Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

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

European Technical Assessment ETA-07/0129 of 20 October 2017

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	IsoFux NDS8Z, IsoFux NDM8Z, IsoFux NDS90Z and IsoFux NDM90Z
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	RANIT-Befestigungssysteme GmbH Lennestraße 3-5 45701 Herten DEUTSCHLAND
Manufacturing plant	RANIT-Befestigungssysteme GmbH Lennestraße 3-5 45701 Herten DEUTSCHLAND
This European Technical Assessment contains	20 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
This version replaces	ETA-07/0129 issued on 15 June 2017

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Specific Part

1 Technical description of the product

The RANIT nailed-in anchor types IsoFux NDS8Z, IsoFux NDM8Z, IsoFux NDS90Z and IsoFux NDM90Z consist of a plastic sleeve made of polypropylene (virgin material), a plastic shaft with a plate made of polypropylene (virgin material) and an accompanying specific nail of galvanised steel or stainless steel.

The plates of the anchor types IsoFux NDS8Z and IsoFux NDM8Z have a diameter of 60 mm; the plates of the anchor types IsoFux NDS90Z and IsoFux NDM90Z have a diameter of 90 mm.

The heads of the nail of the anchor types IsoFux NDS8Z and IsoFux NDS90Z have a cover cap made of polyamide squirted on the nail.

Washers for the special nail made of galvanised or stainless steel and separate cover caps made of polyamide belong to the anchor types IsoFux NDM8Z and IsoFux NDM90Z.

The anchor types IsoFux NDS8Z and IsoFux NDM8Z may in addition be combined with the anchor plates T 90, T 110 and T 140.

An illustration and the description of the product are 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 tension resistance	See Annex C 1
Edge distances and spacing	See Annex B 2
Plate stiffness	See Annex C 2
Displacements	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

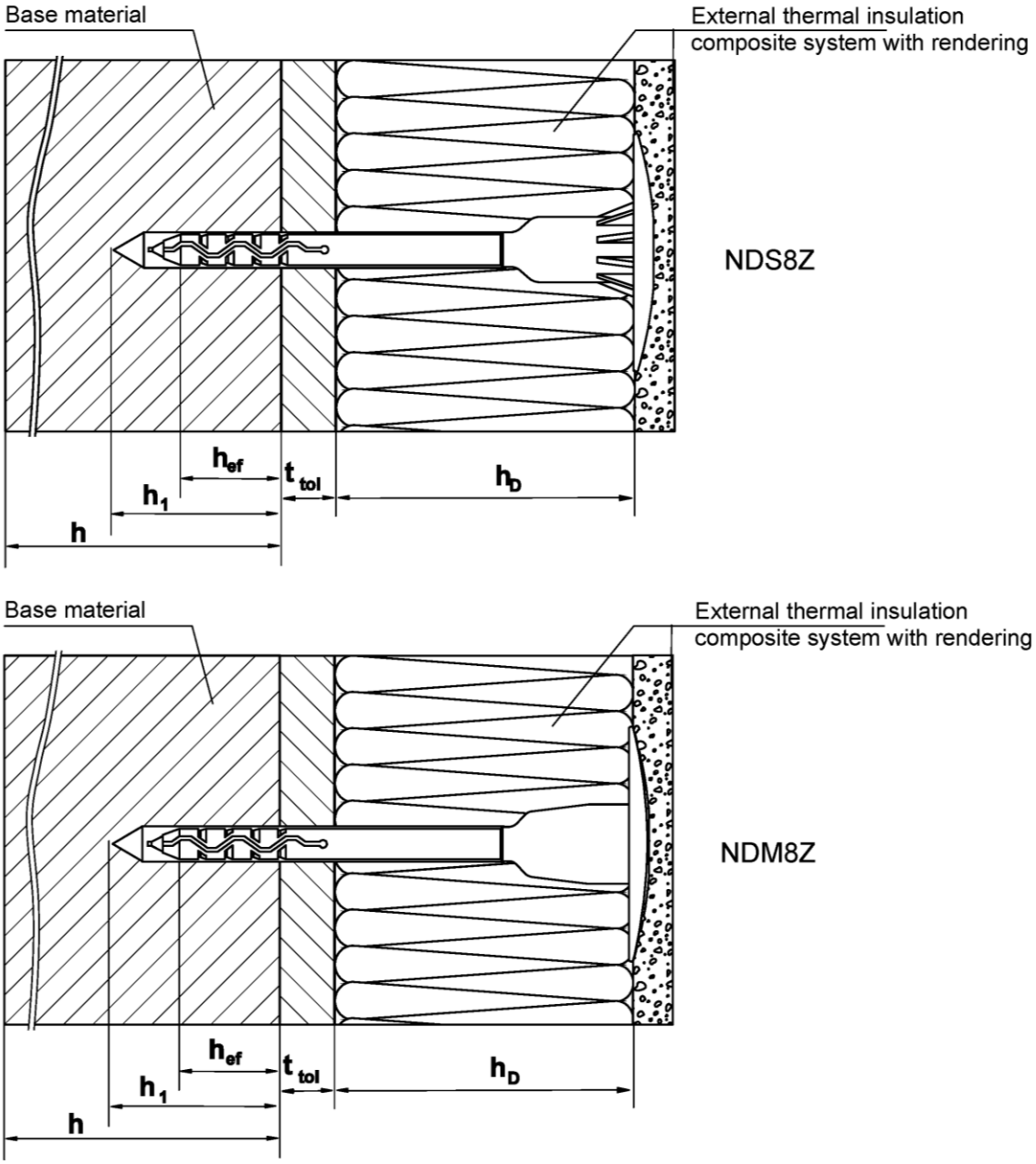
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 20 October 2017 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Aksünger

Deutsches Institut für Bautechnik DIBt



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

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z	**Annex A 1**
Product description installed condition - NDS8Z, NDM8Z	

