Deutsches Institut für Bautechnik

Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

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European Technical Assessment

ETA-22/0611 of 25 November 2022

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	ThermoDrive-V2
Product family to which the construction product belongs	Plastic anchor for fixing of external thermal insulation composite systems with rendering
Manufacturer	Klimas Sp. z o.o. Kuznica Kiedrzynska ul. Wincentego Witosa 135/137 42-233 MYKANÓW POLEN
Manufacturing plant	Plant 1, Plant 2 Poland
This European Technical Assessment contains	19 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

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Specific Part

1 Technical description of the product

The screwed-in anchor ThermoDrive-V2 with plate consists of an anchor sleeve made of polyethylene (virgin material) and an accompanying specific screw made of galvanized steel or of steel with zinc flake coating or of stainless 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 verifications 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 - Characteristic resistance under tension load - Minimum edge distance and spacing	 See Annex C 1, C 2 and C 3 See Annex B 2
Displacements	See Annex C 4
Plate stiffness	See Annex C 4

3.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance	See Annex C 4

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 European Assessment Document

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

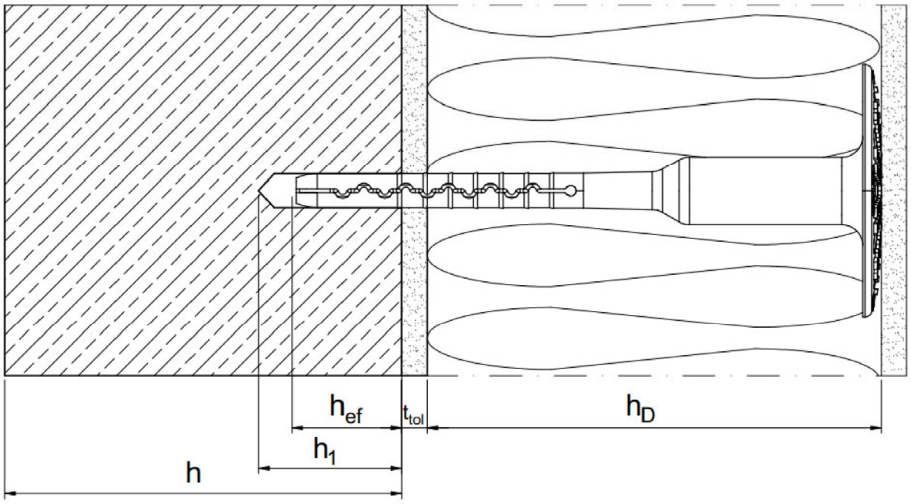
Issued in Berlin on 25 November 2022 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock
Head of Section

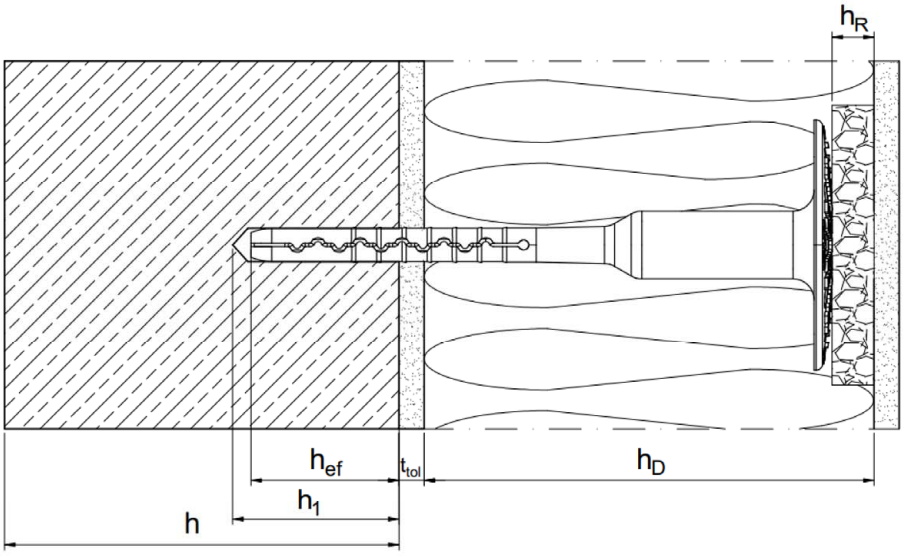
beglaubigt:
Ziegler

Deutsches Institut für Bautechnik DIBt

ThermoDrive-V2



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

ThermoDrive-V2	**Annex A 1**
Product description Installed condition – surface mount, immerged mount	

