

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-08/0314
of 8 August 2014

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Trade name of the construction product

Product family
to which the construction product belongs

Manufacturer

Manufacturing plant

This European Technical Assessment
contains

This European Technical Assessment is
issued in accordance with Regulation (EU)
No 305/2011, on the basis of

This version replaces

Deutsches Institut für Bautechnik

Insulation support - metal screw TSBD, TSBDL, TSBD
WS and TSBD WSG

Screwed-in plastic anchor for fixing of external thermal
insulation composite systems with rendering in concrete
and masonry

KEW
Kunststofferzeugnisse GmbH Wilthen
Dresdener Straße 19
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DEUTSCHLAND

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21 pages including 17 annexes which form an integral
part of this assessment

Guideline for European technical approval of "Plastic
anchors for fixing of external thermal insulation
composite systems with rendering", ETAG 014,
Edition February 2011,
used as European Assessment Document (EAD)
according to Article 66 Paragraph 3 of Regulation (EU)
No 305/2011.

ETA-08/0314 issued on 23 February 2009

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Specific part

1 Technical description of the product

The insulation support metal screw TSBD, TSBDL, TSBD WS und TSBD WSG is a screwed-in anchor which consists of a plastic part made of polypropylene and an accompanying specific screw of galvanised steel or stainless steel and an anchor cap made of polystyrene (for mounting the anchor TSBDL on the surface of the insulating material) or an insulation cover made of polystyrene or mineral wool (for deep mounting of the anchor in the insulating material). The anchor types TSBD und TSBDL may in addition be combined with the insulation discs DSB 90, DSB 110 and DSB 140.

The head of the screw for anchor type TSBD has an additional plastic coating.

The product description is given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document

The performances given in Section 3 are only valid if the anchors is used in compliance with the specifications and conditions given in Annex B.

The verification and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchor of at least 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

The essential characteristics regarding mechanical resistance and stability are included under the Basic Works Requirement Safety in use.

3.2 Safety in case of fire (BWR 2)

Not applicable.

3.3 Hygiene, health and the environment (BWR 3)

Regarding dangerous substances there may be requirements (e.g. transposed European legislation and national laws, regulations and administrative provisions) applicable to the products falling within the scope of this European Technical Assessment. In order to meet the provisions of Regulation (EU) No 305/2011, these requirements need also to be complied with, when and where they apply.

3.4 Safety in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance	See Annex C 1
Anchor distances and dimensions of members	See Annex B 2
Plate stiffness	See Annex C 2
Displacements	See Annex C 3

3.5 Protection against noise (BWR 5)

Not applicable.

3.6 Energy economy and heat retention (BWR 6)

Not applicable.

3.7 Sustainable use of natural resources (BWR 7)

The sustainable use of natural resources was not investigated.

3.8 General aspects

The verification of durability is part of testing the essential characteristics. Durability is only ensured if the specifications of intended use according to Annex B are taken into account.

4 Assessment and verification of constancy of performance (AVCP) system applied with reference to its legal base

According to Decision 97/463/EC of the Commission of 27 June 1997 (Official Journal of the European Communities L 198 of 25.07.1997, p. 31–32) the system of assessment and verification of constancy of performance (AVCP) (see Annex V and Article 65 Paragraph 2 to Regulation (EU) No 305/2011) given in the following table applies.

Product	Intended use	Level or class	System
Plastic anchors for use in concrete and masonry	For use in systems, such as façade systems, for fixing or supporting elements which contribute to the stability of the systems	—	2+

5 Technical details necessary for the implementation of the AVCP system, as provided in the applicable European Assessment Document

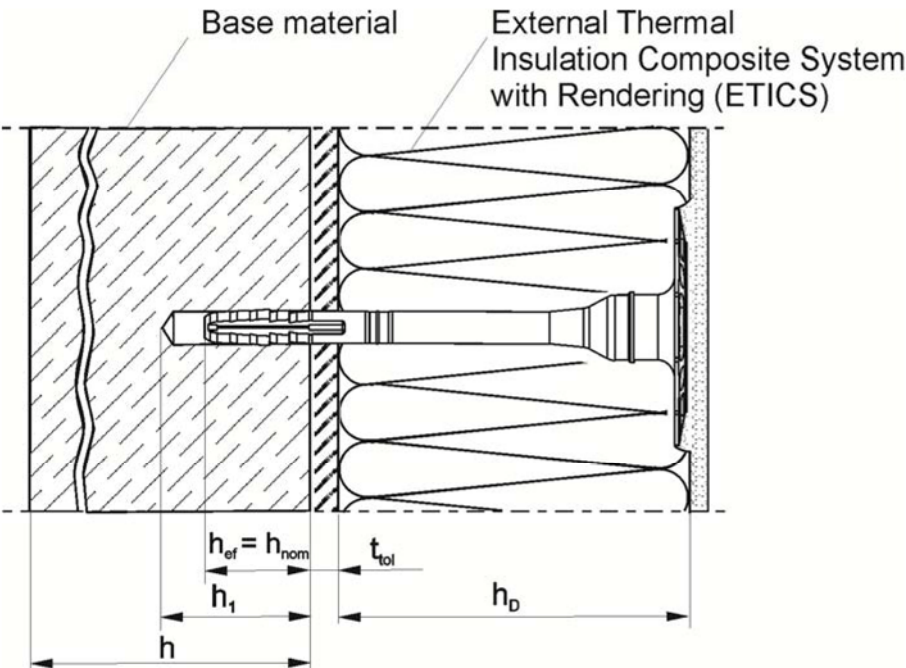
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