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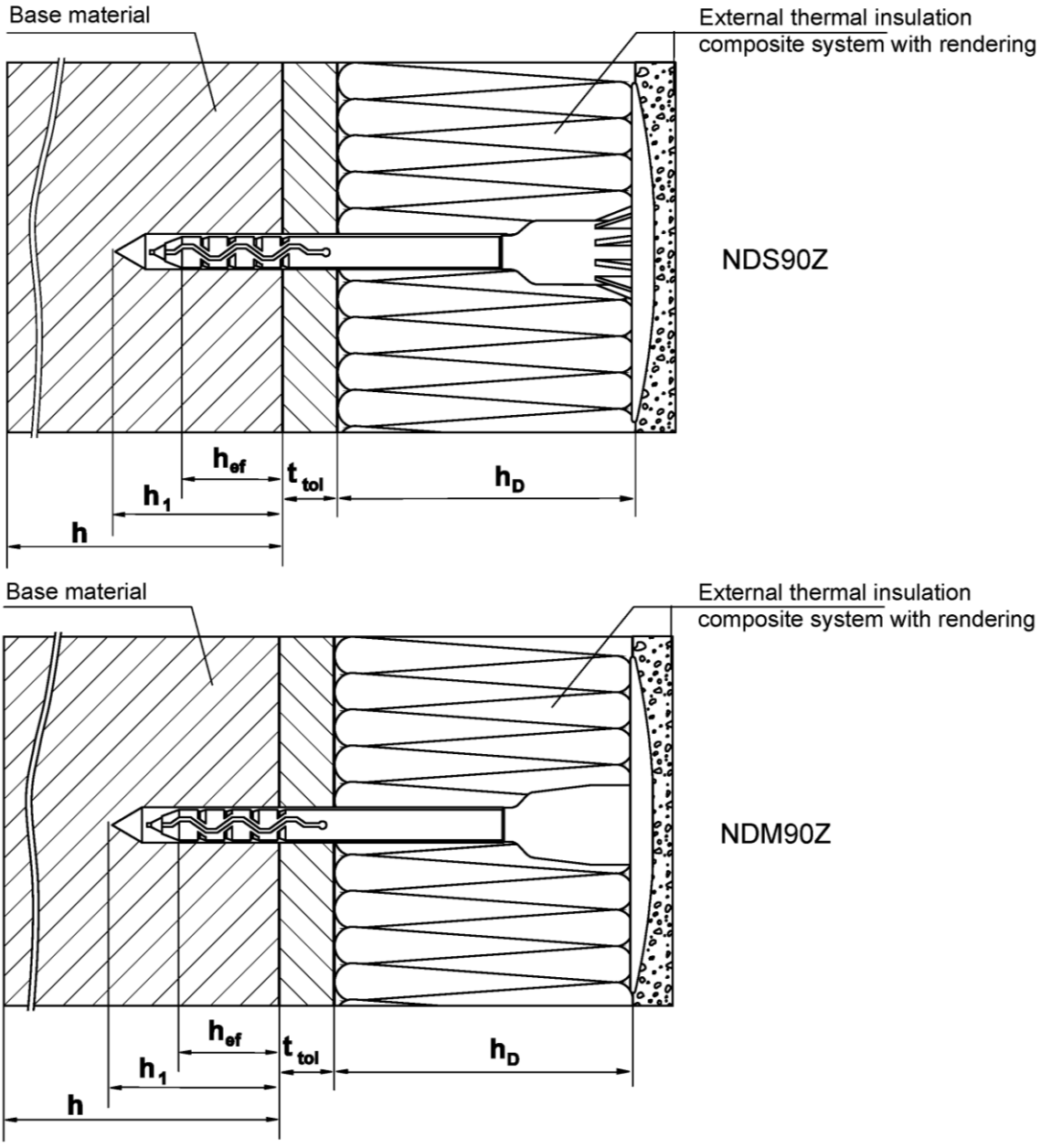

Legend: h = thickness of member (wall)
h_1 = depth of drilled hole to deepest point
h_{ef} = effective anchorage depth
t_{tol} = thickness of equalizing layer or non-load-bearing coating
h_D = thickness of insulation material

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Product description
installed condition - NDS90Z, NDM90Z

Annex A 2

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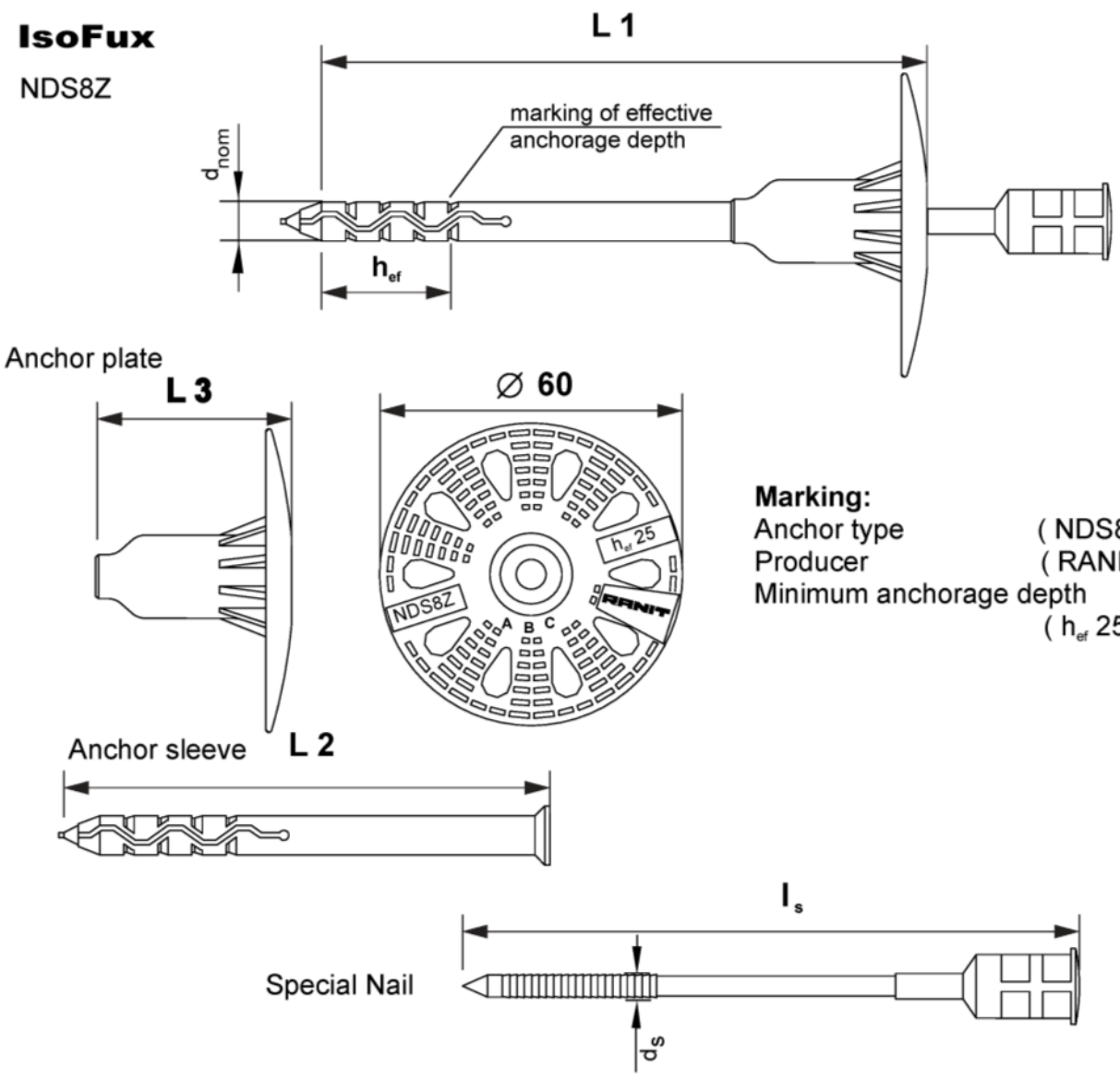
IsoFux

