

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-07/0129
of 15 June 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

European Assessment Document (EAD)
330196-01-0604

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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, a plastic shaft with a plate made of polypropylene 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 Mechanical resistance and stability (BWR 1)

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

English translation prepared by DIBt

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+

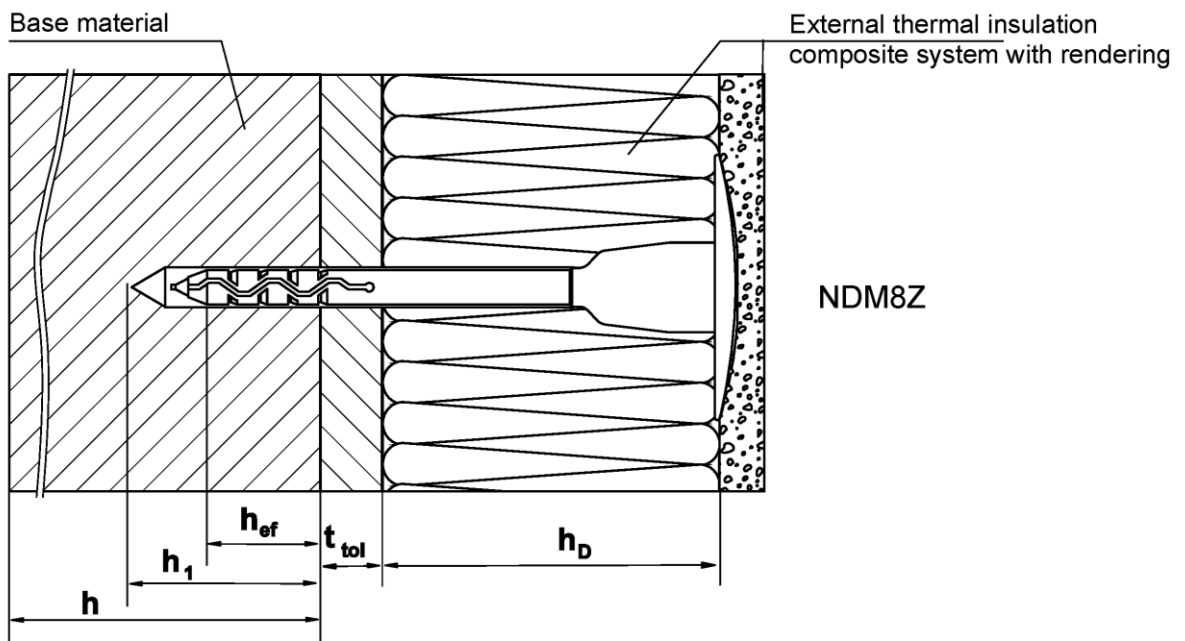
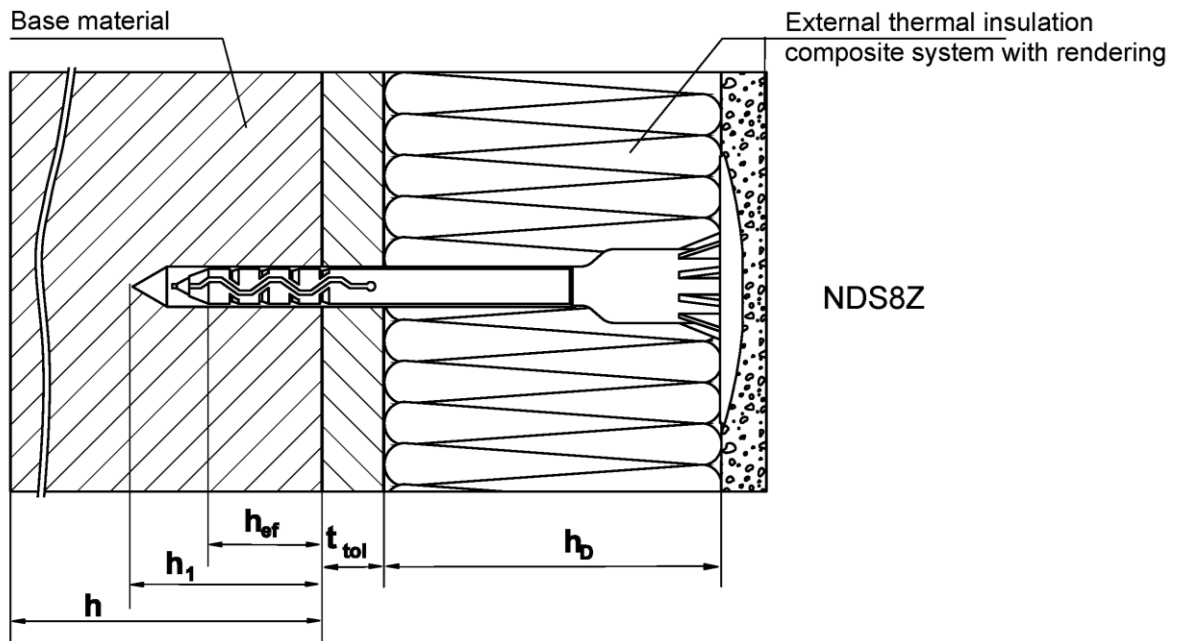
5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

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 15 June 2017 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Aksünger