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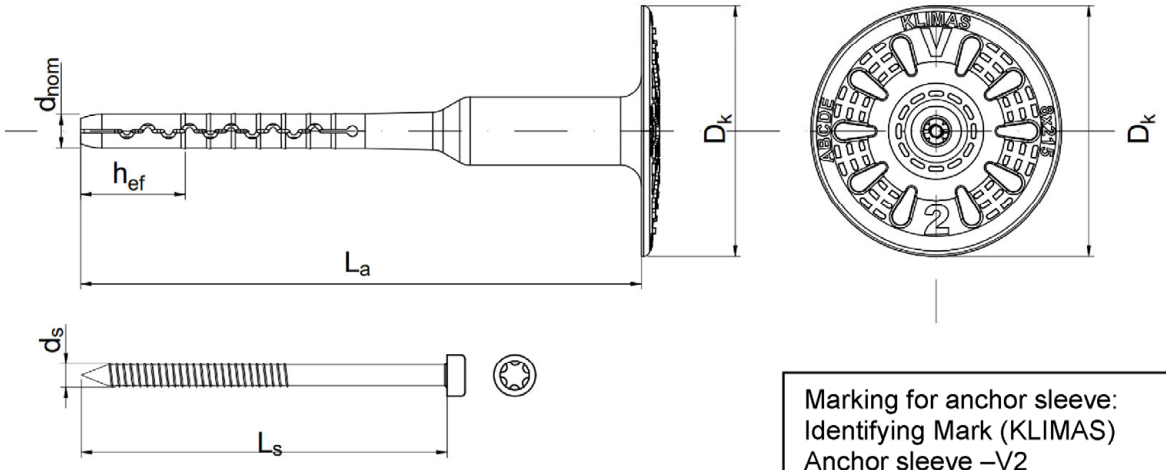
ThermoDrive-V2



Marking for anchor sleeve:
Identifying Mark (KLIMAS)
Anchor sleeve –V2
Anchor size – 8xL_k
Base material group (ABCDE)

Accompanying specific screw

Table A1: Dimensions

Anchor Type	Anchor sleeve					Specific screw		
	D_k [mm]	d_{nom} [mm]	min L_a [mm]	max L_a [mm]	min h_{ef} [mm]	d_s [mm]	min L_s [mm]	max L_s [mm]
ThermoDrive-V2	60	8	135	475	25/45*	5,8	75	295

* effective anchorage depth for base material group E

Determination of maximum thickness of insulation h_D [mm] for ThermoDrive-V2:

$h_D = L_a - t_{tol} - h_{ef}$ (e.g. L_a =195; t_{tol} =10)

e.g. $h_D = 195 - 10 - 25$

$h_{Dmax} = 160$

ThermoDrive-V2	**Annex A 2**
Product description ThermoDrive-V2 - marking and dimension of the anchor sleeve and specific screw	

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Table A2: Materials	
Name	**Materials**
Anchor sleeve	Polyethylene (natural or gray) – virgin material
Screw	Steel, electro galvanized ≥ 5 µm in accordance with EN ISO 4042:2018 or non-electrolytically applied zinc flake coatings ≥ 5 µm in accordance with EN ISO 10683:2018 or stainless steel grade 1.4301, 1.4306, 1.4307, 1.4567 (AISI 304) or 1.4401, 1.4404 ,1.4571, 1.4362, 1.4578 (AISI 316), in accordance with EN 10088-3:2014
Insulation cover	KS, KSV: Polystyrene (EPS), colour: white KSG, KSVG: Polystyrene (EPS), colour: grey EDMW: mineral wool (MW), colour: natural

Table A3: Additional slip on plates - 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)
TDMW-110	110	Polyamide +GF (natural or grey)
TDPS-60	63	Polyamide +GF (natural or grey)

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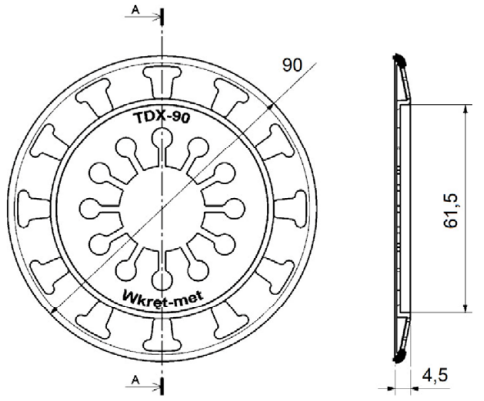
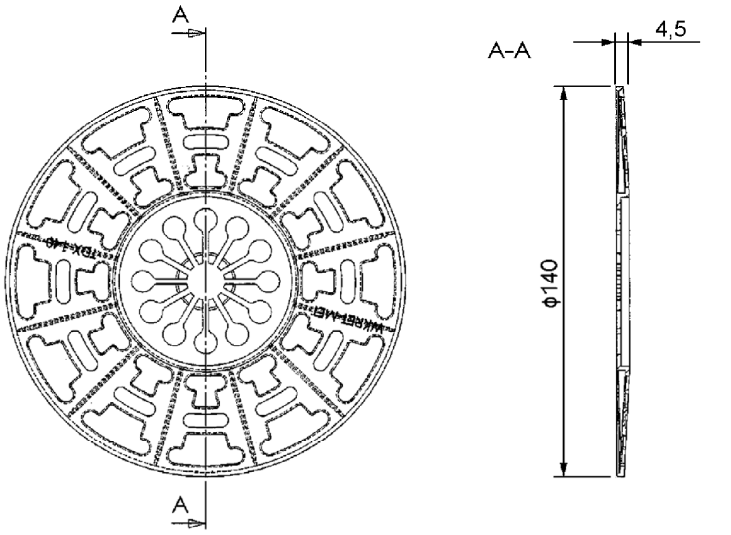
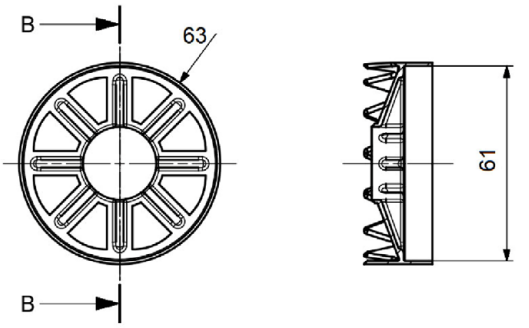


