

SANTAC
SPAN SEAL
CRACK
INDUCER

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HAYAKAWA RUBBER CO., LTD.

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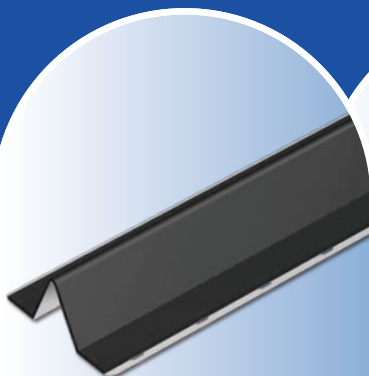
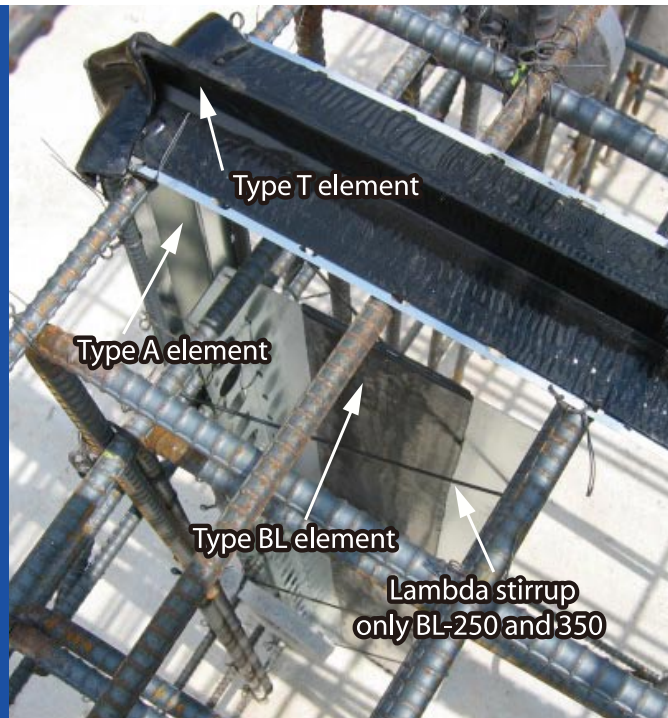
SANTAC SPAN SEAL CRACK INDUCER

Span seal crack inducer facilitates construction. The span seal crack inducer produces a strategically positioned crack on the wall surface and at the same time possesses a waterstop effect.

Concrete structures are often susceptible to cracking when the concrete contracts, etc., from drying and temperatures changes that occur as a result of hydration heat and the external temperature. In the fields of construction and civil engineering, an appropriate countermeasure is required.

Features

- To install, just secure the crack inducer with binding wire.
- Construct with various elements to achieve excellent crack inducibility.
- The steel sheet surface is covered with a span seal which provides waterstop performance.



Type A element

This type is positioned on the rebar covering section. It primarily offers rust prevention (waterstop performance) for the rebar and induces cracking on the tooled joint part.



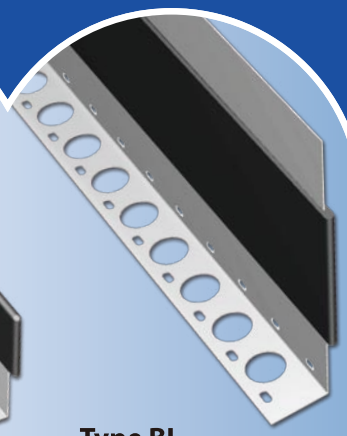
Type T element

This type is primarily used on wall railing, etc.. In addition, it has excellent workability and is also used on profile changes and levee crowns.



Type BL element BL-100/200

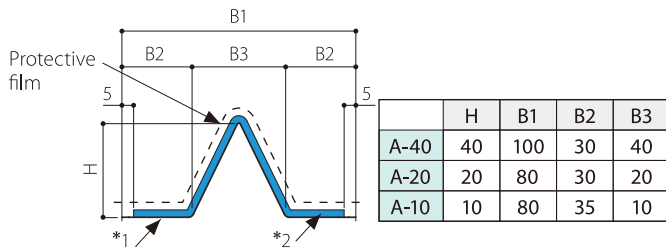
This type is positioned inside the concrete, and is used as a section defect element and has the same waterstop performance as the Type A element.



