

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-15/0305
of 9 June 2015

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Fröwis Screwed-in anchor Gecko U8

Product family
to which the construction product belongs

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

Manufacturer

FROEWIS AKTIENGESELLSCHAFT
Gewerbeweg 44
9486 SCHAANWALD
FÜRSTENTUM LIECHTENSTEIN

Manufacturing plant

Herstellwerk 1, 2
manufacturing plant 1, 2

This European Technical Assessment
contains

15 pages including 3 annexes which form an integral part
of this assessment

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

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.

European Technical Assessment

ETA-15/0305

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Specific part

1 Technical description of the product

The Fröwis Screwed-in anchor Gecko U8 consists of an anchor sleeve made of polypropylene and a screw plate in different colours made of polyamide and an accompanying specific screw of galvanised steel.

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 anchor 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
Displacements	See Annex C 2

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.

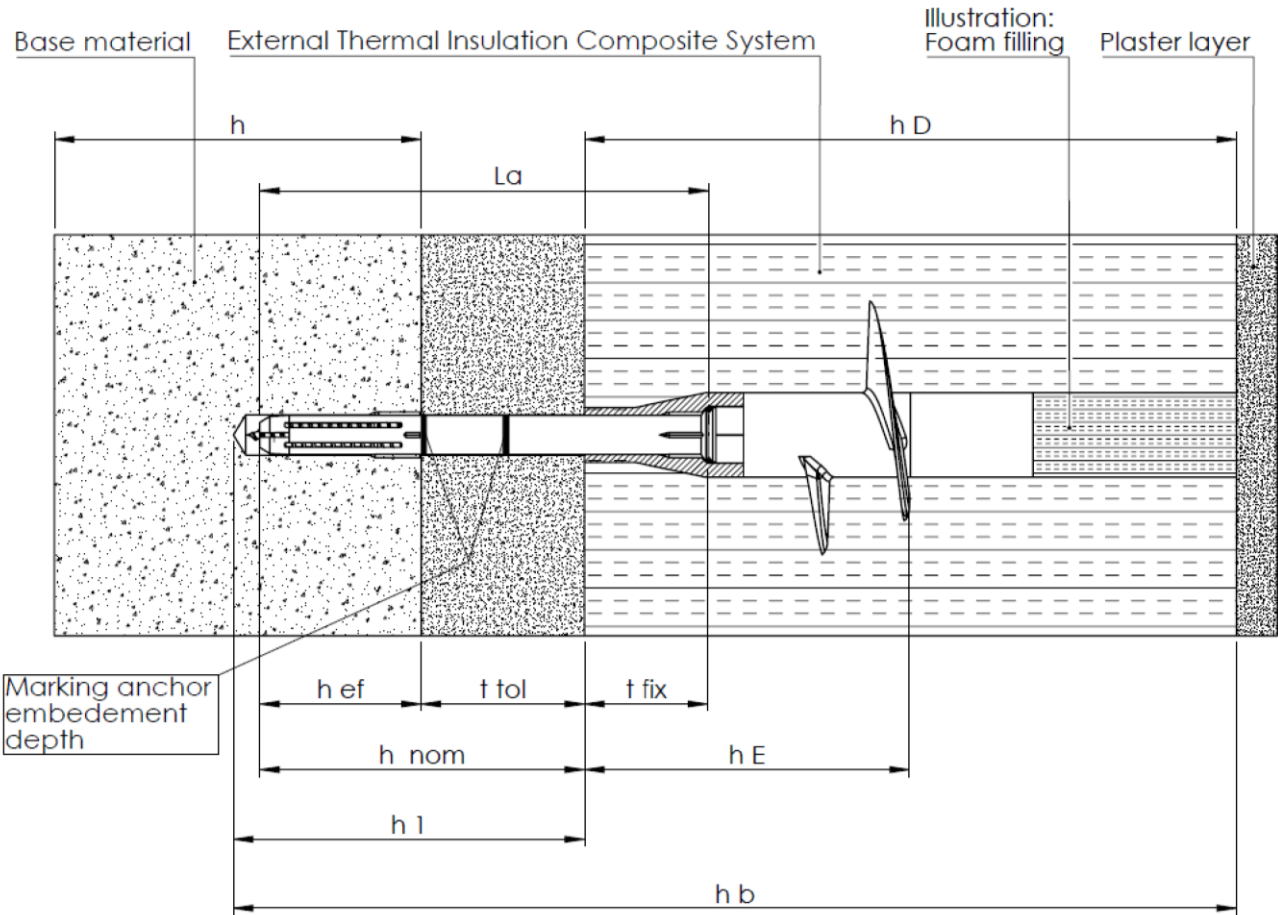
Issued in Berlin on 9 June 2015 by Deutsches Institut für Bautechnik

