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-06/0155 of 2 May 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 | MKT Wedge anchor B A4 and B HCR |
| Product family to which the construction product belongs | Fasteners for use in concrete for redundant non-structural systems |
| Manufacturer | MKT<br>Metall-Kunststoff-Technik GmbH & Co. KG<br>Auf dem Immel 2<br>67685 Weilerbach |
| Manufacturing plant | MKT<br>Metall-Kunststoff-Technik GmbH & Co. KG<br>Auf dem Immel 2<br>67685 Weilerbach |
| This European Technical Assessment contains | 10 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 330747-00-0601 Edition 06/2018 |
| This version replaces | ETA-06/0155 issued on 9 May 2018 |



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## Specific Part

### 1 Technical description of the product

The MKT Wedge Anchor B A4 and B HCR is an anchor made of stainless steel and high corrosion resistant steel which is placed into a drilled hole and anchored by torque-controlled expansion.

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 50 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 in case of fire (BWR 2)

| Essential characteristic | Performance |
|---|---|
| Reaction to fire | Class A1 |
| Resistance to fire | See Annex C1 |

#### 3.2 Safety in use (BWR 4)

| Essential characteristic | Performance |
|---|---|
| Characteristic resistance for all load directions and modes of failure for simplified design | See Annex C1 |
| Durability | See Annex B1 |

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

In accordance with European Assessment Document EAD No. 330747-00-0601, the applicable European legal act is: [97/161/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.

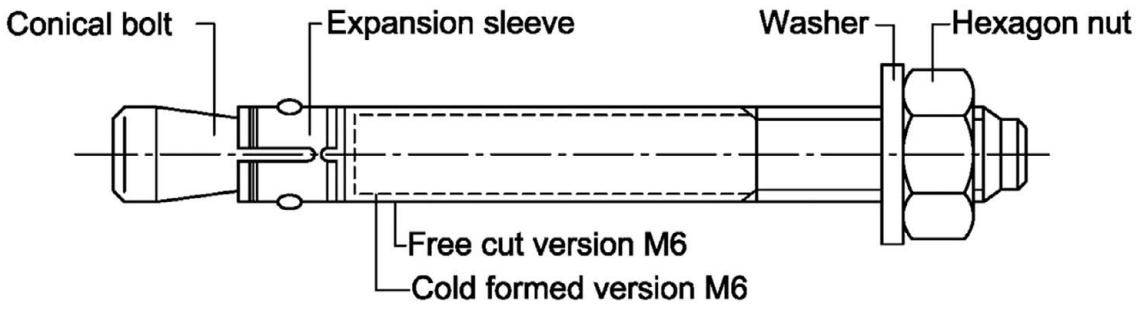
Issued in Berlin on 2 May 2022 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock
Head of Section

