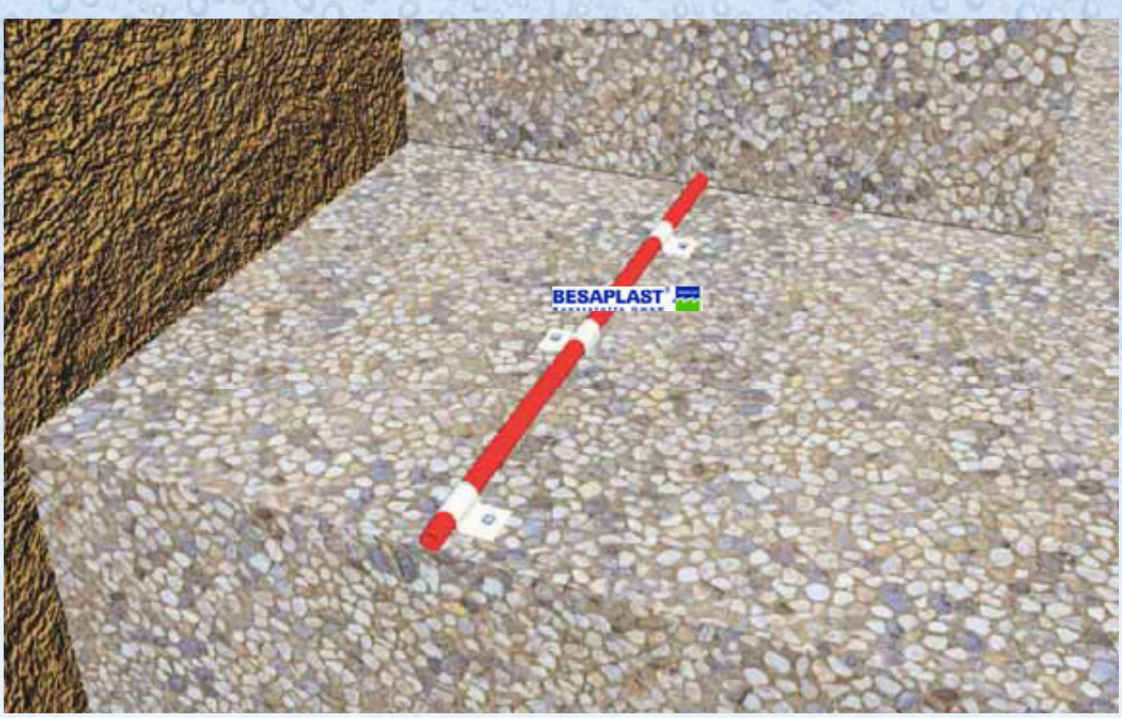




Injection tube

The Besaplast®-Injection tube 6/12 WP is usable for sealing construction joints and additionaly a secunda-ry sealing in combination with waterstops.





Subject to change. Dimensions in mm unless stated otherwise.



Injection tube

Characteristics:

- *Single wall profile*
- *high elasticity*
- *harmless for drinkingwater*
- *multiple injections possible*
- *works with all commenly used injection grouts*
- *working pressure up to 13 bar (188 PSI)*
- *recommended length of injection tube: depending on injection grout, approx. 10 m max.*
- *cleaning with airpressure or water possible (depending on injection grout)*
- *high chemical resistance*
- *Test certificate avaiblable*
- *Delivery length: rolls á 100 m*



Accessories:



Inject screw



Injection nipple
To connect the inject screw with the pressure machine



Clip
To fix at concrete
mechanical fixing possible through extra long side length



Waterstop clip type 4
To fix at waterstops with steel plates



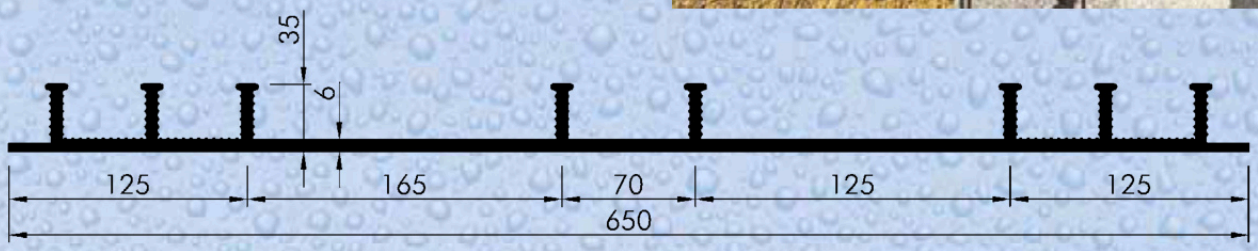
Joining pieces (plastic)
- I-pieces
- T-pieces
allows straight or T-connections of injection tubes

Special profiles

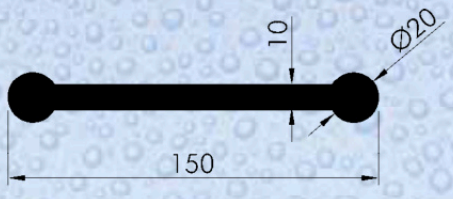
AA 650/323
Nitriflex® nach DIN 18541 Teil 2
Nitriflex® to DIN 18541 part 2

Einbaubeispiel AA 650/323 /
Example for installation AA 650/323

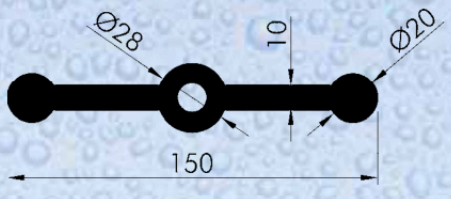




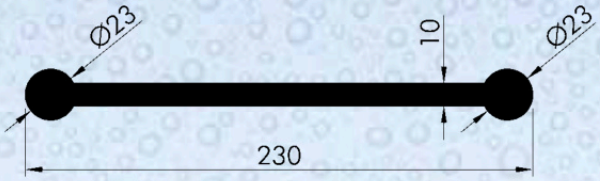
ACL 150/10
Nitriflex® nach DIN 18541 Teil 2
Nitriflex® to DIN 18541 part 2



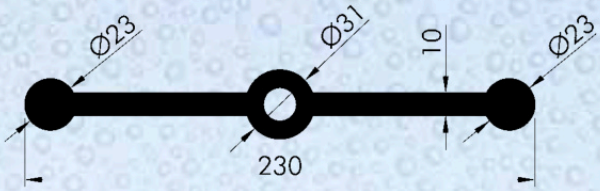
DCL 150/10
Nitriflex® nach DIN 18541 Teil 2
Nitriflex® to DIN 18541 part 2



