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-12/0093 of 28 August 2018

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 Rocket |
| Product family to which the construction product belongs | Screwed-in plastic anchor for fixing of external thermal insulation composite systems with rendering in concrete and masonry |
| Manufacturer | RANIT-Befestigungssysteme GmbH<br>Lennestraße 3-5<br>45701 Herten<br>DEUTSCHLAND |
| Manufacturing plant | RANIT-Befestigungssysteme GmbH<br>Lennestraße 3-5<br>45701 Herten<br>DEUTSCHLAND |
| 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 |
| This version replaces | ETA-12/0093 issued on 17 April 2017 |

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## Specific Part

### 1 Technical description of the product

The RANIT screwed-in anchor type IsoFux Rocket consists of a plastic sleeve made of polypropylene (virgin material), a plastic shaft with a plate and a cover cap made of polyamide (virgin material) and an accompanying specific screw of galvanised steel. For deep mounting of the anchor in the insulating material this anchor type consists in addition of an accompanying insulation cover made of Polystyrol or mineral wool.

For mounting on the surface the anchor may in addition be combined with the anchor plates T90, T110 and T140.

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

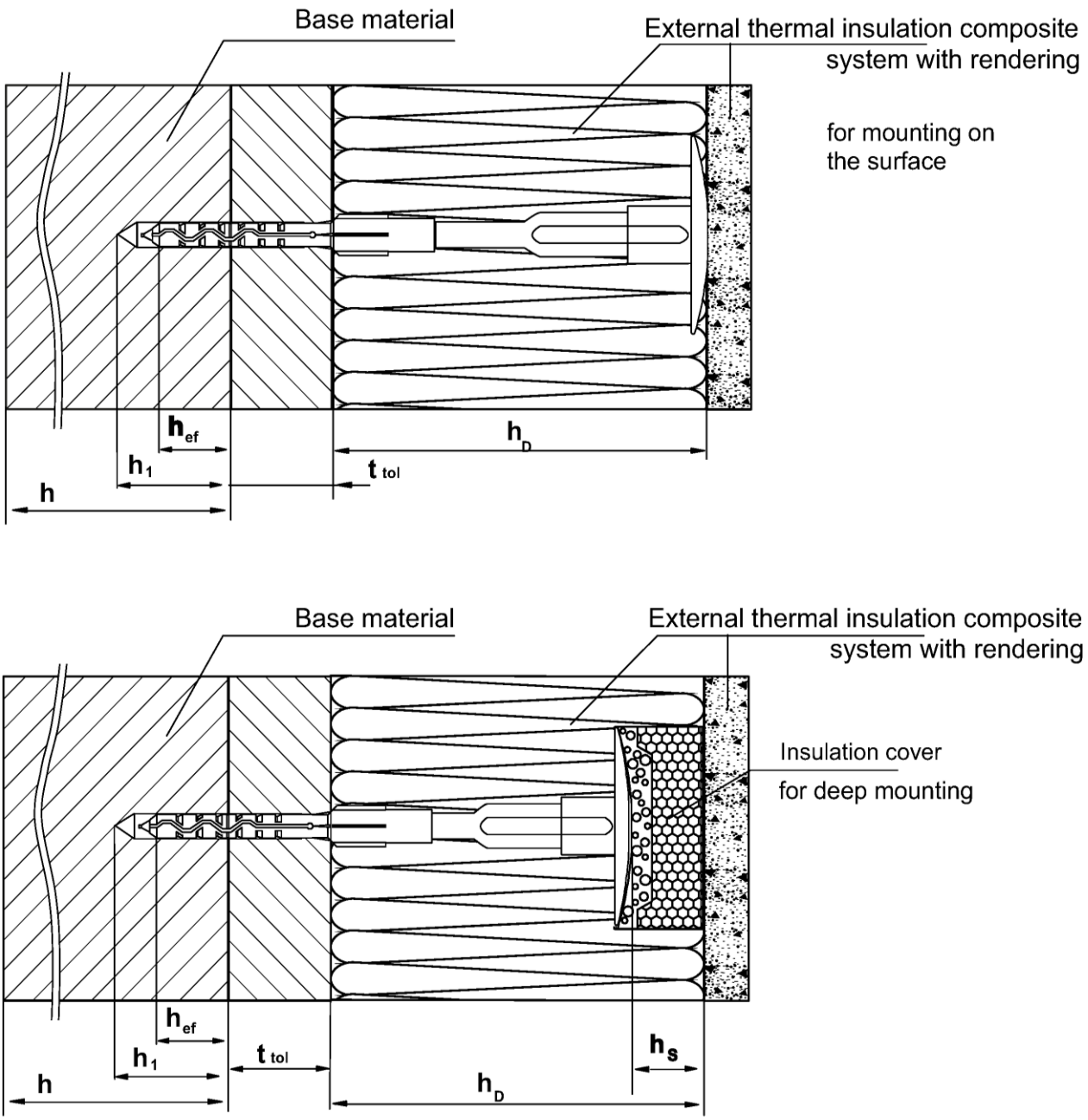
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 28 August 2018 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
$h_s$ = depth of countersink