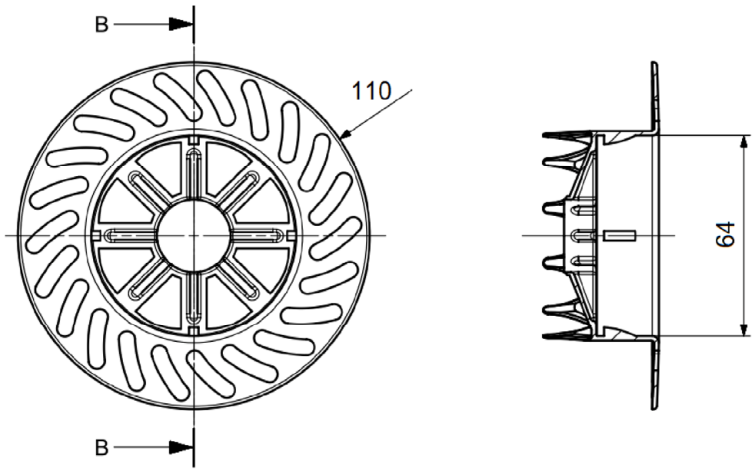
TDX-P-90/TDX-90



TDX-P-140/TDX-140

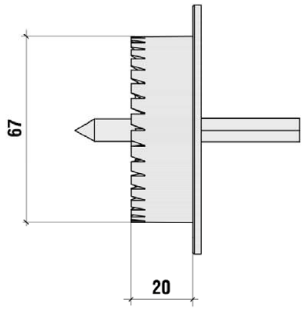


TDPS-60

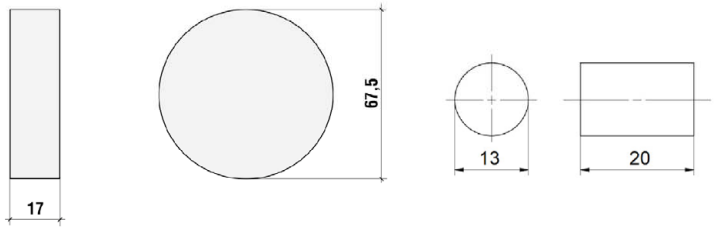


TDMW-110

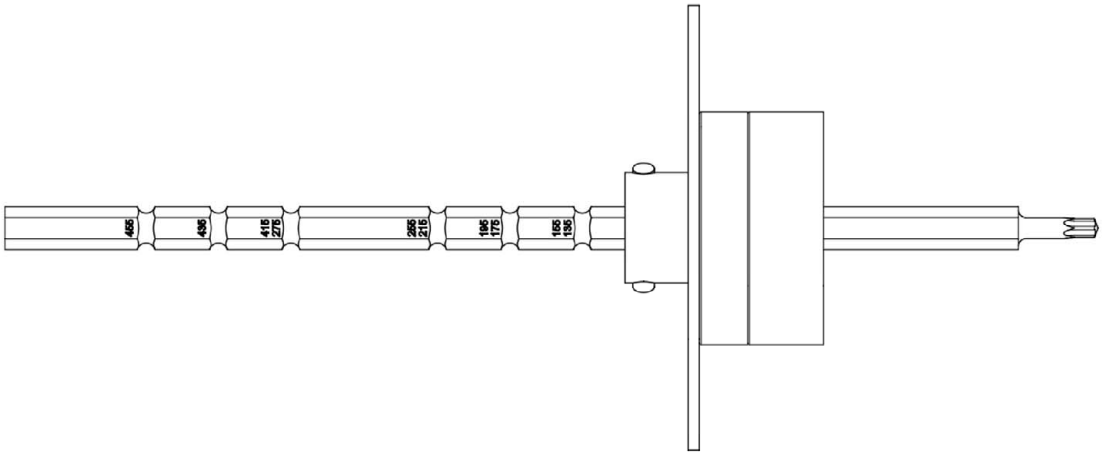
ThermoDrive-V2	**Annex A 4**
Product description Additional slip on plates with ThermoDrive-V2	



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



Insulation cap KS/ KSG or EDMW and KSV



Additional mounting tool ThermoDrive-V2

ThermoDrive-V2	**Annex A 5**
Product description Additional tools and insulation caps	

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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:

- Compacted normal weight concrete without fibres, strength classes ≥ C12/15 (base material group A), according to Annex C 1
- Solid masonry (base material group B), according to Annex C 1
- Hollow or perforated masonry (base material group C), according Annex C 1, C 2
- Lightweight aggregate concrete (base material group D), according to Annex C 3
- Autoclaved aerated concrete (base material group E), according to Annex C 3
- 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 April 2018.

