

TECHNICAL INFORMATION

FRÖWIS Screwed-in anchor Gecko U8

Insulation board fastener with European technical assessment ETA 15/0305 and national technical approval Z-21.2-2052 by DIBT for recessed installation.

Materials	<p>Screw thread \varnothing 6.7 mm made of polyamide PA 6.6</p> <p>Dowel sleeve \varnothing 8 mm made of polypropylene PP</p> <p>Special screw made of steel, galvanized.</p>
Usage	<p>Screwed-in anchor for fixing external thermal insulation composite systems for insulation thicknesses of 100-400 mm with plaster layer in concrete, solid brick, hollow bricks, lightweight aggregate concrete and autoclaved aerated concrete</p>
Characteristics	<ul style="list-style-type: none"> • Recessed installation in the insulation material to avoid dowel plates. • Only one dowel length for all insulation materials and all substrates. • Clean cutting of the screwdriver into the insulation panel. • Secure anchoring of the screw dowel in the substrate. • No reduction of the U-value at Chi value 0.000 W / K.
Thermal bridge effect	<p>Point-shaped heat loss coefficient (Chi value) according to EOTA Technical Report TR025</p> <p>Chi value 0.000 W / K from 100 mm (foam filling)</p> <p>Chi value 0.000 W / K from 150 mm (Styrofoam insulation plug)</p>
Subsoil	<p>The substrate must have a sufficient load bearing capacity for the anchoring of the screw dowels. In the case of undefined subsoils, the characteristic load bearing capacity of the dowels may be determined by building site tests according to ETAG 014.</p>
Application	<p>The dowel may only be used to transfer wind loads and not to transfer the inherent loads of the thermal insulation composite system.</p>
Accessories	<p>Setting tool SW 14 with Torx Bit T30 made of steel, blue chromated.</p> <p>Stop washer \varnothing 6.0 mm made of polypropylene PP.</p> <p>Insulation plug \varnothing 23/21 mm made of polystyrene.</p>

Tension load N_{Rk} for each single anchor according to ETA-15/0305

Cat.	Base material*	Drill method	h_{ef}^{**} [mm]	N_{Rk} [kN]	Tension load N_{rd} [kN]
A	Concrete, C12/15	Hammer drilling	30	1,50	0,50
A	Concrete, C16/20 - C50/60			1,50	0,50
B	Sand-lime solid brick, KS			1,50	0,50
B	Clay bricks, Mz			1,50	0,50
B	Lightweight concrete block, Vbl 2			0,75	0,25
B	Lightweight concrete block, Vbl 4			1,20	0,40
C	Vertically perforated clay brick, Hlz	Rotary drilling		0,90	0,30
C	Vertically perforated sand-lime bricks, KSL			1,50	0,50
C	Lightweight concrete hollow block, 4K Hbl			0,75	0,25
C	Lightweight concrete hollow block, 1K Hbl			0,90	0,30
C	Vertically perforated clay brick, Hlz			0,50	0,167
D	Lightweight aggregate concrete LAC 4	Hammer drilling		0,40	0,10
D	Lightweight aggregate concrete LAC 6		0,50	0,167	
E	Autoclaved aerated concrete, PP4-05	Rotary drilling	0,30	0,10	
D	Lightweight aggregate concrete LAC 4	Hammer drilling	50	0,90	0,30
D	Lightweight aggregate concrete LAC 6			1,20	0,40
E	Autoclaved aerated concrete, PP4-05	Rotary drilling		0,75	0,25

* Minimum compressive strength [N/mm²] and bulk density class [kg/dm³]

** h_{ef} [mm] = effective anchorage depth in the load-bearing substrate without t_{tol}

t_{tol} = thickness of equalizing layer and/or non-load-bearing layer

N_{Rk} in [kN] = Characteristic resistance to tension loads according to ETA-15/0305

$$N_{rd} = N_{Rk} / (\gamma_M * \gamma_F)$$

γ_M = material safety factor for the anchor base according to ETAG 014 ($\gamma_M = 2.0$)

γ_F = safety factor for the impact (wind loads $\gamma_F = 1.5$)