NDS8Z



Marking:
Anchor type (NDS8Z)
Producer (RANIT)
Minimum anchorage depth
(h_{ef} 25)

Table 1: Dimensions — Sizes in mm

Anchor type	Anchor		Anchor L 1		Anchor sleeve L 2		**Anchor plate L 3**
IsoFux NDS8Z	d_{nom}	h_{ef}	min L 1	max L 1	min L 2	max L 2	min L 3
	8	**25**	**80**	**240**	**60**	**200**	**40**

Evaluation of thickness of the insulation h_D of IsoFux NDS8Z
h_D = L1 - t_{tol} - h_{ef} - 5 mm way to telescope (e.g. L1 = 140; t_{tol} = 10)
h_D = 140 - 10 - 25 - 5 = 100 mm = h_{Dmax}

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Product description
Dimensions NDS8Z

Annex A 3

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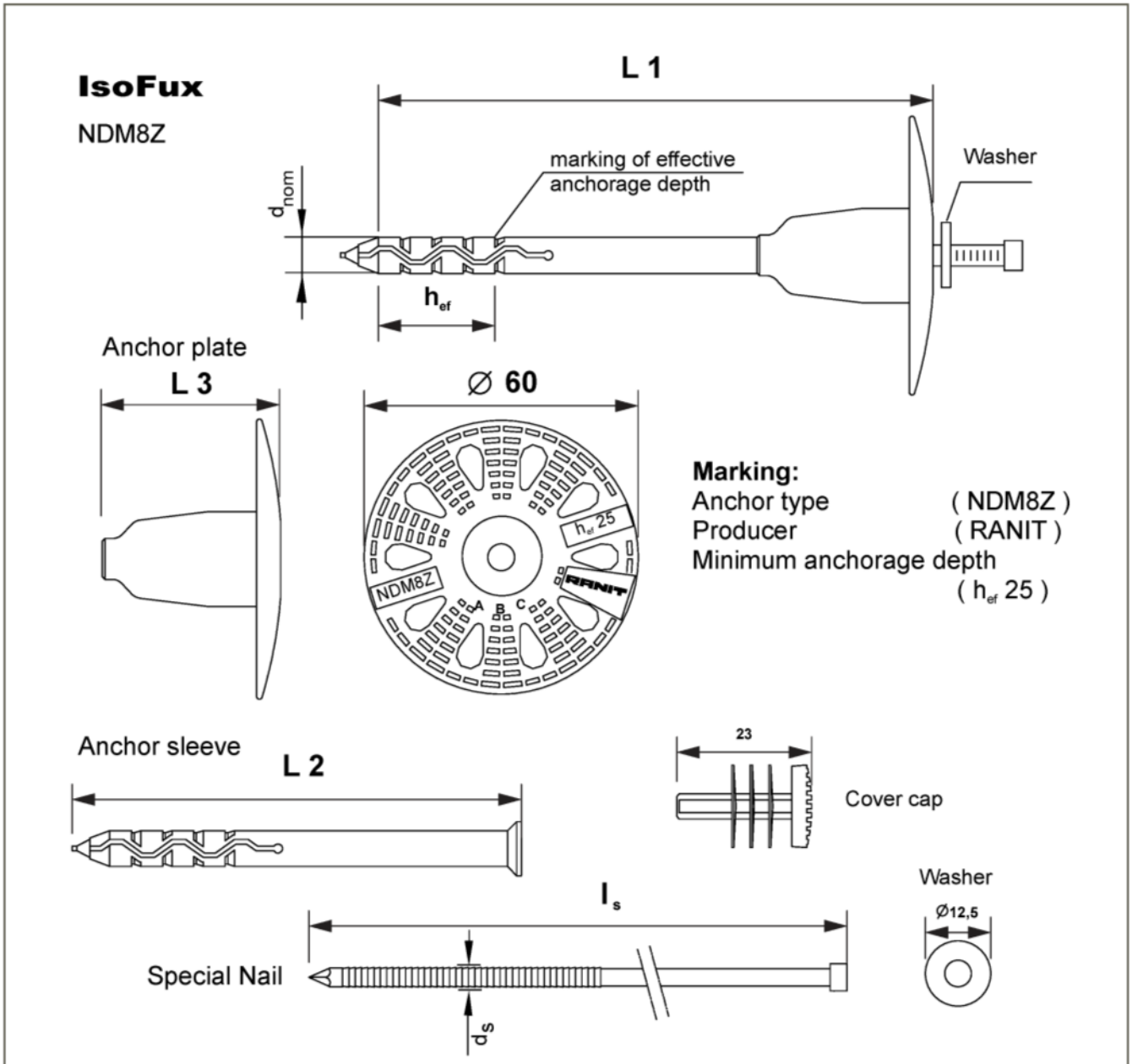