Issued in Berlin on 8 August 2014 by Deutsches Institut für Bautechnik

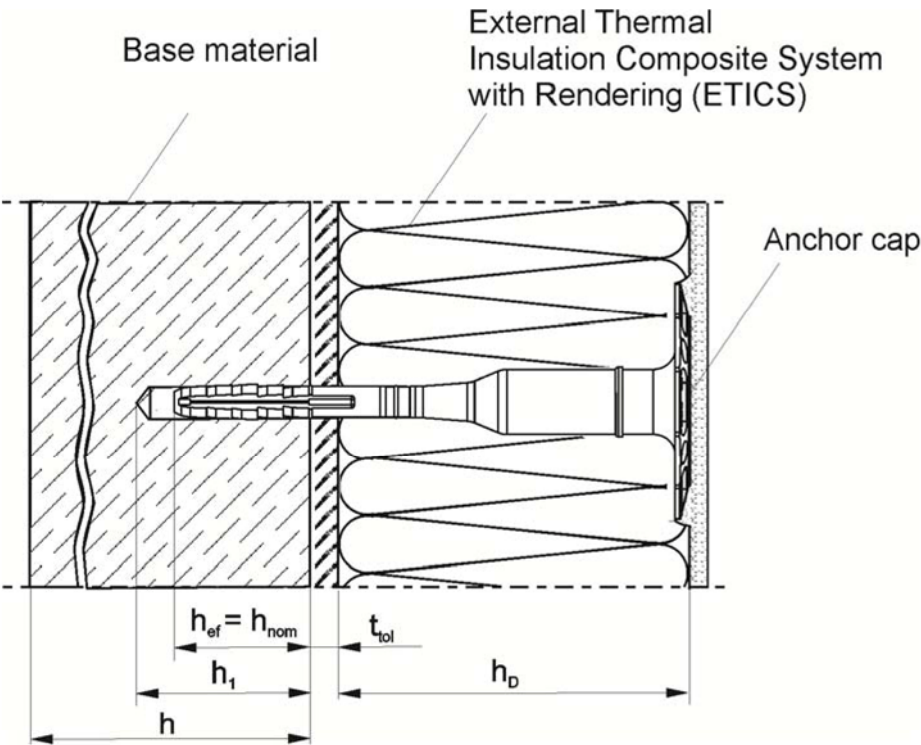
Uwe Bender
Head of Department

beglaubigt:
Ziegler

TSBD



TSBDL

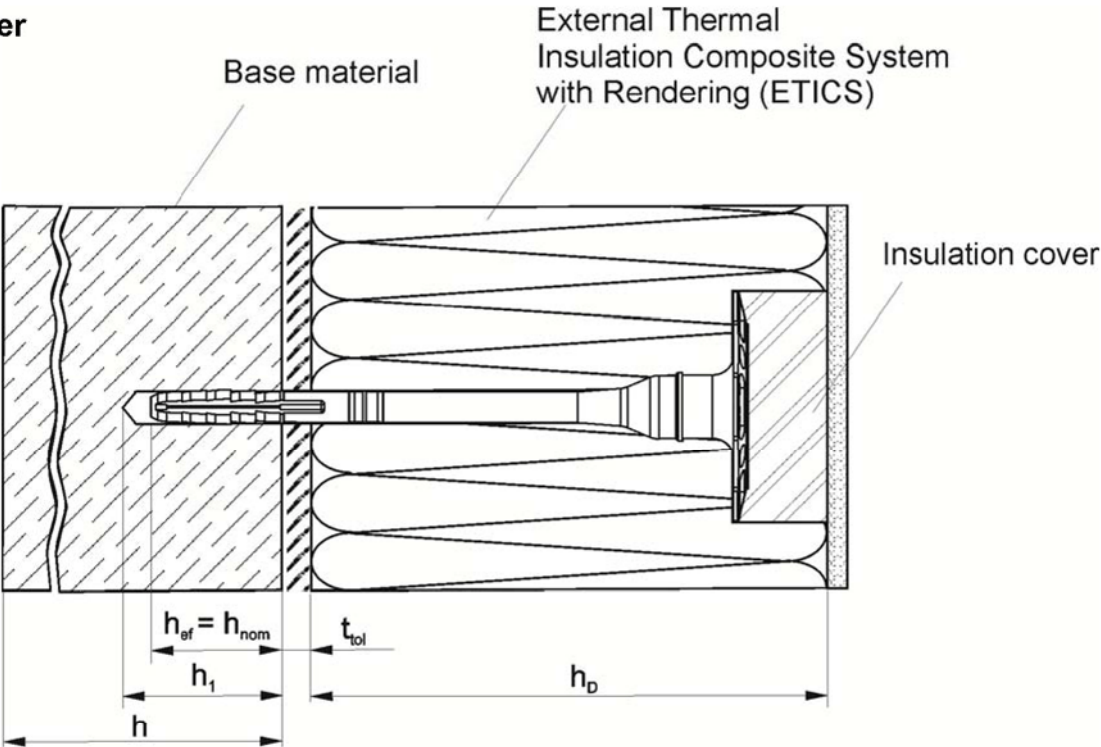


Insulation support • TSBD • TSBDL • TSBD WS • TSBD WSG

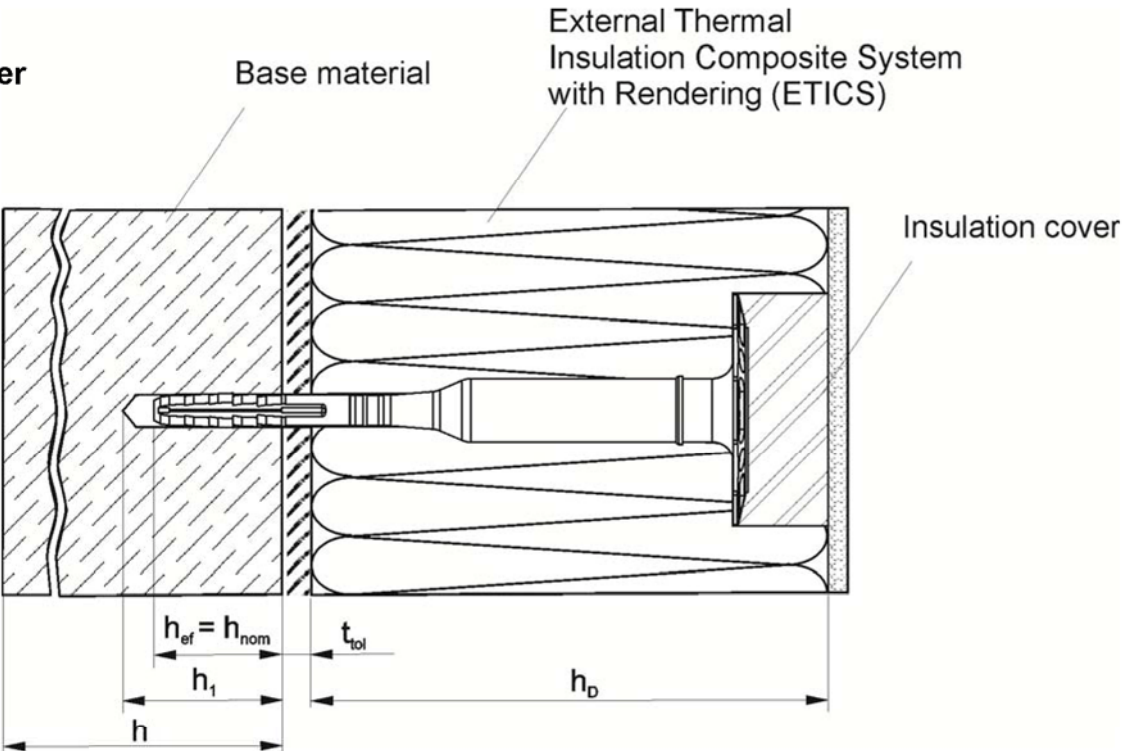
Annex A 1