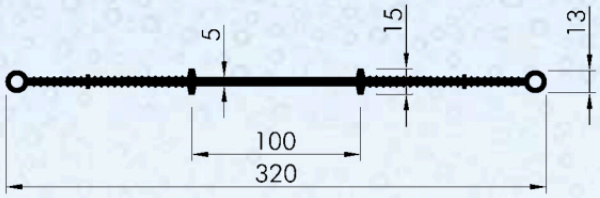
ACL 230/10
Nitriflex® nach DIN 18541 Teil 2
Nitriflex® to DIN 18541 part 2



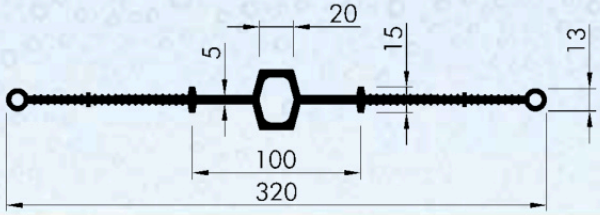
DCL 230/10
Nitriflex® nach DIN 18541 Teil 2
Nitriflex® to DIN 18541 part 2



A 320 Injekt
Nitriflex® nach DIN 18541 Teil 2
Nitriflex® to DIN 18541 part 2



D 320 Injekt
Nitriflex® nach DIN 18541 Teil 2
Nitriflex® to DIN 18541 part 2



Subject to change. Dimensions in mm unless stated otherwise.



T-Lining

Besaplast® T-linings are extruded and homogenous plastic sealing sheets of PVC (polyvinylchlorid) or HDPE (high-density polyethylene) which – due to their composition - offer an extremely high resistance to aggressive chemicals. Thanks to the extrusion process, the product forms one complete unit. Only specially selected materials are used for this sealing and protection system.



T-Lining

The special shape of the linings is determined by integrated, sturdy T-anchors which make for perfect fastening in the concrete, thus rendering conventional bonding unnecessary.
Leaks resulting from damage after installation can be more readily localized than in non-profiled sealing sheets. The continuous T-anchors confine the area where leaks have occurred and have to be repaired. This is another product offering the possibility of low-cost repair.



The applications of T-linings are manifold and permanently adapted to new require-ments. Test certificates issued by the MPA (North-Rhine-Westphalia Materials Testing Institute) confirm the exceptionally good properties of the materials used. Web-sheets not only ensure perfect tightness but also protect the concrete from chemical influences and the rebars from corrosion. The concrete structure must be protected from aggressive substances like sulphuric acid, aggressive salts, organic compounds, solvents, oils, acids, etc.

T-linings can be delivered in different thicknesses and lengths. Besaplast® Kunststoffe GmbH also produces and controls the production of special profiles, from tool-making to extrusion.

Subject to change. Dimensions in mm unless stated otherwise.

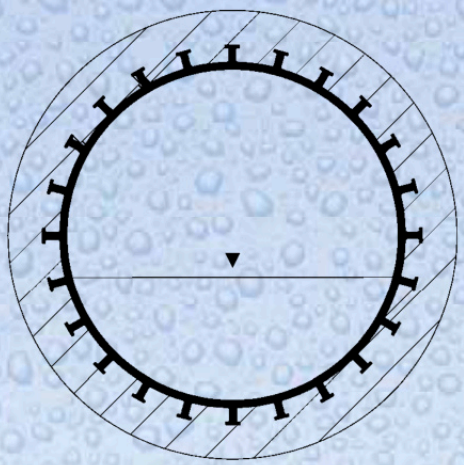


T-Lining

Application examples for Besaplast® T-linings:

- *for concrete protection in drainage channels,*
- *for corrosion protection and/or sealing of concretefloors and -walls*
- *for bottom sealing,*
- *for tunnel sealing,*
- *for internal sealing of concrete pipes, roofs, swimming pools, etc.*

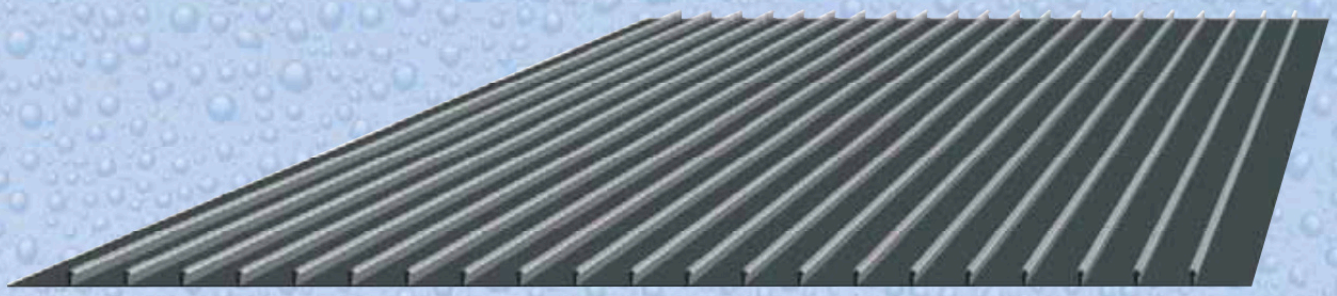
The individual T-linings are welded by means of hot-air blowers, automatic welding units or bonding agents.



Technische Daten /
Technical facts

Material / *material*	PVC-P	HDPE	Prüfmethode / *test methode*
Shore-Härte A / *shore hardness A*	≥ 85	≥ 90	ASTM D 2240
Zugfestigkeit / *tensile strength*	≥ 15 N/mm²	≥ 17 N/mm²	ASTM D 638
Bruchdehnung / *elongation at break*	≥ 230 %	≥ 700 %	ASTM D 638
Spannung bei 100% Dehnung / *100% modulus*	11,1 N/mm²	9,9 N/mm²	ASTM D 638

T-Lining

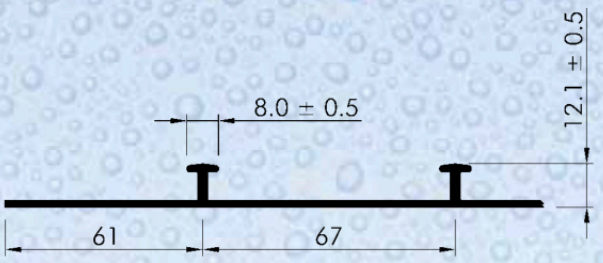


Lieferbreite / *width*: 1060 mm

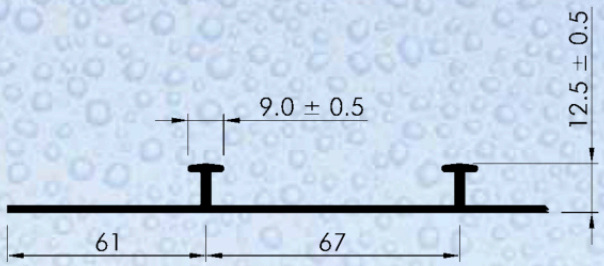
Lieferlänge / *delivery length*: 12,00 m