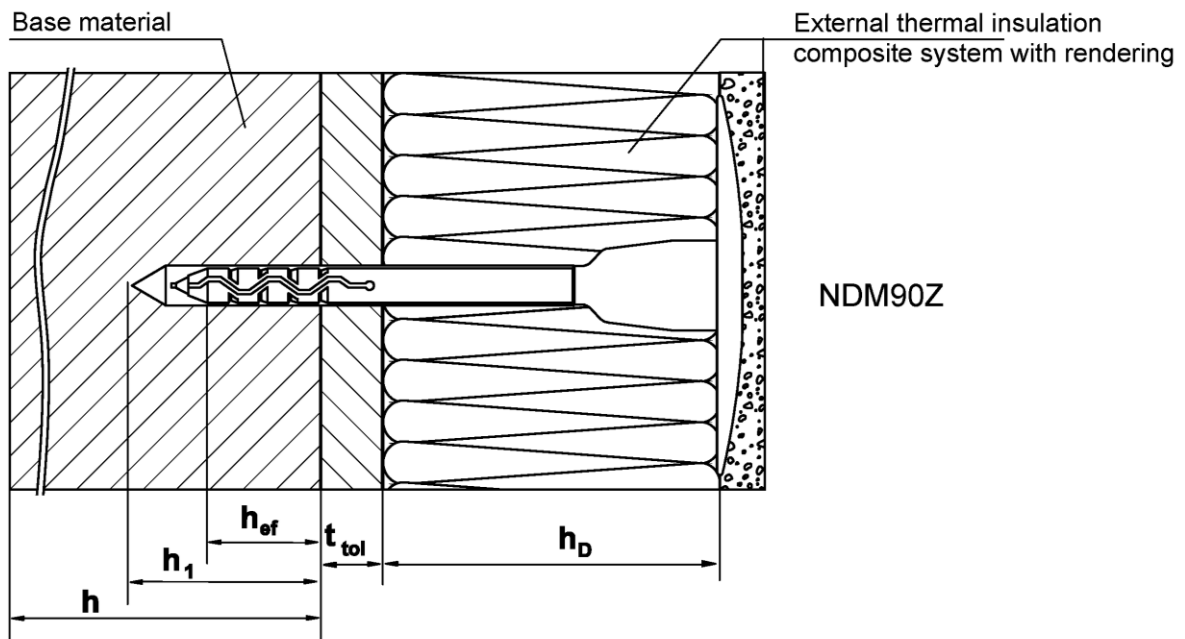
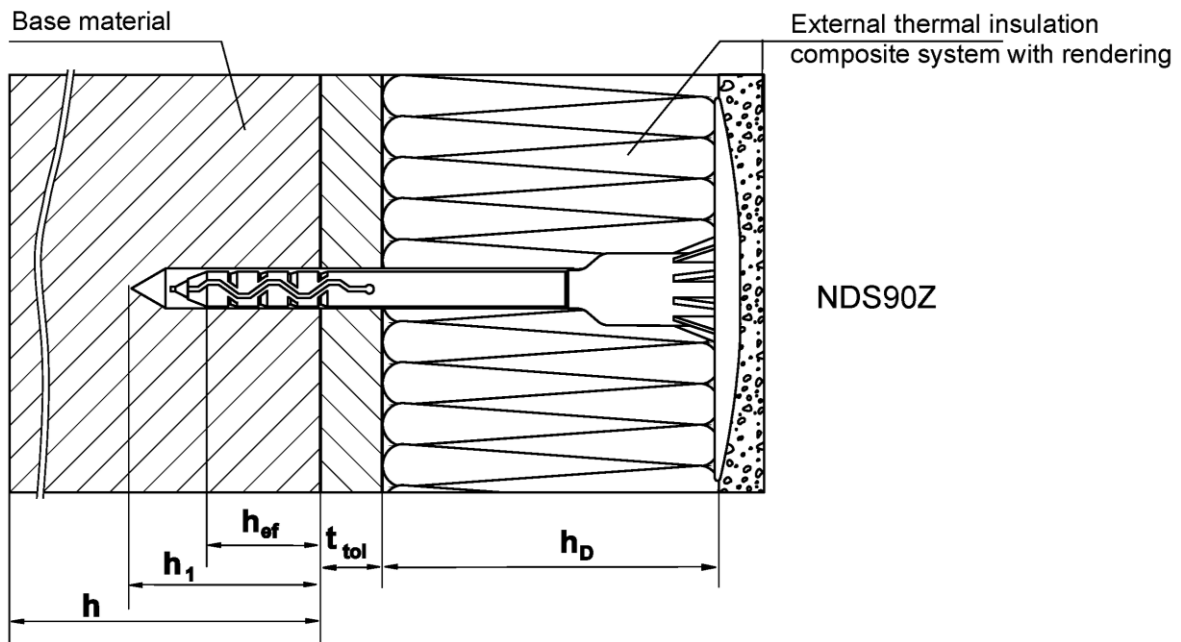


Legend: h = thickness of member (wall)
 h_1 = depth of drilled hole to deepest point
 h_{ef} = effective anchorage depth
 t_{tol} = thickness of equalizing layer or non-load-bearing coating
 h_D = thickness of insulation material

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Product description
 installed condition - NDS8Z, NDM8Z