Product description
Installed condition: TSBD, TSBDL

**TSBD +
Insulation cover**



**TSBDL +
Insulation cover**



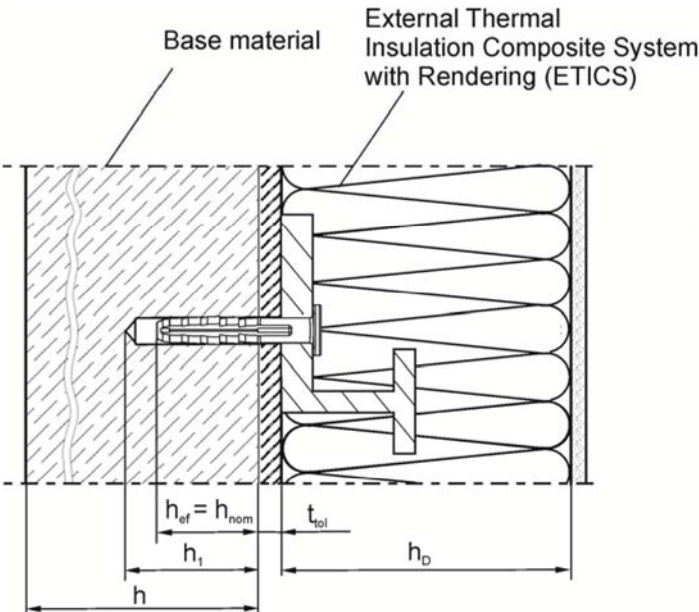
Insulation support • TSBD • TSBDL • TSBD WS • TSBD WSG

Product description

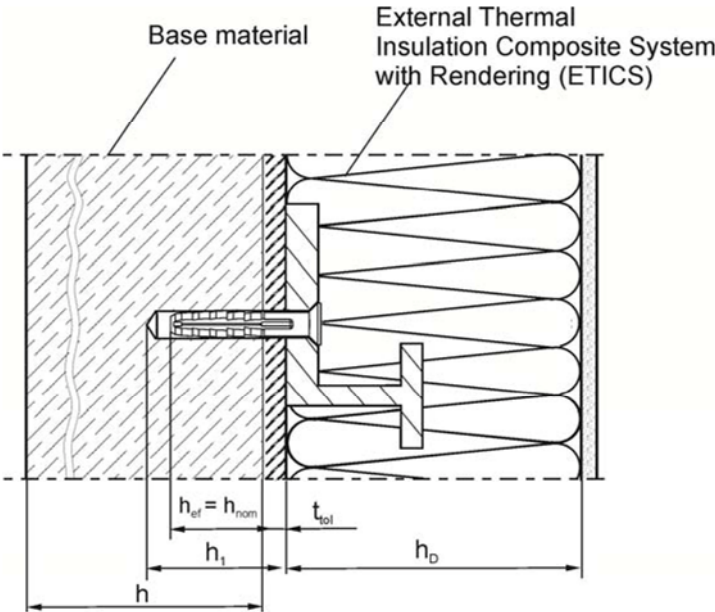
Installed condition with insulation cover: TSBD, TSBDL