5

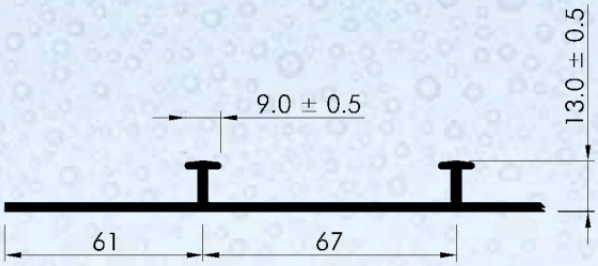
ST 1,6 ST 16 PE
Dicke / *thickness*: 1,6 mm



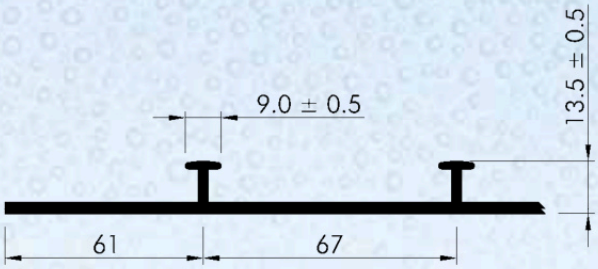
ST 2,0 ST 20 PE
Dicke / *thickness*: 2,0 mm



ST 2,5 ST 25 PE
Dicke / *thickness*: 2,5 mm



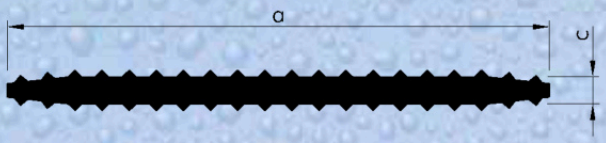
ST 3,0 ST 30 PE
Dicke / *thickness*: 3,0 mm



Subject to change. Dimensions in mm unless stated otherwise.

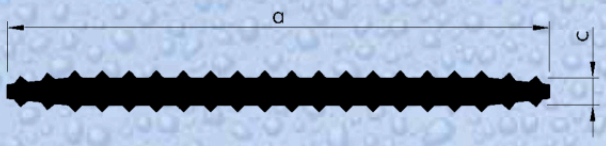


Special profiles



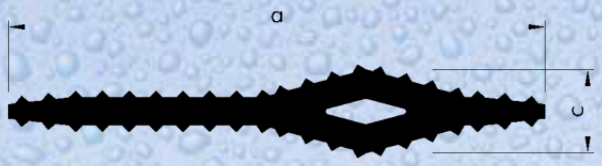
Besaflex® nach Werksnorm
Besaflex® to company standard

Typ / type	a	c
S 60	60	4,0
S 80	80	4,0
S 100	100	4,0
S 120	120	4,0



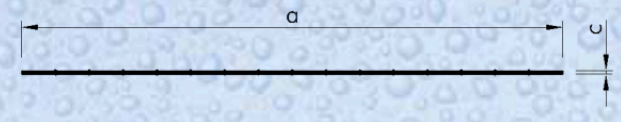
Polyflex® nach Werksnorm
Polyflex® to company standard

Typ / type	a	c
S 60 PE	60	4,0
S 80 PE	80	4,0
S 100 PE	100	4,0
S 120 PE	120	4,0



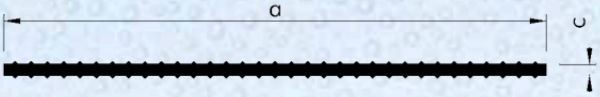
Besaflex® nach Werksnorm
Besaflex® to company standard

Typ / type	a	c
S 80 L	80	12,0
S 120 L	120	12,0



Besaflex® nach Werksnorm
Besaflex® to company standard

Typ / type	a	c
RF 80	80	0,8
RF 115	115	0,8
RF 175	175	0,8
RF 240	240	0,8
RF 365	365	0,8
RF 550	550	1,2
RF 700	700	1,2