Annex A 1



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

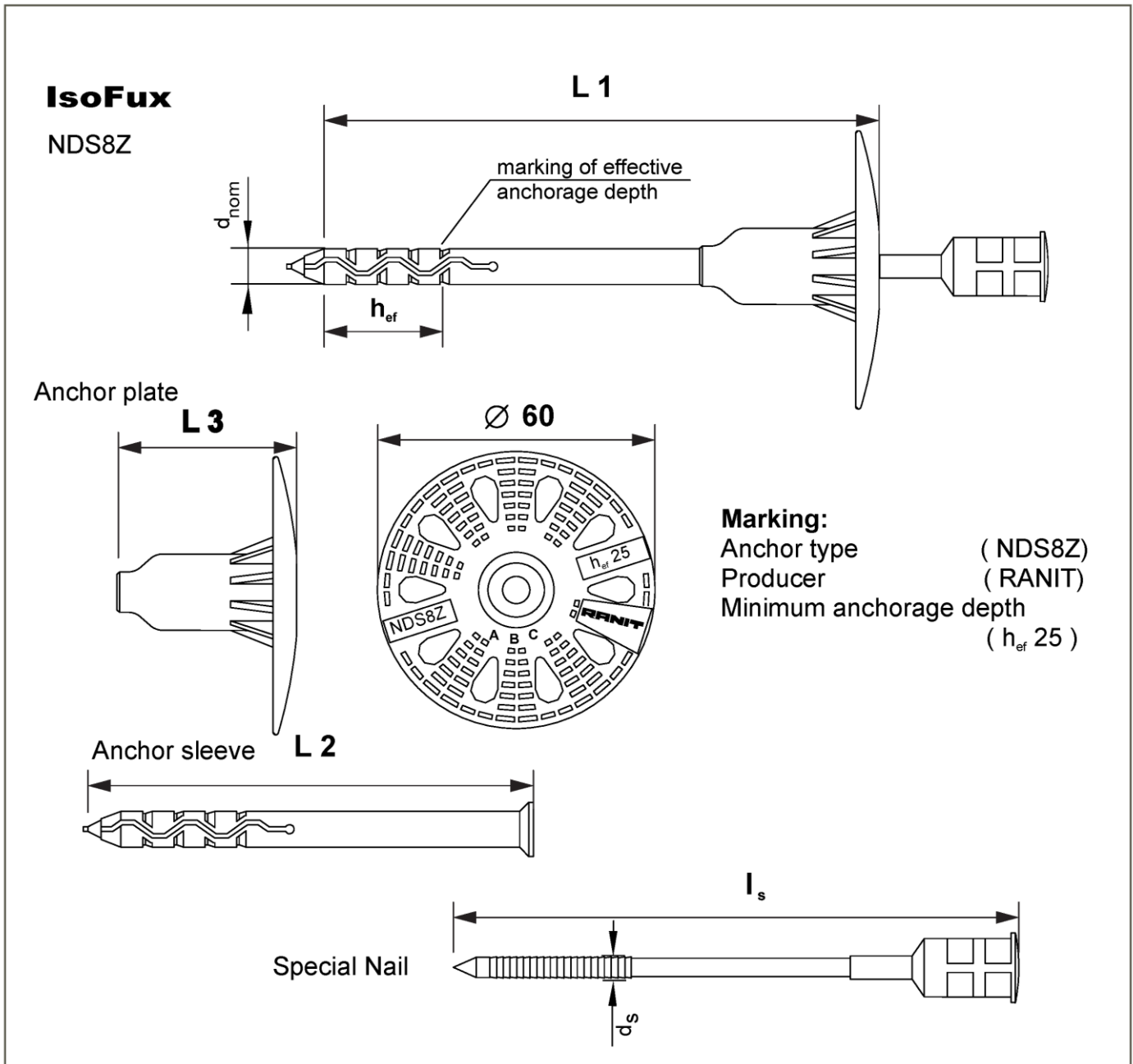


Table 1: Dimensions

Sizes in mm

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

Evaluation of thickness of the insulation h_D of IsoFux NDS8Z

$$h_D = L1 - t_{tol} - h_{ef} - 5 \text{ mm way to telescope} \quad (\text{e.g. } L1 = 140; t_{tol} = 10)$$