Annex A 2

TSBD WS



TSBD WSG



Legend

- h_{ef} = effective anchorage depth
- h_1 = depth of drilled hole to deepest point
- h = thickness of member (wall)
- h_D = thickness of insulation material
- t_{toi} = thickness of equalizing layer or non-load bearing coating

Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG



Annex A 3

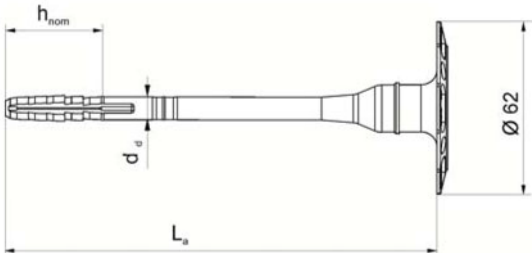
Product description
Installed condition: TSBD WS, TSBD WSG

TSBD

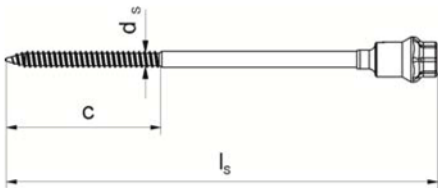
Marking



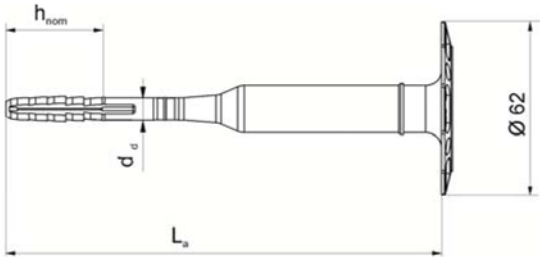
- Company logo – (KEW®)
Anchor type – (TSBD 
 – (TSBDL 
Diameter – (Ø8)
Length of anchor – (e.g. 160)



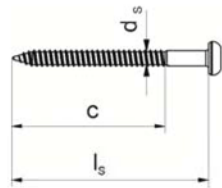
Special screw with special head



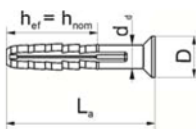
TSBDL



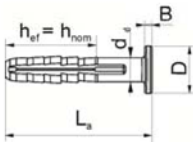
Special screw



TSBD WS / WSG

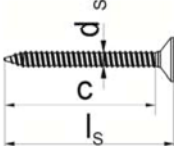


D ≥ 13,5mm



B ≥ 2,5mm
D ≥ 16mm

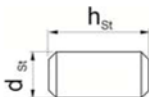
Special screw



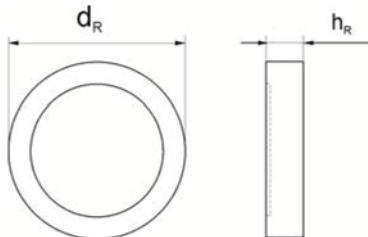
Installation tool



Anchor cap



Insulation cover



Insulation support • TSBD • TSBDL • TSBD WS • TSBD WSG

Product description
Marking of the anchor sleeve, dimensions, installation tool

Annex A 4

Table A1: Dimensions TSBD

Anchor type	Anchor sleeve				Special screw			
	L _a min [mm]	L _a max [mm]	d _d [mm]	h _{ef} [mm]		d _s [mm]	c [mm]	l _s [mm]
TSBD Use category (A-B-C)	100	440	8	30		5,5	52	L _a + 5mm
TSBD Use category (D)	100	440	8	30	50	5,5	52	L _a + 5mm
Determination of max. thickness of insulation h _D [mm]: h_D = L_a – h_{nom} – t_{tol}								
e.g.: TSBD 8x160	L _a = 160		h _{ef} = 30			t _{tol} = 10		
	thickness of insulation material					h _{D max.} = 120		
e.g.: TSBD 8x160	L _a = 160		h _{ef} = 50			t _{tol} = 10		
	thickness of insulation material					h _{D max.} = 100		
Determination of max. thickness of insulation h _D [mm]: h_D = L_a – h_{nom} – t_{tol} + Insulation cover								
e.g.: TSBD 8x160 With Insulation cover 20mm	L _a = 160		h _{ef} = 30			t _{tol} = 10		
	thickness of insulation material					h _{D max.} = 140		
e.g.: TSBD 8x160 With Insulation cover 20mm	L _a = 160		h _{ef} = 50			t _{tol} = 10		
	thickness of insulation material					h _{D max.} = 120		

Table A2: Dimensions TSBDL

Anchor type	Anchor sleeve					Special screw			
	L _a min [mm]	L _a max [mm]	d _d [mm]	h _{ef} [mm]		d _s [mm]	c [mm]	l _s min [mm]	l _s max [mm]
TSBDL Use category (A-B-C)	100	440	8	30		5,5	52	70	310
TSBDL Use category (D)	100	440	8	30	50	5,5	52	70	310
Determination of max. thickness of insulation h _D [mm]: h_D = L_a – h_{nom} – t_{tol}									
e.g.: TSBDL 8x160	L _a = 160		h _{ef} = 30			t _{tol} = 10			
	thickness of insulation material					h _{D max.} = 120			
e.g.: TSBDL 8x160	L _a = 160		h _{ef} = 50			t _{tol} = 10			
	thickness of insulation material					h _{D max.} = 100			
Determination of max. thickness of insulation h _D [mm]: h_D = L_a – h_{nom} – t_{tol} + Insulation cover									
e.g.: TSBDL 8x160 With Insulation cover 20mm	L _a = 160		h _{ef} = 30			t _{tol} = 10			
	thickness of insulation material					h _{D max.} = 140			
e.g.: TSBDL 8x160 With Insulation cover 20mm	L _a = 160		h _{ef} = 50			t _{tol} = 10			
	thickness of insulation material					h _{D max.} = 120			

