Deutsches Institut für Bautechnik

Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

Member of EOTA
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Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

# European Technical Assessment

# ETA-17/0450 of 23 September 2020

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 | LFM-8, LFM-10, LFN-10, LFMG-10 |
| Product family to which the construction product belongs | Nailed-in plastic anchor for fixing of external thermal insulation composite systems with rendering in concrete and masonry |
| Manufacturer | Klimas Sp. z o.o.<br>Kuznica Kiedrzynska<br>ul. Wincentego Witosa 135/137<br>42-233 MYKANÓW<br>POLEN |
| Manufacturing plant | Klimas plant 1 |
| This European Technical Assessment contains | 18 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 | EAD 330196-01-0604 Edition 10/2017 |
| This version replaces | ETA-17/0450 issued on 29 January 2018 |

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## Specific Part

### 1 Technical description of the product

The nailed-in anchor LFM-8 / LFM-10 / LFN-10 / LFMG-10 consists of an anchor sleeve with an enlarged shaft, spreading zone subsequently, an insulation plate made of virgin polyethylene and an accompanying specific nail of virgin polyamide or of galvanised steel. The serrated expanding part of the anchor is slotted.

The anchor may in addition be combined with the anchor plates TDX-P-90/TDX-90 and TDX-P-140/TDX-140.

The description of the product 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 Safety and accessibility in use (BWR 4)

| Essential characteristic | Performance |
|---|---|
| Characteristic load bearing capacity<br>- Characteristic resistance under tension load<br>- Minimum edge distance and spacing | <br>See Annex C 1, C 2<br>See Annex B 2 |
| Displacements | See Annex C 4, C 5 |
| Plate stiffness | See Annex C 3 |

### 3.2 Energy economy and heat retention (BWR 6)

| Essential characteristic | Performance |
|---|---|
| Point thermal transmittance | See Annex C 3 |

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

In accordance with EAD No. 330196-01-0604, the applicable European legal act is: [97/463/EC].

The system to be applied is: 2+

## 5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

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

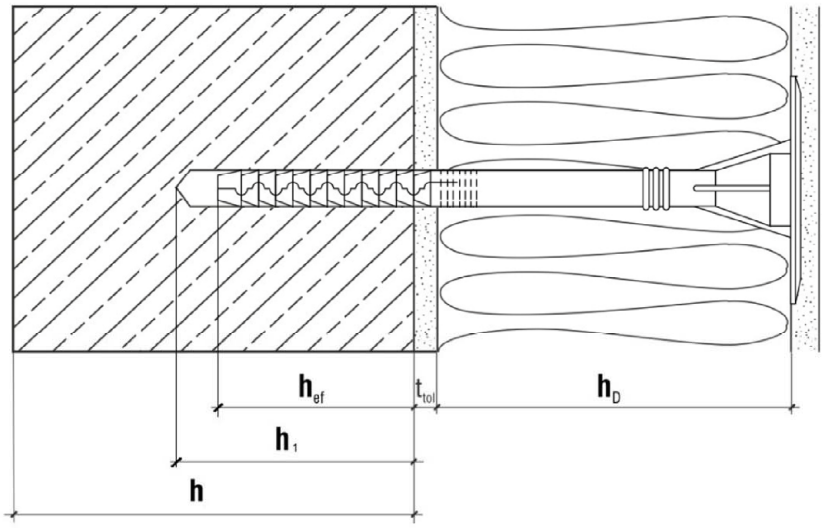
Issued in Berlin on 23 September 2020 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

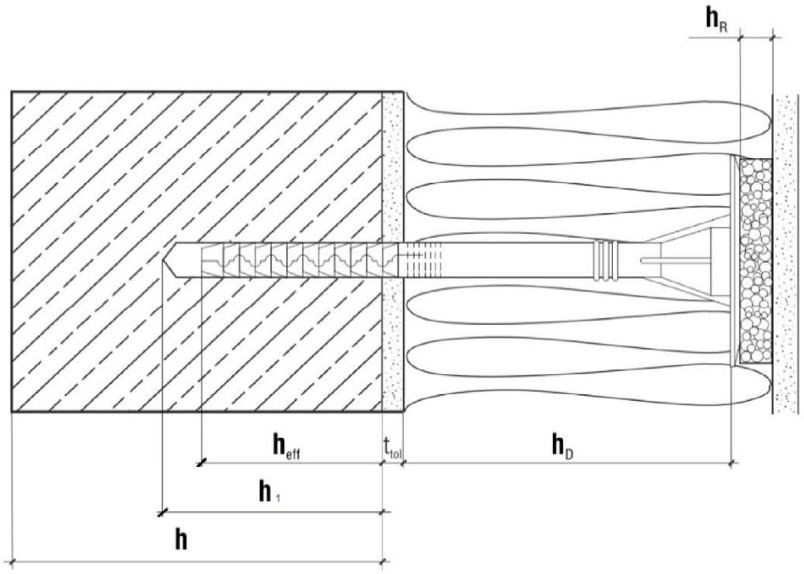
*beglaubigt:*
Ziegler

Deutsches Institut für Bautechnik DIBt

**LFM-8 / LFM-10 / LFN-10 / LFMG-10**




surface mount




immerged mount

Legend:

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

| **LFM-8 / LFM-10 / LFN-10 / LFMG-10** | **Annex A 1** |
|---|---|
| **Product description**<br>Installed condition – surface mount, immerged mount | |

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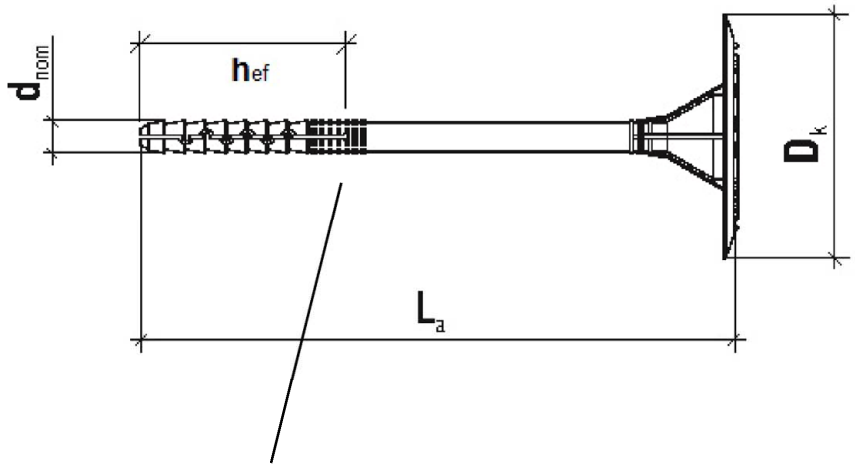
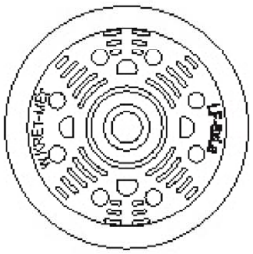
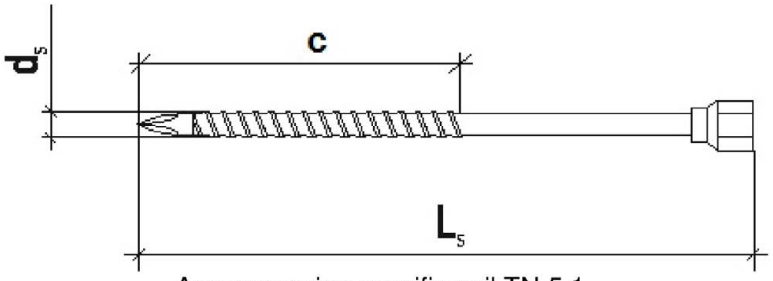
**LFM-8**



Marking:
Identifying Mark (Wkret-Met)
Anchor sleeve – LF
Anchor size – 8xLa

Marking of effective anchorage depth




Accompanying specific nail TN-5,1

**Table A1: Dimensions**

| Anchor Type | Anchor Sleeve | | | | Specific nail | | |
|---|---|---|---|---|---|---|---|
| | $D_k$ [mm] | $d_{nom}$ [mm] | $h_{ef}$ [mm] | min $L_a$ max $L_a$ [mm] | $d_s$ [mm] | c [mm] | min $L_s$ max $L_s$ [mm] |
| LFM-8 | 60 | 8 | 50 | 100 200 | 5,1 | 60-90 | 105 205 |

Determination of maximum thickness of insulation $h_D$ [mm] for LFM-8:

$h_D = L_a - t_{tol} - h_{ef}$ ($L_a$ = e.g. 100; $t_{tol}$ = 10)

e.g. $h_D = 100 - 10 - 50$

$h_{Dmax} = 40$

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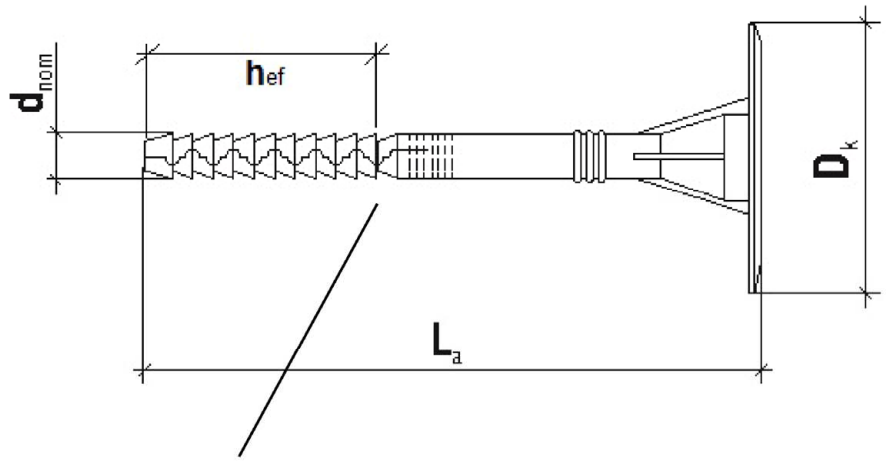
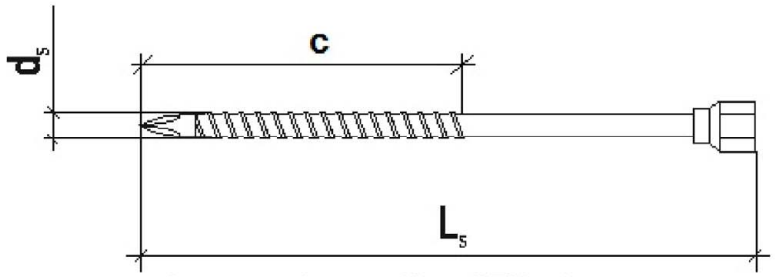
**LFM-10**