Andreas Kummerow
p. p. Head of Department

beglaubigt:
Ziegler

Installed condition Fröwis Gecko U8

For non-load-bearing layer $t_{tol} \leq 40$ mm (respectively $t_{tol} \leq 80$ mm)



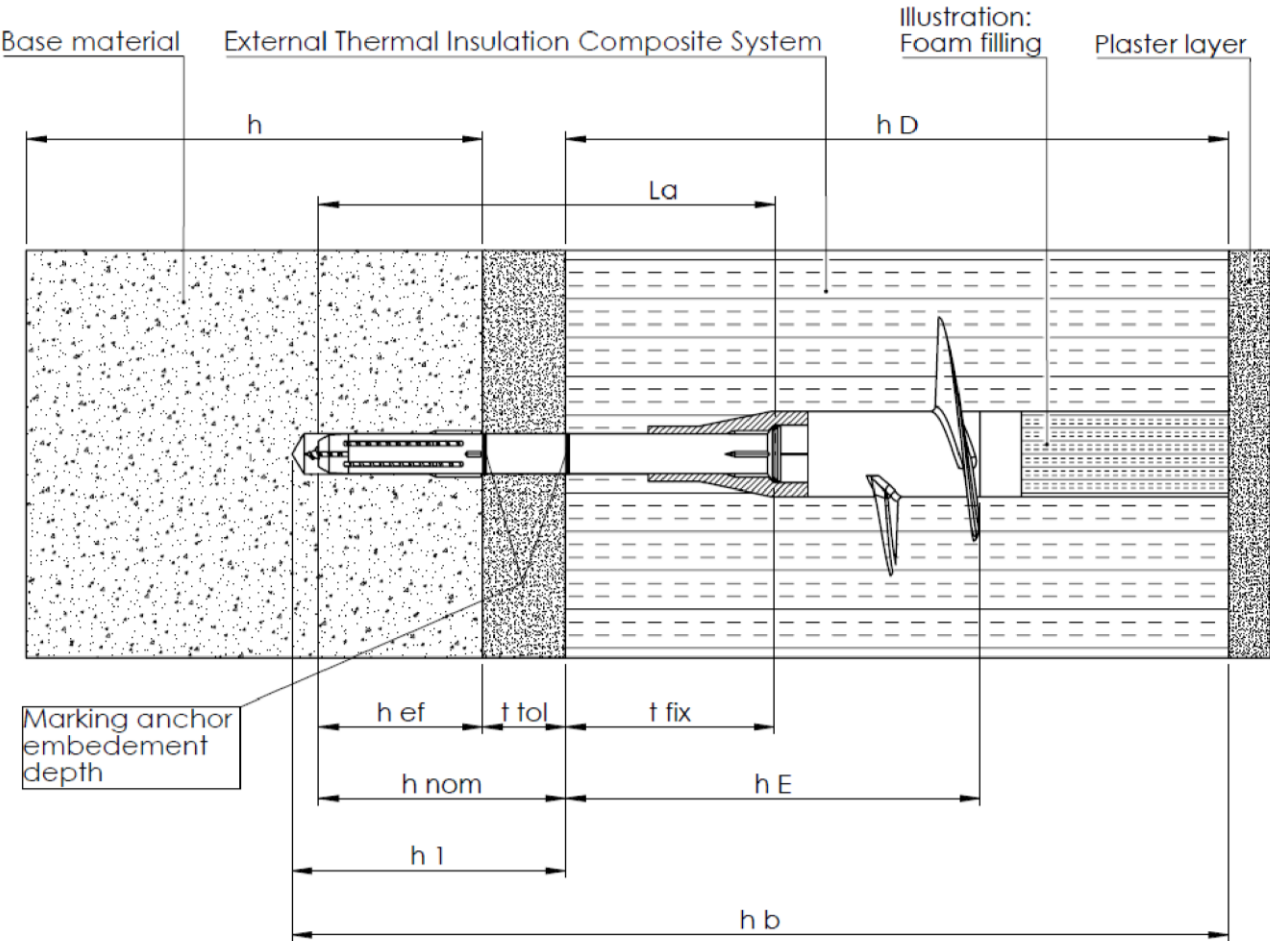
Legend

- h_{nom} = overall plastic anchor embedment depth in the base material with non-load-bearing layer (t_{tol})
- 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_{tol} = thickness of equalizing layer and/or non-load-bearing layer (0 - 40 mm)
- t_{fix} = position of screw plate
- h_E = embedment depth
- h_b = total borehole depth
- L_a = total length of anchor sleeve

Fröwis Screwed-in anchor Gecko U8	Annex A 1
Product description Installed condition for $t_{tol} \leq 40$ mm	