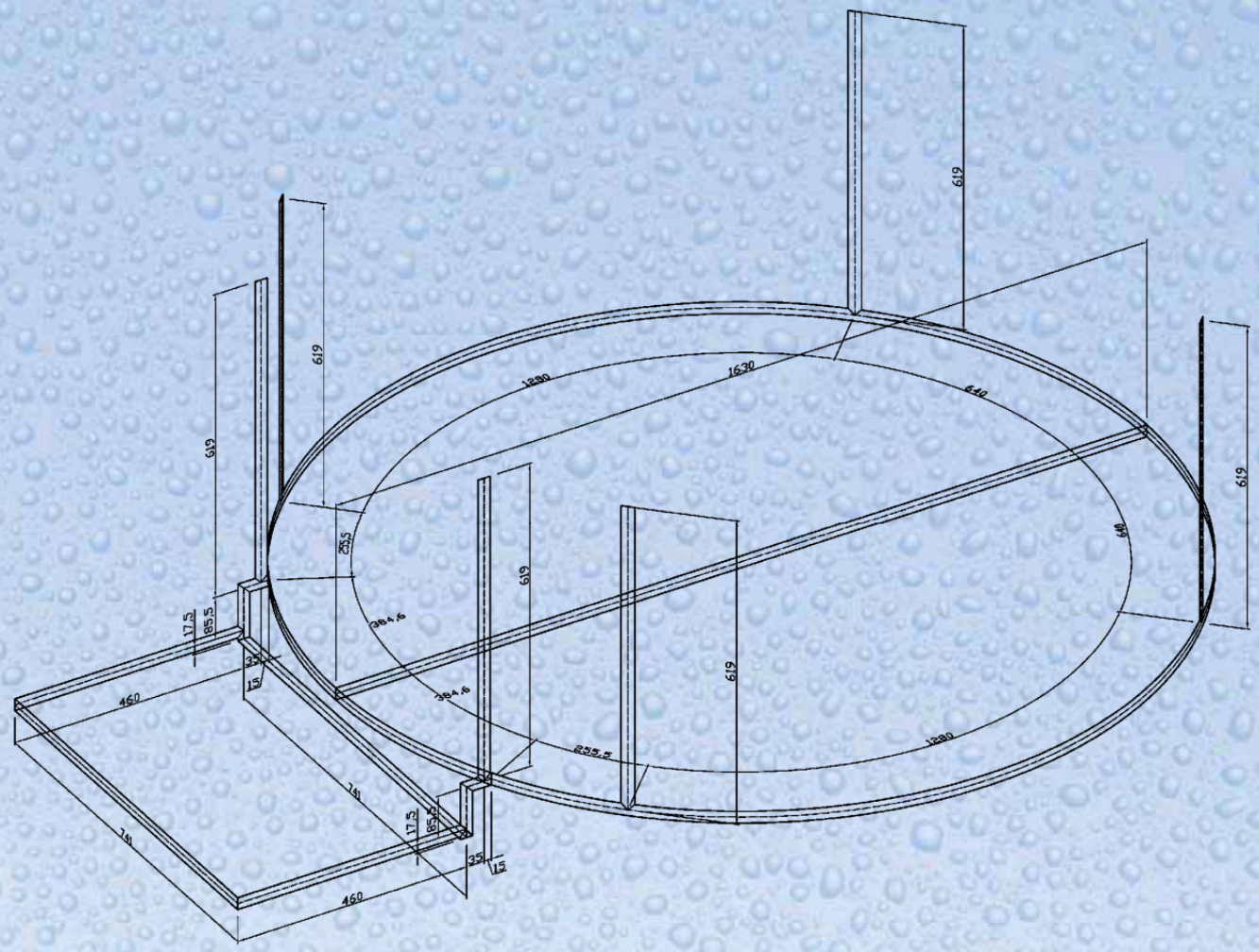


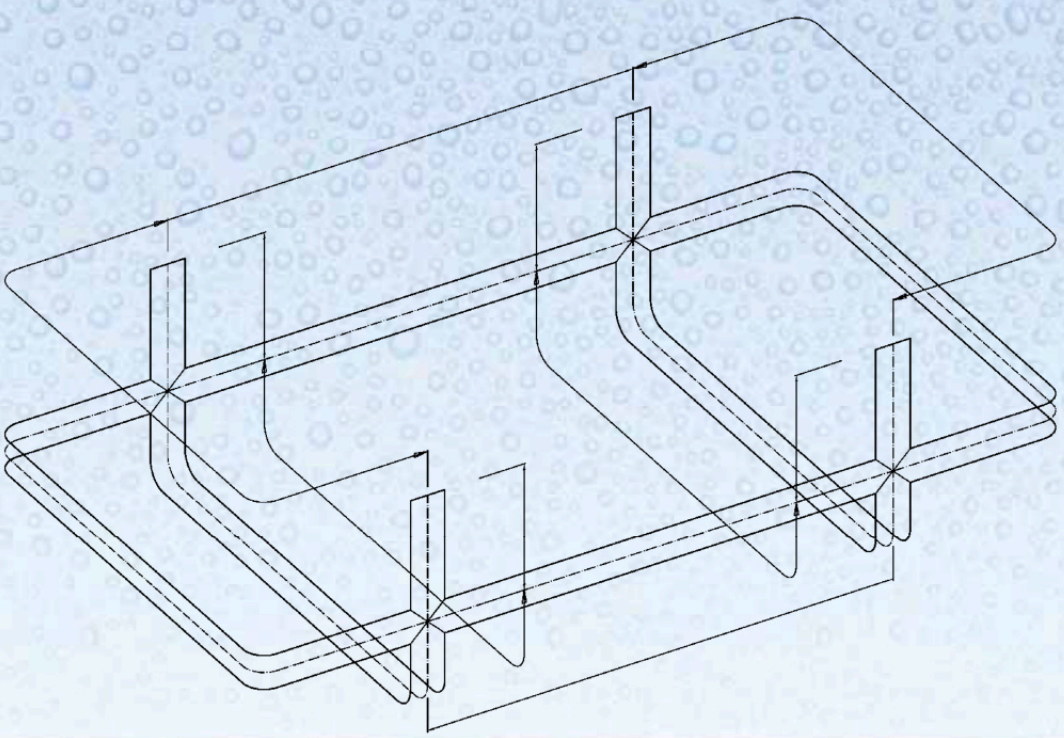
Besaflex® nach Werksnorm
Besaflex® to company standard

Typ / type	a	c
WB 10	100	3,0
WB 15	150	3,0
WB 20	200	3,0
WB 24	240	3,0

Alle Profile sind auch in HDPE lieferbar
All profiles can be also delivered in HDPE

Intersection pieces

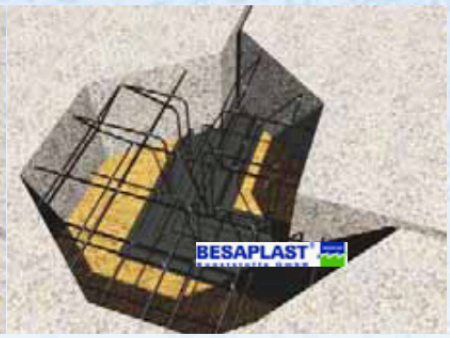




Subject to change. Dimensions in mm unless stated otherwise.



Intersection pieces

Form 1 flach-X / *flat-X*	Form 2 flach-T / *flat-T*	Form 3 flach-L / *flat-L*
		
		
		
		

Intersection pieces

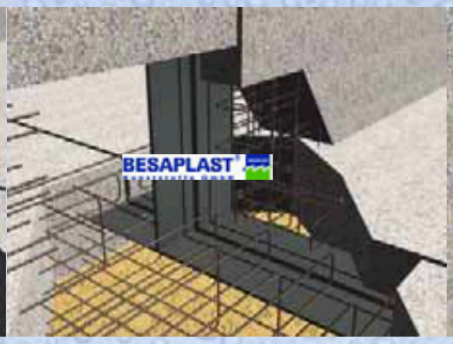
Form 4
vertikal-X / *vertical-X*





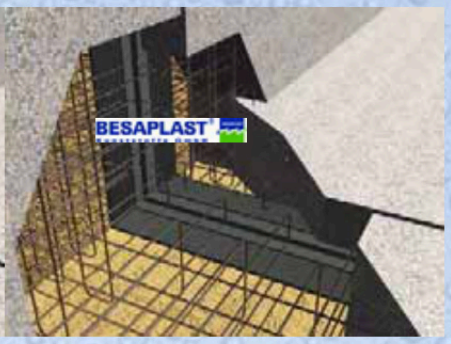
Form 5
vertikal-T / *vertical-T*





Form 6
vertikal-L / *vertical-L*













Subject to change. Dimensions in mm unless stated otherwise.