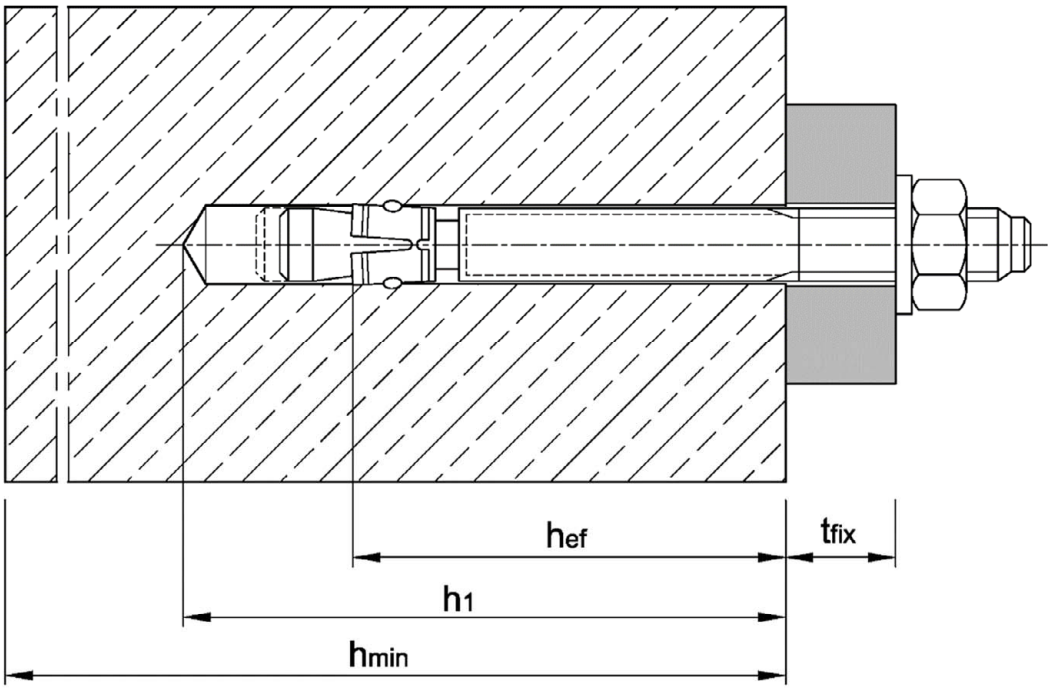
*beglaubigt:*
Ziegler

Deutsches Institut für Bautechnik DIBt

# Wedge Anchor B A4 / B HCR
## 30 M6 und 40 M6
## for multiple use for non-structural applications




## Installation condition



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|---|---|
| **MKT Wedge anchor B A4 and B HCR** | **Annex A1** |
| **Product description**<br>Product and installation condition | |

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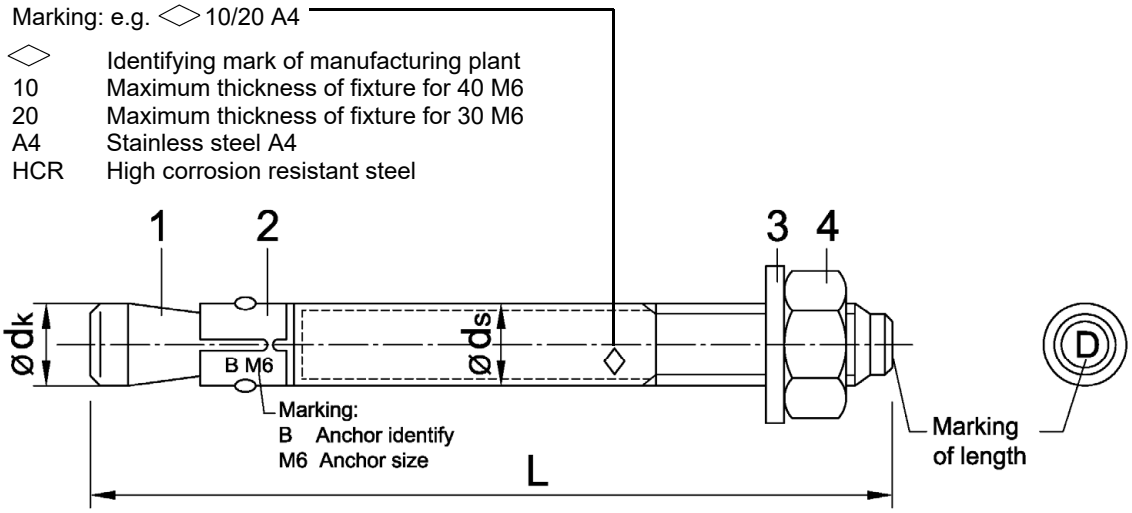


| Marking of length | A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|---|
| Length of anchor min ≥ | 38,1 | 50,8 | 63,5 | 76,2 | 88,9 | 101,6 | 114,3 | 127,0 | 139,7 | 152,4 |
| Length of anchor max < | 50,8 | 63,5 | 76,2 | 88,9 | 101,6 | 114,3 | 127,0 | 139,7 | 152,4 | 165,1 |

| Marking of length | K | L | M | N | O | P | Q | R | S | T | U |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Length of anchor min ≥ | 165,1 | 177,8 | 190,5 | 203,2 | 215,9 | 228,6 | 241,3 | 254,0 | 279,4 | 304,8 | 330,2 |
| Length of anchor max < | 177,8 | 190,5 | 203,2 | 215,9 | 228,6 | 241,3 | 254,0 | 279,4 | 304,8 | 330,2 | 355,6 |