Table 2: Dimensions — Sizes in mm

Anchor type	Anchor		Anchor L 1		Anchor sleeve L 2		**Anchor plate L 3**
IsoFux NDM8Z	d_{nom}	h_{ef}	min L 1	max L 1	min L 2	max L 2	min L 3
	8	**25**	**80**	**220**	**60**	**200**	**40**

Evaluation of thickness of the insulation h_D of IsoFux NDM8Z
h_D = L1 - t_{tol} - h_{ef} - 5 mm way to telescope (e.g. L1 = 140; t_{tol} = 10)
h_D = 140 - 10 - 25 - 5 = 100 mm = h_{Dmax}

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Annex A 4

Product description
Dimensions NDM8Z

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IsoFux
NDS90Z

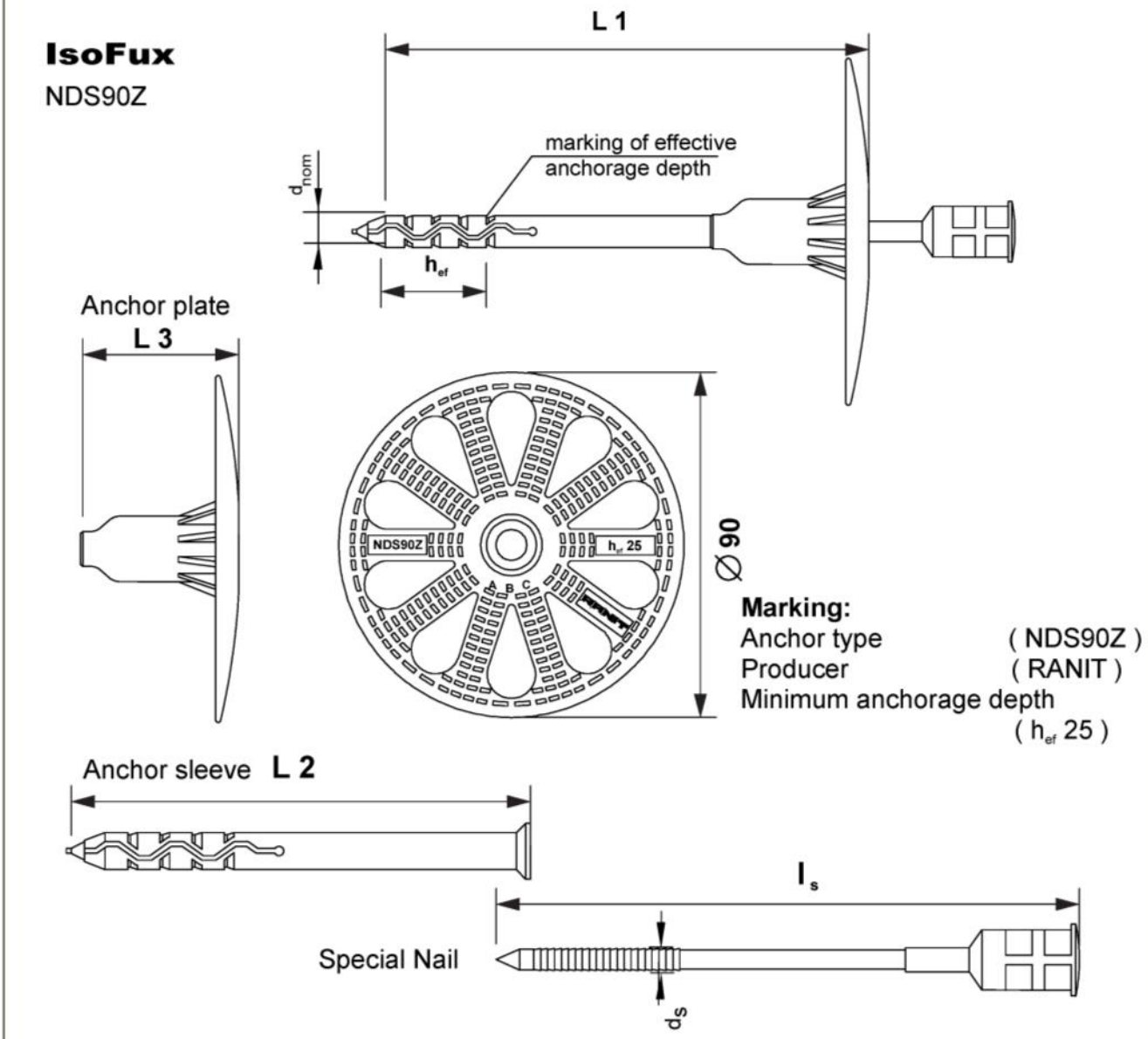

Table 3: Dimensions — Sizes in mm

Anchor type	Anchor		Anchor L 1		Anchor sleeve L 2		**Anchor plate L 3**
IsoFux NDS90Z	d_{nom}	h_{ef}	min L 1	max L 1	min L 2	max L 2	min L 3
	8	**25**	**80**	**240**	**60**	**200**	**40**

Evaluation of thickness of the insulation h_D of IsoFux NDS90Z
h_D = L1 - t_{tol} - h_{ef} - 5 mm way to telescope (e.g. L1 = 140; t_{tol} = 10)
h_D = 140 - 10 - 25 - 5 = 100 mm = h_{Dmax}

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Product description
Dimensions NDS90Z

