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European Technical Assessment ETA-09/0001 of 10/12/2014

General Part

Technical Assessment Body issuing the European Technical Assessment	Instytut Techniki Budowlanej
Trade name of the construction product	ŁTXϕ8 and ŁMXϕ8
Product family to which the construction product belongs	Nailed-in plastic anchors for fixing of external thermal insulation composite systems with rendering in concrete and masonry
Manufacturer	WKRĘT-MET sp. z o.o sp. komandytowa ul. Wincentego Witosa 170/176 Kuźnica Kiedrzyńska PL 42-233 Mykanów, Poland
Manufacturing plant(s)	KLIMAS WKRĘT-MET sp. z o.o. ul. Warszawska 2 Wanaty PL 42-260 Kamienica Polska, Poland
This European Technical Assessment contains	16 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 ETAG 014, *"Plastic anchors for fixing of external thermal insulation composite systems with rendering"*, Edition February 2011 used as European Assessment Document (EAD)
This version replaces	ETA-09/0001 issued on 30/03/2010

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Specific Part

1 Technical description of the product

The WKRĘT-MET-ŁTXϕ8 nailed-in plastic anchor consists of ŁIX anchor sleeve with a plate made of polyethylene and an accompanying specific TTX nail as an expansion pin made of the glass fibre reinforced polyamide.

The WKRĘT-MET-ŁMXϕ8 nailed-in plastic anchor consists of a ŁIX anchor sleeve with a plate made of polyethylene and an accompanying specific TMX nail as an expansion pin made of galvanised steel.

The WKRĘT-MET-ŁTXϕ8 and WKRĘT-MET-ŁMXϕ8 anchors may in addition be combined with the plate TDX-P-90, TDX-90, TDX-P-140 and TDX-140.

The illustration and the description of the products are given in Annex A.

2 Specification of the intended use in accordance with the applicable EAD

The performances given in Annex C are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The provisions made in this European Technical Assessment are based on an assumed working life of the anchor of 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or Technical Assessment Body, 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 Performance of the product

3.1.1 Mechanical resistance and stability (BWR 1)

Requirements with respect to the mechanical resistance and stability of non load bearing parts of the works are not included in this Basic Works Requirements but are under the Basic Works Requirement safety in use (BWR 4).

3.1.2 Hygiene, health and the environment (BWR 3)

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

3.1.3 Safety in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance	Annex C1
Edge distances and spacings	Annex B2
Point thermal transmittance	Annex C2
Plate stiffness	Annex C2
Displacements	Annex C3

3.1.4 Sustainable use of natural resources (BWR 7)

No performance determined (NPD).

3.2 Methods used for the assessment

The assessment of fitness of the anchor for the declared intended use in relation to the requirements for mechanical resistance and stability and safety in use in the sense of the Basic Requirement 4 has been made in accordance with the ETAG 014 *"Plastic anchors for fixing of external thermal insulation composite systems with rendering"*, Edition February 2011.

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

According to the Decision 97/463/EC of the European Commission of 27 June 1997 the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table applies.

Product	Intended use	Level or class	System
Plastic anchor 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+