Insulation support • TSBD • TSBDL • TSBD WS • TSBD WSG

Product description
Dimensions: TSBD, TSBDL

Annex A 5

Table A3: Dimensions TSBD WS / WSG

Anchor type	Anchor sleeve				Special screw		
	L _a min [mm]	L _a max [mm]	d _d [mm]	h _{ef} [mm]	d _s [mm]	c [mm]	l _s [mm]
TSBD WS / WSG Use category (A-B-C)	50	250	8	30	5,5	52	L_a + 5mm
TSBD WS / WSG Use category (D)	70	250	8	30	50	5,5	52 L_a + 5mm

Table A4: Dimensions Insulation cover and Anchor cap

Anchor type	Insulation cover		Anchor cap	
	d _R [mm]	h _R [mm]	d _{St} [mm]	h _{St} [mm]
TSBD	66	20	-	-
TSBDL	66	20	13	30

Table A5: Materials

Member	Material
Anchor sleeve	Polypropylen, colour: papyrus white
Special screw	Steel, galvanized A2L or A2K according to EN ISO 4042:2001-01
	Stainless steel; mat.No. 1.4401 – 1.4571 according to EN ISO 3506-01:2010-04
Special head on Special screw	PA GF
Anchor cap	Polystyrene
Insulation cover	Polystyrene
	Mineral wool

Insulation support • TSBD • TSBDL • TSBD WS • TSBD WSG

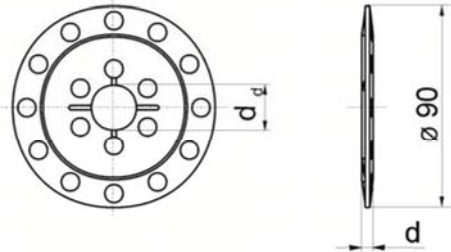
Product description

Dimensions: TSBD WS, TSBD WSG, anchor cap, insulation cover, materials

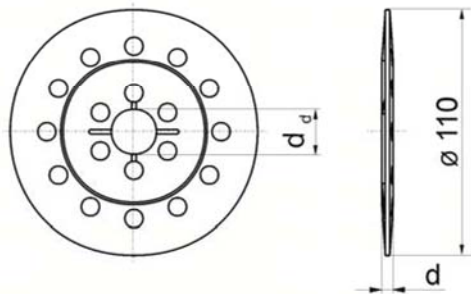
Annex A 6

Insulation discs

DSB 90



DSB 110



DSB 140

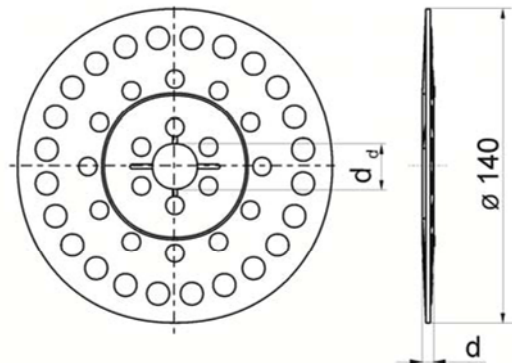


Table A6: Insulation discs, diameters and material

Insulation discs	Ø D [mm]	Ø d _d [mm]	d [mm]	Material
DSB 90	90	20	5	PA 6, PP
DSB 110	110	20	5	PA 6, PP
DSB 140	140	20	5	PA 6, PP

Insulation support •TSBD • TSB DL • TSBD WS • TSBD WSG

Product description

Additional plates in combination with TSBD , TSB DL

Annex A 7

Specifications of intended use

Anchorage subject to:

- The anchor may only be used for transmission of wind suction loads and shall not be used for the transmission of dead loads of the thermal insulation composite system.

Base materials:

- Normal weight concrete (use category A) according to Annex C1.
- Solid masonry (use category B), according to Annex C1.
- Hollow or perforated masonry (use category C), according to Annex C1 and C4.
- Lightweight aggregate concrete (use category D), according to Annex C1 and C4.
- For other base materials of the use categories A, B, C or D the characteristic resistance of the anchor may be determined by job site tests according to ETAG 014 Edition February 2011, Annex D.

Temperature Range:

- 0°C to +40°C (max. short term temperature +40°C and max. long term temperature +24°C)

Design:

- The anchorages are designed in accordance with the ETAG 014 Edition February 2011 under the responsibility of an engineer experienced in anchorages and masonry work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings.
- Fasteners are only to be used for multiple fixings of thermal insulation composite systems.

Installation:

- Hole drilling by the drill modes according to Annex C 1.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Installation temperature from 0°C to +40°C
- Exposure to UV due to solar radiation of the anchor not protected by rendering ≤ 6 weeks