Annex A 5

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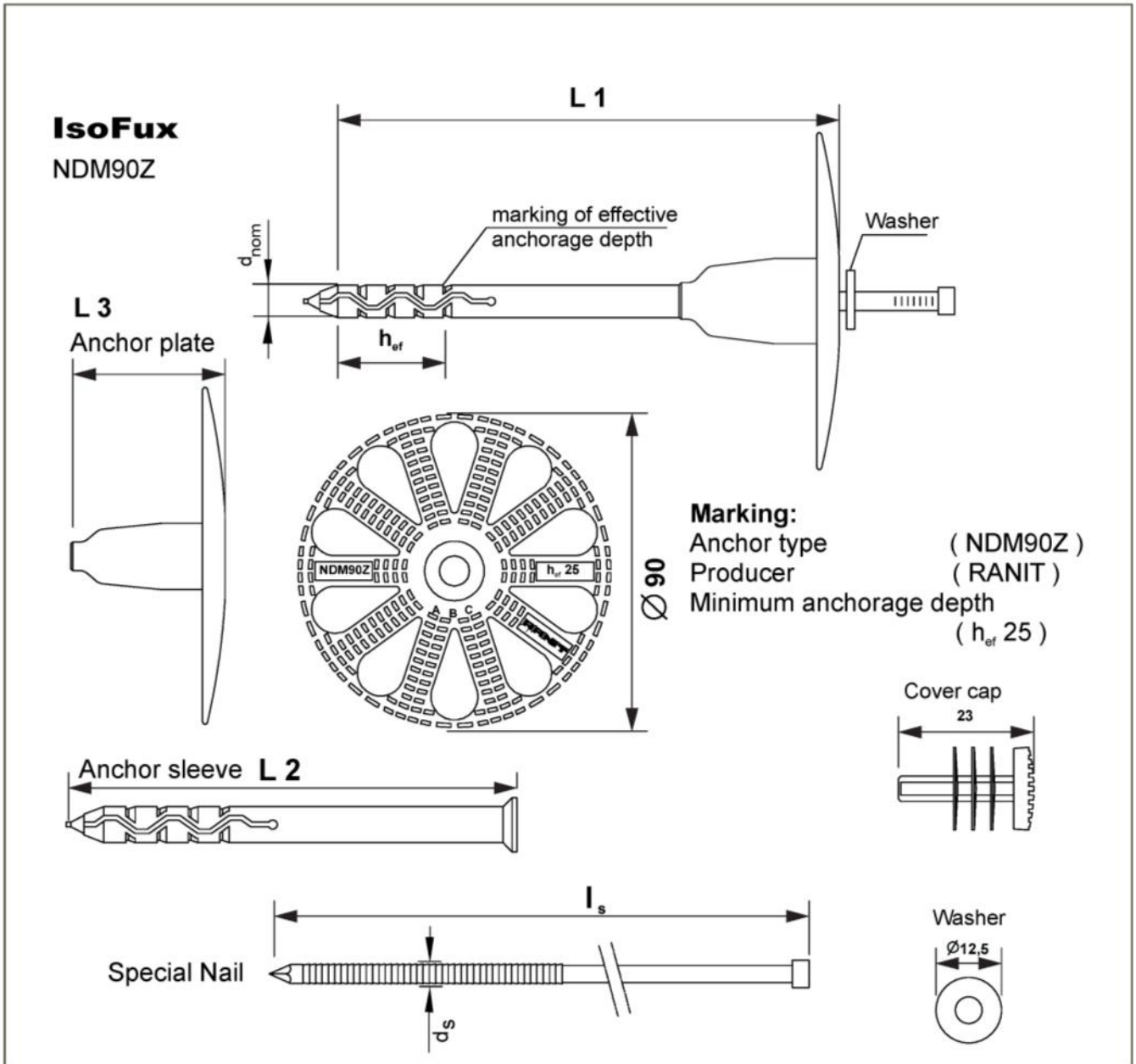

Table 4: Dimensions — Sizes in mm

Anchor type	Anchor		Anchor L 1		Anchor sleeve L 2		**Anchor plate L 3**
IsoFux NDM90Z	d_{nom}	h_{ef}	min L 1	max L 1	min L 2	max L 2	min L 3
	8	**25**	**80**	**220**	**60**	**200**	**40**

Evaluation of thickness of the insulation h_D of IsoFux NDM90Z
h_D = L1 - t_{tol} - h_{ef} - 5 mm way to telescope (e.g. L1 = 140; t_{tol} = 10)
h_D = 140 - 10 - 25 - 5 = 100 mm = h_{Dmax}

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Product description
Dimensions NDM90Z

Annex A 6

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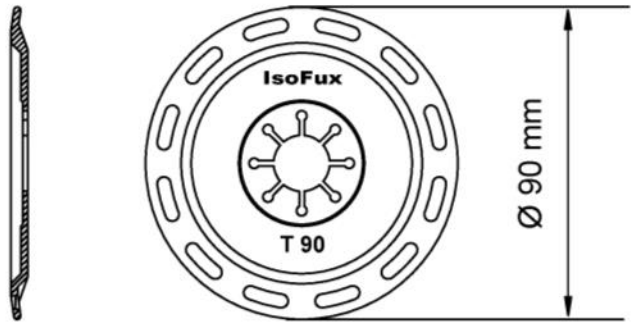