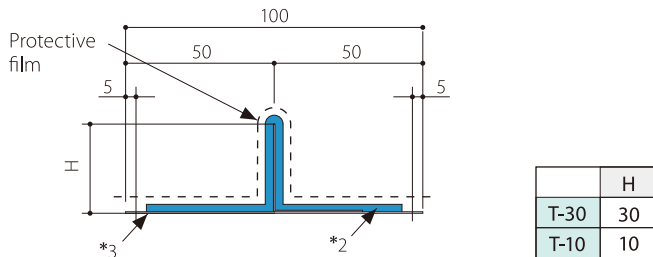
Type BL element BL-250/350

Profiles

Type A element



Type T element

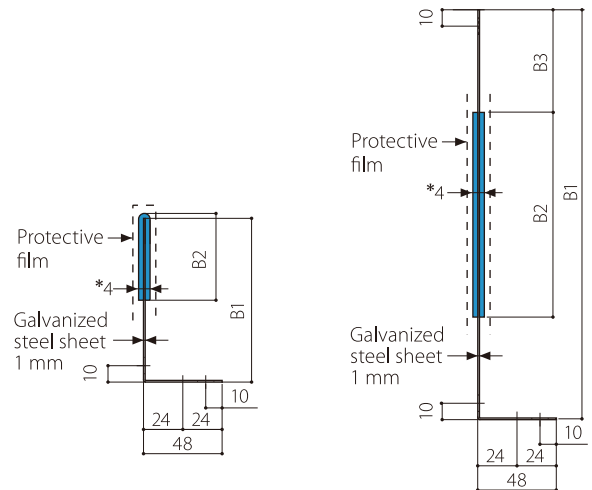


Note*1: Galvanized steel sheet 0.3 mm
 Note*2: Span Seal 3 mm
 Note*3: Galvanized steel sheet 0.5 mm
 Note*4: Span Seal 6 mm

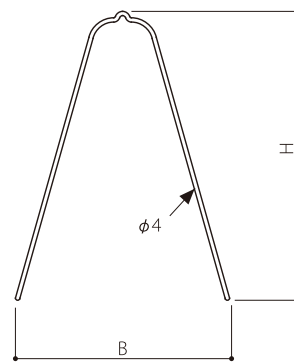
Performance

Property	Unit	Typical value
Density	Mg/m ³	1.40±0.10
Penetration	—	65±10
Nonvolatile percentage	%	>97
Tensile strength	MPa	>0.069
Elongation	%	>1000
Weather resistance	—	Some surface hardening
Water absorption	%	<1.0
Compressibility and restoration	—	>70
Adhesive property to fresh concrete	—	Cohesive failure

Type BL element



Lambda stirrup



Note
 Refer to D13 through D19 for applicable rebar diameters.
 For non-applicable rebar, secure with annealing wire.

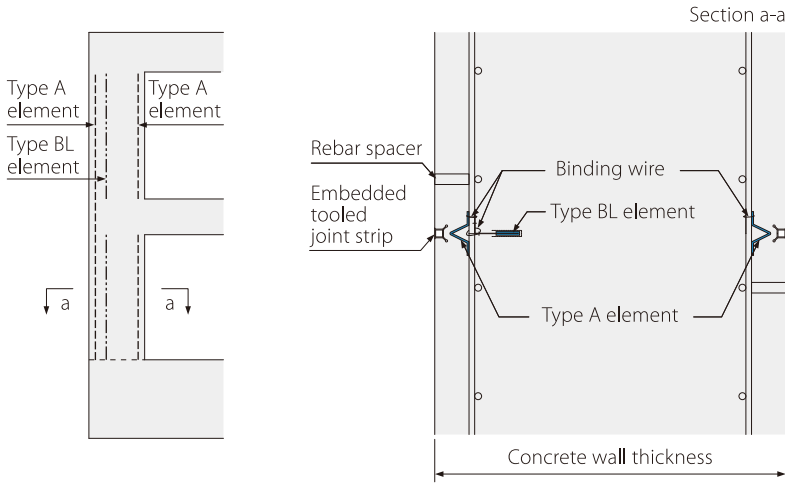
The Lambda stirrup is packaged separately.