Installed condition Fröwis Gecko U8

For non-load-bearing layer $t_{tol} \leq 20\text{ mm}$ (respectively $t_{tol} \leq 60\text{ mm}$)



Legend

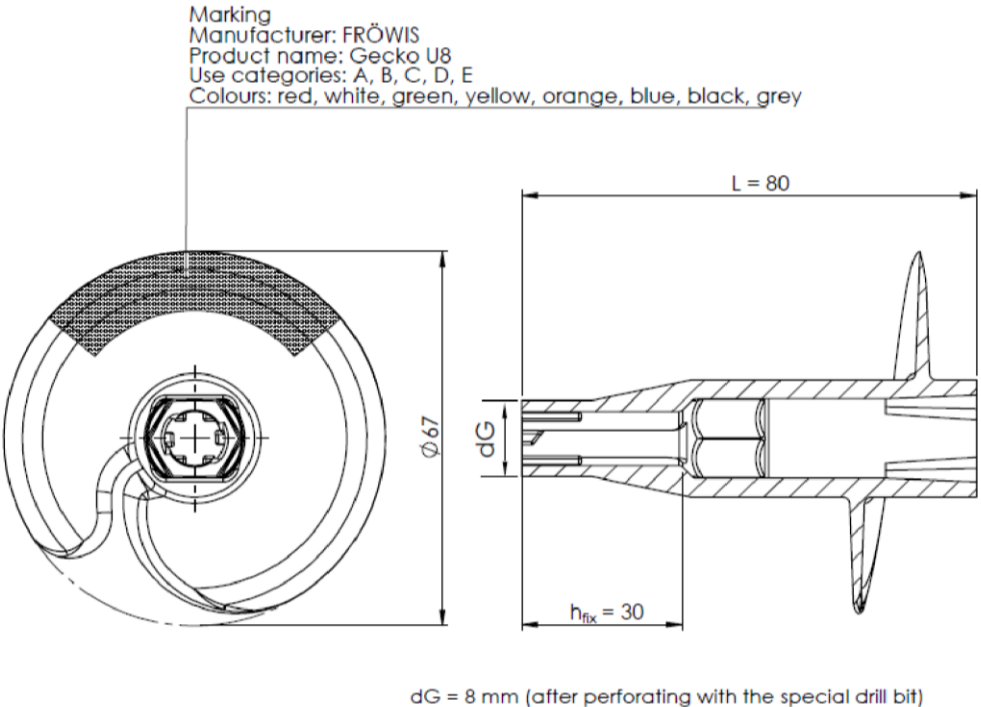
- h_{nom} = overall plastic anchor embedment depth in the base material with non-load-bearing layer (t_{tol})
- h_{ef} = effective anchorage depth
- h_l = depth of drilled hole to deepest point
- h = thickness of member (wall)
- h_D = thickness of insulation material
- t_{tol} = thickness of equalizing layer and/or non-load-bearing layer (0 - 20 mm)
- t_{fix} = position of screw plate
- h_E = embedment depth
- h_b = total borehole depth
- L_a = total length of anchor sleeve