IsoFux Rocket

**Product description**
installed condition - surface mount, deep mounting

**Annex A 1**

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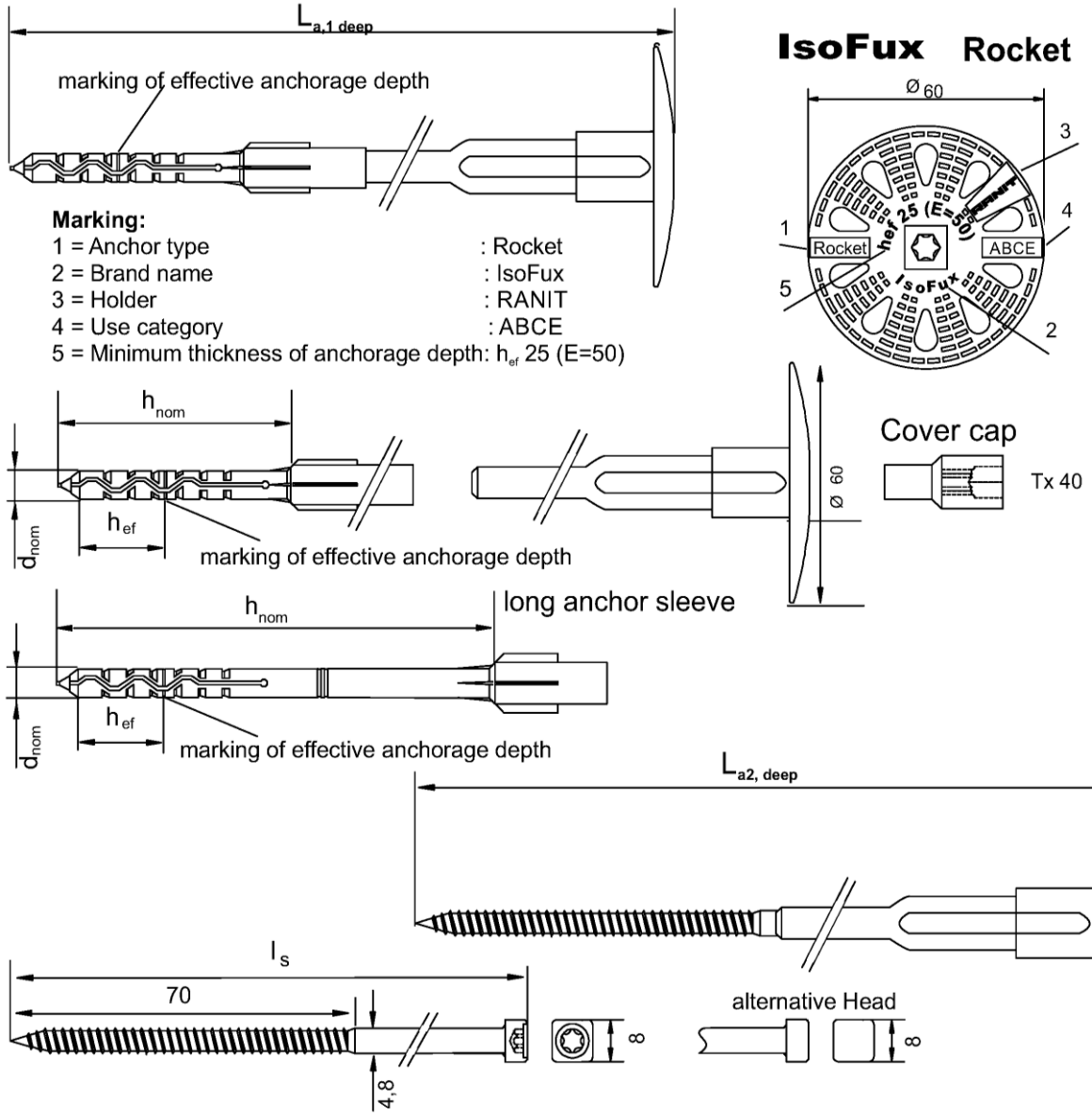


**Table A1: Dimensions** — **Sizes in mm**

| Anchor type | Anchor sleeve | | | | $L_{a1}$ | | $L_{a2}$ | |
|---|---|---|---|---|---|---|---|---|
| **Rocket** | $d_{nom}$ | $h_{ef}$ | $h_{nom}$ | $t_{tol\ max}$ | min $L_{a1,\ deep}$ | max $L_{a1}$ | min $L_{a2,\ deep}$ | max $L_{a2}$ |
| short anchor sleeve | **8** | **25** | **65** | **35** | **155** | **480** | **102** | **427** |
| long anchor sleeve | **8** | **25** | **125** | **95** | **235** | **480** | **182** | **427** |

Evaluation of thickness of the insulation $\mathbf{h_{Dmax}}$ IsoFux Rocket with short anchor sleeve
**min** $L_{a1,\ deep}$ - $h_{nom}$ - 30 = $h_{Dmax}$; e.g.: (min $L_{a1,\ deep}$ = 155) 155 -65 -30 = 60 ($h_{Dmax}$)

Evaluation of thickness of the insulation $\mathbf{h_{Dmax}}$ IsoFux Rocket with long anchor sleeve
**min** $L_{a1,\ deep}$ - $h_{nom}$ + 30 = $h_{Dmax}$; e.g.: (min $L_{a1,\ deep}$ = 235) 235 -125 +30 = 140 ($h_{Dmax}$)