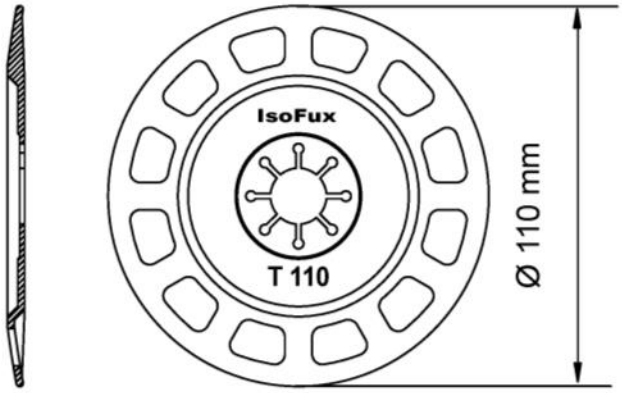

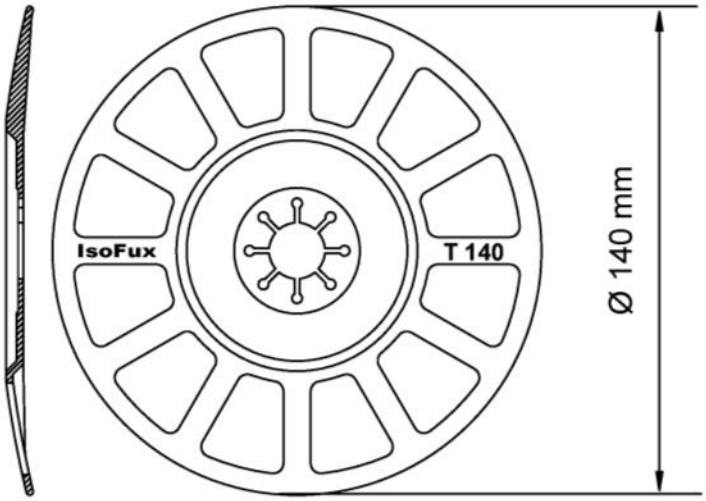

IsoFux NDS8Z, NDM8Z

Product description
Plates T90, T110 und T140
in combination with **IsoFux** NDS8Z; NDM8Z

Annex A 7

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IsoFux NDM8Z, NDM90Z

Product description
Installation Tool Spit PULSA 700P for NDM8Z, NDM90Z

Annex A 8

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Tabelle A5: Materials

Description	**Material**
Anchor sleeve NDS8Z, NDM8Z, NDS90Z, NDM90Z colour: grey or orange	Polypropylene (PP) (virgin material)
Anchor plate NDS8Z, NDM8Z, NDS90Z, NDM90Z colour: grey or orange	Polypropylene (PP) (virgin material)
Cover cap NDM8Z, NDM90Z	Polyamide 6.6 (virgin material)
Plastic head Nagel NDS8Z, NDS90Z	Polyamide 6.0 (virgin material)
Halteteller T90 , T110, T140 colour: grey or orange	Polyamid 6.6 (virgin material)
Special Hammernail NDS8Z, NDS90Z Special Hammernail NDM8Z, NDM90Z	Steel, electrogalvanized ≥ 5 µm, nach EN ISO 4042 :1999 f_{uk} ≥ 500 N/mm^2; f_{yk} ≥ 400 N/mm^2
Washer NDM8Z, NDM90Z	Stainless steel, material number 1.4401 1.4571, 1.4301 oder 1.4567 nach ISO 3506:2009-11 f_{uk} ≥700 N/mm2 , f_{yk} ≥ 450 N/mm^2

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Product description
Materials

Annex A 9

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Specifications of intended use

Anchorages subject to:

- The anchor shall only be used for the transmission of wind suction loads and shall not be used for the transmission of dead loads of thermal insulation composite system.

Base materials:

- Normal weight concrete (use category A) according to Annex C 1
- Solid masonry (use category B) according Annex C 1 and C 2
- Hollow or perforated masonry (use category C) according to Annex C 1 and C 2
- Autoclaved aerated concrete (use category E) according to Annex C 1
- For other base materials of the use categories A, B, C and E, the characteristic resitance of the anchor may be determined by job site tests according to EOTA Technical Report TR051, Edition Dezember 2016.

Application temperature range:

- 0°C to +40°C (maximmum short term temperature +40°C and maximum long term temperature +24°C)

Design:

- The anchors are designed under the responsibility of an engineer experienced in anchorages and masonry work with the partial safty factors $\gamma_{M = 2,0}$ and $\gamma_{F = 1,5}$, if there are no other national regulations.
- Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored. The position of the anchor shall be indicated on the design drawings.
- Fasteners are only to be used for multiple fixing of thermal insulation composite system.

Installation:

- Drilling method shall comply to Annex C 1
- Anchor installation carried out by appropiately qualified personnel and under the supervision of the person responsible for technical matters on the site.
- Ambient temperature during the installation of the anchor 0°C to +40°C
- Exposure to UV due to solar radiation of the anchor not protected by rendering < 6 weeks.

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z	**Annex B 1**
Intended use Specification	

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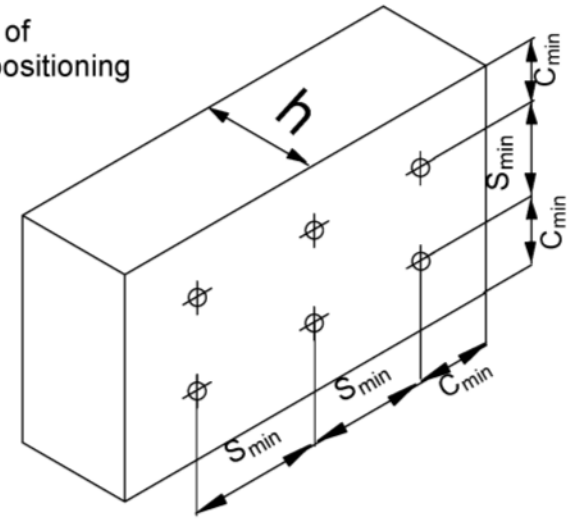
Table B1: Installation parameters

Anchor type	**IsoFux**		NDS8Z, NDM8Z NDS90Z, NDM90Z
Drill hole diameter	d_0	(mm)	8
Catting diameter of drill bit	d_{cut}	(mm) ≤	8,45
Depth of drill hole	h_1	(mm) ≥	35
Effective anchorage depth	h_{ef}	(mm) ≥	25

Table B2: Anchor distances and dimensions of members

Anchor type		NDS8Z; NDM8Z, NDS90Z, NDM90Z
Minimum spacing	S_{min} = [mm]	100
Minimum edge distance	C_{min} = [mm]	100
Minimum thickness of concrete member	h ≥ [mm]	100