Installation

Setting temperature	0° C to +40°C
Storage temperature	0° C to +24°C (maximum long-term temperature)
UV exposure	≤ 6 weeks for rendered façade
Setting tool with stop washer	<p>Setting tool for screwing the spiral into the insulation panel and for screwing the screw dowel into the substrate.</p> <p>The stop washer Ø 60 mm serves as a installation aid for the exact positioning of the spiral in the insulation material.</p> <p>The positioning of the stop washer on the setting tool is dependent on the thickness of insulation and the on-site tolerance compensation (adhesive and old render).</p>
Cordless screwdriver	<p>For assembly, use an 18V or 22V cordless screwdriver.</p> <p>When screwing the spiral into the insulation material, set the maximum torque (drilling) and maximum speed (stage 2 or 3).</p> <p>When screwing the dowel screw into hollow and perforated blocks, gradually reduce the tightening torque until the slip clutch is activated.</p>
Hammer drills	<p>Drill hole diameter: ø 8 mm</p> <p>Cutting diameter of drills: 8.45 mm</p> <p>Drill holes through the spiral perpendicular to the surface of the insulation into the substrate.</p>
Drilling method	<p>Drill the drill holes in hollow and perforated blocks as well as in aerated concrete only without turning the drill (without drilling).</p> <p>If the load-bearing behaviour of the screw-on dowels is assessed on-site by pull-out tests, the hammer or hammer drilling method may also be used for perforated blocks and aerated concrete.</p>
Minimum drill hole depth	<p>Insulation thickness + 60 mm for stop washer 'New Building / New Building'</p> <p>Insulation thickness + 80 mm for stop washer 'Old Render / Old Render'</p>

Screwed-in anchor Gecko U8



Setting tool Gecko U8 with screwdriver bit T30 and stop washer \varnothing 60 mm



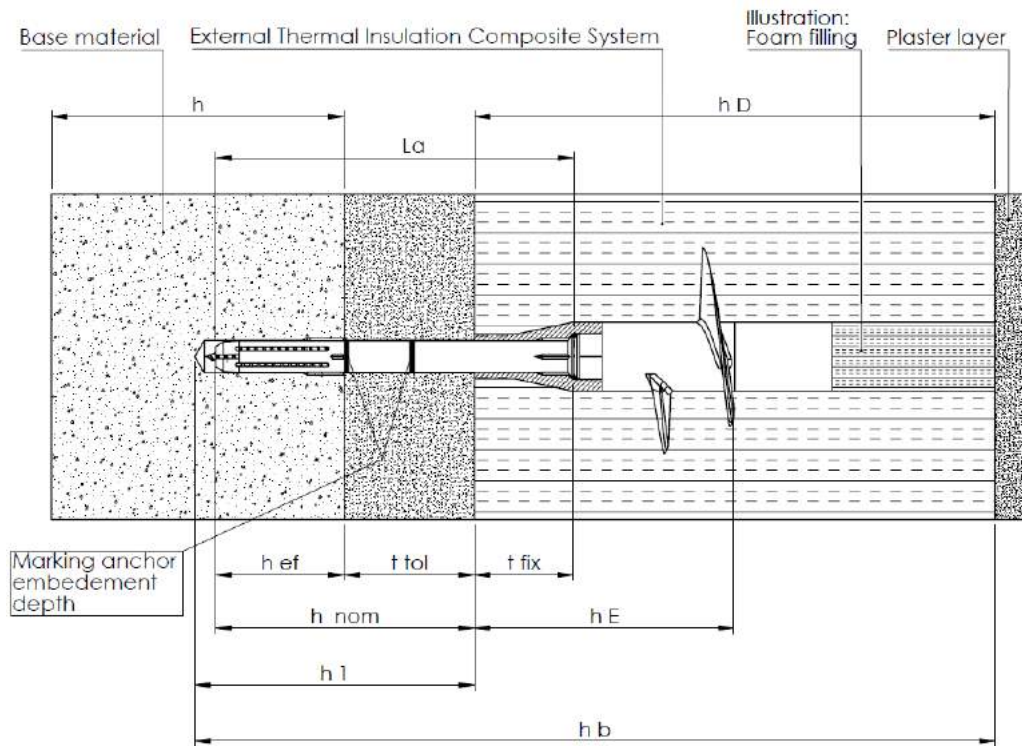
Stop washer
Front



Stop washer
Back

- Select insulation thickness between 100 and 400 mm
- Determine tolerance compensation on site (adhesive and old render)
- Position the stop washer on the tool according to tolerance compensation