IsoFux Rocket

**Product description**
Use category A, B, C
Components of mounting on the surface Dimensions

**Annex A 2**

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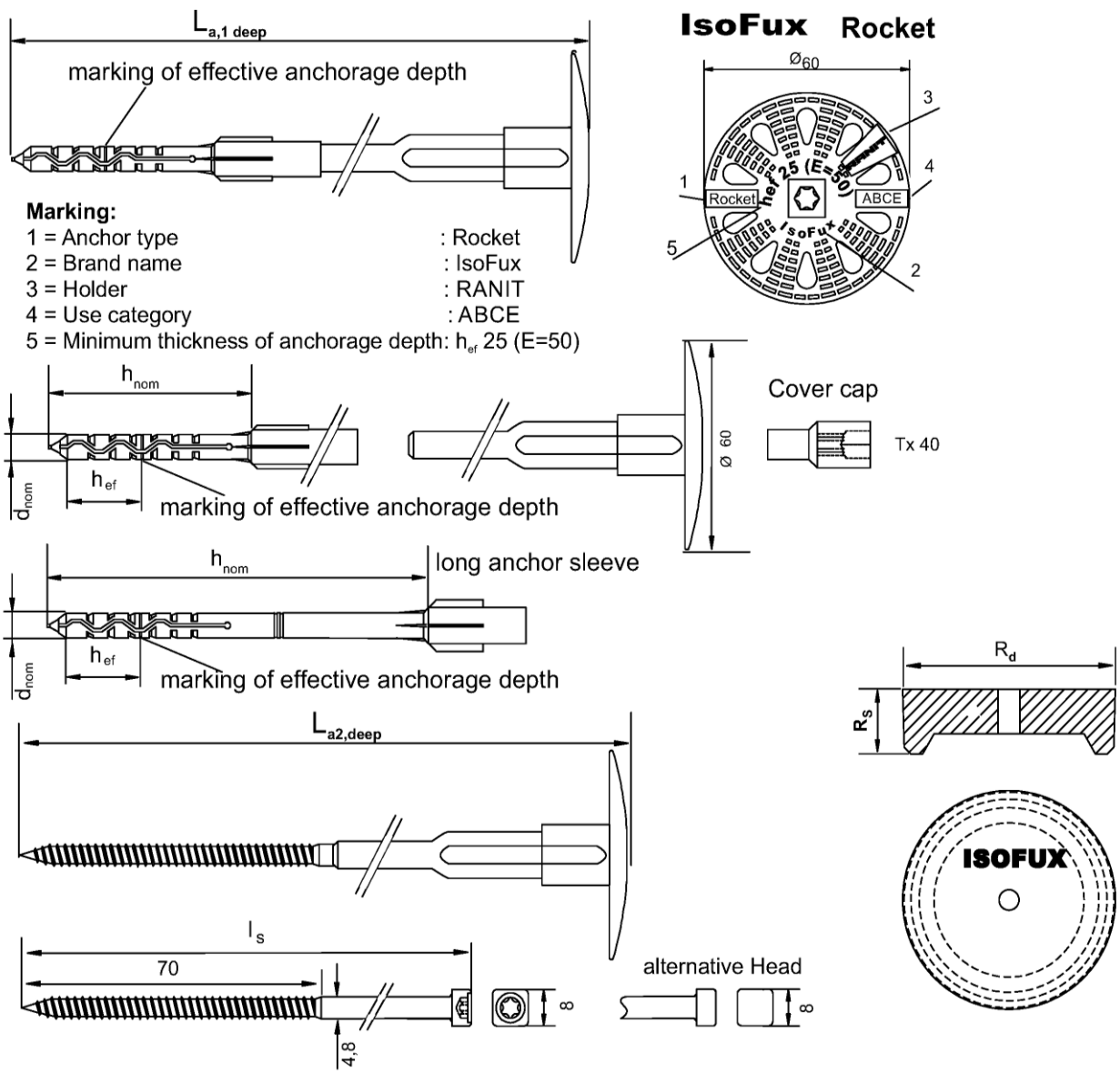


**Table A2: Dimensions** — **Sizes in mm**

| Anchor type | Anchor sleeve | | | | $L_{a1}$ | | $L_{a2}$ | | cover | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Rocket** | $d_{nom}$ | $h_{ef}$ | $h_{nom}$ | $t_{tol\ max}$ | min $L_{a1,\ deep}$ | max $L_{a1}$ | min $L_{a2,\ deep}$ | max $L_{a2}$ | $R_s$ | $R_d$ |
| short anchor sleeve | **8** | **25** | **65** | **35** | **155** | **480** | **102** | **427** | **20** | **64** |
| long anchor sleeve | **8** | **25** | **125** | **95** | **235** | **480** | **182** | **427** | **20** | **64** |

Evaluation of thickness of the insulation $\mathbf{h_{Dmax}}$ IsoFux Rocket with short anchor sleeve
**min** $L_{a1,\ deep}$ - $h_{nom}$ - 30 + Rs = $h_{Dmax}$; e.g.: (min $L_{a1,\ deep}$ = 155) 155 -65 -30 +20 = 80 ($h_{Dmax}$)

Evaluation of thickness of the insulation $\mathbf{h_{Dmax}}$ IsoFux Rocket with long anchor sleeve
**min** $L_{a1,\ deep}$ - $h_{nom}$ + 30 + Rs = $h_{Dmax}$; e.g.: (min $L_{a1,\ deep}$ = 235) 235 -125 +30 +20 = 160 ($h_{Dmax}$)

IsoFux Rocket

**Annex A 3**

**Product description**
Use category A, B, C
Components for deep mounting Dimensions

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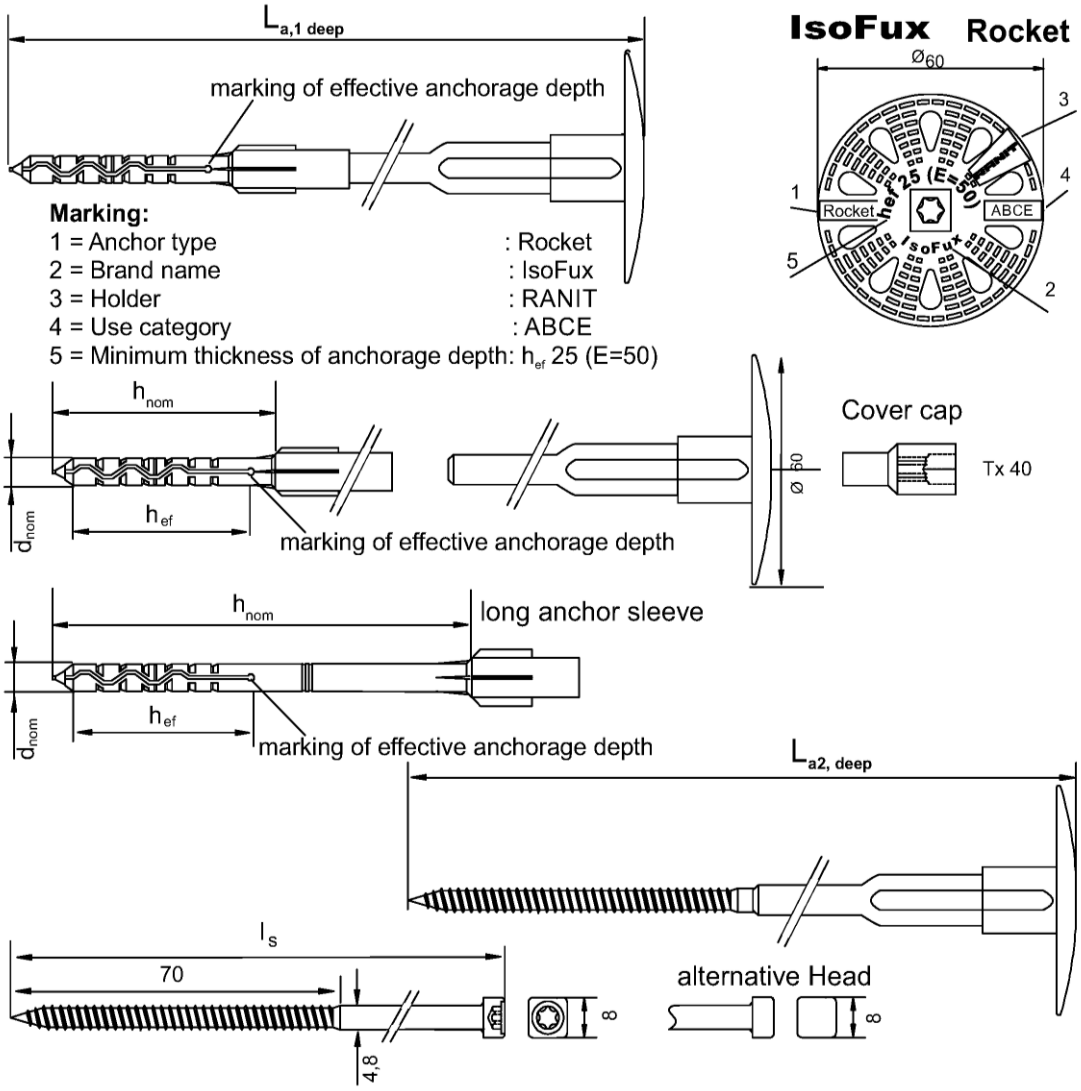