	H	B
BL-250	270	200
BL-350	370	220

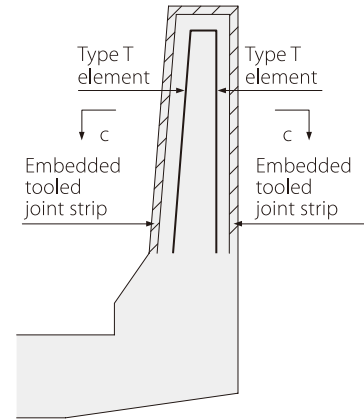
Type of element	Type of product	Span seal thickness (mm)	Galvanized steel sheet (mm)	Partial reduction width of area (mm)	Unit weight (kg)	Packing unit (pieces/carton)	Remark
Type A element	A-10×1000	3.0	0.3×1050	10	0.6	10	Lap length 50 mm Including 10 joint sealers
	A-10×2000		0.3×2050	10	1.2	10	
	A-20×1000	3.0	0.3×1050	20	0.7	10	
	A-20×2000		0.3×2050	20	1.4	10	
	A-40×1000		0.3×1050	40	1.1	10	
A-40×2000	0.3×2050	40	2.2	10			
Type T element	T-10×1000	3.0	0.5×1050	10	1.2	10	Lap length 50 mm Including 10 joint sealers
	T-10×2000		0.5×2050	10	2.4	10	
	T-30×1000	3.0	0.5×1050	30	1.4	10	
	T-30×2000		0.5×2050	30	2.8	10	
Type BL element	BL-100×1000	6.0×50	1.0×1050	100	1.5	10	Lap length 50 mm
	BL-100×2000		1.0×2050	100	2.9	10	
	BL-200×1000	6.0×100	1.0×1050	200	2.8	8	
	BL-200×2000		1.0×2050	200	5.5	4	
	BL-250×1000	6.0×125	1.0×1050	250	3.4	6	
	BL-250×2000		1.0×2050	250	6.7	3	
	BL-350×1000	6.0×175	1.0×1050	350	4.7	4	
BL-350×2000	1.0×2050		350	9.3	2		
Lambda stirrup	BL-250	φ4×270×200			0.06	18	Included with BL-250
	BL-350	φ4×370×220			0.08	12	Included with BL-350

Applications

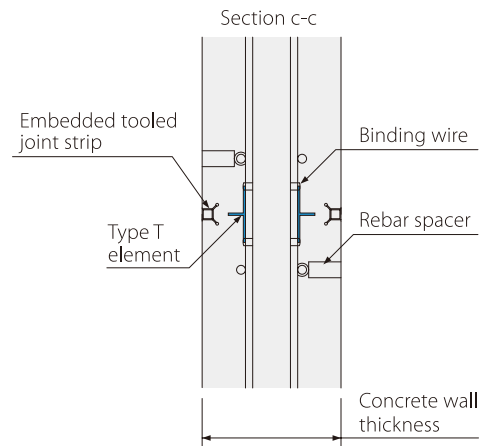
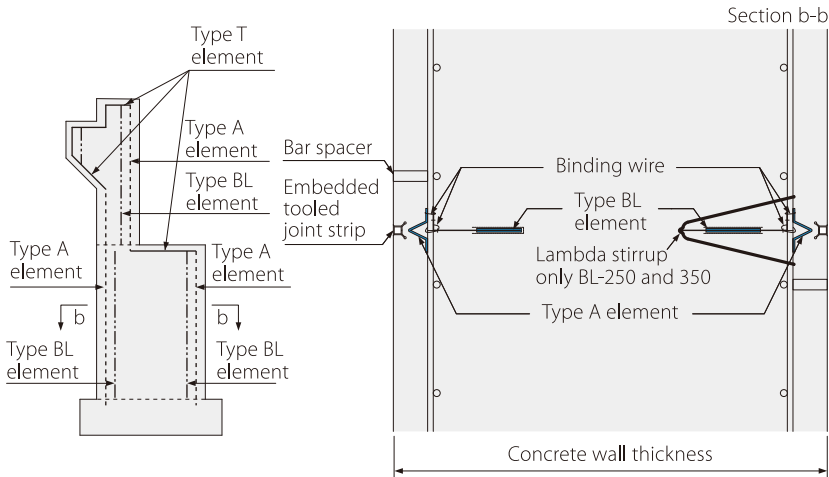
Underground wall type structure