Scheme of anchor positioning

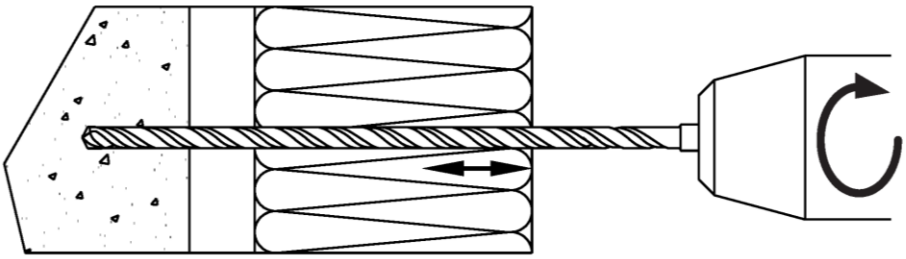


IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

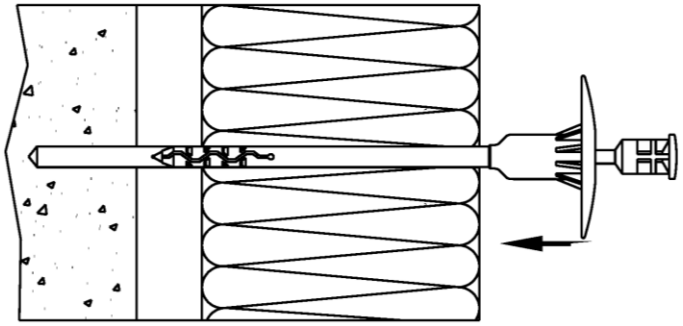
Intended use
Installation parameters, minimum thickness of base material, edge distance and spacing

Annex B 2

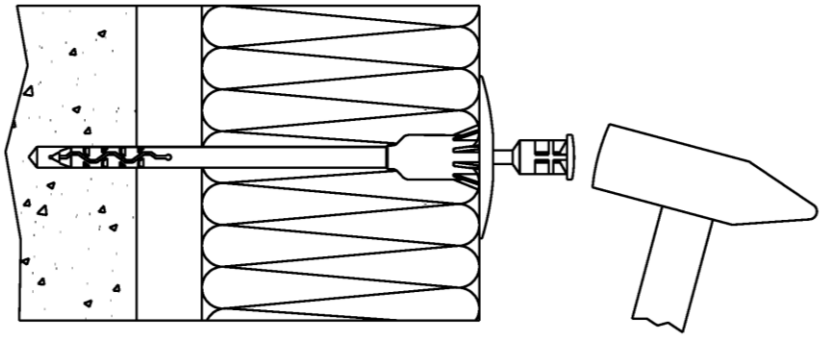
Deutsches Institut für Bautechnik DIBt



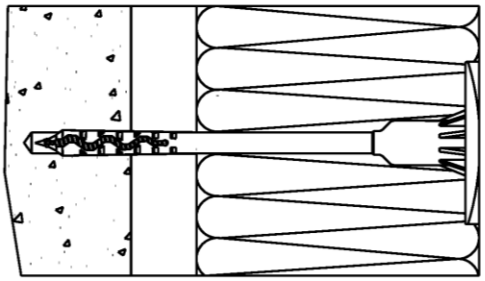
1) Drill the hole perpendicular to the substrate surface. Clean the drill hole.



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.

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Intended use

Installation instructions surface mount

Annex B 3

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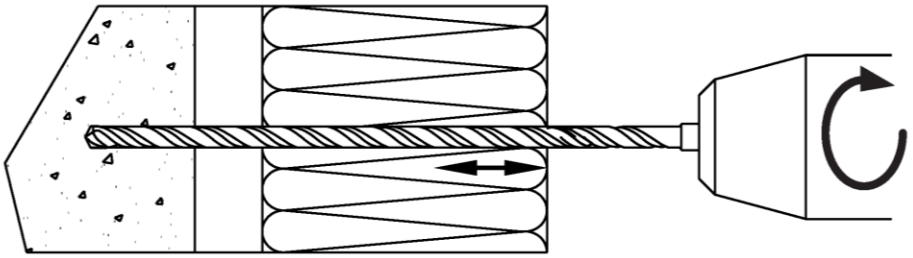
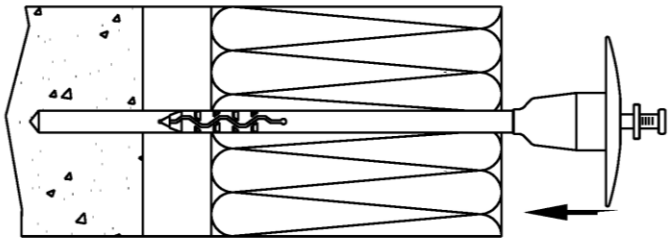
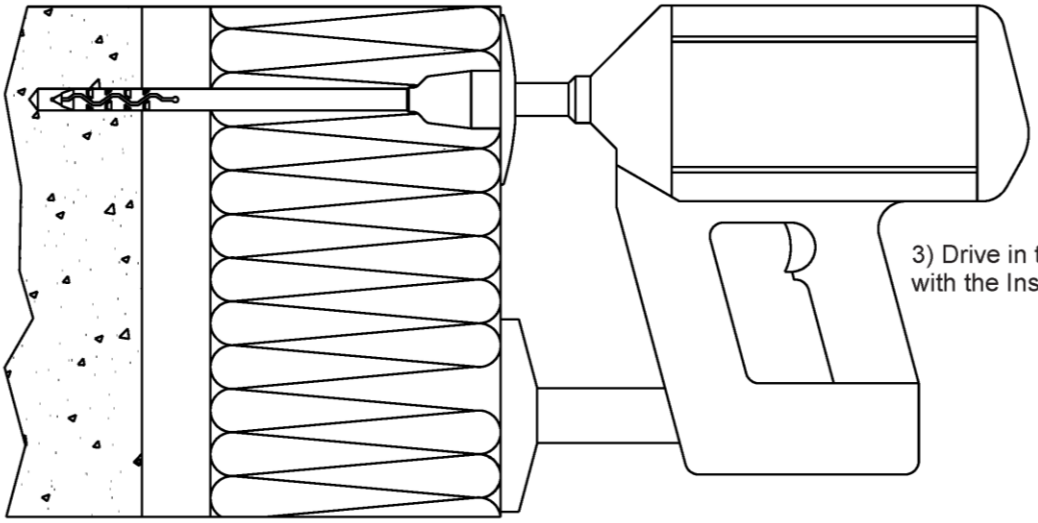


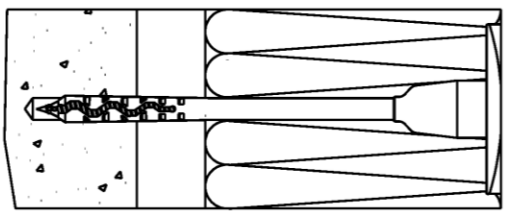
1) Drill the hole perpendicular to the substrate surface. Clean the drill hole.