| **Table A3: Dimensions** | | | | | | | | **Sizes in mm** |
|---|---|---|---|---|---|---|---|---|
| Anchor type | Anchor sleeve | | | | $L_{a1}$ | | $L_{a2}$ | |
| **Rocket** | $d_{nom}$ | $h_{ef}$ | $h_{nom}$ | $t_{tol\ max}$ | min $L_{a1,\ deep}$ | max $L_{a1}$ | min $L_{a2,\ deep}$ | max $L_{a2}$ |
| short anchor sleeve | **8** | **50** | **65** | **10** | **155** | **480** | **102** | **427** |
| long anchor sleeve | **8** | **50** | **125** | **70** | **235** | **480** | **182** | **427** |

Evaluation of thickness of the insulation $\mathbf{h_{Dmax}}$ IsoFux Rocket with short anchor sleeve
**min** $L_{a1,\ deep}$ - $h_{nom}$ - 30 = $h_{Dmax}$; e.g.: (min $L_{a1,\ deep}$ = 155) 155 -65 -30 = 60 ($h_{Dmax}$)

Evaluation of thickness of the insulation $\mathbf{h_{Dmax}}$ IsoFux Rocket with long anchor sleeve
**min** $L_{a1,\ deep}$ - $h_{nom}$ + 30 = $h_{Dmax}$; e.g.: (min $L_{a1,\ deep}$ = 235) 235 -125 +30 = 140 ($h_{Dmax}$)

IsoFux Rocket

**Product description**
Use category E (Autoclaved aerated concrete)
Components of mounting on the surface Dimensions

**Annex A 4**

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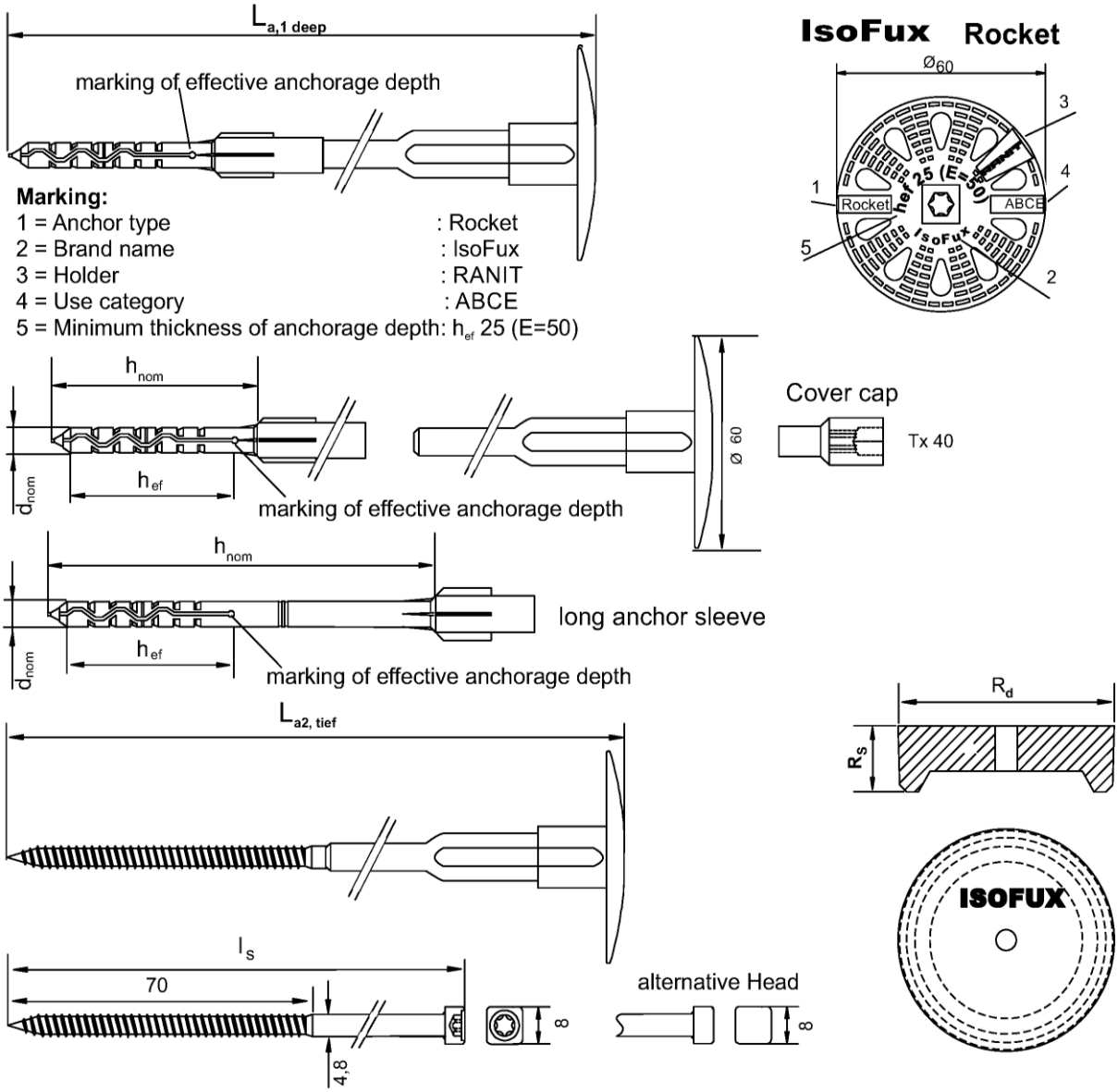