Tolerance compensation $t_{tol} \leq 40$ mm



For an average tolerance compensation of $t_{tol} \leq 40$ mm (adhesive and old render), the stop washer must be positioned on the setting tool so that the user can see the label "Old building / Old Render" during installation.

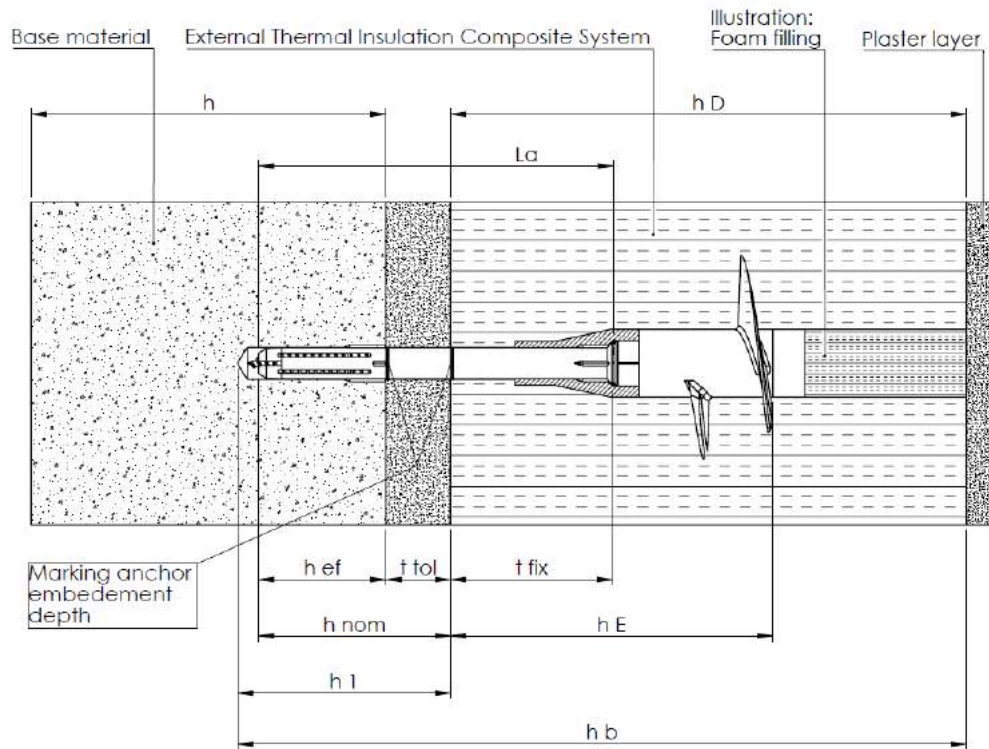


Effective anchoring depth h_{ef} : ≥ 30 mm

Dowel load class:

- ≥ 0.20 kN /dowel (in concrete, solid brick and hollow brick)
- ≥ 0.167 kN /dowel (in lightweight aggregate concrete)
- $\geq 0,10$ kN /dowel (in autoclaved aerated concrete)

Tolerance compensation $t_{tol} \leq 20$ mm



For an average tolerance compensation of $t_{tol} \leq 20$ mm (adhesive and old render), the stop washer must be positioned on the setting tool so that the user can see the label "Old building / Old Render" during installation



Effective anchoring depth h_{ef} : ≥ 30 mm

Dowel load class:

- ≥ 0.20 kN /dowel (in concrete, solid brick and hollow brick)
- ≥ 0.167 kN /dowel (in lightweight aggregate concrete)
- $\geq 0,10$ kN /dowel (in autoclaved aerated concrete)

Tipp for increasing the dowel load class with tolerance compensation $t_{tol} \leq 20$ mm

For an average tolerance compensation of $t_{tol} \leq 20$ mm (adhesive and old render), the stop washer must be positioned on the setting tool so that the label "old building / old render" is visible to the user during installation. This increases the effective anchoring depth to $h_{ef} \geq 50$ mm and the dowel load class ≥ 0.20 kN / dowel.