Marking of effective anchorage depth

Marking:
Identifying Mark (Wkret-Met)
Anchor sleeve – LF
Anchor size – 10xLa




Accompanying specific nail TN-5,1

**Table A2: Dimensions**

| Anchor Type | Anchor Sleeve | | | | Specific nail | | |
|---|---|---|---|---|---|---|---|
| | $D_k$ [mm] | $d_{nom}$ [mm] | $h_{ef}$ [mm] | min $L_a$ max $L_a$ [mm] | $d_s$ [mm] | c [mm] | min $L_s$ max $L_s$ [mm] |
| LFM-10 | 60 | 10 | 70 | 140 300 | 5,1 | 60-90 | 145 305 |

Determination of maximum thickness of insulation $h_D$ [mm] for LFM-10:

$h_D = L_a - t_{tol} - h_{ef}$ ($L_a$ = e.g. 140; $t_{tol}$ = 10)

e.g. $h_D = 140 - 10 - 70$

$h_{Dmax} = 60$

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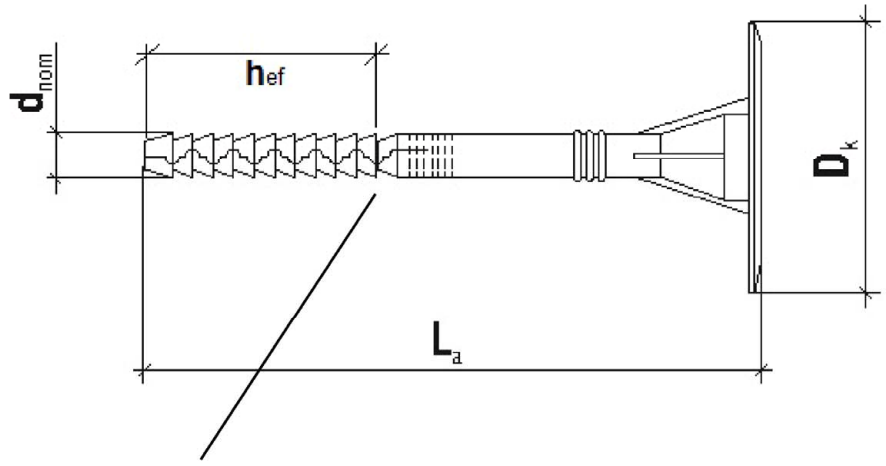
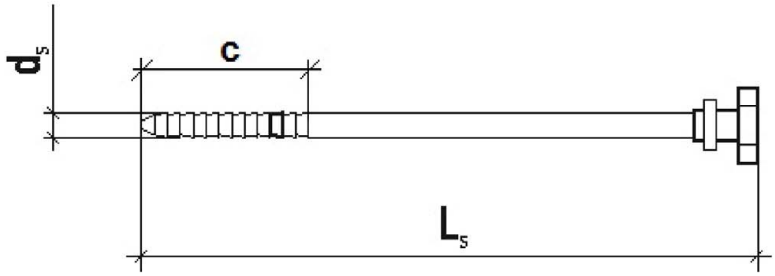
**LFN-10**




Marking of effective anchorage depth

Marking:
Identifying Mark (Wkret-Met)
Anchor sleeve – LF
Anchor size – 10xLa




Accompanying specific nail T-5,3

**Table A3: Dimensions**

| Anchor Type | Anchor Sleeve | | | | Specific nail | | |
|---|---|---|---|---|---|---|---|
| | $D_k$ [mm] | $d_{nom}$ [mm] | $h_{ef}$ [mm] | min $L_a$ max $L_a$ [mm] | $d_s$ [mm] | c [mm] | min $L_s$ max $L_s$ [mm] |
| LFN-10 | 60 | 10 | 70 | 140 300 | 5,3 | 85 | 145 305 |

Determination of maximum thickness of insulation $h_D$ [mm] for LFN-10:

$h_D = L_a - t_{tol} - h_{ef}$ ($L_a$ = e.g. 140; $t_{tol}$ = 10)