$$h_D = 140 - 10 - 25 - 5 = 100 \text{ mm} = h_{Dmax}$$

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Product description

Dimensions NDS8Z

Annex A 3

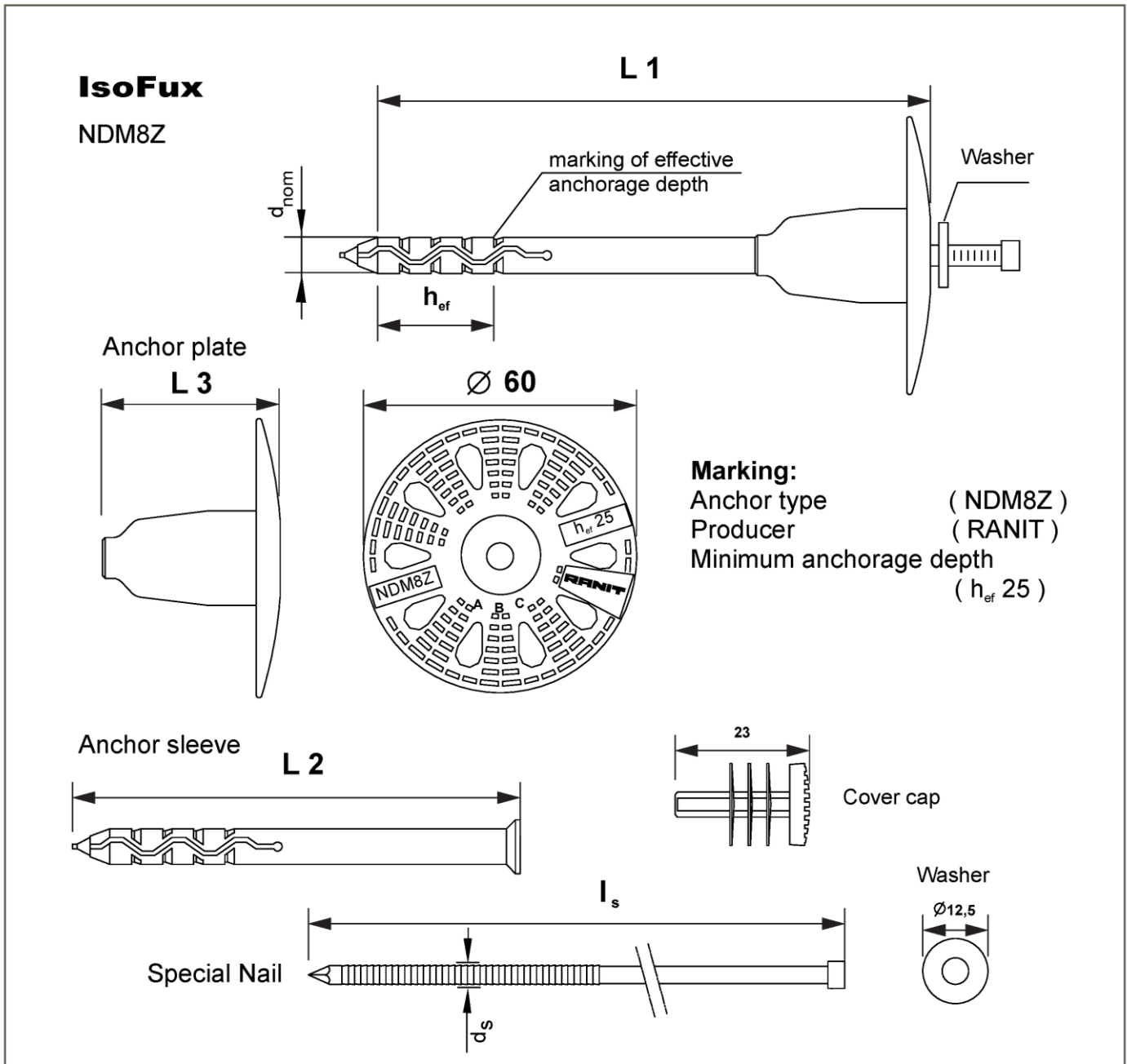


Table 2: Dimensions

Sizes in mm

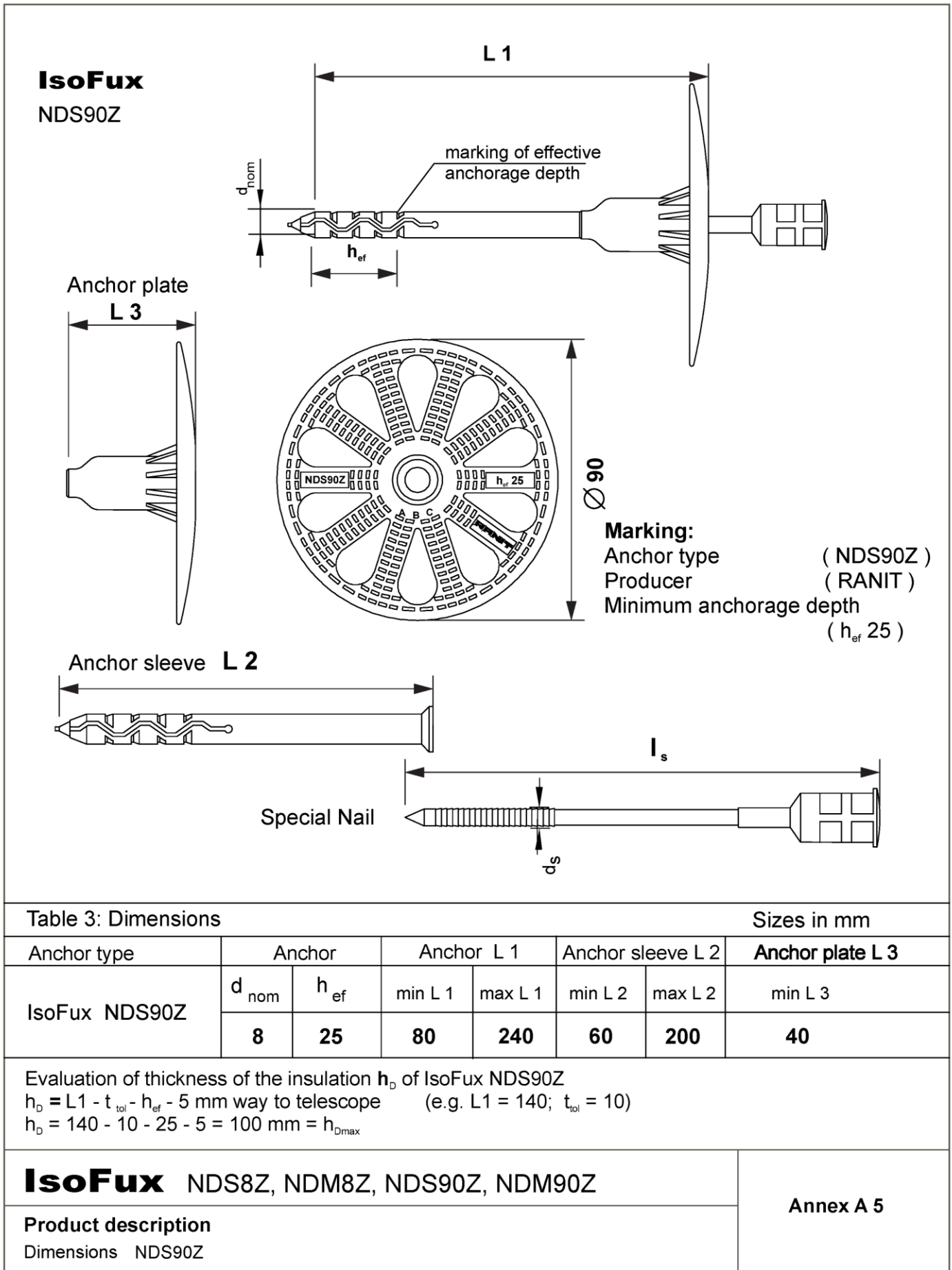
Anchor type	Anchor		Anchor L 1		Anchor sleeve L 2		Anchor plate L 3
	d_{nom}	h_{ef}	min L 1	max L 1	min L 2	max L 2	min L 3
IsoFux NDM8Z	8	25	80	220	60	200	40