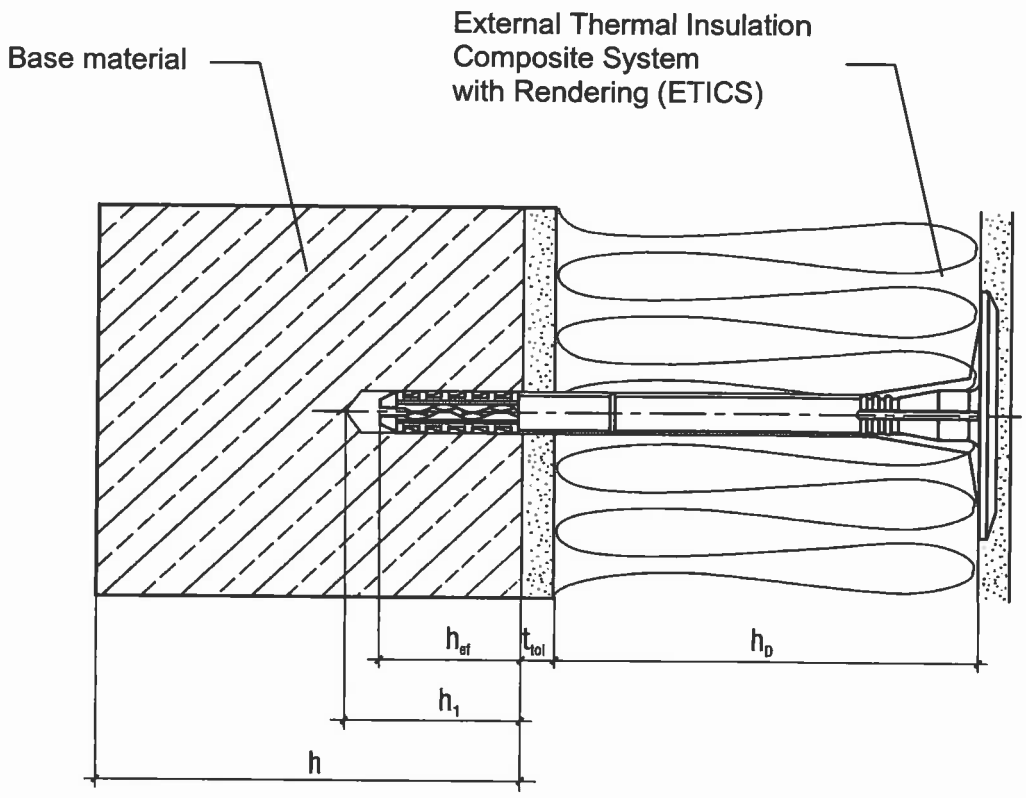
5 Technical details necessary for the implementation of the AVCP system, as provided in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited in Instytut Techniki Budowlanej.

For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 10/12/2014 by Instytut Techniki Budowlanej

Michał Wójtowicz
Head of ITB



Intended Use

Fixing of external thermal insulation composite systems in concrete and masonry

Legend

h_{ef} = effective anchorage depth

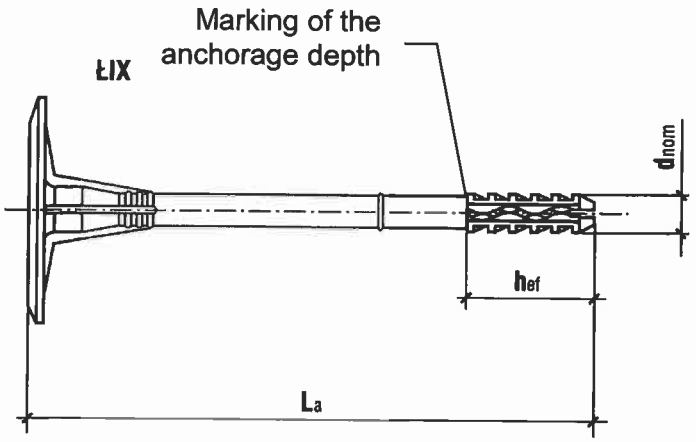
h_1 = depth of drill hole in base material

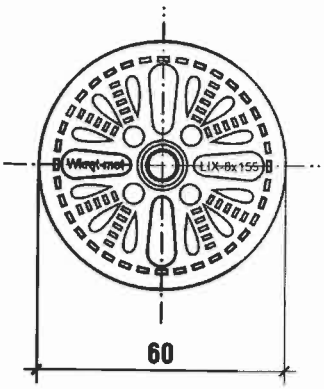
h = thickness of base material

h_D = thickness of insulation material

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

ŁTXϕ8 and ŁMXϕ8	**Annex A1**
Product description Installation conditions	of European Technical Assessment ETA-09/0001





Marking:
Identifying mark:
(Wkręt-Met)
Sleeve type:
(ŁIX)
Length of anchor:
(e.g. 155)
Nominal diameter:
d_{nom} (ϕ8)