Fröwis Screwed-in anchor Gecko U8

Product description
Installed condition for $t_{tol} \leq 20\text{ mm}$

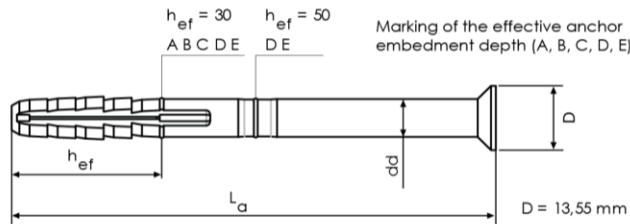
Annex A 2

Screw plate Gecko U8

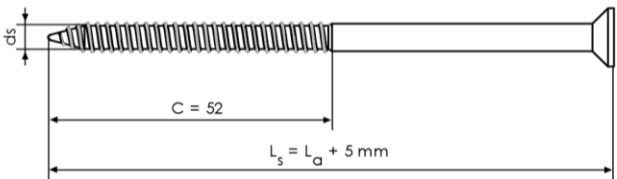


Anchor sleeve TSBD WS with special screw (ETA-08/0314)

Anchor sleeve TSBD WS 8

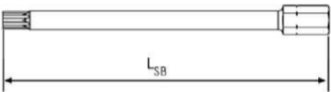


Special screw

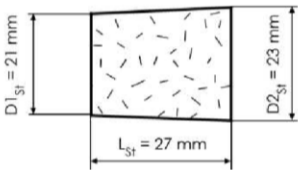


Screwdriver bit TX 30

Length $L_{SB} \geq$ Thickness insulation material h_D



Insulation plug



Fröwis Screwed-in anchor Gecko U8

Product description

Screw plate, anchor sleeve, special screw, insulation plug, screwdriver bit
Marking

Annex A 3

Table A1: Dimensions

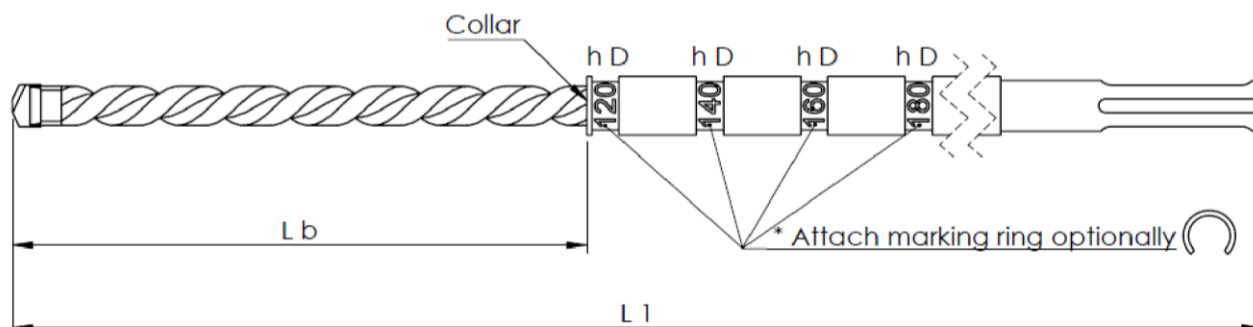
Anchor type	Anchor sleeve			Special screw		
	d_d [mm]	L_a [mm]	h_{ef} [mm]	d_s [mm]	c [mm]	L_s [mm]
TSBD WS Use category (A-B-C-D-E)	8	100 - 250	30	5,5	52	$L_a + 5\text{mm}$
TSBD WS Use category (D-E)	8	100 - 250	50	5,5	52	$L_a + 5\text{mm}$

Anchor type	Screw plate		
	d [mm]	L [mm]	h_{fix} [mm]
Gecko U8 Use category (A-B-C-D-E)	67	80	30

Table A2: Materials

Element	Material
Screw plate	polyamide PA 6.6, colour: red, white, green, yellow, orange, blue, black, grey
Anchor sleeve	polypropylene PP, colour: papyrus white
Special screw	galvanized steel. A2L or A2K according to EN ISO 4042:2001
Insulation plug	polystyrene

Special drill bit / setting tool



Special drill bit / setting tool		SDS-G8 460/110	SDS-G8 600/250
Drill hole diameter	[mm]	8	8
Total length of the tool	$L_1 =$ [mm]	460	600
Drill length	$L_b =$ [mm]	110	250