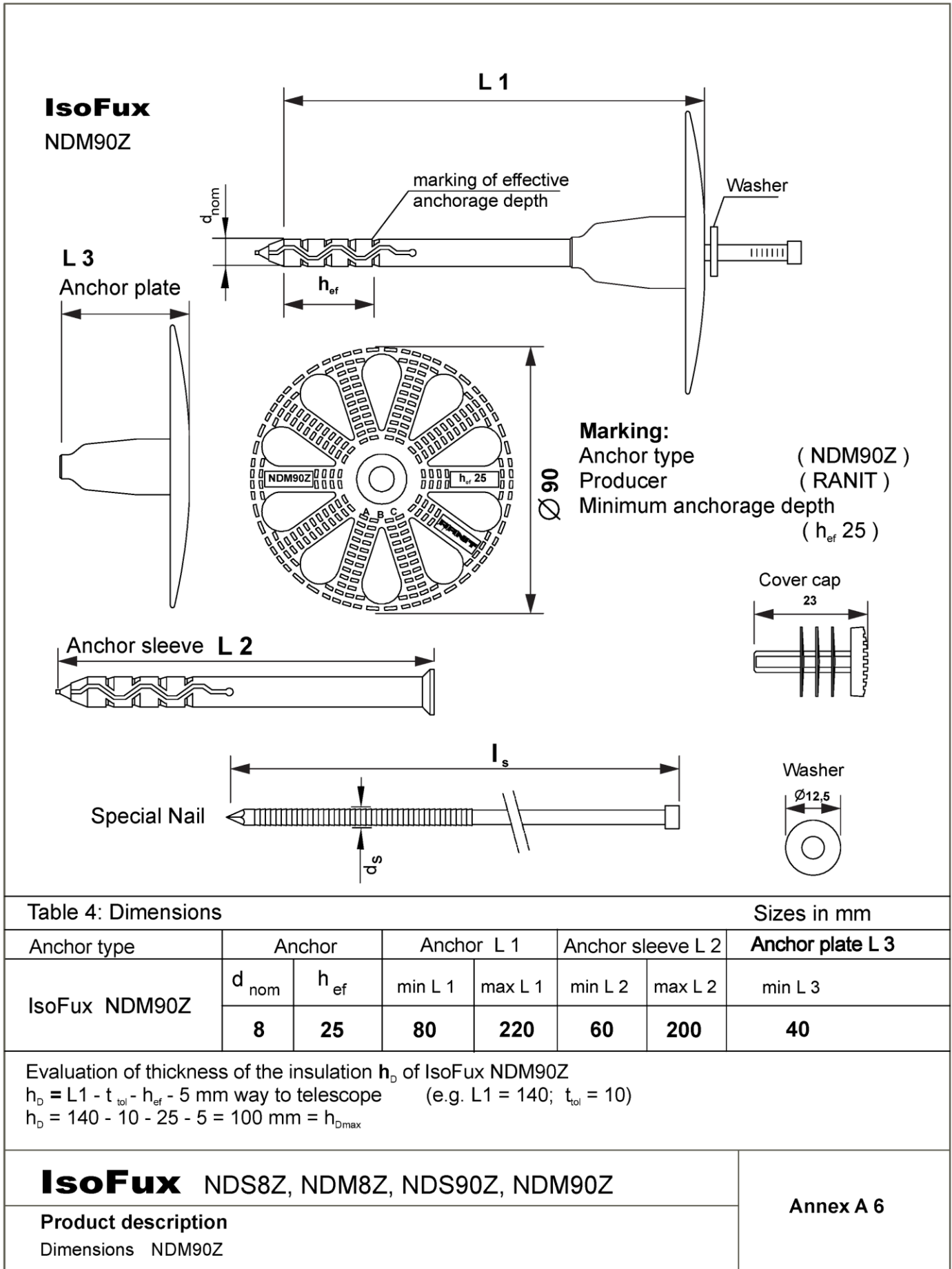
Evaluation of thickness of the insulation h_D of IsoFux NDM8Z
 $h_D = L1 - t_{tol} - h_{ef} - 5 \text{ mm way to telescope}$ (e.g. $L1 = 140$; $t_{tol} = 10$)
 $h_D = 140 - 10 - 25 - 5 = 100 \text{ mm} = h_{Dmax}$