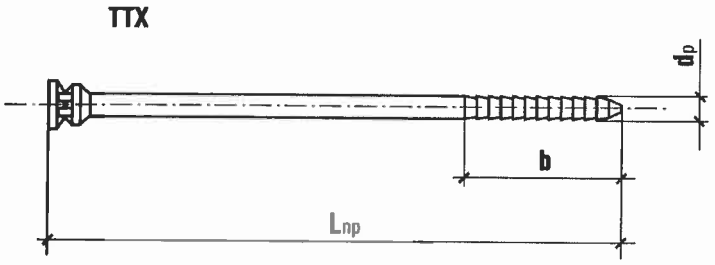


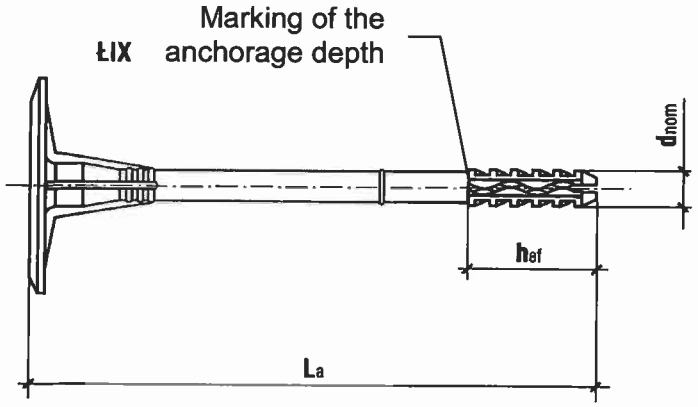
Table A1: ŁTXϕ8 anchor types and dimensions [mm]

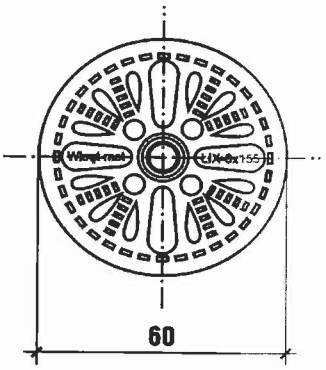
Anchor type	Anchor sleeve			Expansion pin		
	$d_{nom} \pm 0,1$	h_{ef}	$L_a \pm 2$	$d_p \pm 0,1$	$b \pm 2$	$L_{np} \pm 2$
ŁTX 8 × 95	8	35[1)]/55[2)]	95	4,8	44	100
ŁTX 8 × 115	8	35[1)]/55[2)]	115	4,8	44	120
ŁTX 8 × 135	8	35[1)]/55[2)]	135	4,8	44	140
ŁTX 8 × 155	8	35[1)]/55[2)]	155	4,8	44	160
ŁTX 8 × 175	8	35[1)]/55[2)]	175	4,8	44	180
ŁTX 8 × 195	8	35[1)]/55[2)]	195	4,8	44	200

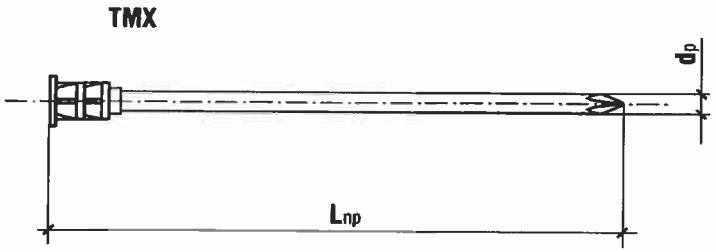
[1)] use category A, B, C, D
[2)] use category E

Determination of maximum thickness of insulation material: $h_D = L_a - t_{tol} - h_{ef}$

ŁTXϕ8 and ŁMXϕ8	**Annex A2** of European Technical Assessment ETA-09/0001
Product description Marking and dimensions of the anchor sleeve and expansion element of the ŁTXϕ8 anchors	







Marking:
Identifying mark:
(Wkręt-Met)
Sleeve type:
(ŁIX)
Length of anchor:
(e.g. 155)
Nominal diameter:
d_{nom} (ϕ8)

Table A2: ŁMXϕ8 anchor types and dimensions [mm]