e.g. $h_D = 140 - 10 - 70$

$h_{Dmax} = 60$

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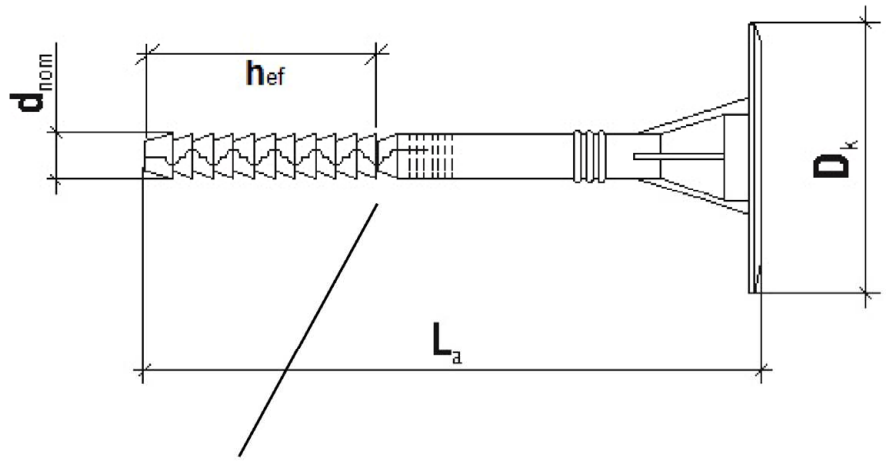
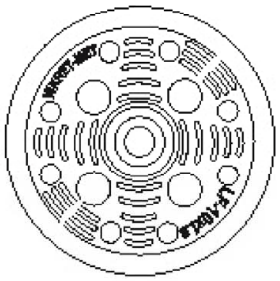
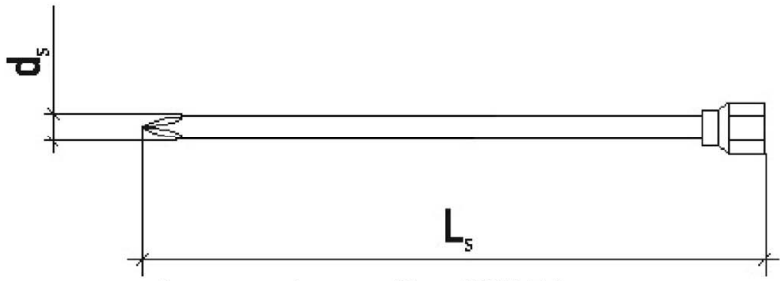
**LFMG-10**




Marking of effective anchorage depth



Marking:
Identifying Mark (Wkret-Met)
Anchor sleeve – LF
Anchor size – 10xLa




Accompanying specific nail TN-5,0

**Table A4: Dimensions**

| Anchor Type | Anchor Sleeve | | | | Specific nail | |
|---|---|---|---|---|---|---|
| | $D_k$ [mm] | $d_{nom}$ [mm] | $h_{ef}$ [mm] | min $L_a$ max $L_a$ [mm] | $d_s$ [mm] | min $L_s$ max $L_s$ [mm] |
| LFMG-10 | 60 | 10 | 70 | 140 300 | 5,0 | 145 305 |

Determination of maximum thickness of insulation $h_D$ [mm] for LFMG-10:

e.g. $h_D = L_a - t_{tol} - h_{ef}$ ($L_a$ = e.g. 140; $t_{tol}$ = 10)
$h_D = 140 - 10 - 70$
$h_{Dmax} = 60$

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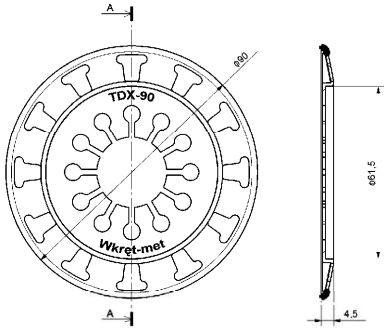
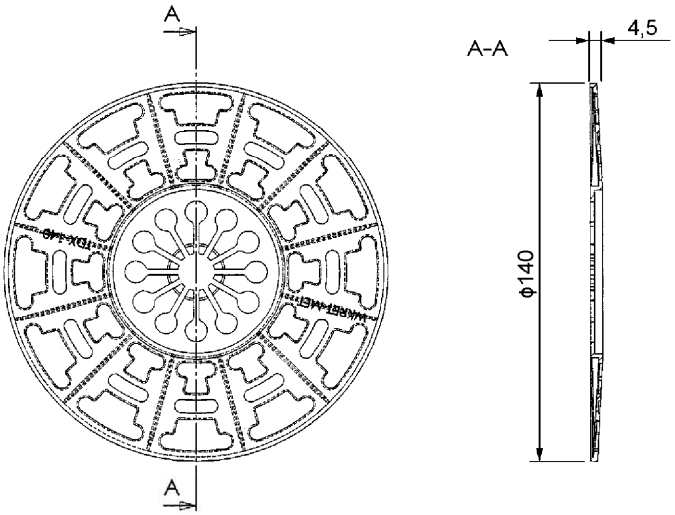
| **Table A5: Materials** | |
|---|---|
| Name | Materials |
| Anchor sleeve | virgin Polyethylene, colour: natural |
| Specific nail T | virgin Polyamide + GF, colour: black or natural |
| Specific nail TN | Steel, electro galvanized ≥ 5 µm according to EN ISO 4042:1999, white passivated, $f_{yk}$ ≥ 420 N/mm² |
| Insulation cover | KS: Polystyrene (EPS), colour: white<br>KSG: Polystyrene (EPS), colour: grey<br>EDMW: mineral wool (MW), colour: natural |

**Table A6: Insulation discs, diameters and material**

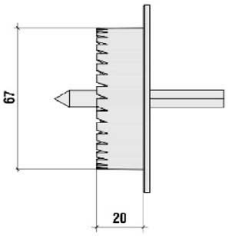
| Plate type | Outer diameter [mm] | Material |
|---|---|---|
| TDX-P-90 | 90 | Polyethylene, natural or grey |
| TDX-90 | 90 | Polyamide +GF, natural or grey |
| TDX-P-140 | 140 | Polyethylene, natural or grey |
| TDX-140 | 140 | Polyamide + GF, natural or grey |