| Table A4: Dimensions | | | | | | | | | Sizes in mm | |
|---|---|---|---|---|---|---|---|---|---|---|
| Anchor type | Anchor sleeve | | | | $L_{a1}$ | | $L_{a2}$ | | cover | |
| **Rocket** | $d_{nom}$ | $h_{ef}$ | $h_{nom}$ | $t_{tol\ max}$ | min $L_{a1,\ deep}$ | max $L_{a1}$ | min $L_{a2,\ deep}$ | max $L_{a2}$ | $R_s$ | $R_d$ |
| short anchor sleeve | **8** | **50** | **65** | **10** | **155** | **480** | **102** | **427** | **20** | **64** |
| long anchor sleeve | **8** | **50** | **125** | **70** | **235** | **480** | **182** | **427** | **20** | **64** |

Evaluation of thickness of the insulation $\mathbf{h_{Dmax}}$ IsoFux Rocket with short anchor sleeve
**min** $L_{a1,\ deep}$ - $h_{nom}$ - 30 + Rs = $h_{Dmax}$; e.g.: (min $L_{a1,\ deep}$ = 155) 155 -65 -30 +20 = 80 ($h_{Dmax}$)

Evaluation of thickness of the insulation $\mathbf{h_{Dmax}}$ IsoFux Rocket with long anchor sleeve
**min** $L_{a1,\ deep}$ - $h_{nom}$ + 30 + Rs = $h_{Dmax}$; e.g.: (min $L_{a1,\ deep}$ = 235) 235 -125 +30 +20 = 160 ($h_{Dmax}$)

# IsoFux Rocket

**Product description**
Use category E (Autoclaved aerated concrete)
Components for deep mounting Dimensions

**Annex A 5**

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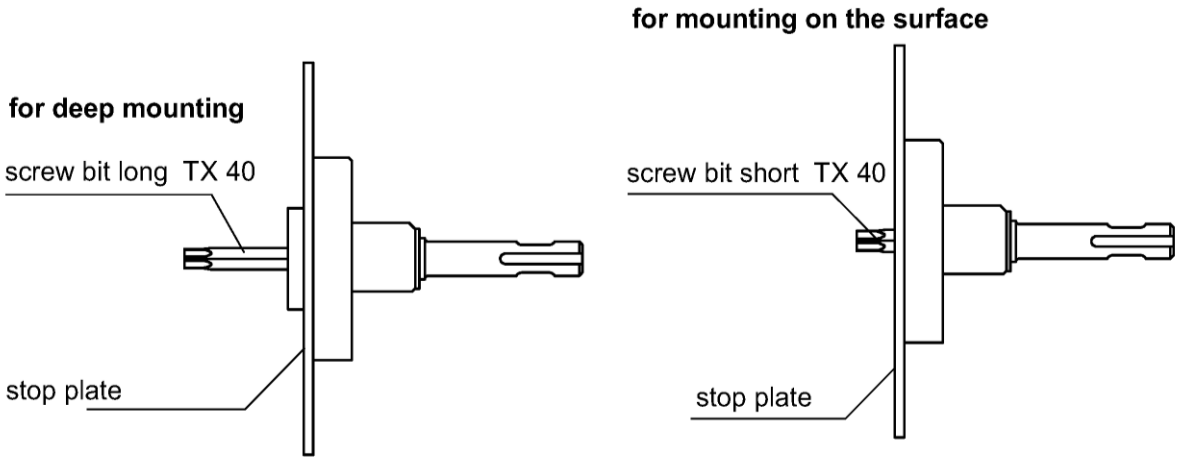
**Table A5:** Maximum insulation thickness for mounting on the surface and deep mounting, classification of the lengths $L_{a1}$ ,colour coding of the cover caps

| mounting on the surface $h_D$ max | deep mounting $h_D$ max | min $L_{a1}$, deep | max $L_{a1}$ | Cover cap Colour |
|---|---|---|---|---|
| 60 | 80 | 155 | 180 | beige |
| 80 | 100 | 175 | 200 | yellow |
| 100 | 120 | 195 | 220 | green |
| 120 | 140 | 215 | 240 | white |
| 140 | 160 | 235 | 260 | orange |
| 160 | 180 | 255 | 280 | brown |
| 180 | 200 | 275 | 300 | blue |
| 200 | 220 | 295 | 320 | red |
| 220 | 240 | 315 | 340 | light grey |
| 240 | 260 | 335 | 360 | black |
| 260 | 280 | 355 | 380 | violet |
| 280 | 300 | 375 | 400 | dark grey |
| 320 | 340 | 415 | 440 | dark green |
| 360 | 380 | 455 | 480 | natural |

**Screw-in tool for IsoFux Rocket**




IsoFux Rocket

**Product description**
Classification of the anchor length $L_{a1}$ for the insulation thickness $h_D$ and colour coding of the cover caps Screw- in tool for IsoFux Rocket