Anchor type	Anchor sleeve			Expansion pin	
	$d_{nom \pm 0,1}$	h_{ef}	$L_{a \pm 2}$	$d_{p \pm 0,1}$	$L_{np \pm 2}$
ŁMX 8 × 95	8	35[1)]/55[2)]	95	4,8	100
ŁMX 8 × 115	8	35[1)]/55[2)]	115	4,8	120
ŁMX 8 × 135	8	35[1)]/55[2)]	135	4,8	140
ŁMX 8 × 155	8	35[1)]/55[2)]	155	4,8	160
ŁMX 8 × 175	8	35[1)]/55[2)]	175	4,8	180
ŁMX 8 × 195	8	35[1)]/55[2)]	195	4,8	200
ŁMX 8 × 225	8	35[1)]/55[2)]	225	4,8	230
ŁMX 8 × 245	8	35[1)]/55[2)]	245	4,8	250
ŁMX 8 × 265	8	35[1)]/55[2)]	265	4,8	270
ŁMX 8 × 285	8	35[1)]/55[2)]	285	4,8	290
ŁMX 8 × 305	8	35[1)]/55[2)]	305	4,8	310
ŁMX 8 × 325	8	35[1)]/55[2)]	325	4,8	330
ŁMX 8 × 345	8	35[1)]/55[2)]	345	4,8	350

[1)] use category A, B, C, D
[2)] use category E

Determination of maximum thickness of insulation material: $h_D = L_a - t_{tol} - h_{ef}$

ŁTXϕ8 and ŁMXϕ8	**Annex A3** of European Technical Assessment ETA-09/0001
Product description Marking and dimensions of the anchor sleeve and expansion element of the ŁMXϕ8 anchors	

Table A3: Materials

Designation	Material
Anchor sleeve ŁIX	Polyethylenie, natural
Expansion pin TTX	Glass fibre reinforced polyamide PA6 GF30, black or natural
Expansion pin TMX	Carbon steel ($f_{y,k}$ = 190 MPa, $f_{u,k}$ = 310 MPa) galvanized ≥ 5 µm according to EN ISO 4042, white chromated, with head coating of polyamide PA6, natural

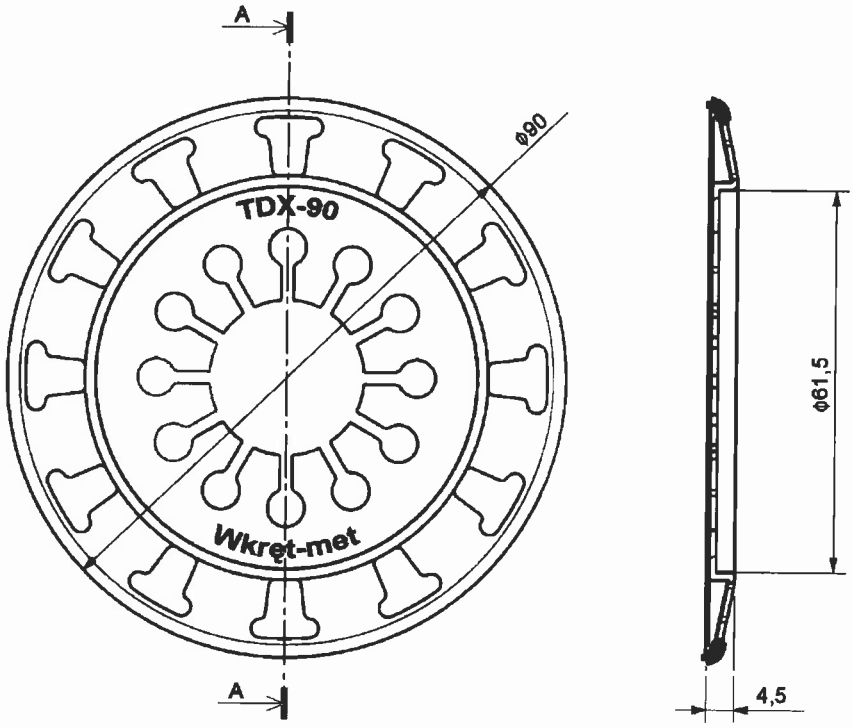


Table A4: Additional plate TDX-90

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

ŁTXϕ8 and ŁMXϕ8	**Annex A5**
Product description Additional plate TDX-P-90 and TDX-90 in combination with anchor sleeve	of European Technical Assessment ETA-09/0001