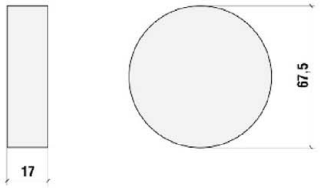

**TDX-P-90/TDX-90**




**TDX-P-140/TDX-140**




**Special drill tool WK-FT/WK-FM for immerged installation**




**Insulation cover KS/KSG and EDMW**

**LFM-8 / LFM-10 / LFN-10 / LFMG-10**

**Annex A 6**

**Product description**
Materials,
Slip on plates with LFM-8 / LFM-10 / LFN-10 / LFMG-10

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## Specifications of intended use

**Anchorages 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 (base material group A) according to Annex C 1, C 2
- Solid masonry (base material group B), according to Annex C 1, C 2
- Hollow or perforated masonry (base material group C), according to Annex C 1, C 2
- Lightweight aggregate concrete (base material group D), according to Annex C 1, C 2
- Autoclaved aerated concrete (base material group E), according to Annex C 1, C 2
- For other base materials of the base material groups A, B, C, D or E the characteristic resistance of the anchor may be determined by job site tests according to EOTA Technical Report TR 051 edition December 2016.

**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 under the responsibility of an engineer experienced in anchorages and masonry work with the partial safety factors $\gamma_M$ = 2,0 and $\gamma_F$ = 1,5 if there are no other national regulations.
- 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



| | |
|---|---|
| **LFM-8 / LFM-10 / LFN-10 / LFMG-10** | **Annex B 1** |
| **Intended use**<br>Specifications | |

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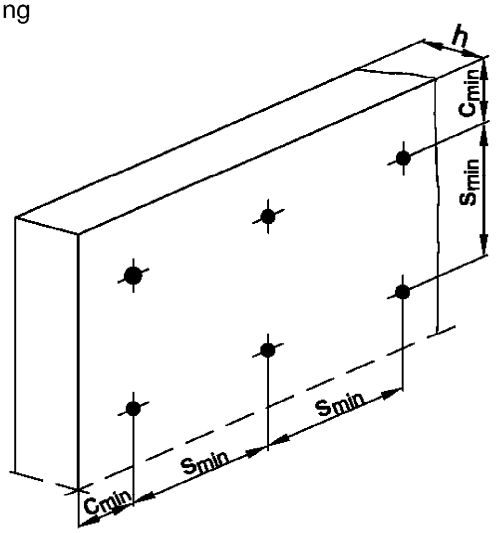
| **Table B1: Installation parameters for LFM-8** | | |
|---|---|---|
| | | LFM-8<br>A B C D E |
| Drill hole diameter | $d_0$ [mm] = | 8 |
| Cutting diameter of drill bit | $d_{cut}$ [mm] ≤ | 8,45 |
| Depth of drilled hole to deepest point | $h_1$ [mm] ≥ | 55 |
| Effective anchorage depth | $h_{ef}$ [mm] ≥ | 50 |

| **Table B2: Installation parameters for LFM-10 / LFMG-10 / LFN-10** | | | |
|---|---|---|---|
| | | LFM-10 / LFMG-10<br>A B C D E | LFN-10<br>B C E |
| Drill hole diameter | $d_0$ [mm] = | 10 | 10 |
| Cutting diameter of drill bit | $d_{cut}$ [mm] ≤ | 10,45 | 10,45 |
| Depth of drilled hole to deepest point | $h_1$ [mm] ≥ | 75 | 75 |
| Effective anchorage depth | $h_{ef}$ [mm] ≥ | 70 | 70 |

| **Table B3: Anchor distances and dimensions of members** | | | |
|---|---|---|---|
| Minimum spacing | $s_{min}$ | ≥ [mm] | 100 |
| Minimum edge distance | $c_{min}$ | ≥ [mm] | 100 |
| Minimum thickness of member | h | ≥ [mm] | 100 |

Scheme of distance and spacing






| **LFM-8 / LFM-10 / LFN-10 / LFMG-10** | **Annex B 2** |
|---|---|
| **Intended use**<br>Installation parameters,<br>Edge distances and spacing | |