Intersection pieces

Fugenabschlußbänder

Kapping joint waterstops

Form 1
flach-L / *flat-L*



Form 2
flach-L / *flat-L*



Form 3
stehend-L / *vertical-L*



Form 4
stehend-X / *vertical-X*



Form 5
stehend-T / *vertical-T*



Form 1
flach-X / *flat-X*



Kombination / *combination*

Innenliegende Arbeits- und Dehnfugenbänder

Internal construction- and expansion joint waterstops

Form 2
flach-T / *flat-T*



Form 1
flach-X / *flat-X*

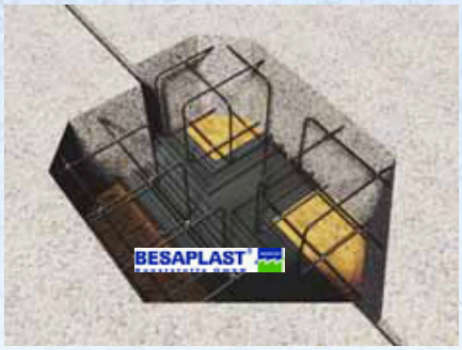


Kombination / *combination*

Außenliegende Arbeits- und Dehnfugenbänder

External construction- and expansion joint waterstops

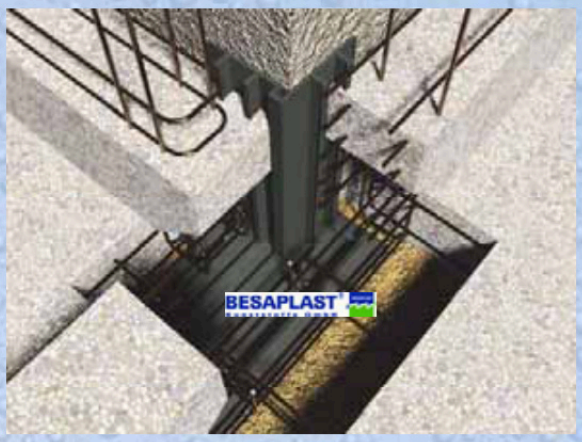
Form 2
flach-T / *flat-T*



Intersection pieces

Sonderverbindungen
Special intersection pieces











Subject to change. Dimensions in mm unless stated otherwise.



Accessories

Schweißbeil
Axe-shaped welding tool

- 125 Watt (schmale Klinge / *thin blade*)
- 200 Watt
- 300 Watt



Schweißschwert
Electric heater blade

mit Matize/
with jig



Heißluftfön
Hot air blower

- 1600 Watt
- mit Breitschlitzdüse /
  with widened jet



Funkenprüfgerät
Spark tester



Accessories



Schweißgerät
welding machine

Verfügbarer Lieferumfang /
available scope of delivery:
- Tansportkiste / *transport box*
- Schweißgerät / *welding machine*
- Fugenbandmatrize / *mould for waterstop*
- Abstandshalter / *spacer*
- Reinigungsschwamm / *sponge for cleaning*
- Bedienungsanleitung / *instruction manual*



Vulkanisationsgerät
vulcanizing machine

Verfügbarer Lieferumfang /
available *scope of delivery:*
- Transportkiste / *transport box*
- Vulkanisationsgerät / *vulcanizing machine*
- Fugenbandmatrize / *mould for waterstop*
- Messer / *knife*
- Rauigel / *grinder*
- Andrückrolle / *roller*
- Maulschlüssel / *wrench*
- Heizlösung / *vulcanizing solvent*
- Rohkautschukstreifen / *rubber stripes*
- Rundschnur / *vulcanizing cord*

7

Schweißband
Welding foil

Lieferbare Größen / *available sizes*:
- 16 x 1,5 mm
- 30 x 1,5 mm
- 30 x 3,0 mm

Rundschnur / *vulcanizing cord*

→ 20 mm

Rohkautschukstreifen
Rubber stripes

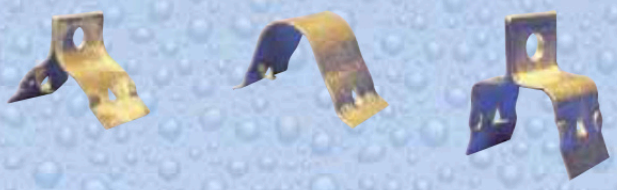
Lieferbare Größen / *available sizes*:
- 30 x 1,0 mm
- 30 x 1,5 mm
- 50 x 1,0 mm
- 50 x 1,5 mm
- 50 x 3,0 mm
- 80 x 3,0 mm
- 80 x 4,0 mm
- 100 x 4,0 mm

Subject to change. Dimensions in mm unless stated otherwise.



Formwork accessories

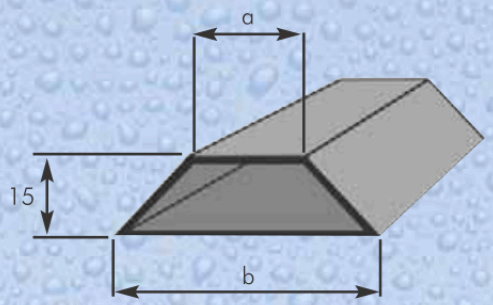
Fugenbandklammern
Waterstop clips



Typ 1 Typ 2 Typ 3

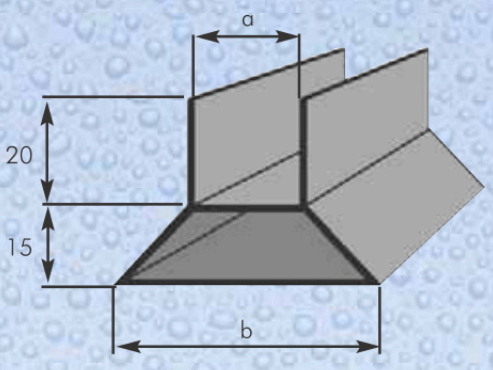
Abstandshalter
Spacer

Typ / type	a	b
TF 1/20	20	50
TF 1/30	30	60



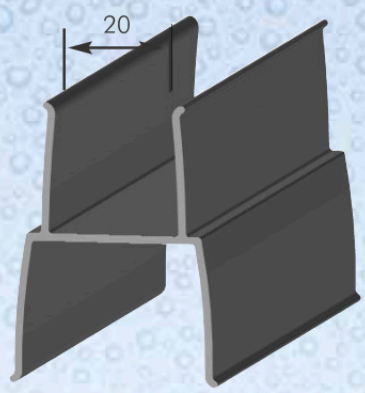
Abstandshalter
Spacer

Typ / type	a	b
TF 2/20	20	50
TF 2/30	30	60
TF 2/40	40	70
TF 2/50	50	80



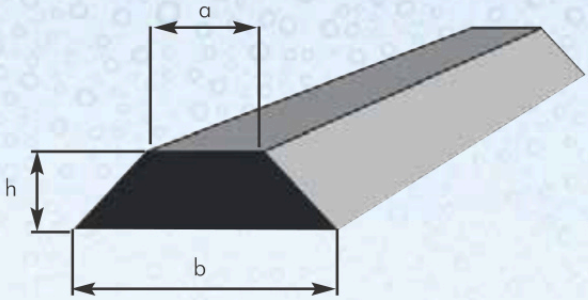
Halteleiste
Terminal strip

Typ / type	
HF 20/40	Halteleiste mit Führungsschienen zum Aufsetzen von Fugeneinlagen auf den Mittelschlauch der Fugenbandserie Elastoflex AM nach DIN 7865 *Terminal strip with guide rail for placing joint inserts on the middle tube of our waterstop series Elastoflex AM acc. to DIN 7865.*



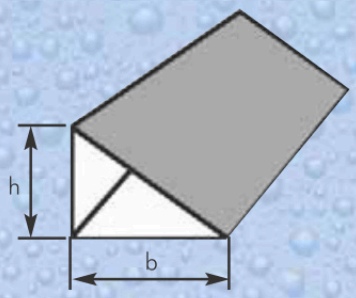
Trapezvollprofil (Weich-PVC)
Solid trapezium profile (soft-PVC)