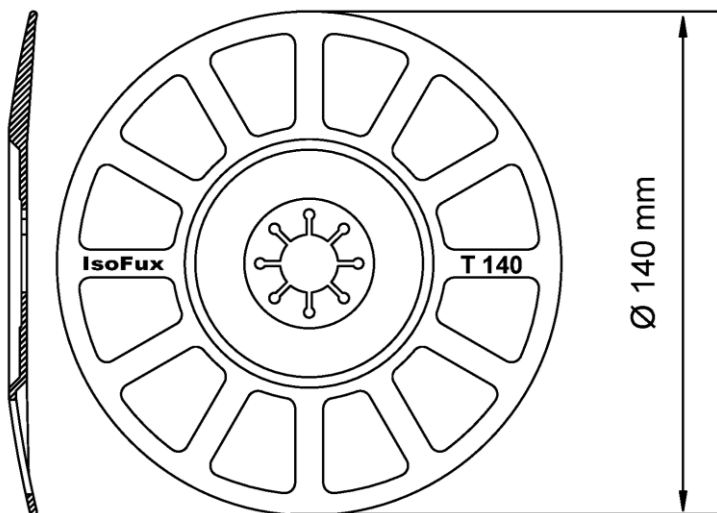
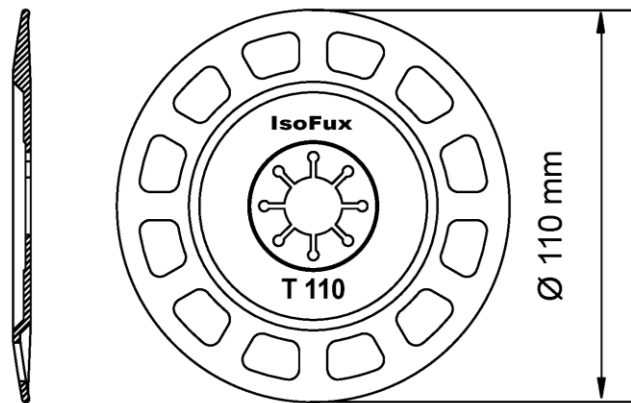
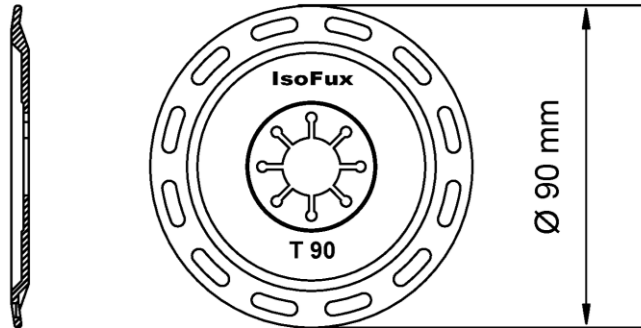
IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Product description
Dimensions NDM8Z

Annex A 4







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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 Spitz PULSA 700P for NDM8Z, NDM90Z

Annex A 8

Tabelle A5: Materials

Benennung	Werkstoff
Anchor sleeve NDS8Z, NDM8Z, NDS90Z, NDM90Z Colour: grey or orange	Polypropylene (PP)
Anchor plate NDS8Z, NDM8Z, NDS90Z, NDM90Z Colour: grey or orange	Polypropylene (PP)
Cover cap NDM8Z, NDM90Z	Polyamid 6.6
Plastic Head of Nail NDS8Z, NDS90Z	Polyamid 6.0
Additional plate T90, T110, T140 Colour: grey or orange	Polyamid 6.6
Special Hammer nail NDS8Z, NDS90Z Special Hammer nail NDM8Z, NDM90Z	Steel, electrogalvanized $\geq 5 \mu\text{m}$, acc. EN ISO 4042:1999 $f_{uk} \geq 500 \text{ N/mm}^2$; $f_{yk} \geq 400 \text{ N/mm}^2$
Washer NDM8Z, NDM90Z	stainless steel, material number 1.4401 1.4571, 1.4301 or 1.4567 acc. to ISO 3506:2009-11 $f_{uk} \geq 700 \text{ N/mm}^2$, $f_{yk} \geq 450 \text{ N/mm}^2$

IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

Product description
Materials

Annex A 9

Specifications of intended use

Anchorage 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
- For other base materials of the use categories A, B, and C, the characteristic resistance 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 (maximum 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 safety 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 with Annex C 1
- Anchor installation carried out by appropriately 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

Intended use
Specification

Annex B 1

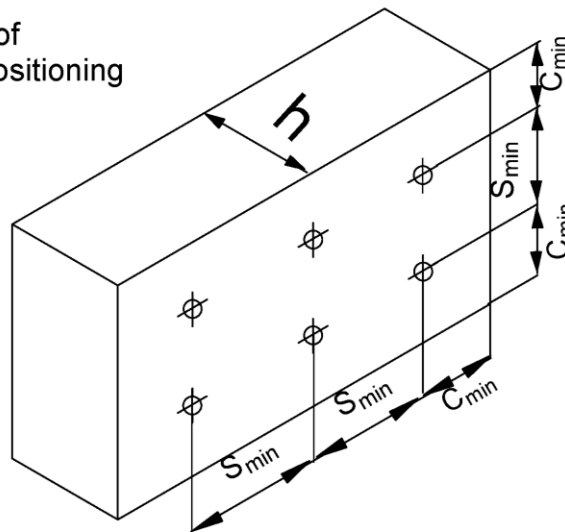
Table B1: Installation parameters

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

Table B2: Anchor distances and dimensions of members

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

Scheme of
anchor positioning

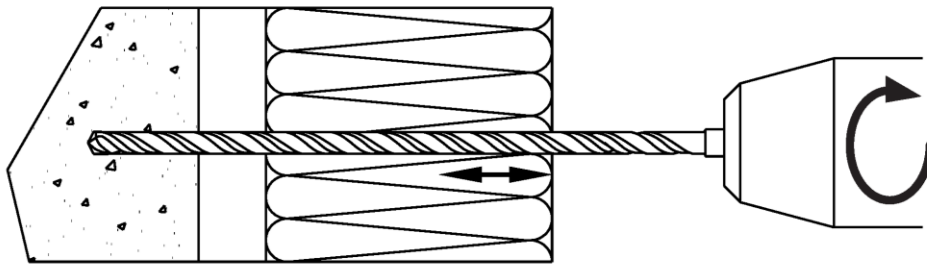


IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

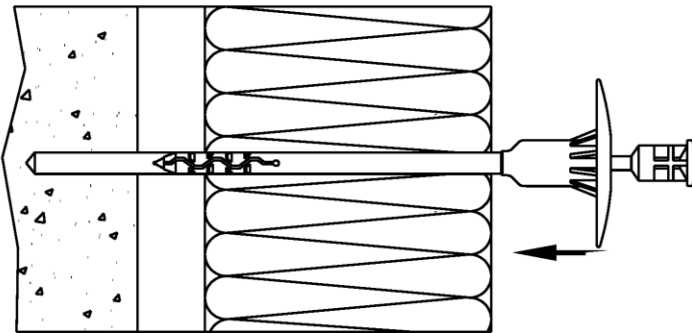
Intended use

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

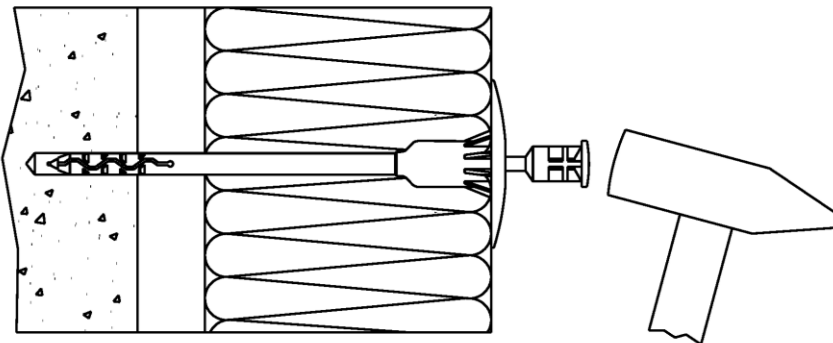
Annex B 2



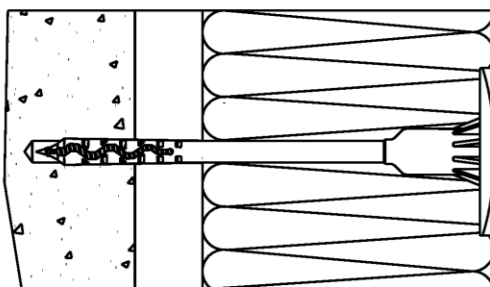
1) Drill the hole perpendicular to the substrate surface. Clean the drill hole.



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.