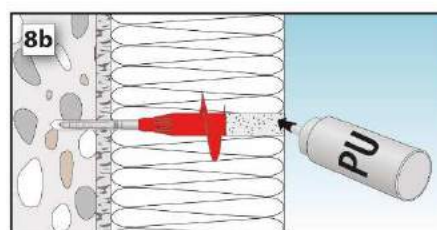
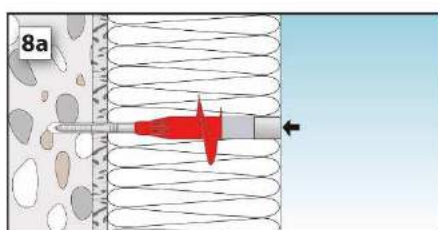
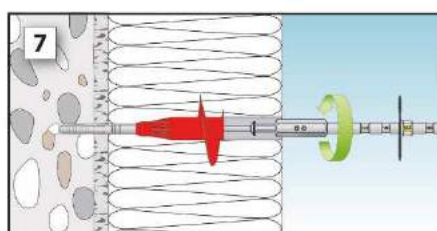
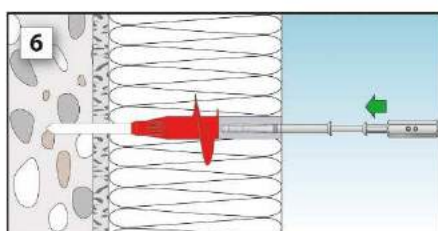
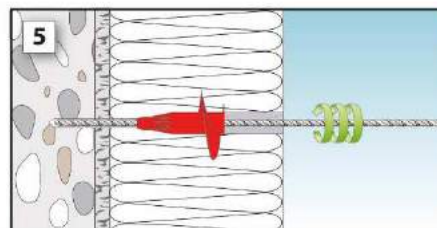
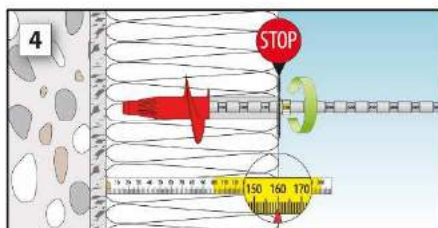
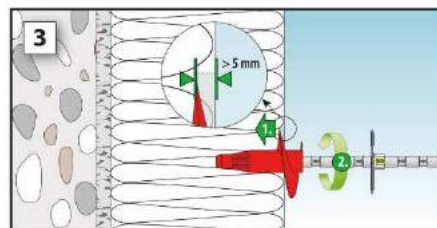
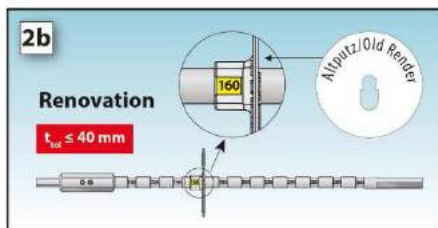
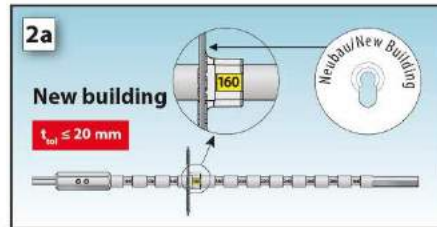
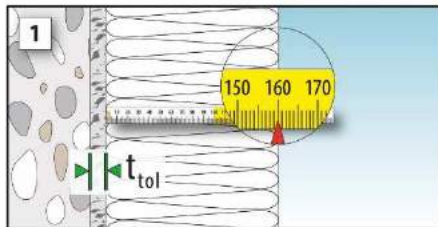