Typ / type	b	a	h
WTR 20	60	20	20
WTR 30	70	20	20
WTR 35	90	35	35



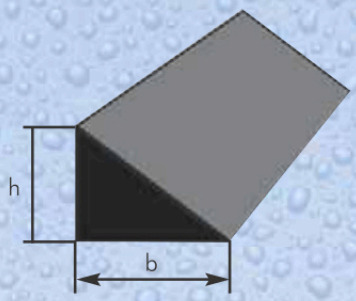
8

Formwork accessories



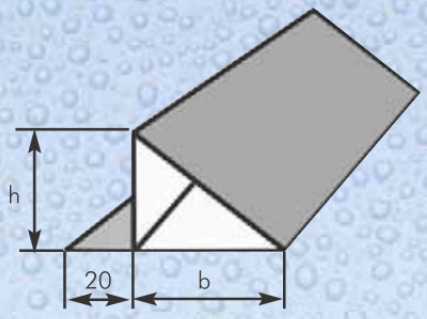
Dreikantleisten
Triangle profile

Typ / type	b	h
DL 10	10	10
DL 15	15	15
DL 20	20	20
DL 25	25	25
DL 30	30	30
DL 40	40	40



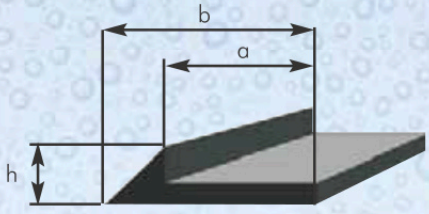
Dreikantvollprofil
Solid triangle profile

Typ / type	b	h
D 15	15	15
D 20	20	20
D 25	25	25



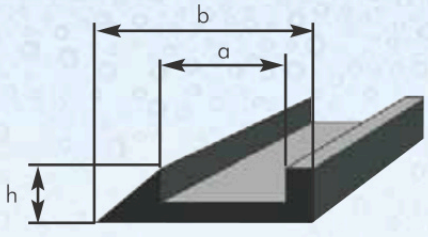
Dreikantleiste mit Nagelfahne
Triangle profile with nail strip

Typ / type	b	h
DLR 15	15	15
DLR 20	20	20
DLR 25	25	25
DLR 30	30	30



Abstandshalter
Spacer

Typ / type	b	a	h
DLF 13	21	13	10
DLF 16	24	16	10
DLF 19	27	19	10
DLF 27	35	27	10



Abstandshalter
Spacer

Typ / type	b	a	h
DLA 13	18	13	10
DLA 16	21	16	10
DLA 19	24	19	10
DLA 27	32	27	10

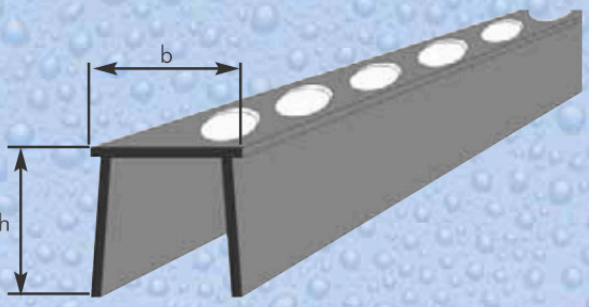
Subject to change. Dimensions in mm unless stated otherwise.



Formwork accessories

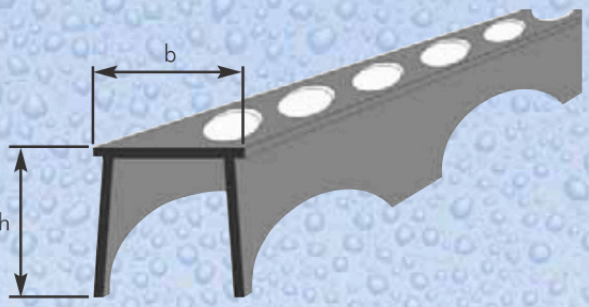
Abstandshalter
Spacer

Typ / type	b	h
AL 15/1	38	15
AL 20/1	38	20
AL 25/1	38	25
AL 30/1	38	30
AL 35/1	38	35
AL 40/1	38	40
AL 50/1	38	50



Abstandshalter
Spacer

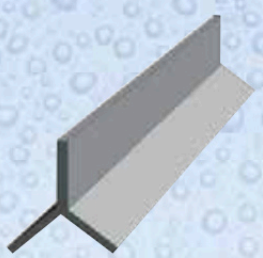
Typ / type	b	h
AL 15/2	38	15
AL 20/2	38	20
AL 25/2	38	25
AL 30/2	38	30
AL 35/2	38	35
AL 40/2	38	40
AL 50/2	38	50



Sternprofil
Star profile

Zur Herstellung von Scheinfugen /
For contraction joints

Schenkellängen: 15 mm /
length each side: 15 mm



Hart-PVC Rohr
rigid PVC tube

Ø 22 / 26 angeraut für Schalelemente
Ø 26 / 31
Ø 70 / 75
Ø 105 / 110
Ø 144 / 150
Weitere Profile auf Anfrage /
further profiles upon request



Formwork accessories

Rondelle

Ø 90 mm

Lieferbar in den PVC und PE.

Available in PVC an PE.





Klemmabstandshalter
clip-spacer

Abstandshalter für Bewehrungsstähle im Tunnelbau.
Lieferbar in den PVC und PE.
Klemmöffnung für Stab- Ø 8 - 10 mm.

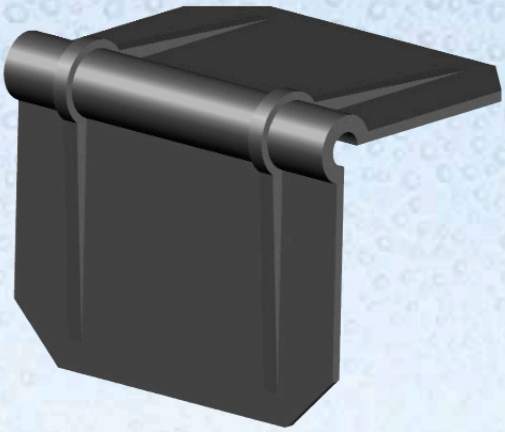
Spacer for reinforcement in tunnelprojects.
Available in PVC an PE.
Aperture for bar steel-→ Ø 8 - 10 mm.

8

Kantenschutzwinkel
Edge protection bracket

70 x 50 x 50 mm

Für Spanngurte ≤ 40 mm
For lashing straps ≤ 40 mm



Subject to change. Dimensions in mm unless stated otherwise.