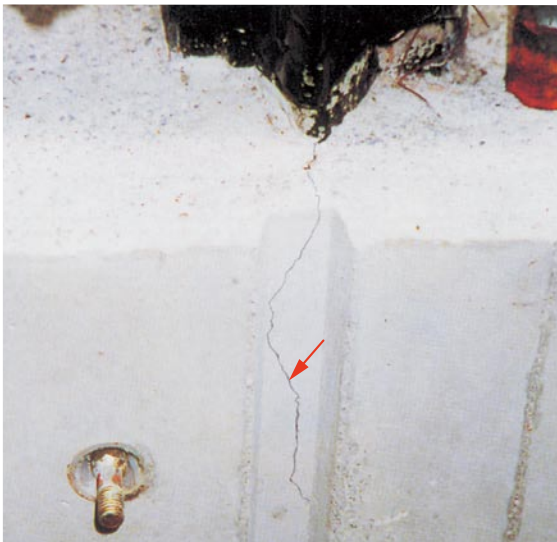
Wall railing



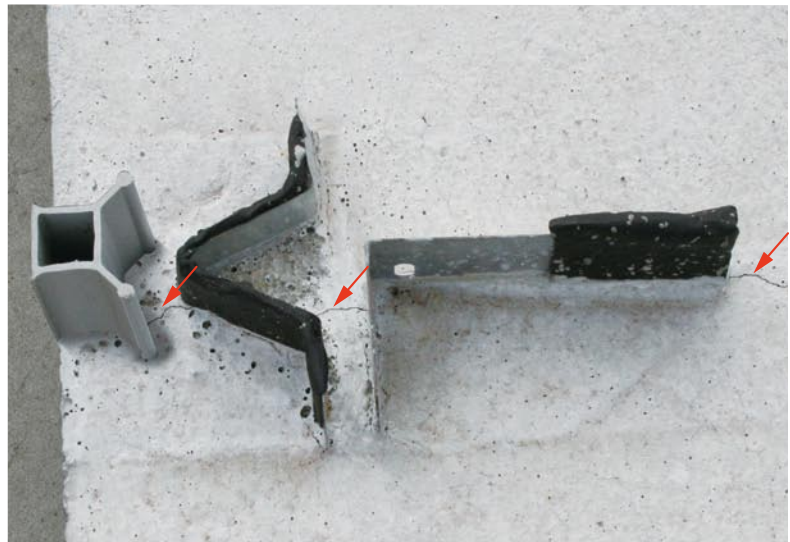
Abutment



View of Cracking



Tooled joint part



Embedded tooled joint part

Standard Usage

■ Combination of Type A-40 and 30 mm depth tooled joint

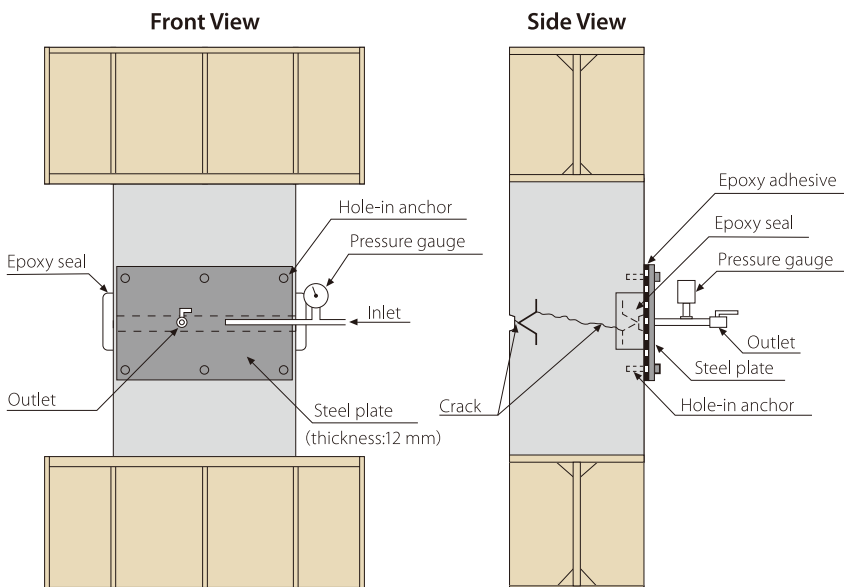
Wall thickness (mm)	A-40 (pieces)	BL-100 (pieces)	BL-200 (pieces)	BL-250 (pieces)	BL-350 (pieces)	Partial reduction of area (%) ^{*5}
400	2					35.0
500	2	1				48.0
600	2	1				40.0
700	2	1				34.3
800	2	1				30.0
900	2	2				37.8
1000	2	2				34.0
1100	2	2				30.9
1200	2	1	1			36.7
1300	2	1	1			33.8
1400	2	1	1			31.4
1500	2	1		1		32.7
1600	2	1		1		30.6
1700	2		2			31.8
1800	2		2			30.0
1900	2		1	1		31.1
2000	2			2		32.0
2100	2			2		30.5
2200	2			1	1	30.9
2300	2		1		1	30.0
2400	2			1	1	30.8
2500	2				2	33.6
2600	2				2	32.3
2700	2				2	31.1
2800	2				2	30.0

■ Combination of Type A-20 and 20 mm depth tooled joint

Wall thickness (mm)	A-20 (pieces)	BL-100 (pieces)	BL-200 (pieces)	BL-250 (pieces)	BL-350 (pieces)	Partial reduction of area (%) ^{*5}
400	2	1				45.0
500	2	1				36.0
600	2	1				30.0
700	2	2				40.0
800	2	2				35.0
900	2	2				31.1
1000	2	1	1			38.0
1100	2	1	1			34.5
1200	2	1	1			31.7
1300	2	1		1		33.1
1400	2	1		1		30.7
1500	2		1	1		35.3
1600	2		2			30.0
1700	2		1	1		31.2
1800	2			2		32.2
1900	2			2		30.5
2000	2			1	1	34.0