Special drill bit / setting tool		SDS-G8 460/150	SDS-G8 600/290
Drill hole diameter	[mm]	8	8
Total length of the tool	$L_1 =$ [mm]	460	600
Drill length	$L_b =$ [mm]	150	290

Fröwis Screwed-in anchor Gecko U8

Product description
Dimensions, materials, special drill bit

Annex A 4

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 C 1
- Solid masonry (use category B), according to Annex C 1 and C 3
- Hollow or perforated masonry (use category C), according to Annex C 1 and C 3
- Lightweight aggregate concrete (use category D), according to Annex C 1
- Autoclaved aerated concrete (use category E), according to Annex C 1
- For other base materials of the use categories A, B, C, D or E 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

Fröwis Screwed-in anchor Gecko U8

Intended use
Specifications

Annex B 1

Table B1: Installation parameters for $t_{tol} \leq 40$ mm (respectively $t_{tol} \leq 80$ mm)

Anchor type		TSBD WS
Use categories		A-B-C-D-E
Drill hole diameter	$d_0 =$ [mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$ [mm]	8,45
Effective anchor embedment depth	$h_{ef} =$ [mm]	30
Thickness of equalizing layer	$t_{tol} \leq$ [mm]	40 / 80
Position of screw plate	$t_{fix} \leq$ [mm]	30
Depth of drilled hole to deepest point ¹⁾	$h_1 \geq$ [mm]	80 / 120
Required length of anchor ²⁾	$L_a =$ [mm]	100 / 140
Thickness of insulation material	$h_D =$ [mm]	120 – 460 / 160 - 420
Total borehole depth	$h_b =$ [mm]	$h_D + h_1$

Table B2: Installation parameters for $t_{tol} \leq 20$ mm (respectively $t_{tol} \leq 60$ mm)

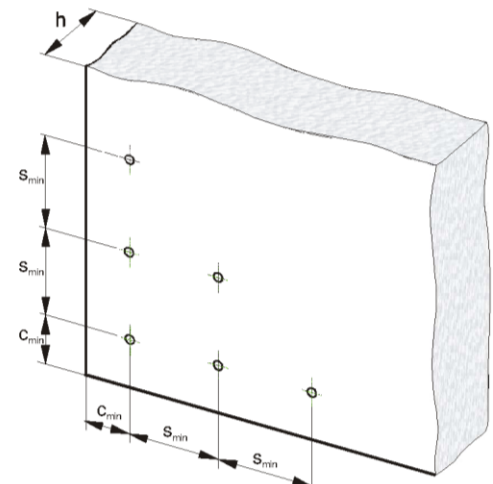
Anchor type		TSBD WS	
Use categories		A-B-C-D-E	D-E
Drill hole diameter	$d_0 =$ [mm]	8	8
Cutting diameter of drill bit	$d_{cut} \leq$ [mm]	8,45	8,45
Effective anchorage depth	$h_{ef} =$ [mm]	30	50
Thickness of equalizing layer	$t_{tol} \leq$ [mm]	20 / 60	
Position of screw plate	$t_{fix} \leq$ [mm]	50	30
Depth of drilled hole to deepest point ¹⁾	$h_1 \geq$ [mm]	60 / 100	80 / 120
Required length of anchor ²⁾	$L_a =$ [mm]	100 / 140	
Thickness of insulation material	$h_D =$ [mm]	140 – 460 / 180 - 420	
Total borehole depth	$h_b =$ [mm]	$h_D + h_1$	

¹⁾ $h_1 = h_{ef} + t_{tol} + 10$ mm

²⁾ $L_a = h_{ef} + t_{tol} + t_{fix}$

Table B3: Scheme of distances and spacing

		TSBD WS
Minimum thickness of the base material	$h \geq$ [mm]	100
Minimum allowable spacing	$s_{min} =$ [mm]	100
Minimum allowable edge distance	$c_{min} =$ [mm]	100