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 γ_M = 2,0 and γ_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

ThermoDrive-V2	**Annex B 1**
Intended use Specifications	

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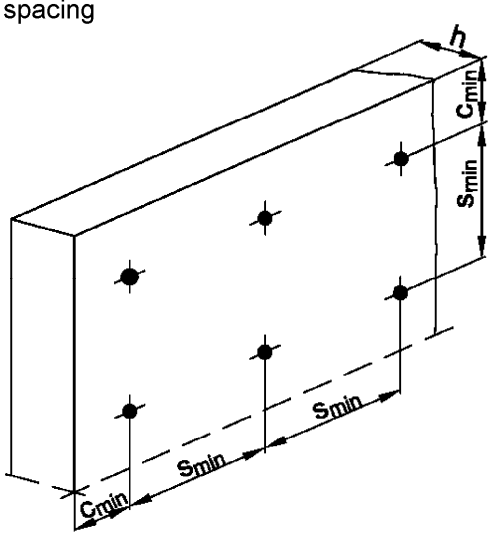
Table B1: Installation parameters for ThermoDrive-V2			
		ThermoDrive-V2	ThermoDrive-V2
Base material group		ABCD	E
Drill hole diameter	d_0 [mm] =	8	8
Cutting diameter of drill bit	d_{cut} [mm] ≤	8,45	8,45
Depth of drilled hole to deepest point	h_1 [mm] ≥	35/55[1)]	55/75[1)]
Effective anchorage depth	h_{ef} [mm] ≥	25	45

[1)] immerged mount using tool Thermodrive-V2

Table B2: 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
Minimum thickness of member for thin concrete members	h	≥ [mm]	40

Scheme of edge distance and spacing



ThermoDrive-V2	**Annex B 2**
Intended use Installation parameters, minimum thickness of base material Edge distances and spacing	

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I. INSTALLATION INSTRUCTION - SURFACE MOUNT

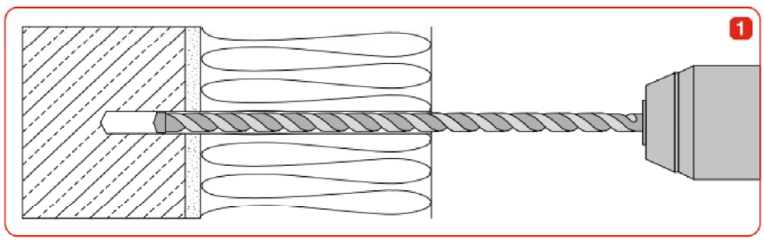


Fig.1 Drill the hole perpendicular to the substrate surface. Clean the drill hole.

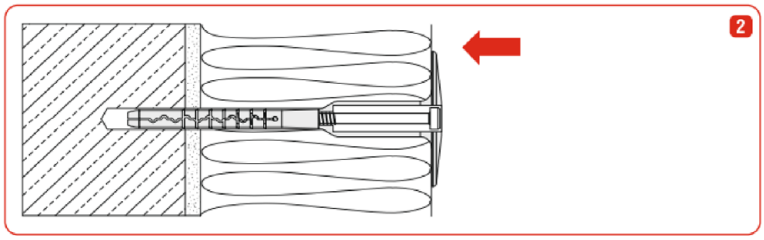


Fig.2 Place the anchor into the drill hole. The bottom side of the plate must be flush with the thermal insulation surface.

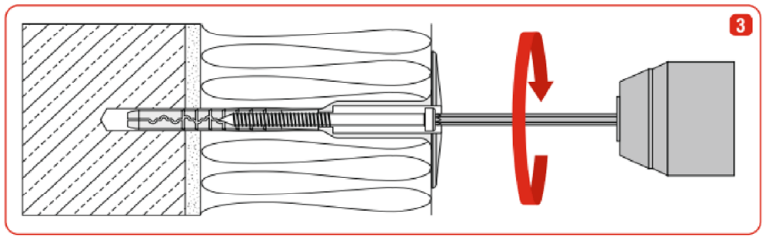
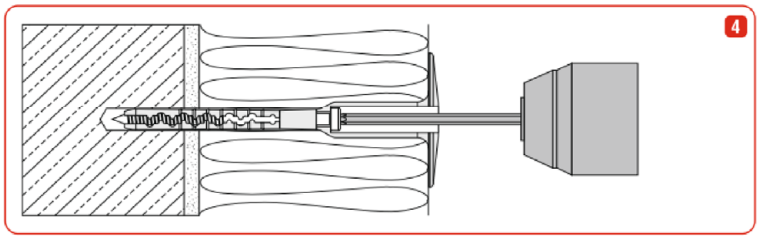


Fig. 3 and 4 Screw in the specific screw using the screwdriver bits type TX-30 with appropriate length.



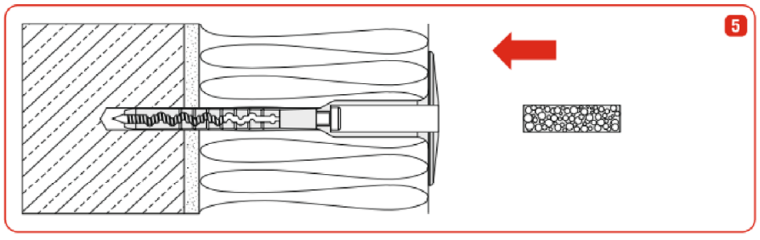


Fig. 5 Insert the KSV to be flush with the plate surface.