2100	2			1	1	32.4
2200	2			1	1	30.9
2300	2				2	33.9
2400	2				2	32.5
2500	2				2	31.2
2600	2				2	30.0

Note *5: Partial reduction of area (%) = [(Tooled joint height + Type A element height + Type BL element height) / Concrete wall thickness] × 100

Waterstop Performance Test



■ Test Result

Ave. crack width	Water pressure	Duration time (min.)	Leakage
0.974 mm	0.1 MPa	30	No
	0.3 MPa	30	No
	0.5 MPa	30	No
0.506 mm	0.1 MPa	30	No
	0.3 MPa	30	No
	0.5 MPa	30	No

Installation Instructions

1) Check the type and quantity of materials

Be sure to check the type and quantity of materials delivered to the site.

2) Check the installation position

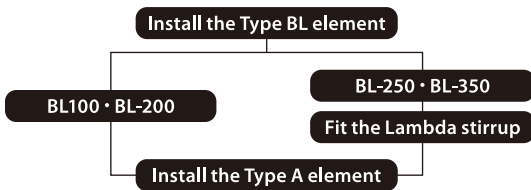
Calculate the location of the crack inducing joint following the design drawing. However, when there are rebar spacers or the main rebar is already set up in the position as per the design drawing, change the installation position.

Note- The installation should be performed after assembling the rebar and before installing the concrete form.

Note- Always position the element in a straight line. (Refer to Figure 2)

3) Installation order flowchart

When using both Type A elements and Type BL elements, install the Type BL element first. (Because installing a Type A element first makes it difficult to install a Type BL element.)