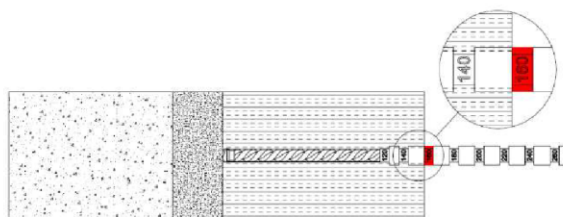
Fröwis Screwed-in anchor Gecko U8

Intended use

Installation parameters
Distances and dimensions of the base material

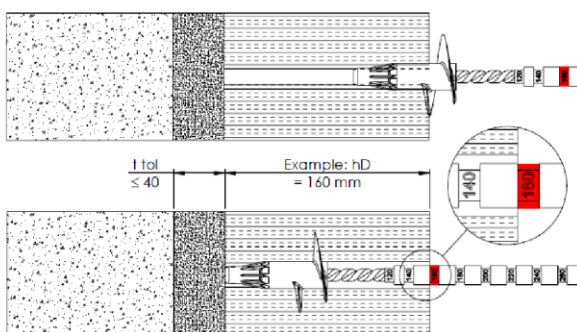
Annex B 2

Installation instructions for $t_{\text{tol}} \leq 40$ mm (respectively $t_{\text{tol}} \leq 80$ mm)



1. Attach marking ring to drill bit / setting tool

For example with an insulation thickness of 16 cm = 160 mm attach the marking ring at „160“.

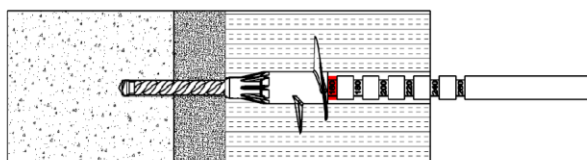


2. Install screw plate

Optionally, pre-drill the insulation panel. Position the Gecko spiral unit on the drill and press firmly against the insulation panel.

Slowly screw in the spiral unit at a low rotation setting until the marking ring is flush with the insulation board surface.

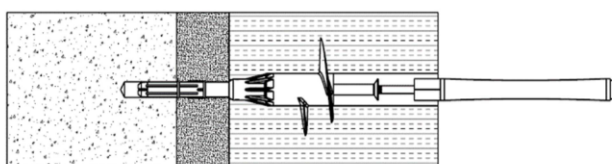
Note: After screwing in the spiral unit, fully remove the drill from the screw plate.



3. Drill hole with the drill bit

On a fast rotation setting, drill through the spiral unit with the drill bit until it is stopped by the collar of the drill bit.

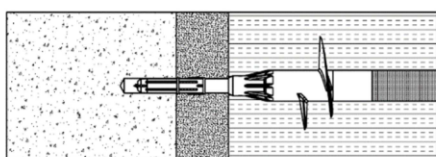
Note: Ventilate the drill hole several times. When drilling in perforated brick and aerated concrete only use rotary drilling without hammer.



4. Position screw anchor and install

Using a TX30 screwdriver bit, position the anchor through the spiral unit beneath the surface until the anchor sleeve stands out in the recess of the spiral unit. Screw the fixing.

Note: If the screw is stripped, a new screw plate must be installed.



5. Closing the borehole in the insulation

Close the borehole with an insulation plug. Alternatively, fill the borehole with a suitable foam, approved by the system designer.

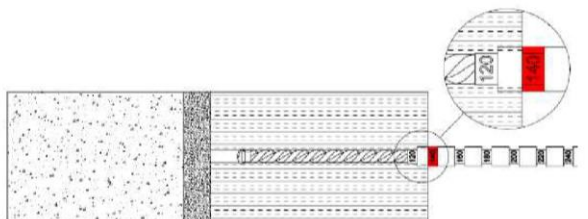
Fröwis Screwed-in anchor Gecko U8

Intended use

Installation instructions for $t_{\text{tol}} \leq 40$ mm

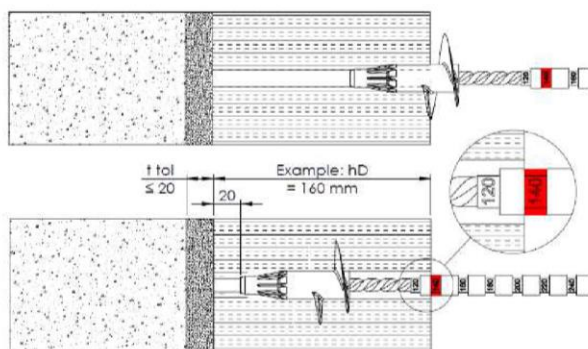
Annex B 3

Installation instructions for $t_{\text{tol}} \leq 20$ mm (respectively $t_{\text{tol}} \leq 60$ mm)