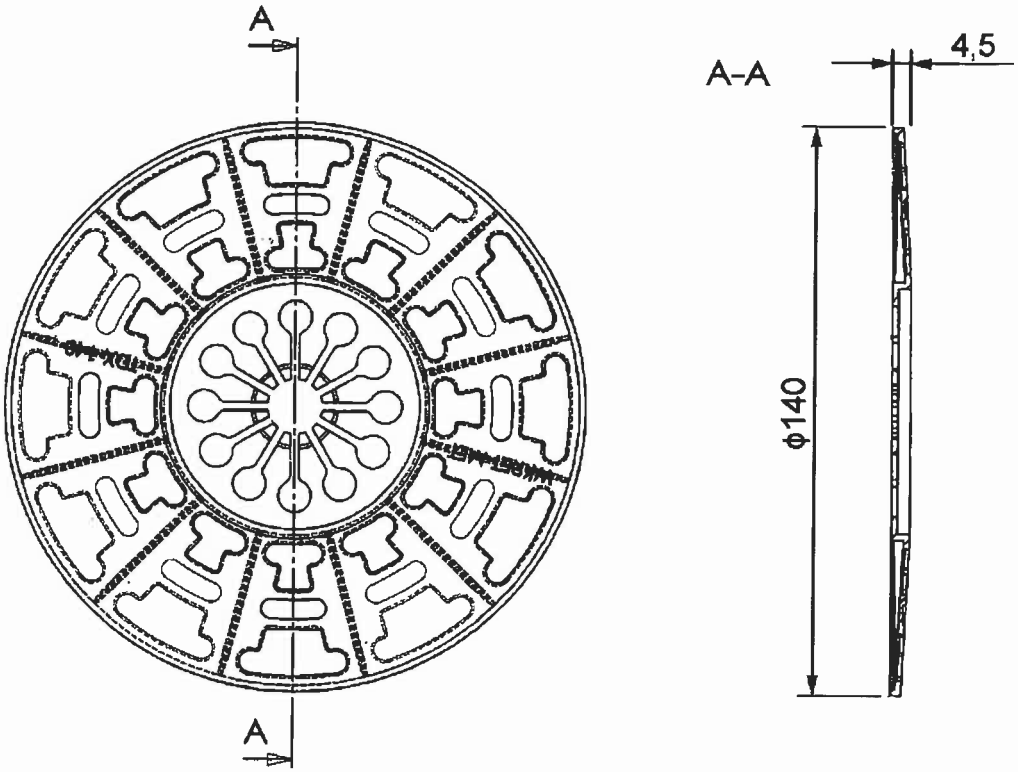


Table A5: Additional plate TDX-140

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

ŁTXϕ8 and ŁMXϕ8	**Annex A6**
Product description Additional plate TDX-P-140 and TDX-140 in combination with anchor sleeve	of European Technical Assessment ETA-09/0001

Specification of intended use

Anchorages subject to:

- Wind suction loads.
  Note: Dead loads have to be transmitted by the adhesion of the relevant external 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.
- Lightweight aggregate concrete (use category D), according to Annex C1.
- Autoclaved aerated concrete (use category E), according to Annex C1.
- 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 into 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 for non-structural application, according to ETAG 014, edition February 2011.

Installation:

- Hole shall be drilled by the drill modes according to Annex C1.
- Anchor installation shall be carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Installation shall be executed in temperature from 0°C to +40°C.
- Exposure to UV due to solar radiation of the anchor not protected by rendering by the mortar shall not exceed 6 weeks.

ŁTXϕ8 and ŁMXϕ8	**Annex B1**
Intended use Specifications	of European Technical Assessment ETA-09/0001

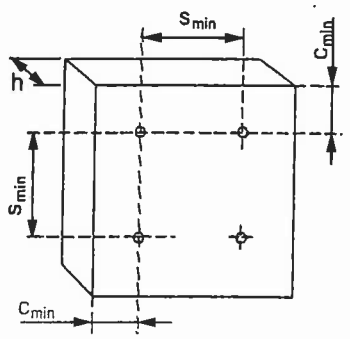
Table B1: Installation characteristics

Anchor type		ŁTXϕ8 and ŁMXϕ8
Nominal diameter of drill bit	d_o [mm]	8
Cutting diameter of drill bit	d_{cut} [mm]	≤ 8,45
Depth of drill hole for category, A, B, C, D	h_1 [mm]	≥ 45
Effective anchorage depth for category, A, B, C, D	h_{ef} [mm]	≥ 35
Depth of drill hole for category E	h_1 [mm]	≥ 65
Effective anchorage depth for category E	h_{ef} [mm]	≥ 55