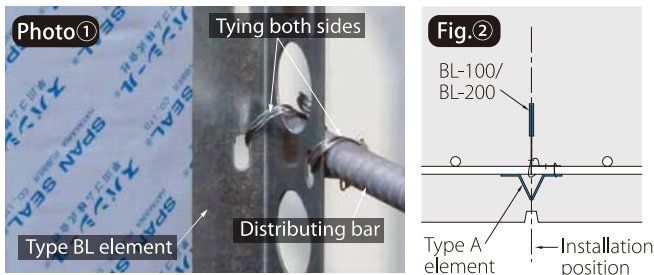


4-1) Install the crack inducer BL element

Install the crack inducer BL element in the position as per the design drawing. Secure the Type BL element to the direct distributing bar with binding wire.

(As a general rule, the binding wire should be used for all places that cross the distributing bar. And, secure both sides well, as shown in Photo 1.)

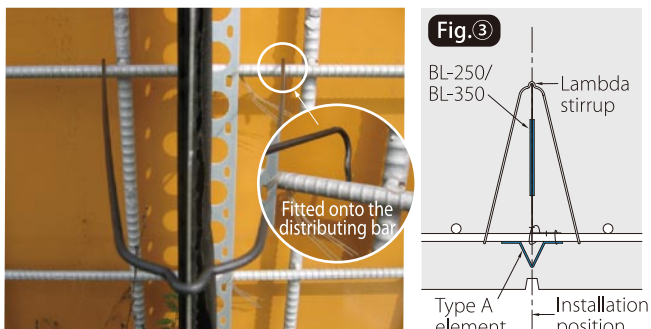
In addition, use a plumb-bob to check the perpendicular accuracy and location. Position the BL element so that the side of the span seal faces the position as per the design drawing. (Refer to Figure 2 and 3)



4-2) Fit the Lambda stirrup

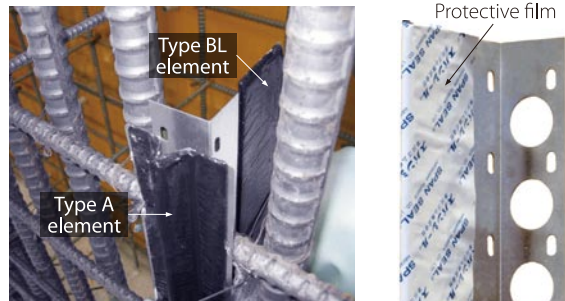
After installing the BL element, fit the Lambda stirrup to the BL-250 and BL-350. (about 3 places per 1 meter) Fit one side to the distributing bar and then fit the other side. (In this situation, if the fitting is difficult to perform, pressing the end of the BL element on the fitting side makes it easier.)

Note- Applicable rebar diameters: D13-D19



5) Install the crack inducer A element

Install the Type A element so that it is opposite the Type BL element. Use the plumb-bob to check the perpendicular accuracy, following the same steps as the Type BL element installation.



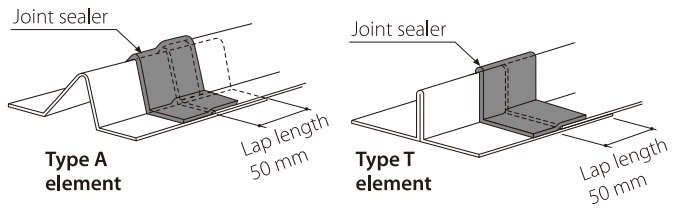
6) Remove the protective film

Remove the entire protective film that is adhered to the Type A and BL elements, before pouring concrete into the formwork. (If the film is not removed, the waterstop performance will not take effect.)

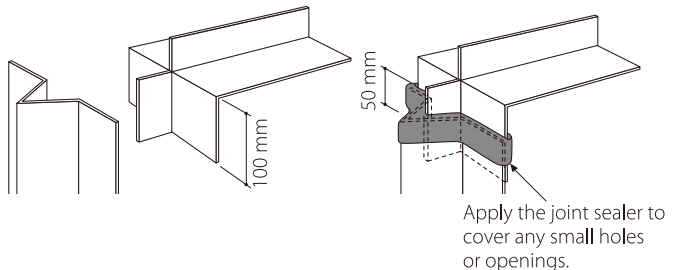
7) Joint method

Connecting the elements is carried out after the protective film has been removed. Joint parts should be overlapped by 50mm. For the type A elements, additionally affix the joint sealer (thickness 4 mm, width 50 mm, length 140-160 mm) packaged together.

