

YDEEVNEDEKLARATION

DoP Nr.: **MKT-1.1-301_da**

- ✧ **Varetypens unikke identifikationskode:** **Drop-in anker E / ES**
- ✧ **Tilsligtet anvendelse:** Mekanisk dyvel til forankring i beton, se bilag / Annex B
- ✧ **Fabrikant:** MKT Metall-Kunststoff-Technik GmbH & Co.KG
Auf dem Immel 2
67685 Weilerbach
- ✧ **System eller systemer til vurdering og kontrol af konstansen af ydeevnen:** 1
- ✧ **Europæisk vurderingsdokument:** **EAD 330232-01-0601**
Europæisk teknisk vurdering: **ETA-02/0020, 01.06.2021**
Teknisk vurderingsorgan: DIBt, Berlin
Notificeret organ/notificerede organer: NB 2873 – Technische Universität Darmstadt

✧ **Deklareret ydeevne/deklarerede ydeevner:**

| Væsentlige funktioner | Ydeevne |
|---|---------------------------|
| Mekanisk modstandsdygtighed og stabilitet (BWR 1) | |
| Karakteristiske modstande under trækbelastning (statiske og kvasistatiske effekter), Metode A | Bilag/Annex B2, C1 – C2 |
| Karakteristiske modstande under tværgående stress (statiske og kvasistatiske effekter) | Bilag/Annex C3 – C4 |
| Skift | Bilag/Annex C5 |
| Holdbarhed | Bilag/Annex B1 |
| Karakteristiske modstande og forskydninger for de seismiske præstasjonskategorier C1 + C2 | Ingen præstation vurderet |
| Brandsikring (BWR 2) | |
| Brandegenskaber | Klasse A1 |
| Brandsikkerhed | Ingen præstation vurderet |

Ydeevnen for den vare, der er anført ovenfor, er i overensstemmelse med den deklarerede ydeevne. Denne ydeevnedeklaration er udarbejdet i overensstemmelse med forordning (EU) nr. 305/2011 på eneansvar af den fabrikant, der er anført ovenfor.

Underskrevet for fabrikanten og på dennes vegne af:


Stefan Weustenhagen
(CEO)

Weilerbach, 01.06.2021

p.p. 
Dipl.-Ing. Detlef Bigalke
(Leder af produktudvikling)



Originalen af denne erklæringserklæring blev skrevet på tysk. I tilfælde af afvigelser i oversættelsen er den tyske udgave gyldig.

Specifications of intended use

Anchorage subject to:

- Static and quasi-static loads

Base materials:

- Compacted, reinforced or unreinforced normal weight concrete, without fibres according to EN 206:2013 + A1:2016
- Uncracked concrete
- 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 applies:
Use according to EN 1993-1-4:2015 corresponding to corrosion resistance class CRC according to Annex A2, Table A1:
 - Stainless steel A4: CRC III
 - High corrosion resistant steel HCR: CRC V
- Anchor types M6x30 A4 and M8x30 A4 only for dry internal exposure

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.).
- The strength class and the length of the fastening screw or threaded rod shall be defined by the designing engineer
- Design of fastenings according EN 1992-4:2018 (and TR 055, if necessary)
- Anchor sizes M6x30, M8x30 and M10x30 for statically indeterminate structural components only, when in case of failure, the load can be distributed to other fasteners.

Installation:

- Anchor installation in accordance with the manufacturer's specifications and drawings and using the appropriate tools
- Drill hole by hammer drilling or vacuum drilling