Dimensions in mm

## Table A1: Dimensions in mm

| Anchor size | Ø $d_k$ | Ø $d_s$ | Anchor length L | Wrench size |
|---|---|---|---|---|
| 30 M6 | 6 | 6 / 5,3 [1)] | $t_{fix}$ + 47,4 | 10 |
| 40 M6 | 6 | 6 / 5,3 [1)] | $t_{fix}$ + 57,4 | 10 |

[1)] cold formed version

Dimensions in mm

## Table A2: Materials

| Part | Designation | Material |
|---|---|---|
| **Stainless steel A4** | | |
| 1 | Conical bolt | Stainless steel according to CRC III [1)] |
| 2 | Expansion sleeve | Stainless steel according to CRC II [1)] or CRC III [1)] |
| 3 | Washer | Stainless steel according to CRC III [1)] |
| 4 | Hexagon nut | Stainless steel according to CRC III [1)], property class 70, EN ISO 3506-2:2009 |
| **High corrosion resistant steel HCR** | | |
| 1 | Conical bolt | Stainless steel according to CRC V [1)] |
| 2 | Expansion sleeve | Stainless steel according to CRC III [1)] |
| 3 | Washer | Stainless steel according to CRC V [1)] |
| 4 | Hexagon nut | Stainless steel according to CRC V [1)], property class 70, EN ISO 3506-2:2009 |

[1)] Corrosion resistance class according to EN 1993-1-4:2015, Annex A, Table A.3

**MKT Wedge anchor B A4 and B HCR**

**Product description**
Marking, dimensions and material

**Annex A2**

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## Specifications of intended use

| Multiple use for non-structural applications according to EN 1992-4:2018 | | |
|---|---|---|
| **Wedge Anchor B A4 / B HCR** | **30 M6** | **40 M6** |
| Stainless steel A4 | ✓ | |
| High corrosion resistant steel HCR | ✓ | |
| Static and quasi-static actions | ✓ | |
| Fire exposure | ✓ | |
| Cracked and uncracked concrete | ✓ | |

**Base materials:**

- Reinforced or unreinforced normal weight concrete without fibres according to EN 206:2013 + A1:2016
- Strength classes C20/25 to C50/60 according to EN 206:2013 + A1:2016

**Use conditions (Environmental conditions):**

- Structures subject to dry internal conditions (all materials)
- For all other conditions:

| Anchor version | Use according to EN 1993-1-4:2015 corresponding to the corrosion resistance class CRC according to Annex A, Table A.2 |
|---|---|
| B A4 | CRC III |
| B HCR | CRC V |

**Design:**

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- 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 (e.g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages are designed according to EN 1992-4:2018 (and EOTA Technical Report TR 055:2018), design method B

**Installation:**

- Hole drilling by hammer drill bit or vacuum drill bit.
- Anchor installation such that the effective anchorage depth is complied with. This compliance is ensured, if the thickness of fixture is not greater than the maximum thickness of fixture marked on the anchor in accordance with Annex A2 and the hexagon nut is placed at the end of the conical bolt as delivered by the manufacturer.
- Use of the fastener only as supplied by the manufacturer without exchanging the components of the fastener.



| | |
|---|---|
| **MKT Wedge anchor B A4 and B HCR** | **Annex B1** |
| **Intended use**<br>Specifications | |