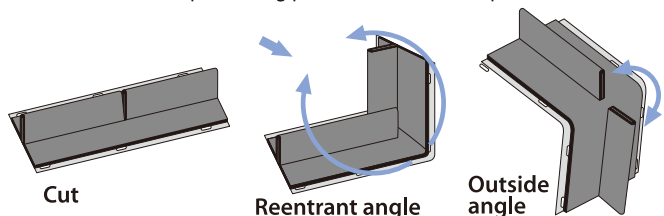
(BL Type element does not have a joint sealer and only has 50 mm of lap length.)



- For cutting, a grinder cutter or the like is to be used, but the type A and T elements can be cut with metal cutting shears.
- Make a cut on the protruding part of the joint for Type A and Type T elements on the outside angle. Bend it, overlap the Type T element onto the inner side of the Type A element, and then add and apply the joint sealer.



- When there is a reentrant / outside angle part, bend the Type T element. Make a cut on the protruding part and bend the flat part.



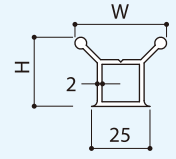
- Before pouring wall concrete, be sure to remove the protective film.

Precautions

- If importance is attached to waterstop properties, embed the Type A element 50 mm or more into the bottom slab. In this case, set the lowest part before pouring this bottom slab concrete, or insert and bury it after pouring the bottom slab concrete and before it hardens.
- In order to secure a regular concrete cover thickness, install a bar spacer or like to distributing bar near the crack inducer.
- Since cracks produce residual stress to main reinforcement, influence exerted on structural performance should be studied in such a case where walls are designed as two-way slab.
- For safety, use protective gear (gloves, etc.) when working.
- For assistance with detailing and problem solving please contact us.

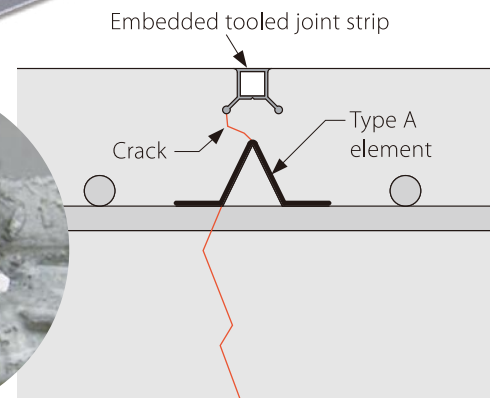
Embedded Tooled Joint Strip

An embedded tooled joint strip is also available, which allows you to skip over caulking the concrete surface.

	Type of product	Type of element	Width (mm)	Height (mm)	Thickness (mm)	Length (mm)	Packing unit (pieces/carton)
	Embedded tooled joint strip	N	39	30	2	2000	10
L		50	35	2	2000	10	

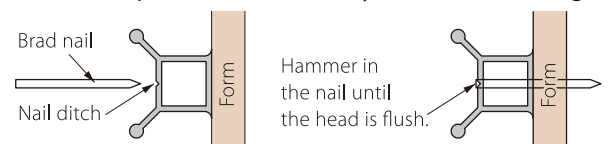


Material : PVC

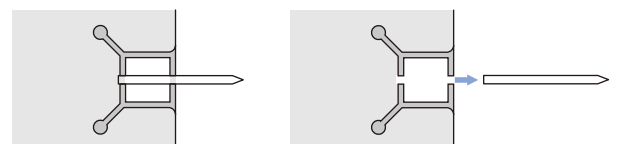


Assembly Instructions

- 1) Secure by hammering brad nails so that the space for the position, opposite the Type A element for the concrete form, does not exceed 300 mm.
- 2) If there is a space between the tooled joint strip and the concrete form, cracking might occur when hammering in the brad nails. Be sure to press it in all the way when hammering.



- 3) After removing the concrete form, pull out the nails, or cut them so that they do not protrude out from the concrete surface.



- 4) Remove the concrete slag and pull off the protective tape on the surface.

View of applications



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