Insulation support •TSBD • TSB DL • TSBD WS • TSBD WSG

Intended Use
Specifications

Annex B 1

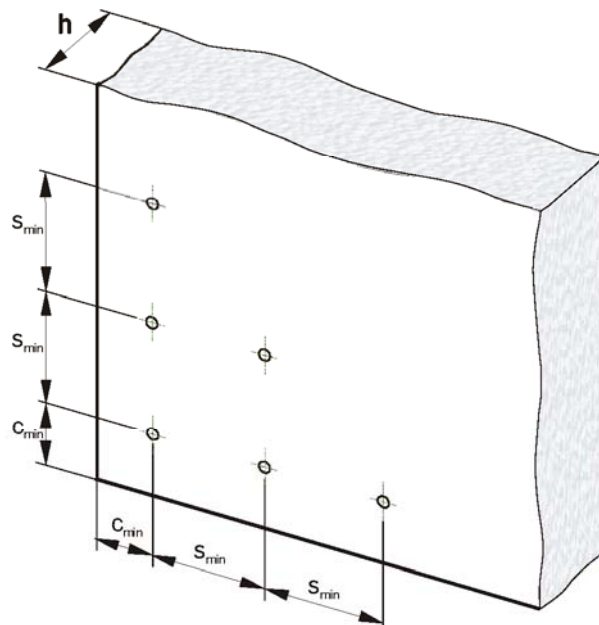
Table B1: Installation parameters

Anchor type		TSBD, TSBDL		
Use category		A-B-C	D	
Drill hole diameter	$d_0 =$ [mm]	8	8	
Cutting diameter of drill bit	$d_{cut} \leq$ [mm]	8,45	8,45	
Depth of drilled hole to deepest point	$h_1 \geq$ [mm]	40	40	60
Effective anchorage depth	$h_{ef} =$ [mm]	30	30	50

Table B2: Minimum distances and dimensions

		TSBD, TSBDL
Thickness of member	$h \geq$ [mm]	100
Minimum allowable spacing	$s_{min} =$ [mm]	100
Minimum allowable edge distance	$c_{min} =$ [mm]	100

Edge and spacing distances



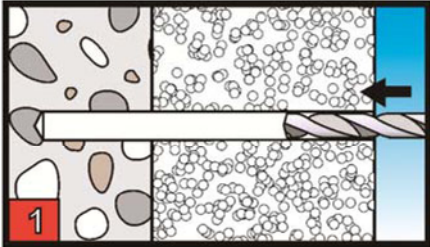
Insulation support • TSBD • TSBDL • TSBD WS • TSBD WSG

Intended Use

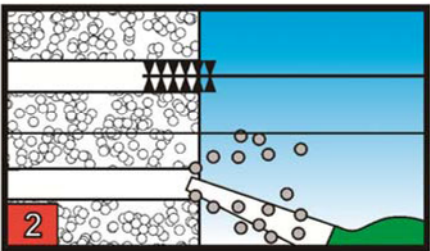
Installation parameters,
Edge distances and spacing

Annex B 2

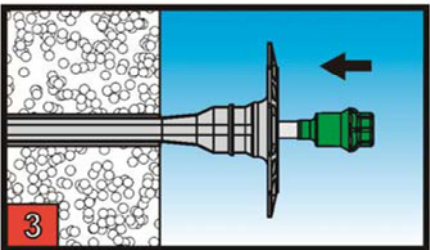
Installation instructions TSBD surface-flush mounted



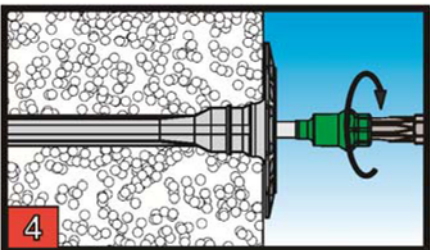
Create a hole about observation of the drill method according Annex C 1



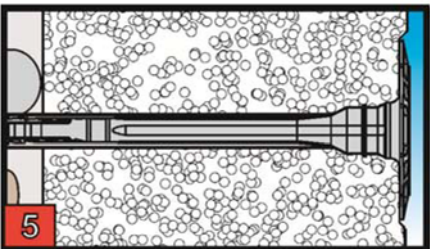
Holes to be cleaned of drilling dust.



Insert the anchor into the hole until the plate rests on the insulation.



Set the screw with the matching bit



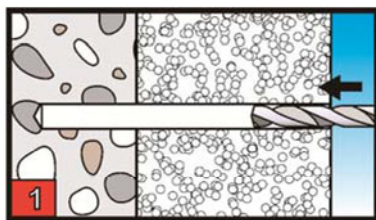
Surface-flush mounted

Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

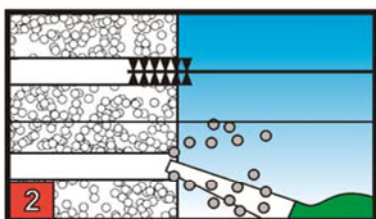
Annex B 3

Intended Use
Installation instructions TSBD - surface-flush mounted

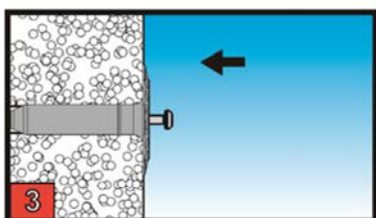
Installation instructions TSBDL surface-flush mounted



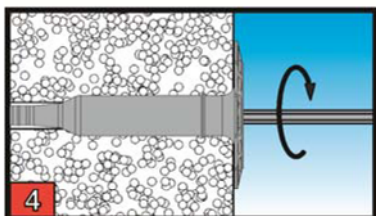
Create a hole about observation of the drill method according Annex C 1



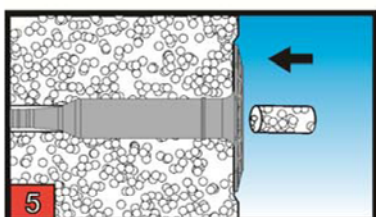
Holes to be cleaned of drilling dust.



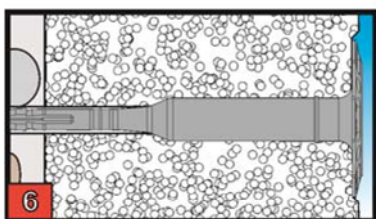
Insert the anchor into the hole until the plate rests on the insulation.