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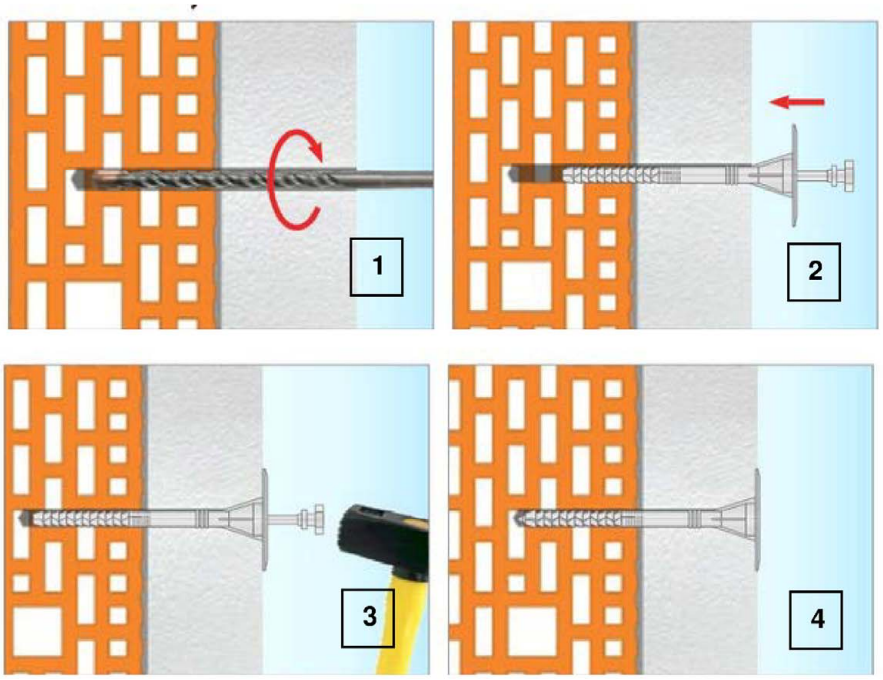
## Installation instructions

surface mount



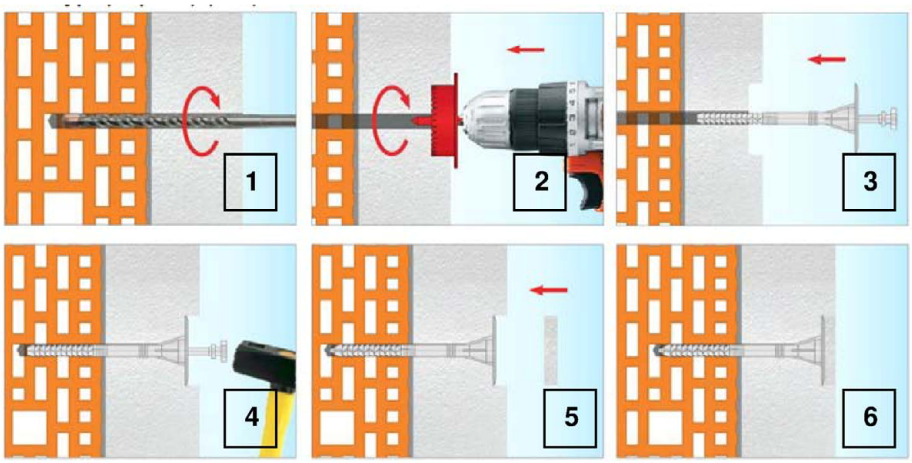

1) Drill the hole perpendicular to the substrate surface. Clean the drill hole.

2) Place the anchor into the drill hole. The bottom side of the plate must be flush with the ETICS.

3) Drive in the specific nail with the hammer.

4) Installed condition.

immerged mount




1) Drill the hole perpendicular to the substrate surface. Clean the drill hole.

2) Drill the recess for immerged installation with the special drilling tool WK-FT / WK-FM.

3) Place the anchor into the drill hole. The bottom side of the plate must be flush with the recess in the ETICS.

4) Drive in the specific nail with the hammer.

5) Insert the insulation cover.

6) Installed condition.



| | |
|---|---|
| **LFM-8 / LFM-10 / LFN-10 / LFMG-10** | **Annex B 3** |
| **Intended use**<br>Installation instructions – surface mount, immerged mount | |

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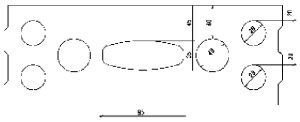
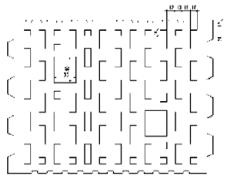
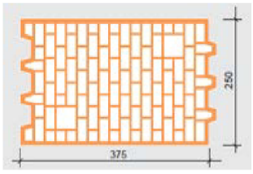
**Table C1: Characteristic resistance to tension loads $N_{Rk}$ in concrete and masonry for a single anchor in kN**

| Anchor type | | | | | LFM-8 |
|---|---|---|---|---|---|
| Base materials | Bulk density ρ [kg/dm³] | minimum compressive strength $f_b$ [N/mm²] | General remarks | Drill method | $N_{Rk}$ [kN] |
| Concrete C12/15 (EN 206-1:2000) | ≥ 2,25 | ≥ 15 | | hammer | 0,5 |
| Concrete C20/25 - C50/60 (EN 206-1:2000) | ≥ 2,30 | ≥ 25 | | hammer | 0,75 |
| Clay bricks MZ<br>e.g. according to EN 771-1:2011 | ≥ 2,0 | ≥ 20 | | hammer | 0,5 |
| Calcium silicate bricks KS<br>e.g. according to EN 771-2:2011 | ≥ 2,0 | ≥ 20 | | hammer | 0,5 |
| Calcium silicate hollow block KSL<br>e.g. according to EN 771-2:2011<br>  | ≥ 1,6 | ≥ 12 | Vertically perforation more than 15% and less than 50%, outer web thickness ≥ 20mm | rotary | 0,4 |
| Vertically perforated clay bricks HLZ<br>e.g. according to EN 771-1:2011<br>  | ≥ 1,2 | ≥ 12 | Vertically perforation more than 15% and less than 50%, outer web thickness ≥ 12mm | rotary | 0,1 |
| Vertically perforated clay bricks porotherm 25<br>e.g. according to EN 771-1:2011<br>  | ≥ 0,8 | ≥ 10 | Vertically perforation more than 15% and less than 50%, outer web thickness ≥ 12mm | rotary | [1] |
| Autoclaved concrete blocks<br>e.g. according to EN 771-4:2011 | ≥ 0,35 | ≥ 2 | | rotary | 0,3 |
| Autoclaved concrete blocks<br>e.g. according to EN 771-4:2011 | ≥ 0,65 | ≥ 5 | | rotary | 0,6 |
| Lightweight concrete blocks LAC, e.g. according to EN 1520:2011 / EN 771-3:2011 | ≥ 0,88 | ≥ 5 | | rotary | 0,8 |