Maximum tolerance compensation $t_{tol} \leq 20$ mm (adhesive and old render)

Effective anchoring depth $h_{ef} \geq 50$ mm (in the supporting substrate)

Dowel load class ≥ 0.20 kN / dowel (in concrete, solid brick and hollow brick, lightweight aggregate concrete and autoclaved aerated concrete)

Installation instructions



Minimum number of anchors/m² depending on wind load w_e according to national technical approval Z-21.2-2052

Table 1a: EPS and PUR boards with ≥ 100 kPa (see national technical approval Z-21.2-2052)

Cat.	h_{ef}^{**} [mm]	Tension load [kN]	Wind load w_e up to kN/m ²				
			-0,80	-1,20	-1,50	-1,80	-2,10
A,B,C	30	$\geq 0,20$	4	6	8	10	12
D	30	$\geq 0,167$	6	8	10	12	12
E	30	$\geq 0,10$	8	12	-	-	-
E	50	$\geq 0,20$	4	6	8	10	12

Table 1b: Phenolic resin rigid foam boards with ≥ 60 kPa (see national technical approval Z-21.2-2052)

Cat.	h_{ef}^{**} [mm]	Tension load [kN]	Wind load w_e up to kN/m ²				
			-0,70	-1,10	-1,40	-1,70	-1,90
A,B,C	30	$\geq 0,20$	4	6	8	10	12
D	30	$\geq 0,167$	4	6	8	10	12
D,E	50	$\geq 0,20$	4	6	8	10	12

Table 1c: Mineral fibre boards with ≥ 5 kPa (approval in preparation)

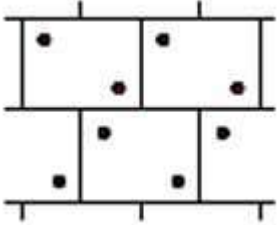
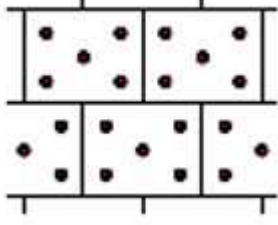
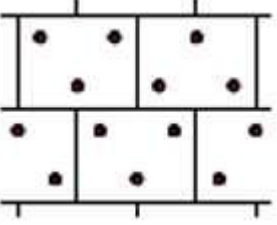
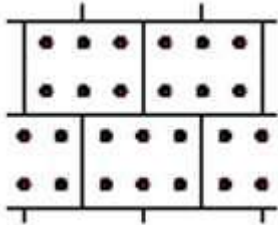
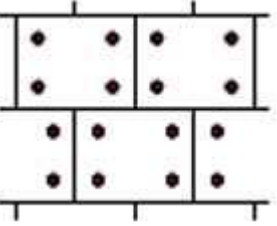
Cat.	h_{ef}^{**} [mm]	Tension load [kN]	Wind load w_e up to kN/m ²				
			-0,48	-0,72	-0,96	-1,20	-1,44
A,B,C,D	30	$\geq 0,12$	4	6	8	10	12
E	50	$\geq 0,12$					

** h_{ef} [mm] = effective anchorage depth in the load-bearing substrate without t_{tol}

t_{tol} = thickness of equalizing layer and/or non-load-bearing layer (adhesive and old render)

Fixing pattern

The screw dowel Gecko U8 must be set according to anchoring pictures in the German national technical approval Z-21.2-2052.

Number of dowels per m ²	Dowel arrangement	Number of dowels per m ²	Dowel arrangement
4		10	
6		12	
8		Plate size: 100 x 50 cm Minimum edge distance: ≥ 10 cm	

For the proof of the anchoring quantities per m² according to DIN 1055-4, a design plan with determination of the statically required quantity of anchors as a function of the subsoil and of the heat insulation composite system to be applied shall be drawn up.

Before using the FRÖWIS Screwed-in anchor Gecko U8 the insulation panel type must be tested for its basic suitability for this dowel type. The surface of the insulating material may only be damaged to a small extent when the spiral is being screwed in.