Set the screw with the matching bit



Put the anchor cap into the anchor



Surface-flush mounted

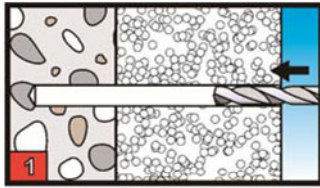
Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

Intended Use

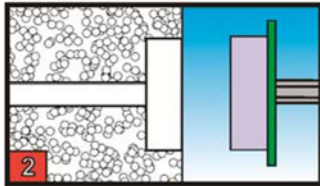
Installation instructions TSBDL - surface-flush mounted

Annex B 4

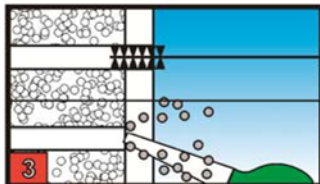
Installation instructions TSBD countersunk



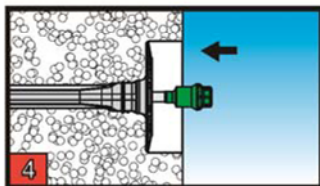
Create a hole about observation of the drill method according Annex C 1



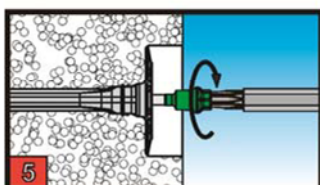
Countersink the insulation



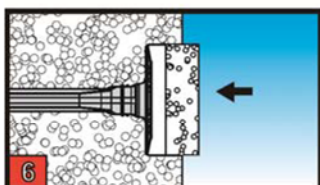
Holes to be cleaned of drilling dust.



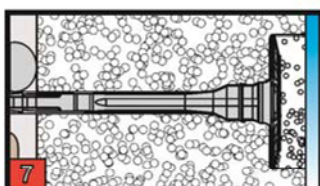
Insert the anchor into the hole until the plate rests on the insulation.



Set the screw with the matching bit



Insert the insulation cover



Countersunk installation

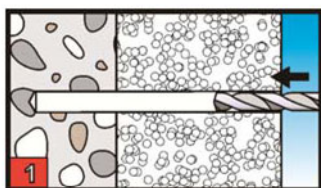
Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

Intended Use

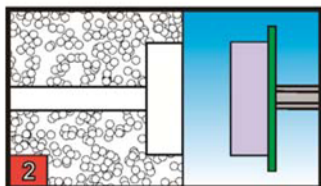
Installation instructions TSBD – countersunk installation

Annex B 5

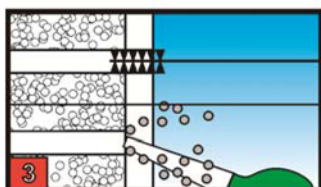
Installation instructions TSBDL countersunk



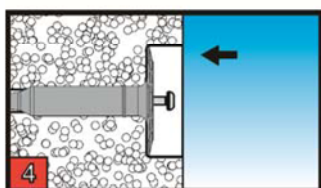
Create a hole about observation of the drill method according Annex C 1



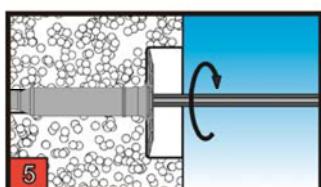
Countersink the insulation



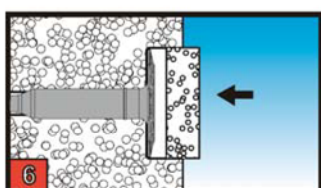
Holes to be cleaned of drilling dust.



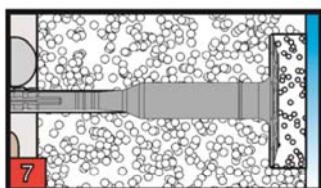
Insert the anchor into the hole until the plate rests on the insulation.



Set the screw with the matching bit



Insert the insulation cover



Countersunk installation

Insulation support • TSBD • TSBDL • TSBD WS • TSBD WSG

Intended Use

Installation instructions TSBDL – countersunk installation

Annex B 6

Table C1: Characteristic resistance N_{Rk} in [kN] to tension loads for a single anchor

Base material	Bulk density- class ρ [kg/dm ³]	Minimum Com- pressive strength f_k [N/mm ²]	Remarks	Drill method	N_{Rk} [kN]
Concrete C12/15			EN 206-1	Hammer drilling	1,5
Concrete C16/20 – C50/60			EN 206-1		1,5
Sand-lime solid bricks , KS e.g. acc. to DIN V106:2005-10 / EN 771-2:2011	≥ 1.8	12	Vertically perforation up to 15%		1,5
Mauerziegel, Mz e.g. acc. to DIN 105-100:2012-01 / EN 771-1:2011	≥ 1.7	12	Vertically perforation up to 15%		1,5
Lightweight concrete solid blocks, Vbl 2 e.g. acc. to DIN V 18152-100:2005-10 / EN 771-3:2011	≥ 0.8	2	according to Annex C 4		0,75
Lightweight concrete solid blocks, Vbl 4 e.g. acc. to DIN V 18152-100:2005-10 / EN 771-3:2011	≥ 0.8	4	according to Annex C 4		1,2
Vertically perforated clay bricks, HLz e.g. acc. to DIN 105-100:2012-01 / EN 771-1:2011 with outer web thickness ≥ 12 mm	≥ 1.0	12	Vertically perforation more than 15% and less than 50%	Rotary drilling	0,9
Vertically perforated sand-lime bricks KS L, e.g. acc. to DIN V 106:2005-10 / EN 771-2:2011 with outer web thickness ≥ 20 mm	≥ 1.4	12	Vertically perforation up to 15%		1,5
Lightweight concrete hollow blocks 4K Hbl e.g. acc. to DIN V 18151-100:2005-10 / EN 771-3:2011	≥ 0.9	2	according to Annex C 4		0,75
Lightweight concrete hollow blocks 1K Hbl e.g. acc. to DIN V 18151-100:2005-10 / EN 771-3:2011	≥ 0.8	2	according to Annex C 4		0,9
Vertically perforated clay bricks Hlz 250x380x235	≥ 1.0	6	according to Annex C 4		0,5
Lightweight aggregate concrete , LAC 4 e.g. acc. to EN 1520	≥ 1.0	4	$h_{ef} \geq 30$ mm	Hammer drilling	0,4
			$h_{ef} \geq 50$ mm		0,9
Lightweight aggregate concrete , LAC 6 e.g. acc. to EN 1520	≥ 1.0	6	$h_{ef} \geq 30$ mm		0,5
			$h_{ef} \geq 50$ mm		1,2

Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

Performances

Characteristic resistance of the anchor

Annex C 1

Table C2: Plate stiffness according to EOTA Technical Report TR 026:2007-06

Anchor type	Diameter of anchor plates [mm]	Load resistance of anchor plates [kN]	Plate stiffness [kN/mm]
TSBD	60	2,22	1,6
TSBDL	60	2,22	1,6

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Annex C 2

Performances
Plate stiffness

Table C3: Displacements

Base material	Bulk-density-class ρ [kg/dm ³]	Minimum compressive strength f_k [N/mm ²]	Tension load N [kN]	Displacements $\delta_m(N)$ [mm]
Concrete C12/15-C50/60 (EN 206-1)			0,50	0,2
Sand-lime solid bricks, KS DIN V106:2005-10 / EN 771-2:2011	≥ 1.8	12	0,50	0,3
Mauerziegel, Mz DIN 105-100:2012-01 / EN 771-1:2011	≥ 1.7	12	0,50	0,3
Lightweight concrete solid blocks, Vbl 2 DIN V 18152-100:2005-10 / EN 771-3:2011	≥ 0.8	2	0,25	0,3
Lightweight concrete solid blocks, Vbl 4 DIN V 18152-100:2005-10 / EN 771-3:2011	≥ 0.8	4	0,40	0,4
Vertically perforated clay bricks, HLz DIN 105-100:2012-01 / EN 771-1:2011	≥ 1.0	12	0,30	0,1
Vertically perforated sand-lime bricks KS L DIN V 106:2005-10 / EN 771-2:2011	≥ 1.4	12	0,50	0,3
Lightweight concrete hollow blocks 4K Hbl DIN V 18151-100:2005-10 / EN 771-3:2011	≥ 0.9	2	0,25	0,1
Lightweight concrete hollow blocks 1K Hbl DIN V 18151-100:2005-10 / EN 771-3:2011	≥ 0.8	2	0,30	0,2
Vertically perforated clay bricks HLz 250x380x235	≥ 1.0	6	0,15	0,1
Lightweight aggregate concrete, LAC 4 (EN 1520)	≥ 1.0	4	$h_{ef} > 30$ mm: 0,15	0,1
			$h_{ef} \geq 50$ mm: 0,30	0,2
Lightweight aggregate concrete, LAC 6 (EN 1520)	≥ 1.0	6	$h_{ef} > 30$ mm: 0,15	0,1
			$h_{ef} \geq 50$ mm: 0,40	0,2

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Performances
Displacements

Annex C 3

Table C4: Geometry of anchor for lightweight concrete hollow blocks according to DIN V 18151-100:2005-10 / EN 771-3:2011

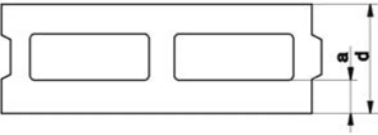
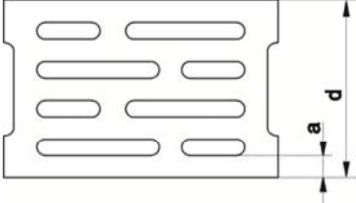
Geometry	Thickness of brick d [mm]	Outer web in longitudinal direction a [mm]
	175	50
	240 300 365	30
The anchor shall be placed in the brick in such way, that the spreading part of the expansion sleeve is located in the outer web.		

Table C5: Geometry of Vbl according to DIN V 18152-100:2005-10 / EN 771-3:2011

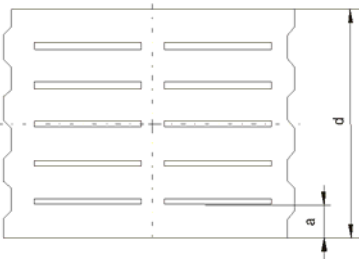
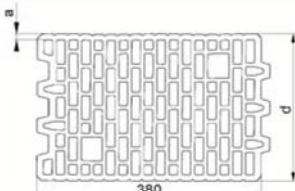
Geometry	Thickness of brick d [mm]	Outer web in longitudinal direction a [mm]
	248 300 370	≥ 43

Table C6: Geometry of Vertically perforated clay brick Hlz 250x380x235

Geometry	Thickness of brick d [mm]	Outer web in longitudinal direction a [mm]
	250	≥ 16

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Performances

Geometry of lightweight concrete hollow and solid blocks, vertically perforated clay brick 250x380x235

Annex C 4