[1] No performance assessed

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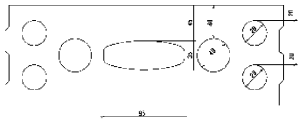
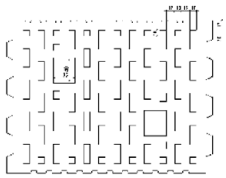
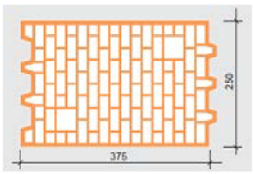
**Table C2: Characteristic resistance to tension loads $N_{Rk}$ in concrete and masonry for a single anchor in kN**

| Anchor type | | | | | LFM-10 | LFMG-10 | LFN-10 |
|---|---|---|---|---|---|---|---|
| Base materials | Bulk density ρ [kg/dm³] | minimum compr. strength $f_b$ [N/mm²] | General remarks | Drill method | $N_{Rk}$ [kN] | $N_{Rk}$ [kN] | $N_{Rk}$ [kN] |
| Concrete C12/15 (EN 206-1:2000) | ≥ 2,25 | ≥ 15 | | hammer | 0,6 | 0,65 | 1) |
| Concrete C20/25 - C50/60 (EN 206-1:2000) | ≥ 2,30 | ≥ 25 | | hammer | 0,9 | 0,9 | 1) |
| Clay bricks MZ e.g. as per EN 771-1:2011 | ≥ 2,0 | ≥ 20 | | hammer | 0,5 | 0,75 | 0,75 |
| Calcium silicate bricks KS e.g. according to EN 771-2:2011 | ≥ 2,0 | ≥ 20 | | hammer | 0,5 | 0,75 | 1) |
| Calcium silicate hollow block KSL e.g. according to EN 771-2:2011  | ≥ 1,6 | ≥ 12 | Vertically perforation ≥ 15% and ≤ 50%, outer web thickness ≥ 20mm | rotary | 0,3 | 0,5 | 0,5 |
| Vertically perforated clay bricks HLZ e.g. as per EN 771-1:2011  | ≥ 1,2 | ≥ 12 | Vertically perforation more than 15% and less than 50%, outer web thickness ≥ 12mm | rotary | 0,3 | 0,4 | 0,8 |
| Vertically perforated clay bricks porotherm 25 e.g. as per EN 771-1:2011)   | ≥ 0,8 | ≥ 10 | Vertically perforation more than 15% and less than 50%, outer web thickness ≥ 12mm | rotary | 0,3 | 0,4 | 0,5 |
| Autoclaved concrete blocks e.g. according to EN 771-4:2011 | ≥ 0,35 | ≥ 2 | | rotary | 0,3 | 0,4 | 0,3 |
| Autoclaved concrete blocks e.g. according to EN 771-4:2011 | ≥ 0,65 | ≥ 5 | | rotary | 0,4 | 0,5 | 0,85 |
| Lightweight concrete blocks LAC e.g. as per EN 1520:2011 / EN 771-3:2011 | ≥ 0,88 | ≥ 5 | | rotary | 0,75 | 0,75 | 1) |

1) No performance assessed

**LFM-8 / LFM-10 / LFN-10 / LFMG-10**

**Performances**
Characteristic resistance LFM-10 / LFMG-10 / LFN-10

**Annex C 2**

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| **Table C3: Point thermal transmittance according EOTA Technical Report TR 025:2016-05** | | |
|---|---|---|
| anchor type | insulation thickness<br>$h_D$<br>[mm] | point thermal transmittance<br>$\chi$<br>[W/K] |
| LFM-8 surface mount | 40-200 | 0,004 |
| LFM-8 immerged mount | 40-200 | 0,003 |
| LFM-10 surface mount | 80-300 | 0,004 |
| LFM-10 immerged mount | 80-300 | 0,003 |
| LFN-10 surface mount | 80-240 | 0,000 |
| LFN-10 immerged mount | 80-240 | 0,000 |
| LFMG-10 surface mount | 80-300 | 0,004 |
| LFMG-10 immerged mount | 80-300 | 0,003 |

| **Table C4: Plate stiffness according EOTA Technical Report TR 026:2016-05** | | | |
|---|---|---|---|
| anchor type | diameter of the anchor plate<br>[mm] | load resistance of the anchor plate<br>[kN] | plate stiffness<br>[kN/mm] |
| LFM-8 | 60 | 1,44 | 0,3 |
| LFM-10 | 60 | 1,34 | 0,3 |
| LFN-10 | 60 | 1,33 | 0,3 |
| LFMG-10 | 60 | 1,44 | 0,4 |