1. Attach marking ring to drill bit / setting tool

For example with an insulation thickness of 16 cm = 160 mm attach the marking ring at „140“.
(insulation thickness minus 2 cm)

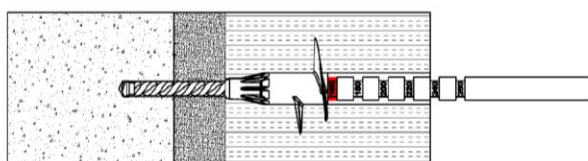


2. Install screw plate

Optionally, pre-drill the insulation panel. Position the Gecko spiral unit on the drill and press firmly against the insulation panel.

Slowly screw in the spiral unit at a low rotation setting until the marking ring is flush with the insulation board surface.

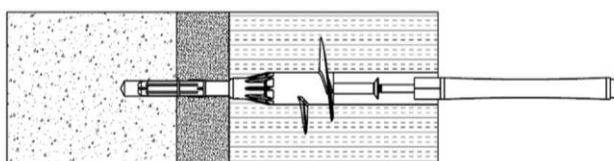
Note: After screwing in the spiral unit, fully remove the drill from the screw plate.



3. Drill hole with the drill bit

On a fast rotation setting, drill through spiral unit with the drill bit until it is stopped by collar of the drill bit.

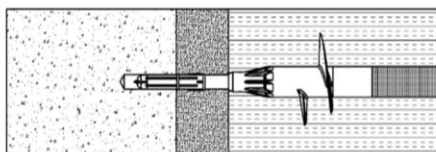
Note: Ventilate the drill hole several times. When drilling in perforated brick and aerated concrete only use rotary drilling without hammer.



4. Position screw anchor and install

Using a TX30 screwdriver bit, position the anchor through the spiral unit beneath the surface until the anchor sleeve stands out in the recess of the spiral unit. Screw the fixing.

Note: If the screw is stripped, a new screw plate must be installed.



5. Closing the borehole in the insulation

Close the borehole with an insulation plug. Alternatively, fill the borehole with a suitable foam, approved by the system designer.

Fröwis Screwed-in anchor Gecko U8

Intended use

Installation instructions for $t_{\text{tol}} \leq 20$ mm

Annex B 4

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

Base material	Bulk density class ρ [kg/dm ³]	Minimum compressive strength f_b [N/mm ²]	Remarks	Drill method	N_{Rk} [kN]
Concrete C12/15 EN 206-1:2000				Hammer drilling	1,5
Concrete C16/20 – C50/60 EN 206-1:2000					1,5
Sand-lime solid bricks, KS e.g. acc. to DIN V 106:2005-10 / EN 771-2:2011	≥ 1.8	12	Vertically perforation up to 15 %		1,5
Clay bricks, Mz e.g. acc. to DIN V 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 3		0,75
Lightweight concrete solid blocks, Vbl 4 e.g. according to DIN V 18152-100:2005-10 / EN 771-3:2011	≥ 0.8	4	According to Annex C 3		1,2
Vertically perforated clay bricks, HLz e.g. according to DIN 105-100:2012-01 / EN 771-1:2011 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, KSL e.g. according to DIN V 106:2005-10 / EN 771-2:2011 outer web thickness ≥ 20 mm	≥ 1.4	12	Vertically perforation more than 15 % and less than 50 %		1,5
Lightweight concrete hollow blocks, 4K Hbl e.g. according to DIN V 18151-100:2005-10 / EN 771-3:2011	≥ 0.9	2	According to Annex C 3		0,75
Lightweight concrete hollow blocks, 1K Hbl e.g. according to DIN V 18151-100:2005-10 / EN 771-3:2011	≥ 0.8	2	According to Annex C 3		0,9
Vertically perforated clay bricks Hlz 250x380x235	≥ 1.0	6	According to Annex C 3		0,5
Lightweight aggregate concrete, LAC 4 e.g. according to EN 1520:2011-06 / EN 771-3:2011	≥ 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. according to EN 1520:2011-06 / EN 771-3:2011	≥ 1.0	6	$h_{ef} \geq 30$ mm		0,5
			$h_{ef} \geq 50$ mm		1,2
Autoclaved aerated concrete, PP4-05 e.g. according to DIN V 4165-100:2005-10 / EN 771-4:2011	≥ 0.5	4	$h_{ef} \geq 30$ mm	Rotary drilling	0,3
			$h_{ef} \geq 50$ mm		0,75