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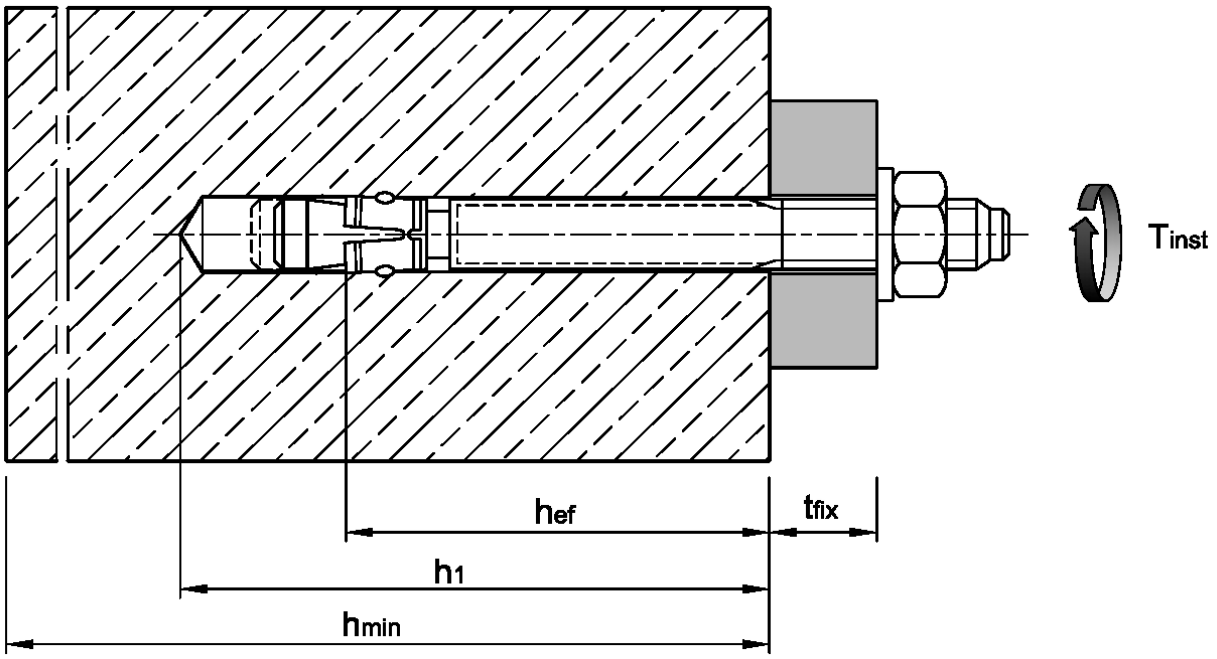
## Table B1: Installation parameters

| Anchor size | | | 30 M6 | 40 M6 |
|---|---|---|---|---|
| Nominal drill hole diameter | $d_0$ = | [mm] | 6 | 6 |
| Cutting diameter of drill bit | $d_{cut} \leq$ | [mm] | 6,40 | 6,40 |
| Installation torque | $T_{inst}$ = | [Nm] | 8 | 8 |
| Depth of drill hole | $h_1 \geq$ | [mm] | 45 | 55 |
| Effective embedment depth | $h_{ef} \geq$ | [mm] | 30 | 40 |
| Minimum thickness of concrete member | $h_{min}$ | [mm] | 80 | 80 |
| Minimum spacing | $s_{min}$ | [mm] | 50 | 50 |
| Minimum edge distance | $c_{min}$ | [mm] | 50 | 50 |
| Diameter of clearance hole in the fixture | $d_f \leq$ | [mm] | 7 | 7 |






**MKT Wedge anchor B A4 and B HCR**

**Intended use**
Installation parameters

**Annex B2**

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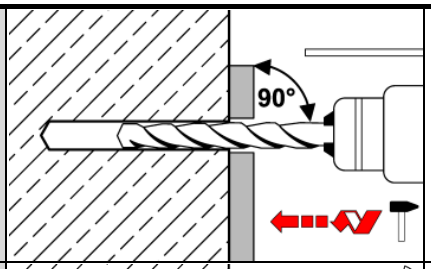
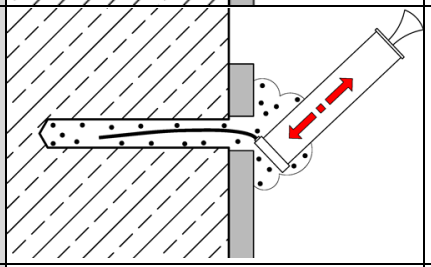
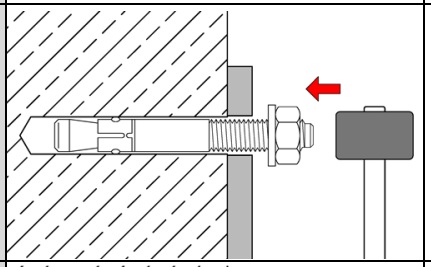
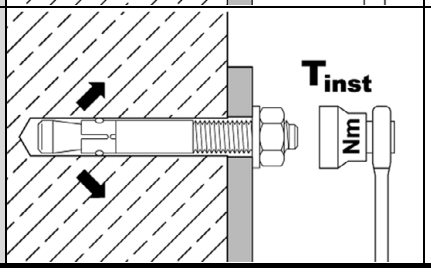
## Installation instructions