**Annex A 6**

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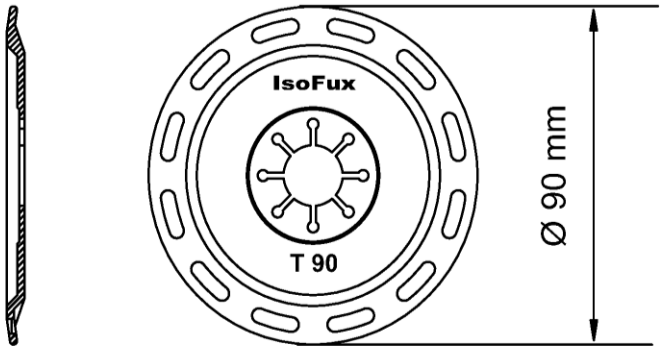
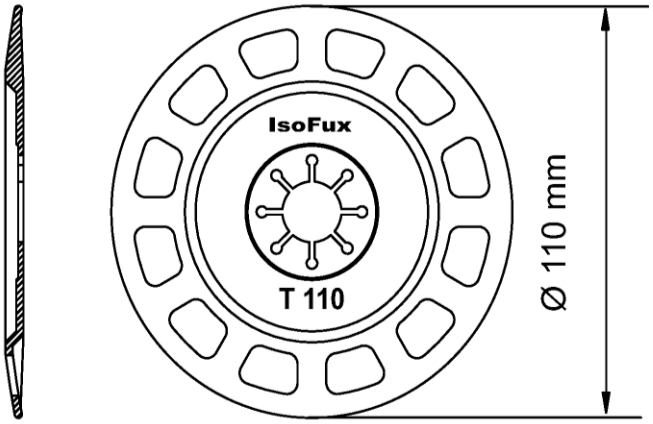
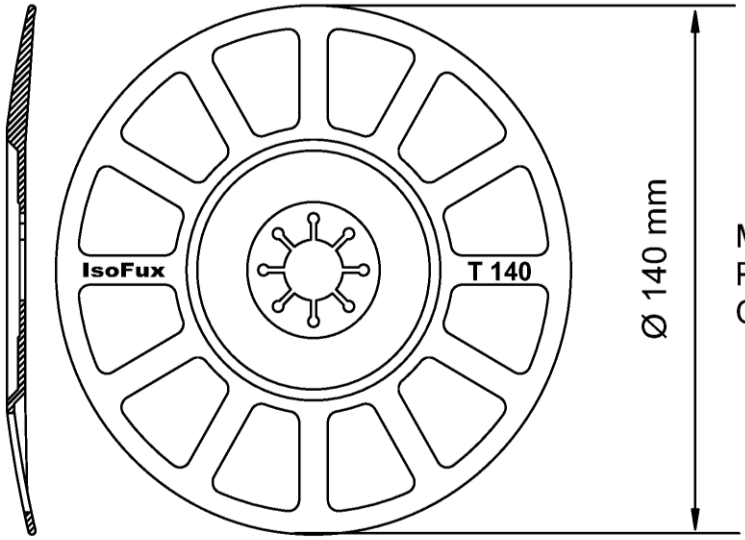



Material:
Polypropylene (PP)
Colour: grey, orange, red

Material:
Polyamide 6.6 (PA)
Colour: grey, orange, red




Material:
Polyamide 6.6 (PA)
Colour: grey, orange, red

| IsoFux Rocket | |
|---|---|
| **Product description**<br>Plates T90, T110 and T140<br>in combination with IsoFux Rocket ( for mounting on the surface ) | **Annex A 7** |

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**Table A6:** Materials

| Designation | **Material** |
|---|---|
| Anchor sleeve<br>Colour: grey | Polypropylene (PP) (virgin material) |
| Shaft with plate<br>Colour: grey or red | Polyamid (PA) (virgin material) |
| Cover cap | Polyamid 6.0 GF (virgin material) |
| Additional plate T110, T140<br>Additional plate T 90<br>Colour: grey, orange or red | Polyamid 6.6<br>Polypropylene (PP) (virgin material) |
| Spezial screw | Steel, electrogalvanized 5 µm |
| Insulation cover | Polystyrol PS20<br>Mineral wool Type HD |



IsoFux Rocket

**Product description**
Materials

**Annex A 8**

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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 upervision 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 Rocket | Annex B 1 |
|---|---|
| **Intended use**<br>Specification | |

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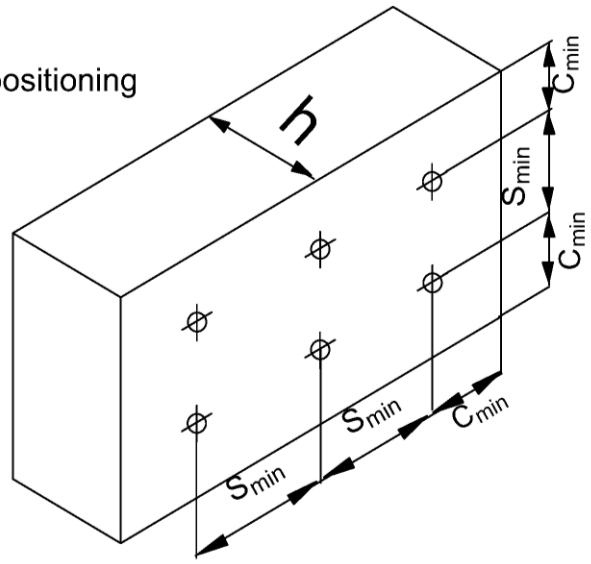
**Table B1:** Installation parameters

| **Anchor type** | **IsoFux** | | **Rocket** |
|---|---|---|---|
| Drill hole diameter | $d_0$ (mm) = | | 8 |
| Cutting diameter of drill bit | $d_{cut}$ (mm) ≤ | | 8,45 |
| Depth of drill hole to deepest point<br>Use category : A B C | $h_1$ (mm) ≥ | | 35 |
| Use category : E | $h_1$ (mm) ≥ | | 60 |
| Effective anchorage depth<br>Use category : A B C | $h_{ef}$ (mm) ≥ | | 25 |
| Use category : E | $h_{ef}$ (mm) ≥ | | 50 |

**Table B2:** Anchor distances and dimensions of members

| Anchor type | | Rocket |
|---|---|---|
| Minimum allowable spacing | $S_{min}$ = [ mm ] | 100 |
| Minimum allowable edge distance | $C_{min}$ = [ mm ] | 100 |
| Minimum thickness of concrete member | **h** = [ mm ] | 100 |