Welding instructions

Preparation

The ends of the waterstops have to be preheated if used in cold environment (temperature below +5° C / +41° F). The material temperature of the waterstop ends has to be above +15° C / 59° F). The waterstops have to be dry and clean.
For the manufacture of a butt joint the ends have to be cut straight and at right angles to the length of the waterstop (use stop angle and sharp knife). The quality of the cut is very important for the quality of the welding. Repairs and corrections require special tools and welding material.

Welding temperature

The welding temperature depends mainly on the material of the waterstops and the outside temperature. Therefore the values below can only be taken as guidelines. In order to determinate the right temperature for the device sample weldings have to be done before the actual welding.

CAUTION: Maximum Temperature 215° C / 419° F

Besaflex:	180 - 190° C / 356 - 374° F
Nitriflex:	160 - 170° C / 320 - 338° F
Polyflex:	215° C / 419° F
TPE:	150 - 210° C / 302 - 410° F

Preparation of welding machine

Sample weldings have to be made before the actual welding process to evaluate the welding behaviour of the waterstop and to set the right welding parameters at the given conditions.
Hold the device by the top plate and lift it out of the transportation box.
The included clamps have to be mounted on the top plate of the device by using the clamp screws.



Welding instructions

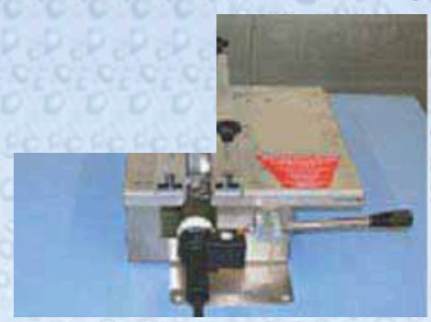
The device has to be connected to electrical power supply. Make sure that current and voltage of the power supply are in accordance with the values mentioned on the specification plate on the device. Only if these values match turn on the device by switching the power button to position I. The heater elements will start preheating the device to a welding temperature of max. 215° C / 419° F.

During this time the orange control lamp will be on. If the device reaches the preset welding temperature the control lamp will turn off. The device is now ready for welding. Weldings can not be made before it reaches this point.

The heating element is used by moving the plastic handle at the end. The top plate can be adjusted by a compression lever. By moving the compression lever clockwise the top plate is locked in its position.

At the beginning of the welding process the device should be in the following starting position:

- device preheated
- bottom part of the clamp fixed to the top plate (when working with internal waterstops or capping joints)
- top part of the clamp within reach
- top plate in open position
- heating elements cleaned (only with cloth!)



Subject to change. Dimensions in mm unless stated otherwise.



Welding instructions

Clamping and justifying of waterstop-profile

Put the spacer into the open gap of the top plate to adjust the two waterstop ends. Move the one of the two waterstop ends to each side of the spacer until the whole area where the waterstop was cut touches the spacer. After that the top parts of the clamps are placed on both waterstop ends. Fix them by using the clamp screws.



Warming

Apply pressure equal to 1 - 3 kg to the compression lever. Hold it for about 10 - 20 seconds. During this time a welding bulge of approx. 1 mm height starts building up at the waterstop ends.



Shifting

The welding table will be driven apart, the band joints loose ends from the heating element and the heating element has to put down.Die maximum of Setting 2 seconds may not be exceeded.



Welding instructions



In the cooled state the wood protection has to be attached.
After lowering the heater blade the machine is in basic position

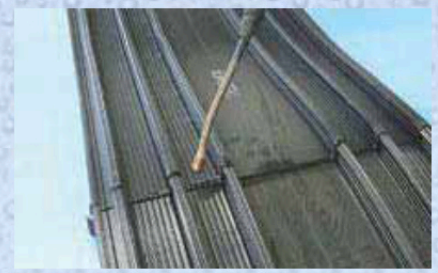
Check

After complete cooling of the welded connection can be fitted for the release tested to excessive requirements of DIN V 18197 must be observed.

Test:
- *Visual test*
- *Bending test*
- *High-frequency spark test*
  → *error display by penetrading of sparks.*

Due to welding a bulge is possible. It should be removed before the test.

Prüfung entfernt.





Possible rework

For smaller defects can be hand welded (Schweißbeil, hot-air device) or by adding a round cord (conical flask, hot-air device) rework done.
Otherwise, the welding has to be cut out and newly built.

9

Subject to change. Dimensions in mm unless stated otherwise.



Welding instructions



Joining

For joining the welding table has to be pressed together within 2 seconds. The pressure should be about 3 to 12 kg (depending on waterstop type). After this the welding table has to be locked by turning the pressure lever. Join pressure will be arrested and held constantly.



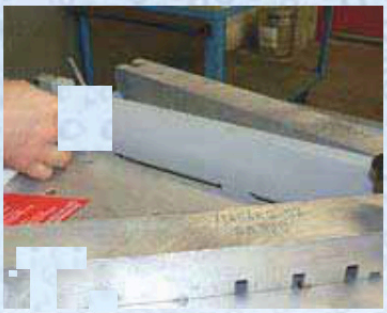
Cool off

The position for 5 minutes must be kept. The pressure has to be held while cooling time of the join.



Draft

After cooling, the rail terminal resolved. The connection can now be detached from the welding table and stored sideways. After a resting phase of about 10 minutes, the connection will be charged.



Cleaning

The fixation of the pressure lever will be resolved and the welding table driven apart. The heater blade is made up. Die coating of the heater blade is after every weld with the cleaning rag to clean.
ATTENTION: coating of the heating elements can be damaged by the useing tools!
WARNING: Heater blade is hot! Combustion hazard, direct contact with the hand avoid possibly heat gloves.

Vulcanising instructions

Elastomer waterstops cannot be joined by means of the traditional welding procedure, but must rather be joined by vulcanization. This procedure requires the addition of crude rubber by means of pressure and heat. The only kind of vulcanization performed on construction sites is butt-joint vulcanization which can be performed by any construction worker after corresponding instruction.

Step 1
The vulcanization equipment and the aluminium moulds are preheated for ca. 30 minutes. The moulds must reach ca. 160 °C. During the preheating cycle, the waterstops can be prepared.

Step 2
The two waterstop ends to be joined must be cut to exactly 90° with a sharp knife. Thereafter, the two rectangular waterstop ends are fixed with a wooden clamping device, the waterstop protruding on each side ca. 10 cm into the clamp.

Step 3
The protruding ends and the front end of the waterstops to be joined are thoroughly and uniformly roughened all around with a grinding wheel (the wheel can be used in an electric drill).

Step 4
Remove the grinding dust from the roughened waterstop surfaces and then apply to the waterstop a thin layer of heating solution which must be allowed to dry for ca. 5 minutes. The covered surfaces must be kept clean and not be touched.

Step 5
For expansion joint waterstops, the centre tube is closed with a rubber plug inserted 5 to 6 cm deep into the centre tube until the plug is even with front end. This plug is very important for the vulcanization of expansion joint waterstops, since the pressure build-up of the vulcanizing mould near the centre tube would otherwise be insufficient because of the hollow part of the waterstop.