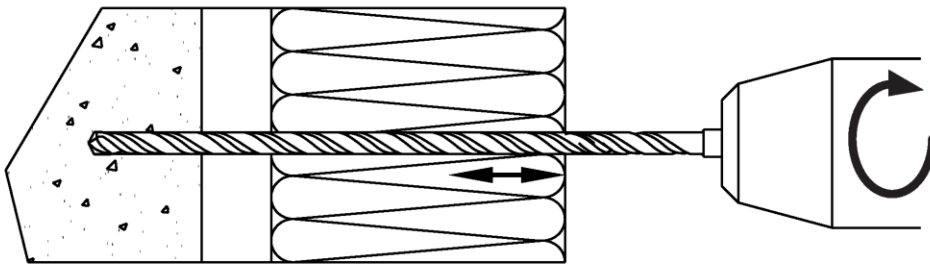
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IsoFux NDS8Z, NDM8Z, NDS90Z, NDM90Z

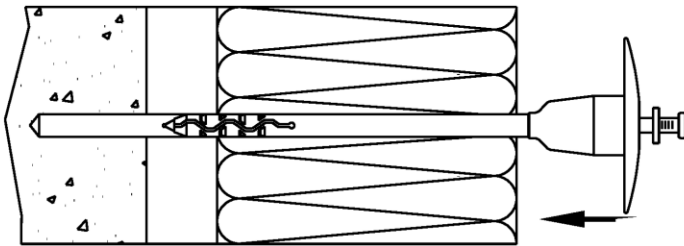
Intended use

Installation instructions surface mount

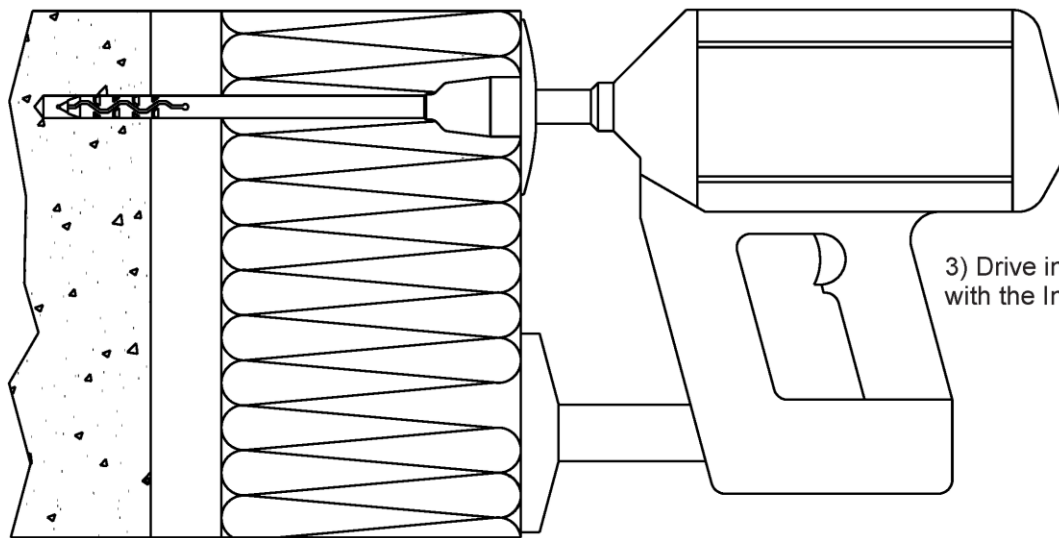
Annex B 3



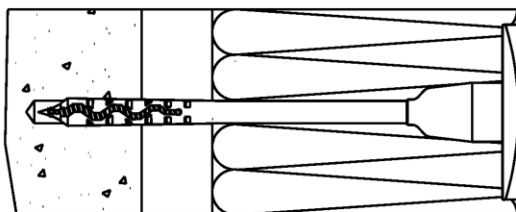
1) Drill the hole perpendicular to the substrate surface. Clean the drill hole.



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

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/dm ³]	Minimum compressive strength f_b [N/mm ²]	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		$\geq 2,0$	12	Cross-section reduced by vertical perforation up to 15%	Hammer	0,9					
Sand-lime solid bricks, KS EN 771-2 : 2011		$\geq 1,8$	12	Cross-section reduced by vertical perforation up to 15%	Hammer	0,9					
Sand-lime perforated bricks, KSL EN 771-2 : 2011		$\geq 1,4$	12	Cross-section reduced by vertical perforation more than 15%	Hammer	0,6¹⁾					
Vertically perforated clay brick, HLz EN 771-1 : 2011		$\geq 1,0$	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		$\geq 0,7$	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		$\geq 0,9$	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		$\geq 1,5$	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

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

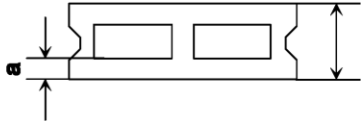
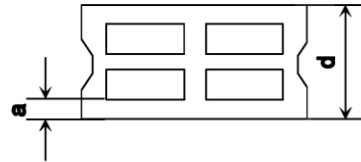
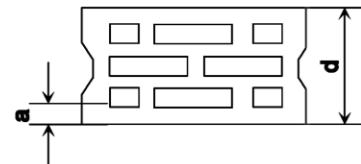
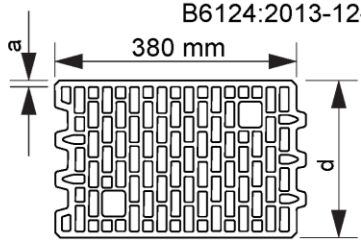
Geometry	Thickness in longitudinal direction d [mm]	Outer web a [mm]
	175	50
	240 300	50
	175	35
	240 300 365	35
	240 300 365	30
Reference brick acc. ÖNORM B6124:2013-12-15 	250	9

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

Anchor 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

Table C4: Displacements

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