Scheme of anchor positioning






IsoFux Rocket

**Intended use**

Installation parameters. Minimum thickness, edge distance nd spacing

**Annex B 2**

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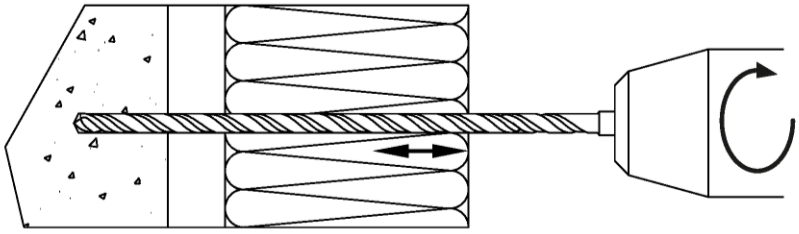
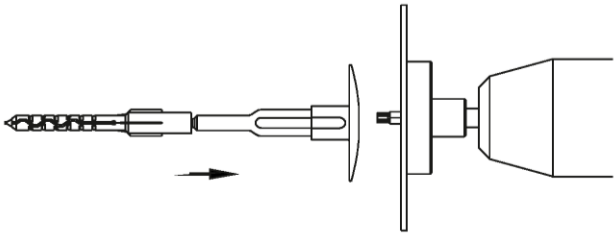
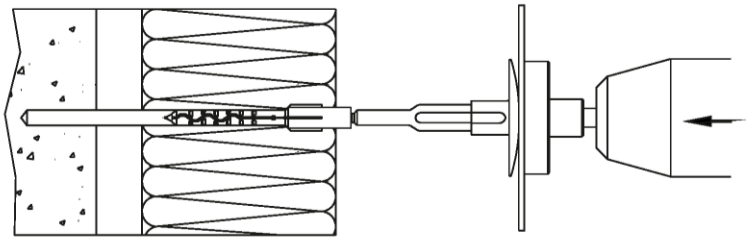


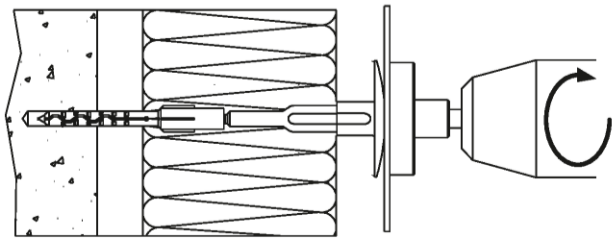
1) Drill the hole perpendicular to the substrate surface. Clean the drill hole.



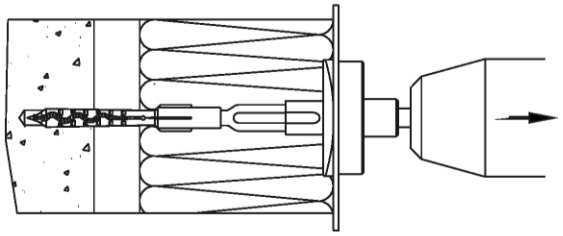
2) Put the anchor on the mounting tool.



3) Place the anchor into the drill hole.



4) Anchor with the screw drill mounting. The bottom side of the plate must be flush with the ETICS.



5) Installed condition. remove the mounting tool.

IsoFux Rocket

**Intended use**
Installation instructions surface mount

**Annex B 3**

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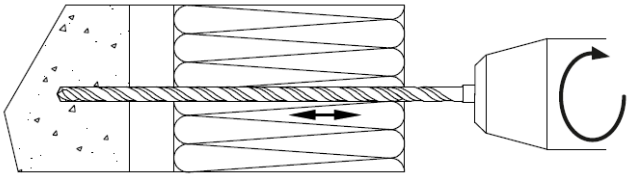
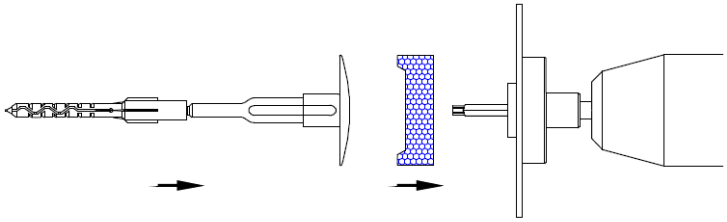
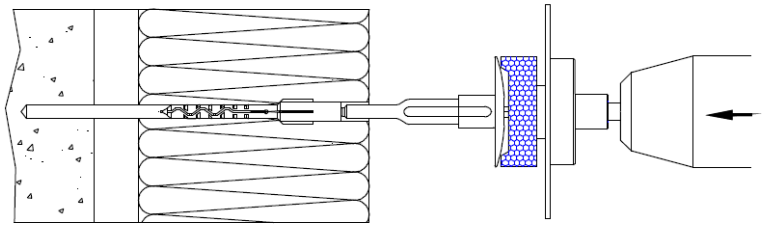


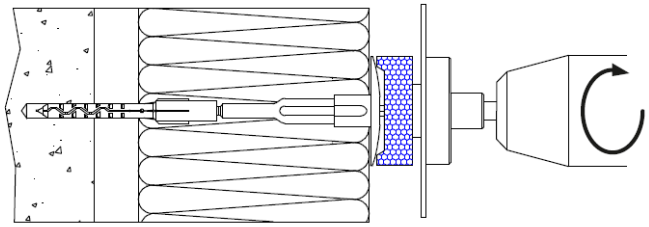
1) Drill the hole perpendicular to the substrate surface. Clean the drill hole.



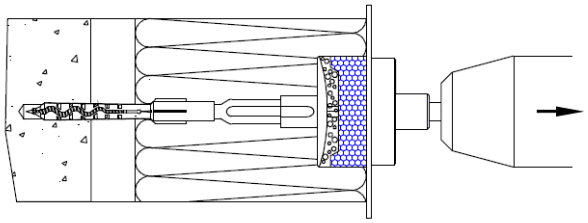
2) Put the anchor and the insulation cover on the mounting tool.



3) Place the anchor into the drill hole.