Table B2: Minimum thickness of base material, edge distance and anchor spacing

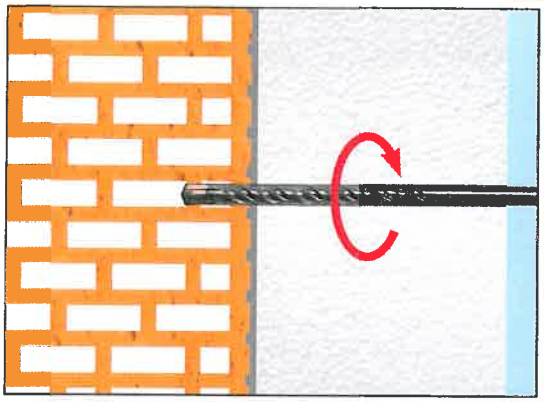
Anchor type		ŁTXϕ8 and ŁMXϕ8
Minimum thickness of base material	h [mm]	100
Minimum spacing	s_{min} [mm]	100
Minimum edge distance	c_{min} [mm]	100

Diagram of spacing

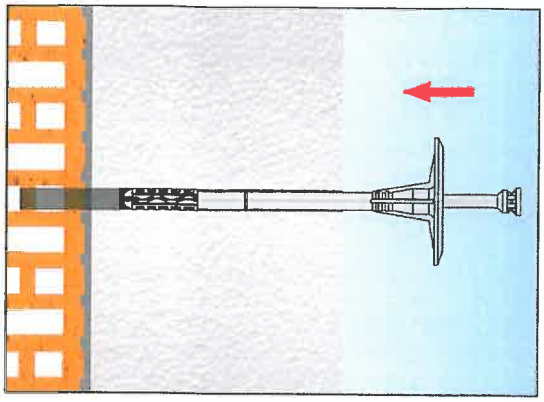


ŁTXϕ8 and ŁMXϕ8	**Annex B2** of European Technical Assessment ETA-09/0001
Intended use Installation characteristics, minimum thickness of base material, edge distance and spacing	

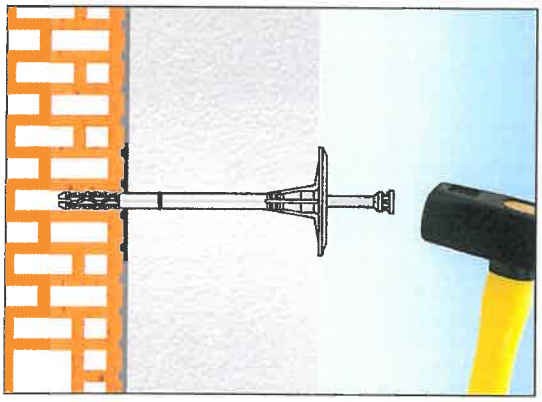
Installation instruction



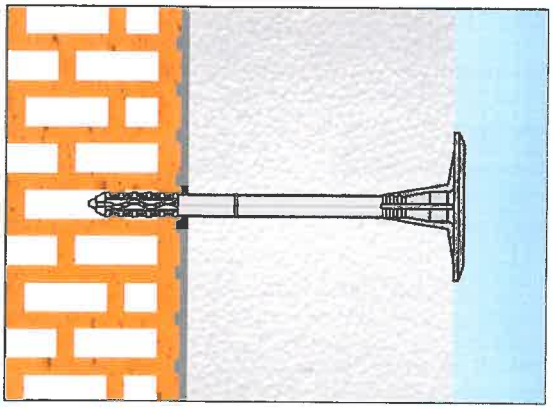
1. Drill hole by corresponding drilling method



2. Set-in anchor manually



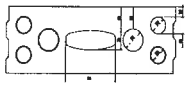
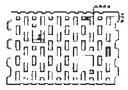
3. Set anchor by hammer blows