Fröwis Screwed-in anchor Gecko U8

Performances
Characteristic resistance of the anchor

Annex C 1

Table C2: Displacements

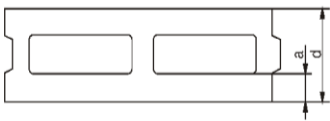
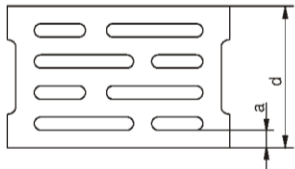
Base material	Bulk density class ρ [kg/dm ³]	Minimum compressive strength f_b [N/mm ²]	Tension load N [kN]	Displacements $\delta_m(N)$ [mm]
Concrete C12/15-C50/60 EN 206-1:2000			0,50	1,6
Sand-lime solid bricks, KS DIN V 106:2005-10 / EN 771-2:2011	≥1.8	12	0,50	1,7
Clay bricks, Mz DIN 105-100:2012-01 / EN 771-1:2011	≥1.7	12	0,50	1,7
Lightweight concrete blocks, Vbl 2 DIN V 18152-100:2005-10 / EN 771-3:2011	≥0.8	2	0,25	1,0
Lightweight concrete block, Vbl 4 DIN V 18152-100:2005-10 / EN 771-3:2011	≥0.8	4	0,40	1,5
Vertically perforated clay brick, HLz DIN 105-100:2012-01 / EN 771-1:2011	≥1.0	12	0,30	1,0
Vertically perforated sand-lime bricks, KSL DIN V 106:2005-10 / EN 771-2:2011	≥1.4	12	0,50	1,7
Lightweight concrete hollow block, 4K Hbl DIN V 18151-100:2005-10 / EN 771-3:2011	≥0.9	2	0,25	0,8
Lightweight concrete hollow block, 1K Hbl DIN V 18151-100:2005-10 / EN 771-3:2011	≥0.8	2	0,30	1,1
Vertically perforated clay bricks HLz 250x380x235	≥1.0	6	0,15	0,6
Lightweight aggregate concrete, LAC 4 EN 1520:2011-06 / EN 771-3:2011	≥1.0	4	$h_{ef} > 30 \text{ mm}$: 0,15	0,5
			$h_{ef} \geq 50 \text{ mm}$: 0,30	1,1
Lightweight aggregate concrete, LAC 6 EN 1520:2011-06 / EN 771-3:2011	≥1.0	6	$h_{ef} > 30 \text{ mm}$: 0,15	0,5
			$h_{ef} \geq 50 \text{ mm}$: 0,40	1,3
Autoclaved aerated concrete, PP4-05 DIN V 4165-100:2005-10 / EN 771-4:2011	≥0.5	4	$h_{ef} > 30 \text{ mm}$: 0,10	0,5
			$h_{ef} \geq 50 \text{ mm}$: 0,25	0,7

Fröwis Screwed-in anchor Gecko U8

Performances
Displacements

Annex C 2

Table C3: Geometry of Hbl 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 a way the spreading part is anchored in the web of the brick.

Table C4: Geometry of Vbl according to DIN V 18152-100:2005-10 / EN 771-3:2011

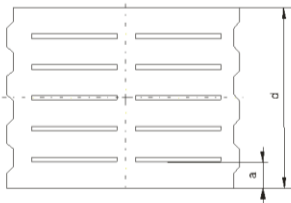
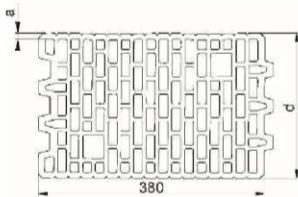
Geometry	Thickness of brick d [mm]	Outer web in longitudinal direction a [mm]
	248 300 370	≥ 43

Table C5: Geometry of vertically perforated clay brick Hlz 250x380x235

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

Fröwis Screwed-in anchor Gecko U8

Performances

Geometry of lightweight concrete hollow blocks and solid lightweight concrete blocks,
Hlz 250 x 380 x 235

Annex C 3