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 Installation Tool



4) Installed condition.

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Intended use

Installation instructions - surface mount with Installation Tool

Annex B 4

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

Anchor type	**IsoFux** NDS 8Z, NDM 8Z, NDS90Z, NDM90Z				
Base material	Bulk density class ρ [kg/dm³]	Minimum compressive strength f_b [N/mm²]	Remarks	Drill method	N_{Rk} [kN]
Concrete C12/15 bis C50/60 EN 206 : 2013				Hammer	**0,9**
Clay bricksl, Mz EN 771-1 : 2011	≥ 2,0	12	Cross-section reduced by vertical perforation up to 15%	Hammer	**0,9**
Sand-lime solid bricks, KS EN 771-2 : 2011	≥ 1,8	12	Cross-section reduced by vertical perforation up to 15%	Hammer	**0,9**
Sand-lime perforated bricks, KSL EN 771-2 : 2011	≥ 1,4	12	Cross-section reduced by vertical perforation more than 15%	Hammer	**0,6** 1)
Vertically perforated clay brick, HLz EN 771-1 : 2011	≥ 1,0	12	Cross-section reduced by vertical perforation for more than 15% and less than 50%. Exterior web thickness > 14 mm	Rotary	**0,4**
Lightweight concrete solid bricks, Vbl 4 EN 771-3 : 2011	≥ 0,7	4	Proportion of hole up to 10% maximum extension of hole: length=110 mm; width=45 mm	Hammer	**0,2**
Lightweight concrete hollow blocks, Hbl 2 DIN V 18151-100 : 2005-10 EN 771-3 : 2011	≥ 0,9	2	**Exterior web thickness ≥ 35 mm see Annex C 2**	Rotary	**0,3**
Vertically perforated clay bricks, 380x250x235 mm, HLZ Reference brick according to ÖNORM B6124 : 2013-12-15	≥ 1,5	12	**Exterior web thickness ≥ 9 mm see Annex C 2**	Rotary	**0,4**

1) The value applies only for outer web thicknesses ≥ 24 mm; otherwise the characteristic resistance shall be determined by job-site pull-out tests.

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Performance
Characteristic resistance to tension loads

Annex C 1

Deutsches Institut für Bautechnik DIBt

Table C2: Assignment type of anchor for lightweight concrete hollow blocks according to DIN 18151-100:2005-10 (EN 771-3:2011)

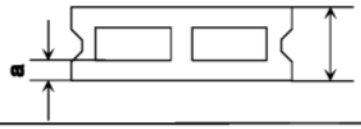
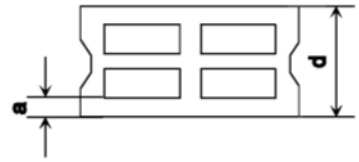
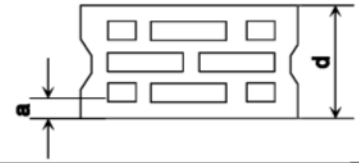
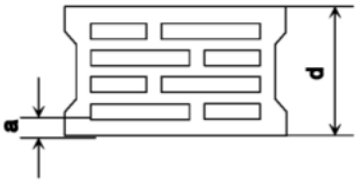
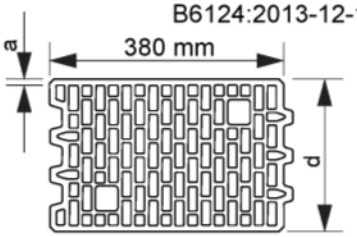
Geometry	Thickness in longitudinal direction d [mm]	Outer web a [mm]
	175	50
	240 300	50
	175	35
	240 300 365	35
	240 300 365	30
Reference brick acc. ÖNORM B6124:2013-12-15 	250	9

Table C3: Plate stiffness according EOTA Technical Report TR 026: May 2016

Ancher type	Diameter of the anchor plate [mm]	Load resistance of the anchor plate [kN]	Plate stiffness [kN/mm]
Isofux NDS8Z	60	2,2	0,9
Isofux NDS90Z	90		
Isofux NDM8Z	60	1,3	0,7
IsoFux NDM90Z	90		

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Performance

Assignment type of anchor for hollow blocks of lightweight concrete, plate stiffness

Annex C 2

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Table C4: Displacements

Base material	Bulk density class ρ [kg/dm³]	Minimum compressive strength f_b [N/mm²]	Tension load N [kN]	Displacements $\delta_m(N)$ [mm]
Concrete C12/15 - C50/60 (EN 206-1 : 2013)			0,3	0,6
Clay brick, Mz EN 771-1 : 2011	≥ 2,0	12	0,3	0,8
Sand-lime solid brick , KS EN 771-2 : 2011	≥ 1,8	12	0,3	0,6
Vertically perforated, KSL EN 771-2 : 2011	≥ 1,4	12	0,2	0,8
Vertically perforated, clay brick HLZ EN 771-1 : 2011	≥ 1,0	12	0,15	0,3
Lightweight concrete solid bricks, Vbl EN 771-3 : 2011	≥ 0,7	4	0,05	0,3
Lightweight concrete hollow blocks, Hbl (DIN V 18151-100 : 2005-10) EN 771-3 : 2011	≥ 0,9	2	0,1	0,3
Vertically perforated clay bricks, HLZ Reference brick according to ÖNORM B6124:2013-12-15)	≥ 1,5	12	0,15	0,3

Table C5: Point thermal transmittance according EOTA Technical Report TR 025: May 2016

Anchor type	Insulation thickness h_D [mm]	point thermal transmittance χ [W/K]
IsoFux NDS8Z IsoFux NDS90Z	60 - 210	0,002
IsoFux NDM8Z IsoFux NDM90Z	60 - 190	

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Performance

Displacements, point thermal transmittance

Annex C 3