4) Anchor with the screw drill mounting. The bottom side of the plate must be flush with the ETICS.



5) Installed condition. remove the mounting tool.

IsoFux Rocket

**Intended use**
Installation instructions immerged mount

**Annex B 4**

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

| **Anchor type** | | | **IsoFux Rocket** | | |
|---|---|---|---|---|---|
| Baustoff | Bulk density class ρ [kg/dm³] | Minimum compressive strength $f_b$ [N/mm²] | Remarks | Drill method | $N_{Rk}$ [kN] |
| Concrete C12/15 - C20/25 EN 206 :2013 | | | | Hammer | **1,5** |
| Concrete C50/60 EN 206 : 2013 | | | | Hammer | **1,5** |
| Clay bricks Mz EN 771-1 : 2011 | ≥ 1,8 | 20 | Cross-section reduced by vertical perforation up to 15% | Hammer | **1,5** |
| Sand-lime solid bricks KS EN 771-2 : 2011 | ≥ 1,8 | 12 | Cross-section reduced by vertical perforation up to 15% | Hammer | **1,5** |
| Sand-lime perforated bricks KSL EN 771-2 : 2011 | ≥ 1,4 | 12 | Cross-section reduced by vertical perforation more than 15% | Rotary drilling | **1,2** 1) |
| Vertically perforated clay bricks HLZ EN 771-1 : 2011 | ≥ 1,0 | 12 | Cross-section reduced by vertical perforation for more than 15% and less than 50% | Rotary drilling | **0,75** 2) |
| Lightweight concrete solid bricks EN 771-3 : 2011 | ≥ 1,2 | 6 | Proportion of hole up to 10% maximum extension of hole: length= 110mm; wide= 45 mm | Rotary drilling | **0,4** |
| Lightweight concrete hollow blocks Hbl DIN V18151-100 :2001-10/ EN 771-3 : 2011 | ≥ 1,2 | 6 | see Annex C2 | Rotary drilling | **0,6** |
| Autoclaved aerated concrete EN 771-4 : 2011 | ≥0,65 | 4 | PP/PPE | Rotary drilling | **1,2** |

1) The value applies only for outer web thicknesses ≥ 20 mm; otherwise the characteristic resistance shall be determined by job-site pull-out tests.

2) The value applies only for outer web thickness ≥ 14 mm; otherwise the characteristic resistance shall be determined by job-site pull-out tests.

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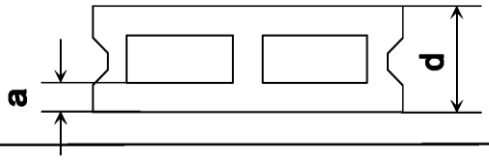
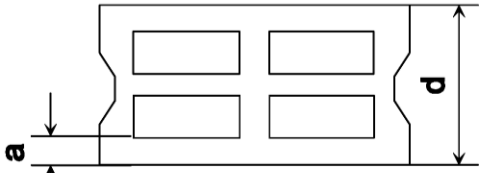
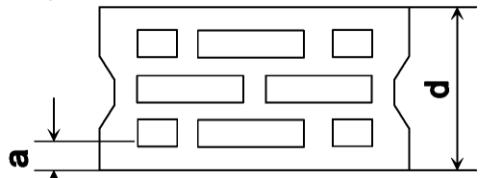
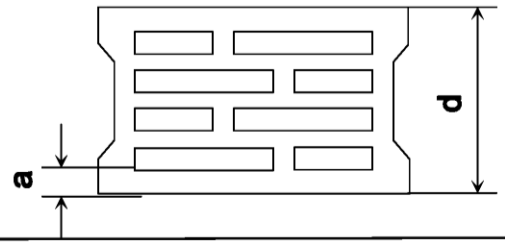
**Table C2:** Assignment type of anchor for lightweight concrete hollow blocks according to DIN V 18151-100:2005-10 (EN 771-3:2011)

| Geometry | Thickness d [mm] | Outer web in longitudinal direction a [mm] |
|---|---|---|
|  | 175 | 50 |
|  | 240<br>300 | 50 |
| | 175 | 35 |
|  | 240<br>300<br>365 | 35 |
|  | 240<br>300<br>365 | 30 |

Anchor shall be placed in the brick in such way, that the spreading part of the expansion sleeve is located in the outer web.

**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] |
|---|---|---|---|
| RANIT Isofux Rocket | 60 | 2,5 | 1,1 |

IsoFux Rocket

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

**Annex C 2**

Deutsches Institut für Bautechnik DIBt

**Table C4: Displacements**

| Base material | Bulk density class [kg/dm³] | Minimum compressive strength [N/mm²] | Tension load N [kN] | Displacements $\delta_m$(N) [mm] |
|---|---|---|---|---|
| Concrete C12/15 - C50/60 (EN 206:2013) | ≥ 1,8 | 20 | 0,50 | 0,3 |
| Clay brick, Mz (EN 771-1:2011) | ≥ 1,8 | 20 | 0,50 | 0,3 |
| Sand-lime solid brick, KS (EN 771-2:2011) | ≥ 1,8 | 12 | 0,50 | 0,3 |
| Vertically perforated sand-lime brick , KSL (EN 771-2:2011) | ≥ 1,4 | 12 | 0,40 | 0,3 |
| Vertically perforated clay brick, HLZ (EN 771-1:2011) | ≥ 1,0 | 12 | 0,25 | 0,3 |
| Lightweight concrete solid bricks, V (EN 771-3:2011) | ≥ 1,2 | 6 | 0,15 | 0,3 |
| Lightweight concrete hollow blocks, Hbl (DIN V 18151-100:2005-10) (EN 771-3:2011) | ≥ 1,2 | 6 | 0,20 | 0,3 |
| Autoclaved aerated concrete, AAC (EN 771-4:2011) | ≥ 0,65 | 4 | 0,40 | 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 $\chi$ [W/K] |
|---|---|---|
| RANIT IsoFux Rocket deep mounted | 80 - 380 | 0,001 |
| RANIT IsoFux Rocket flush mounted | 60 - 360 | 0,002 |

IsoFux Rocket

**Performance**

Displacements, point thermal transmittance

**Annex C 3**