Subject to change. Dimensions in mm unless stated otherwise.



Vulcanising instructions

Step 6
The front ends of the waterstop are covered with a thin adhesive crude rubber foil and the protruding lengths folded back. Make sure the adhesive foil is pressed precisely against the front. The protective film is then peeled off.

Step 7
The two wooden clamps are pressed together with long screws until the waterstop front ends are perfectly in contact. The pretreated front ends adhere immediately to each other.

Step 8
Now, a 50 x 3 mm layer of crude rubber strip is wound round the joint after removal of the protective film. Thereafter, a second 50 x 3 mm layer of crude rubber strip is placed over the joint. The thickness of the crude rubber bandage must be at least 6 mm.

Step 9
Place the prepared joint of the waterstop in the preheated vulcanization unit and close it. Tighten the clamping screws until the aluminium mould halves are in firm contact. Normally, the mould cannot yet be closed completely if the crude rubber bandage has the correct thickness. Wait ca. 5 – 10 minutes before retightening the clamping screws. Depending on weather conditions) and outside temperatures, the crude rubber is fully vulcanized after 20 – 35 minutes and the vulcanization unit can be opened.*

**) In strong wind and at low outside temperatures, the unit should be covered up with foils or formwork panels.*

Vulcanising instructions

Step 10

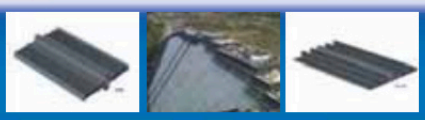
The vulcanized joint must be treated with care since full resistance of the joint is obtained only after cooling. If the surface is still susceptible to plastic deformation (to be tested with a fingernail or a blunt screwdriver), the vulcanizing process is not yet completely finished. This problem arises when the temperature of 160 °C was not reached or when the vulcanization cycle was too short. Place a matching strip of crude rubber to repair depressions in the joint area. The vulcanization unit can be closed again and reheating can be done for 10 minutes. If the surface of the rubber strip looks porous or scarred, the crude rubber bandage on the joint was not thick enough so that no pressure could build up inside the rubber.

Cold vulcanization

1. *Roughen the joining area of the waterstop with a wire brush and remove the dust produced.*
2. *Apply fast adhesive to the front ends of the waterstops and press ends against each other.*
3. *Apply Special Cement BL generously to the joint area and allow to dry (ca. 10 – 30 minutes at 20 °C).*
4. *Mix cold vulcanization compounds A and B in a ratio of 1:1 and knead thoroughly until all bright stripes have disappeared (ca. 5 – 10 minutes by hand).*
5. *Apply the mixture of A + B compounds in thin layers generously and bubble-free to the area to be repaired and press onto the surface.*
6. *Leave the joint to rest for 8 hours.*

Important: Cold vulcanization is merely a repair by chemical means. The joint does not have the physical properties of the base material as required for hot vulcanization in accordance with DIN 7865.

BESAGROUP



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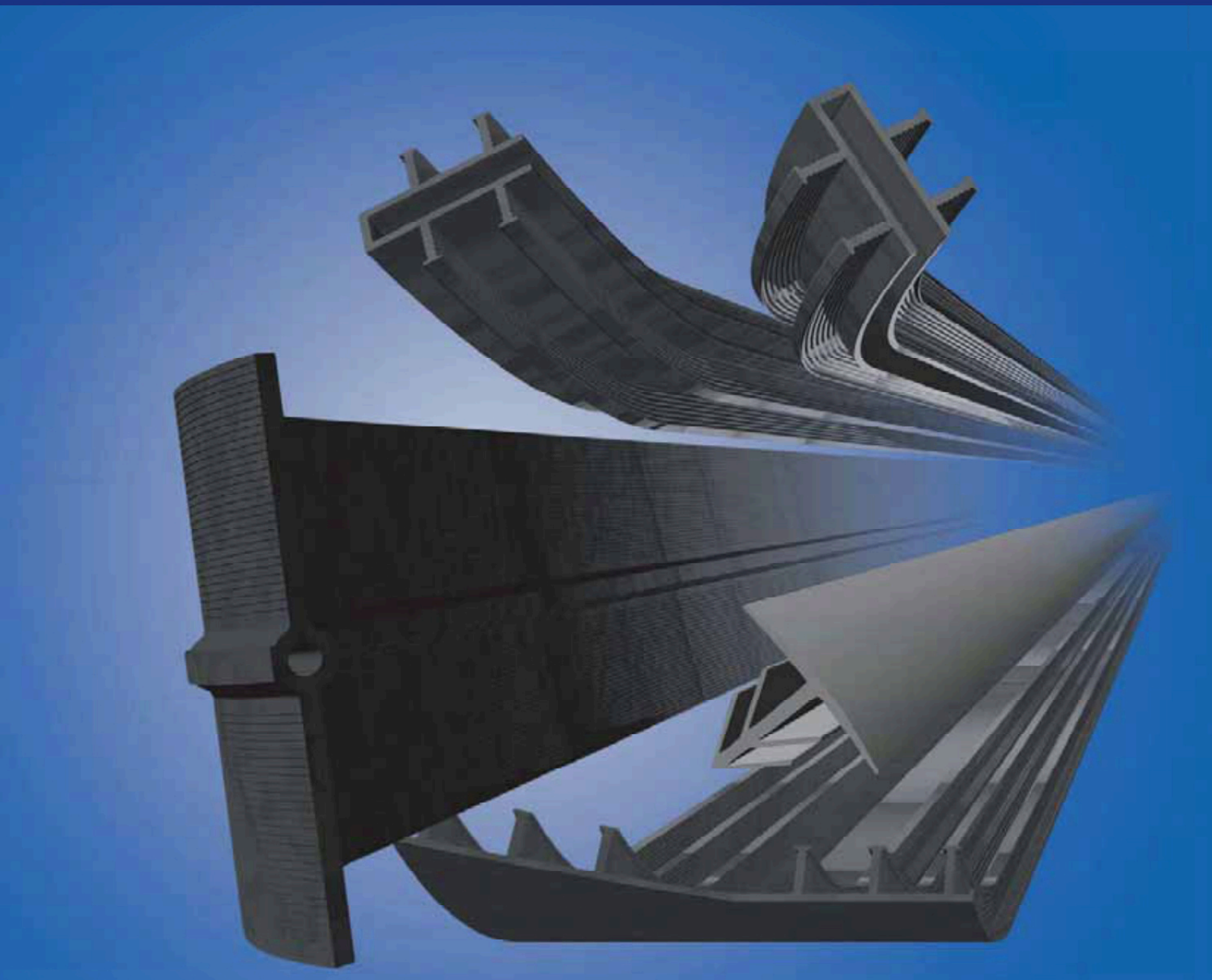
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