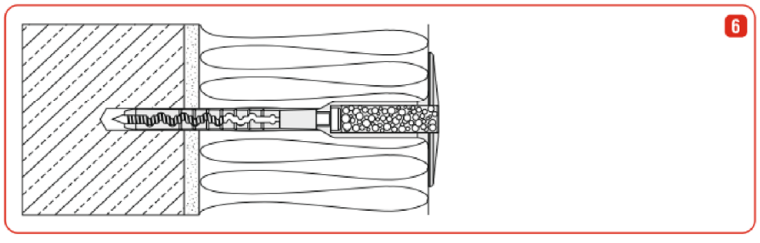


Fig. 6 Properly installed anchor.

ThermoDrive-V2	**Annex B 3**
Intended use Installation instruction - surface mount	

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II. INSTALLATION INSTRUCTION - IMMERGED MOUNT WITH INSULATION CAP

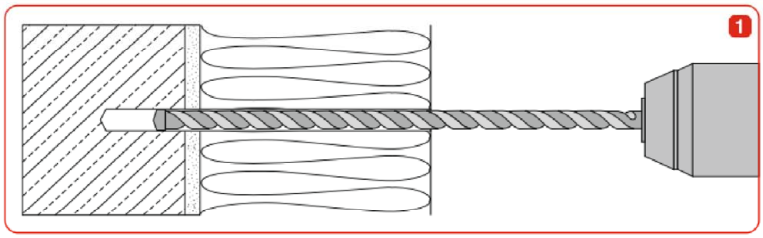


Fig. 1 Drill the hole perpendicular to the substrate surface. Clean the drill hole.

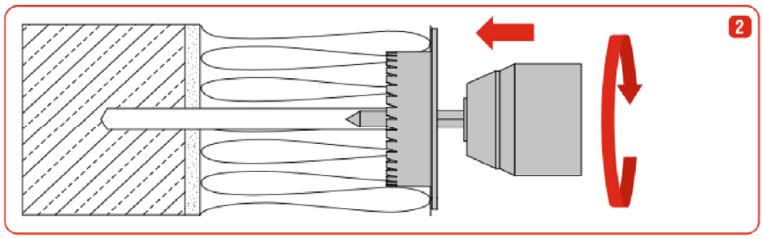


Fig. 2 Drill the recess for immerged installation with appropriate drilling tool WK-FT/WK-FM.

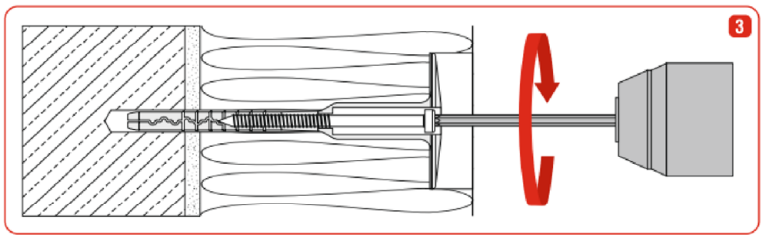
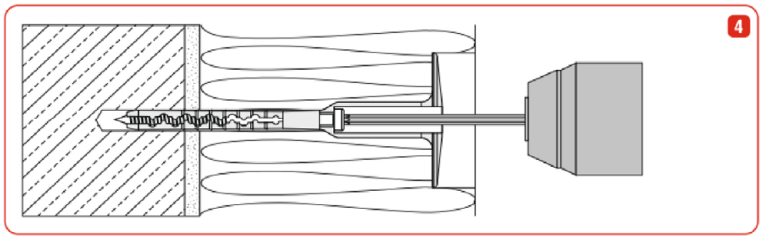


Fig. 3 and 4 Screw in the specific screw using the screwdriver bits type TX-30 with appropriate length.



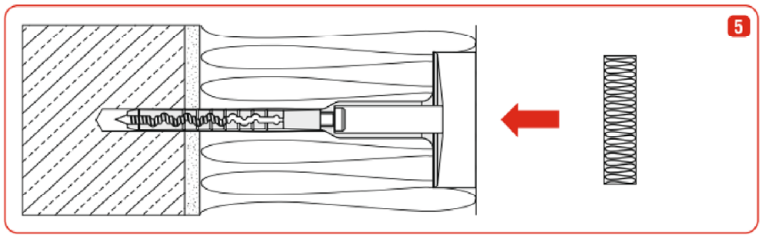


Fig. 5 Insert the insulation cap.

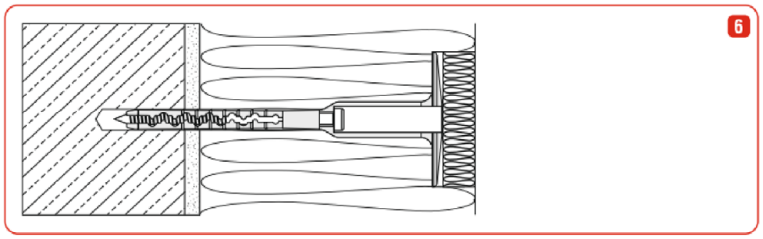


Fig. 6 Properly installed anchor.