4. Correctly installed anchor

ŁTXϕ8 and ŁMXϕ8	**Annex B3** of European Technical Assessment ETA-09/0001
Intended use Installation instruction	

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

Category	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	Referring standard	N_{Rk} [kN]		Drill metod
					ŁTXϕ8	ŁMXϕ8	
A	Concrete C12/15			EN 206-1	0,40	0,40	hammer
	Concrete C16/20 + C50/60			EN 206-1	0,60	0,60	hammer
B	Clay bricks[1)] 	≥ 2,0	≥ 20,0	EN 771-1	0,50	0,60	hammer
	Calcium silicate bricks[2)] 	≥ 2,0	≥ 20,0	EN 771-2	0,50	0,60	hammer
C	Calcium silicate hollow blocks[3)] 	≥ 1,6	≥ 12,0	EN 771-2	0,30	0,40	hammer
	Vertically perforated clay bricks[4)] 	≥ 1,2	≥ 12,0	EN 771-1	0,30	0,30	rotary
D	Lightweight aggregate concrete blocks LAC	≥ 5,0	≥ 1,05	EN 771-3	0,30	0,30	rotary
E	Autoclaved aerated concrete elements AAC 2	≥ 0,35	≥ 2,0	EN 771-4	0,30	0,40	rotary
	Autoclaved aerated concrete elements AAC 7	≥ 0,65	≥ 3,5	EN 771-4	0,60	0,70	rotary
Partial safety factor for anchor resistance, γ_M[5)]		2,0					

[1)] German clay brick MZ Rd 2,0/20
[2)] For example Kalksandstein KS NF 20-2,0 Vollstein according to DIN 108
[3)] For example KSL-R(P)8DF Lochstein according to DIN 106
[4)] For example HLZRd1.2/12 according to DIN 105
[5)] Valid in absence of national regulations

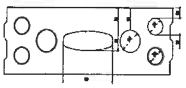
Table C2: Point thermal transmittance according to EOTA Technical Report TR 025

Anchor type	Insulation thickness H_D [mm]	Point thermal transmittance χ [W/K]
ŁTXϕ8	50 – 150	0
ŁMXϕ8	50 – 220	0,003

Table C3: Plate stiffness according to EOTA Technical Report TR 026

Anchor type	Diameter of the anchor plate d_{plate} [mm]	Load resistance of the anchor plate $N_{u,m}$ [kN]	Plate stiffness $N_{0,m}$ [kN/mm]
ŁTXϕ8 and ŁMXϕ8	60	1,53	0,5

Table C4: Displacement behaviour

Category	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	$\frac{N_{Rk}}{3}$, [kN]		$\delta\left(\frac{N_{Rk}}{3}\right)$ [mm]	
				ŁTXϕ8	ŁMXϕ8	ŁTXϕ8	ŁMXϕ8
A	Concrete C12/15	–		0,13	0,13	1,77	1,03
	Concrete C16/20 + C50/60	–		0,20	0,20	2,66	1,55
B	Clay bricks[1)] 	≥ 2,0	≥ 20,0	0,17	0,20	2,29	3,06
	Calcium silicate bricks[2)]	≥ 2,00	≥ 20,0	0,17	0,20	2,27	3,00
C	Calcium silicate hollow blocks[3)] 	≥ 1,6	≥ 12,0	0,10	0,13	1,36	1,68
	Vertically perforated clay bricks[4)] 	≥ 1,2	≥ 12,0	0,10	0,10	2,31	1,58
D	Lightweight aggregate concrete blocks LAC	≥ 5,0	≥ 1,05	0,10	0,10	0,92	1,40
E	Autoclaved aerated concrete elements AAC 2	≥ 0,35	≥ 2,0	0,10	0,13	1,30	1,83
	Autoclaved aerated concrete elements AAC 7	≥ 0,65	≥ 3,5	0,20	0,23	2,69	1,72

[1)] German clay brick MZ Rd 2,0/20
[2)] For example Kalksandstein KS NF 20-2,0 Vollstein according to DIN 108
[3)] For example KSL-R(P)8DF Lochstein according to DIN 106
[4)] For example HLZRd1.2/12 according to DIN 105
[5)] Valid in absence of national regulations