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**Table C5: Displacements LFM-8**

| Base materials (refer Table C1, C2) | Bulk density ρ [kg/dm³] | Minimum Compressive strength $f_b$ [N/mm²] | Tension load N [kN] | Displacements $\Delta\delta_N$ [mm] |
|---|---|---|---|---|
| | | | **LFM-8** | **LFM-8** |
| Concrete C20/25 | ≥ 2,25 | ≥ 30 | 0,17 | 0,5 |
| Concrete C50/60 | ≥ 2,30 | ≥ 65 | 0,25 | 0,6 |
| Clay bricks MZ | ≥ 2,0 | ≥ 20 | 0,17 | 0,5 |
| Calcium silicate bricks KS | ≥ 2,0 | ≥ 20 | 0,17 | 0,5 |
| Calcium silicate hollow block KSL | ≥ 1,6 | ≥ 12 | 0,13 | 1,0 |
| Vertically perforated clay bricks HLZ | ≥ 1,2 | ≥ 12 | 0,03 | 0,7 |
| Perforated clay bricks porotherm 25 | ≥ 0,8 | ≥ 10 | 1) | 1) |
| Autoclaved concrete blocks | ≥ 0,35 | ≥ 2 | 0,1 | 0,3 |
| Autoclaved concrete blocks | ≥ 0,65 | ≥ 5 | 0,2 | 0,8 |
| Lightweight concrete blocks LAC | ≥ 0,88 | ≥ 5 | 0,3 | 1,0 |

1) No performance assessed

**Table C6: Displacements LFM-10 / LFN-10**

| Base materials (refer Table C1, C2) | Bulk density ρ [kg/dm³] | Minimum Compressive strength $f_b$ [N/mm²] | Tension load N [kN] | | Displacements $\Delta\delta_N$ [mm] | |
|---|---|---|---|---|---|---|
| | | | **LFM-10** | **LFN-10** | **LFM-10** | **LFN-10** |
| Concrete C20/25 | ≥ 2,25 | ≥ 30 | 0,2 | 1) | 0,8 | 1) |
| Concrete C50/60 | ≥ 2,30 | ≥ 65 | 0,3 | 1) | 0,4 | 1) |
| Clay bricks MZ | ≥ 2,0 | ≥ 20 | 0,17 | 0,25 | 0,9 | 1,2 |
| Calcium silicate bricks KS | ≥ 2,0 | ≥ 20 | 0,17 | 1) | 0,6 | 1) |
| Calcium silicate hollow block KSL | ≥ 1,6 | ≥ 12 | 0,1 | 0,17 | 0,5 | 2,4 |
| Vertically perforated clay bricks HLZ | ≥ 1,2 | ≥ 12 | 0,1 | 0,25 | 0,3 | 1,8 |
| Perforated clay bricks porotherm 25 | ≥ 0,8 | ≥ 10 | 0,1 | 0,17 | 0,4 | 2,5 |
| Autoclaved concrete blocks | ≥ 0,35 | ≥ 2 | 0,1 | 0,1 | 0,4 | 1,2 |
| Autoclaved concrete blocks | ≥ 0,65 | ≥ 5 | 0,13 | 0,3 | 0,7 | 0,9 |
| Lightweight concrete blocks LAC | ≥ 0,88 | ≥ 5 | 0,25 | 1) | 1,3 | 1) |

1) No performance assessed

**LFM-8 / LFM-10 / LFN-10 / LFMG-10**

**Performances**
Displacements

**Annex C 4**

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**Table C7: Displacements LFMG-10**

| Base materials (refer Table C1, C2) | Bulk density $\rho$ [kg/dm³] | Minimum Compressive strength $f_b$ [N/mm²] | Tension load N [kN] | Displacements $\Delta\delta_N$ [mm] |
|---|---|---|---|---|
| | | | **LFMG-10** | **LFMG-10** |
| Concrete C20/25 | ≥ 2,25 | ≥ 30 | 0,22 | 0,3 |
| Concrete C50/60 | ≥ 2,30 | ≥ 65 | 0,30 | 0,4 |
| Clay bricks MZ | ≥ 2,0 | ≥ 20 | 0,25 | 0,5 |
| Calcium silicate bricks KS | ≥ 2,0 | ≥ 20 | 0,25 | 0,5 |
| Calcium silicate hollow block KSL | ≥ 1,6 | ≥ 12 | 0,17 | 0,3 |
| Vertically perforated clay bricks HLZ | ≥ 1,2 | ≥ 12 | 0,13 | 0,7 |
| Perforated clay bricks porotherm 25 | ≥ 0,8 | ≥ 10 | 0,13 | 0,8 |
| Autoclaved concrete blocks | ≥ 0,35 | ≥ 2 | 0,13 | 0,2 |
| Autoclaved concrete blocks | ≥ 0,65 | ≥ 5 | 0,17 | 0,2 |
| Lightweight concrete blocks LAC | ≥ 0,88 | ≥ 5 | 0,25 | 0,3 |



**LFM-8 / LFM-10 / LFN-10 / LFMG-10**

**Annex C 5**

**Performances**
Displacements