ThermoDrive-V2	**Annex B 4**
Intended use Installation instruction - immerged mount with insulation cap	

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III. INSTALLATION INSTRUCTION - IMMERGED MOUNT USING TOOL THERMODRIVE-V2 WITH INSULATION CAP

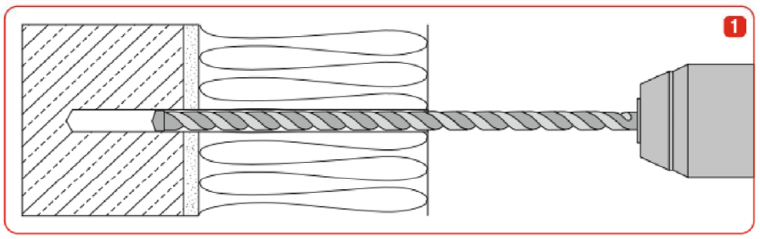


Fig. 1 Drill the hole perpendicular to the substrate surface. Clean the drill hole.

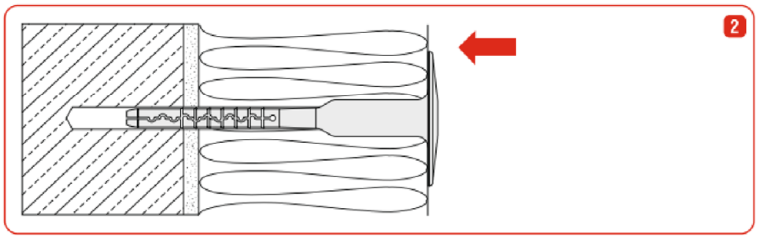
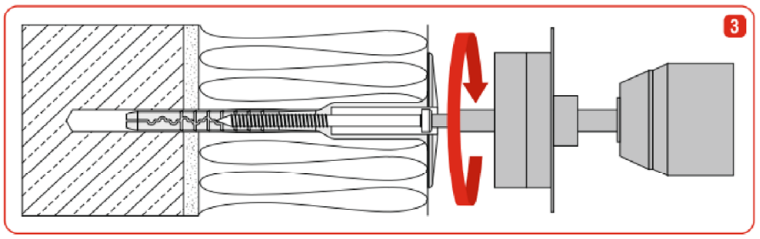


Fig. 2 Place the anchor into the drill hole. The bottom side of the plate must be flush with the thermal insulation surface.



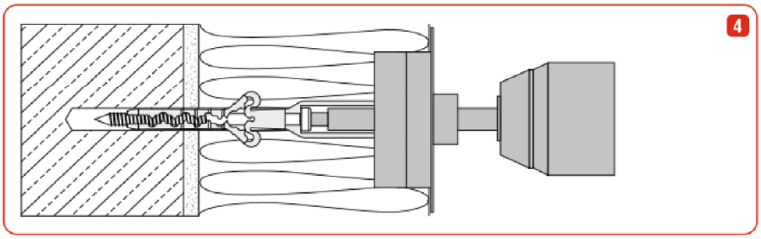


Fig. 3 and 4 Screw in the specific screw using the tool Thermodrive-V2.

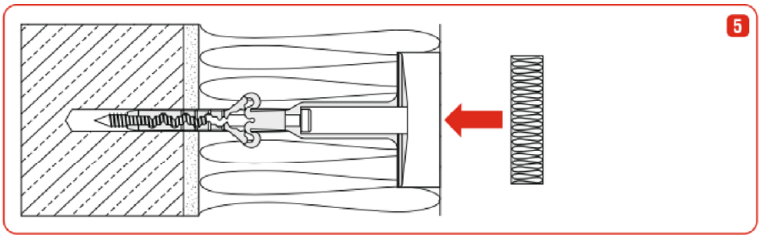


Fig. 5 Insert the insulation cap.

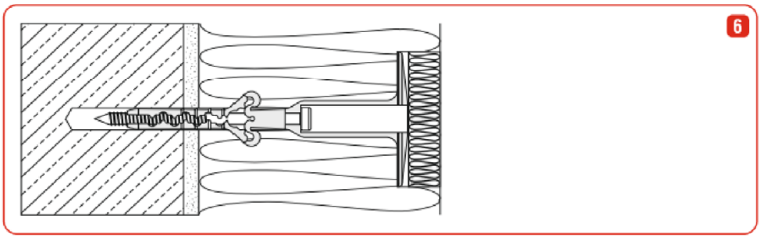


Fig. 6 Properly installed anchor.

ThermoDrive-V2	**Annex B 5**
Intended use Installation instruction - immerged mount using tool Thermodrive-V2 with insulation cap	

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IV. INSTALLATION INSTRUCTION - IMMERGED MOUNT WITH PLATE V2 AND INSULATION CAP

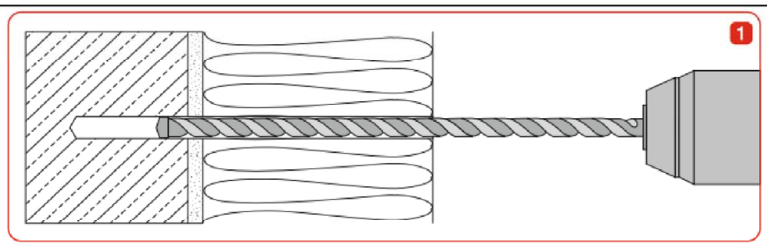
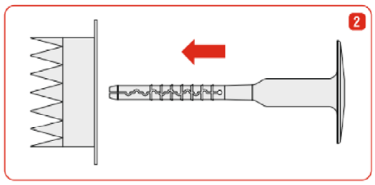


Fig. 1 Drill the hole perpendicular to the substrate surface. Clean the drill hole.