| | | |
|---|---|---|
| 1 |  | Drill hole perpendicular to concrete surface.<br>If using a vacuum drill bit, proceed with step 3. |
| 2 |  | Blow out dust. Alternatively, vacuum clean down to the bottom of the hole. |
| 3 |  | Drive in anchor.<br>Observe effective anchorage depth. This is ensured, if the thickness of fixture is not greater than the maximum thickness of fixture marked on the anchor (according to Annex A2). |
| 4 |  | Apply installation torque $T_{inst}$ by using torque wrench. |



| | |
|---|---|
| **MKT Wedge anchor B A4 and B HCR** | **Annex B3** |
| **Intended use**<br>Installation instructions | |

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## Table C1: Characteristic values of resistance, design method B

| **Anchor size** | | | **30 M6** | **40 M6** |
|---|---|---|---|---|
| **All load directions** | | | | |
| Characteristic resistance in C20/25 to C50/60 | $F^0_{Rk}$ | [kN] | 5 | 6 |
| Partial factor [1)] | $\gamma_M$ | [-] | 2,16 | 1,8 |
| Design resistance in C20/25 to C50/60 | $F^0_{Rd}$ | [kN] | 2,3 | 3,3 |
| Spacing | $s_{cr}$ | [mm] | 260 | 370 |
| Edge distance | $c_{cr}$ | [mm] | 130 | 185 |
| **Shear load with lever arm** | | | | |
| Characteristic bending resistance | $M^0_{Rk,s}$ | [Nm] | 10 | 10 |
| Partial factor [1)] | $\gamma_{Ms}$ | [-] | 1,25 | 1,25 |

[1)] in absence of other national regulations

## Table C2: Characteristic values under fire exposure in concrete C20/25 to C50/60, design method B

| **Anchor size** | | | | **30 M6 40 M6** |
|---|---|---|---|---|
| **Fire resistance class** | **In any load direction** | | | |
| R 30 | Characteristic resistance | $F^0_{Rk,fi30}$ | [kN] | 0,6 |
| | Characteristic bending resistance | $M^0_{Rk,s,fi30}$ | [Nm] | 0,5 |
| R 60 | Characteristic resistance | $F^0_{Rk,fi60}$ | [kN] | 0,5 |
| | Characteristic bending resistance | $M^0_{Rk,s,fi60}$ | [Nm] | 0,4 |
| R 90 | Characteristic resistance | $F^0_{Rk,fi90}$ | [kN] | 0,3 |
| | Characteristic bending resistance | $M^0_{Rk,s,fi90}$ | [Nm] | 0,3 |
| R 120 | Characteristic resistance | $F^0_{Rk,fi120}$ | [kN] | 0,3 |
| | Characteristic bending resistance | $M^0_{Rk,s,fi120}$ | [Nm] | 0,2 |
| R 30 to R 120 | Spacing | $s_{cr,fi}$ | [mm] | 4 $h_{ef}$ |
| | | $s_{min}$ | [mm] | 50 |
| | Edge distance | $c_{cr,fi}$ | [mm] | 2 $h_{ef}$ |
| | | $c_{min}$ | [mm] | 50 |
| | Partial factor | $\gamma_{M,fi}$ | [-] | 1,0 |
| If the fire attacks from more than one side, the edge distance of the anchor shall be ≥ 300 mm. | | | | |