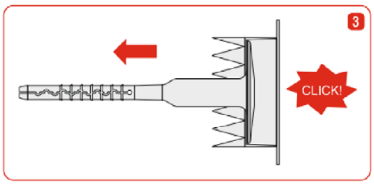


Fig. 2 Assemble anchor and PLATE TDPS or TDMW

Fig. 3 Correct assembly is confirmed by a "click".

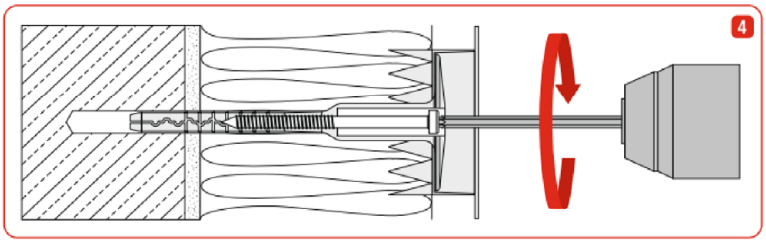
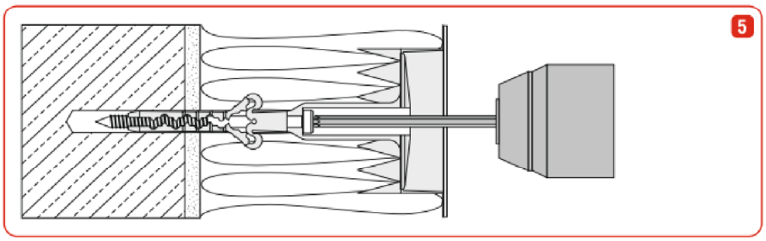


Fig. 4 and 5 Screw in the specific screw using the screwdriver bits type TX-30 with appropriate length.



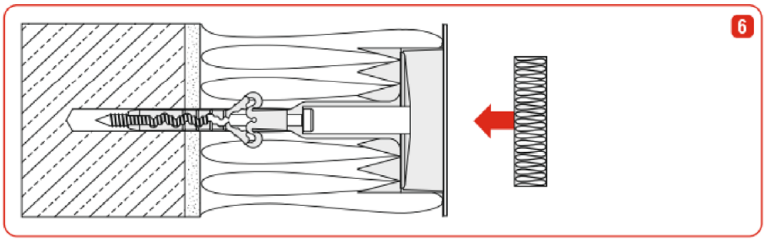


Fig. 6 Insert the insulation cap.

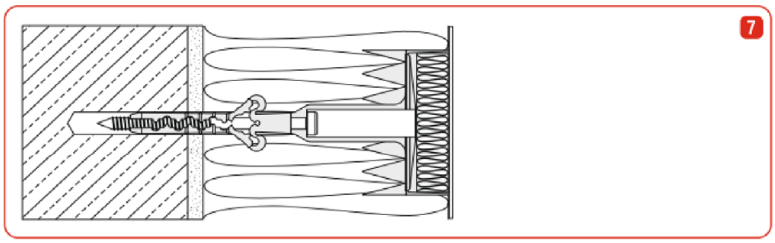


Fig. 7 Properly installed anchor.

ThermoDrive-V2	**Annex B 6**
Intended use Installation instruction - immerged mount with PLATE (TDPS or TDMW) and insulation cap	

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

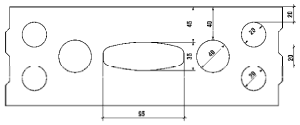
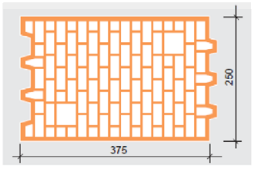
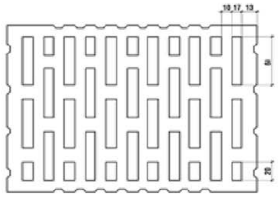
Anchor type				ThermoDrive-V2	
Base materials	Bulk density ρ [kg/dm³]	minimum compressive strength f_b [N/mm²]	General remarks	Drill method	N_{Rk} [kN]
Concrete C12/15 as per EN 206:2013+A1:2016	≥ 2,2	≥ 20	Compacted normal weight concrete without fibres	hammer	1,50
Concrete C16/20 - C50/60 as per EN 206:2013+A1:2016	≥ 2,25	≥ 30	Compacted normal weight concrete without fibres	hammer	1,50
Thin concrete members (e.g. weather resistant skin of external wall panels) C16/20 – C50/60	≥ 2,0	≥ 20	Compacted normal weight concrete without fibres Thickness of the thin skin: 100 mm > h ≥ 40 mm	hammer	1,50
Clay bricks MZ as per EN 771-1:2011+A1:2015	≥ 2,0	≥ 20	Vertically perforation up to 15 %	hammer	1,50
Calcium silicate bricks KS as per EN 771-1:2011+A1:2015	≥ 2,0	≥ 20	Vertically perforation up to 15 %	hammer	1,50
Calcium silicate hollow block KSL as per EN 771-1:2011+A1:2015 	≥ 1,6	≥ 12	Vertically perforation more than 15 % and less than 50 %, outer web thickness ≥ 20 mm	hammer	1,50
Vertically perforated clay bricks Porotherm 25 	≥ 0,8	≥ 15	Vertically perforation more than 15 % and less than 50 %, outer web thickness ≥ 12 mm	rotary	1,20
Vertically perforated ceramic block MAX 250 	≥ 0,8	≥ 15	Vertically perforation more than 15 % and less than 50 %, outer web thickness ≥ 12 mm	rotary	1,20

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

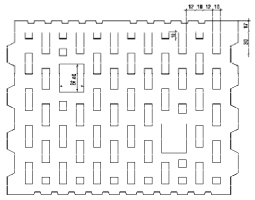
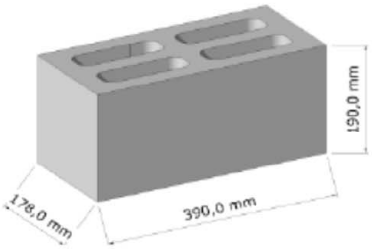
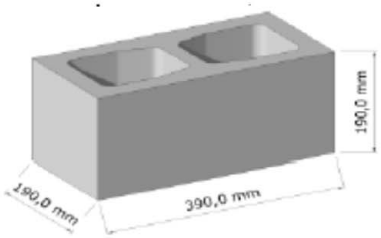
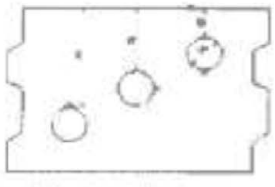
Anchor type				ThermoDrive-V2	
Base materials	Bulk density ρ [kg/dm³]	minimum compressive strength f_b [N/mm²]	General remarks	Drill method	N_{Rk} [kN]
Vertically perforated clay bricks Hlz as per EN 771-1:2011+A1:2015 	≥ 1,2	≥ 12	Vertically perforation more than 15 % and less than 50 %, outer web thickness ≥ 12 mm	rotary	1,50
Tekno Amer Block PK17,8 	≥ 1,5	≥ 25	Exterior web thickness ≥ 30 mm	rotary	1,50
Tekno Amer Block PK19 	≥ 1,1	≥ 20	Exterior web thickness ≥ 30 mm	rotary	1,50
Lightweight concrete hollow blocks HBL as per EN 771-3:2011+A1:2015 	≥ 0,8	≥ 2	Vertically perforation more than 15 % and less than 50 %, outer web thickness ≥ 30 mm	rotary	1,50

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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				ThermoDrive-V2	
Base materials	Bulk density ρ [kg/dm³]	minimum compressive strength f_b [N/mm²]	General remarks	Drill method	N_{Rk} [kN]
Autoclaved concrete blocks as per EN 771-4:2011+A1:2015	≥ 0,35	≥ 2		rotary	1,20
Autoclaved concrete blocks as per EN 771-4:2011+A1:2015	≥ 0,65	≥ 5		rotary	1,50
Lightweight concrete blocks LAC as per EN 1520:2011 / EN 771-3:2011+A1:2015	≥ 0,88	≥ 5		rotary	1,20

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Table C2: Point thermal transmittance according EOTA Technical Report TR 025:2016-05		
anchor type	insulation thickness h_D [mm]	point thermal transmittance χ [W/K]
ThermoDrive-V2 surface mount	100	0,001
ThermoDrive-V2 surface mount	110-400	0,002
ThermoDrive-V2 surface mount	410-430	0,001
ThermoDrive-V2 immerged mount	100-450	0,001

Table C3: Plate stiffness according EOTA Technical Report TR 026:2016-05			
anchor type	diameter of the anchor plate [mm]	load resistance of the anchor plate [kN]	plate stiffness [kN/mm]
ThermoDrive-V2	60	2,6	1,0

Table C4: Displacements ThermoDrive-V2				
Base materials (refer Table C1)	Bulk density ρ [kg/dm³]	Minimum compressive Strength f_b [N/mm²]	Tension load N [kN]	Displacements $\Delta\delta_N$ [mm]
Concrete C12/15	≥ 2,2	≥ 20	0,5	0,44
Concrete C16/20 ÷ C50/60	≥ 2,25	≥ 30	0,5	0,47
Thin concrete members (e.g. weather resistant skins) C16/20 – C50/60	≥ 2,0	≥ 20	0,5	0,47
Clay bricks MZ	≥ 2,0	≥ 20	0,5	0,68
Calcium silicate bricks KS	≥ 2,0	≥ 20	0,5	0,66
Calcium silicate hollow block KSL	≥ 1,6	≥ 12	0,5	0,53
Vertically perforated clay bricks Porotherm 25	≥ 0,8	≥ 15	0,4	0,64
Vertical perforated ceramic bricks MAX 250	≥ 0,8	≥ 15	0,4	0,68
Vertically perforated clay bricks HLZ	≥ 1,2	≥ 12	0,5	0,62
Tekno Amer Block PK17,8	≥ 1,5	≥ 25	0,5	0,58
Tekno Amer Block PK19	≥ 1,1	≥ 20	0,5	0,48
Lightweight concrete hollow blocks HBL	≥ 0,8	≥ 2	0,5	0,65
Autoclaved concrete blocks	≥ 0,35	≥ 2	0,4	0,68
Autoclaved concrete blocks	≥ 0,65	≥ 5	0,5	0,56
Lightweight concrete blocks LAC	≥ 0,88	≥ 5	0,4	0,44

ThermoDrive-V2

Performances
Point thermal transmittance, plate stiffness, displacements

Annex C 4