Drop-in Anchor E / ES

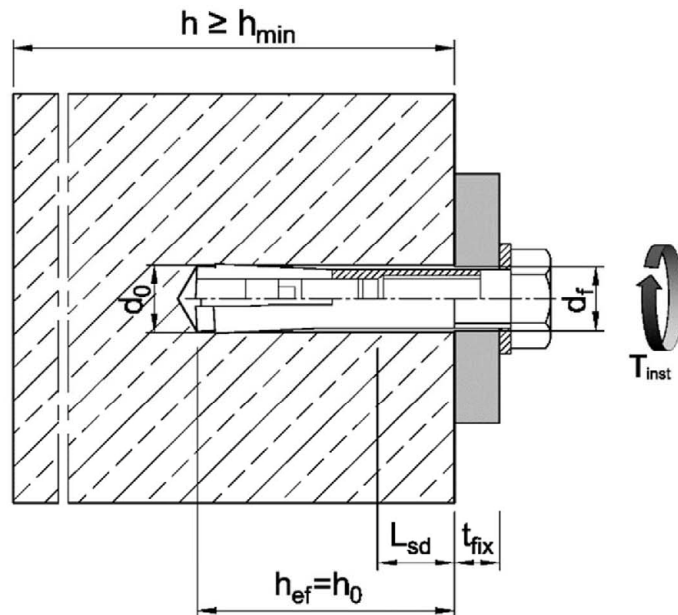
Intended use
Specifications

Annex B1

Table B1: Installation parameters

| Anchor size | | M6x30 | M8x30 | M8x40 | M10x30 | M10x40 | M12x50 | M12x80 | M16x65 | M16x80 | M20x80 |
|---|----------------------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| Depth of drill hole | $h_0 =$ [mm] | 30 | 30 | 40 | 30 | 40 | 50 | 80 | 65 | 80 | 80 |
| Drill hole diameter | $d_0 =$ [mm] | 8 | 10 | 10 | 12 | 12 | 15 | 15 | 20 | 20 | 25 |
| Cutting diameter of drill bit | $d_{cut} \leq$ [mm] | 8,45 | 10,45 | 10,45 | 12,5 | 12,5 | 15,5 | 15,5 | 20,55 | 20,55 | 25,55 |
| Max. installation torque ¹⁾ | $T_{inst} \leq$ [Nm] | 4 | 8 | 8 | 15 | 15 | 35 | 35 | 60 | 60 | 120 |
| Diameter of clearance hole in the fixture | $d_f \leq$ [mm] | 7 | 9 | 9 | 12 | 12 | 14 | 14 | 18 | 18 | 22 |
| Thread length | L_{th} [mm] | 13 | 13 | 20 | 12 | 15 | 18 | 45 | 23 | 38 | 34 |
| Minimum screw-in depth | L_{sdmin} [mm] | 7 | 9 | 9 | 10 | 11 | 13 | 13 | 18 | 18 | 22 |
| Steel, zinc plated | | | | | | | | | | | |
| Minimum thickness of member | h_{min} [mm] | 100 | 100 | 100 | 120 | 120 | 130 | 130 | 160 | 160 | 200 |
| Minimum spacing | s_{min} [mm] | 55 | 60 | 80 | 100 | 100 | 120 | 120 | 150 | 150 | 160 |
| Minimum edge distance | c_{min} [mm] | 95 | 95 | 95 | 115 | 135 | 165 | 165 | 200 | 200 | 260 |
| Stainless steel A4, HCR | | | | | | | | | | | |
| Minimum thickness of member | h_{min} [mm] | 100 | 100 | 100 | - | 130 | 140 | 140 | 160 | 160 | 250 |
| Minimum spacing | s_{min} [mm] | 50 | 60 | 80 | - | 100 | 120 | 120 | 150 | 150 | 160 |
| Minimum edge distance | c_{min} [mm] | 80 | 95 | 95 | - | 135 | 165 | 165 | 200 | 200 | 260 |

¹⁾ If the screw or threaded rod is otherwise secured against unscrewing, the torque can be omitted



Drop-in Anchor E / ES

Intended use
Installation parameters

Annex B2

Installation instructions

| | | |
|---|--|--|
| 1 | | <p>Drill hole perpendicular to concrete surface. Using vacuum drill bit proceed with step 3.</p> |
| 2 | | <p>Blow out dust. Alternatively, vacuum clean down to the bottom of the hole.</p> |
| 3 | | <p>Drive in anchor.</p> |
| 4 | | <p>Drive in cone by using setting tool.</p> |
| 5 | | <p>Shoulder of setting tool must fit on anchor rim.</p> |
| 6 | | <p>Turn in screw or threaded rod with nut, observe minimum screw-in depth (see Annex B2). Apply installation torque T_{inst}.</p> |

Drop-in Anchor E / ES

Intended use
Installation instructions

Annex B3

Table C1: Characteristic values for tension loads, zinc plated steel

| Anchor size | | | M6x30 | M8x30 | M8x40 | M10x30 | M10x40 | M12x50 | M12x80 | M16x65 M16x80 | M20x80 | | | | |
|--|--------------------|-------------|--|-------|--|--|--------|--------|--------|------------------------|--------|------|-------|--|--|
| Installation factor | γ_{inst} | [-] | 1,2 | | | | | | | | | | | | |
| Steel failure | | | | | | | | | | | | | | | |
| Characteristic resistance | property class | 4.6 | $N_{Rk,s}$ | [kN] | 8,0 | 14,6 | | 23,2 | | 33,7 | | 62,8 | 98,0 | | |
| | | 4.8 | | | 8,0 | 14,6 | | 18,0 | 20,2 | 33,7 | | 62,8 | 98,0 | | |
| | | 5.6 | | | 10,0 | 18,3 | | 18,0 | 20,2 | 42,1 | | 78,3 | 122,4 | | |
| | | 5.8 | | | 10,0 | 17,6 | 18,3 | 18,0 | 20,2 | 40,2 | 42,1 | 67,1 | 106,4 | | |
| | | 8.8 | | | 15,0 | 17,6 | 19,9 | 18,0 | 20,2 | 40,2 | 43,0 | 67,1 | 106,4 | | |
| Partial factor | property class | 4.6 | γ_{Ms}^1 | [-] | 2,0 | | | | | | | | | | |
| | | 5.6 | | | 2,0 | | 1,5 | | 2,0 | | | | | | |
| | | 4.8 | | | 1,5 | | | | | | | 1,6 | | | |
| | | 5.8 | | | 1,5 | | | | | | | 1,6 | | | |
| | | 8.8 | | | 1,5 | | | | | | | 1,6 | | | |
| Pull-out failure | | | | | | | | | | | | | | | |
| Characteristic resistance in concrete C20/25 | $N_{Rk,p}$ | [kN] | 8,1 | 8,1 | 9,0 | 8,1 | 12,4 | 17,4 | 17,4 | 25,8 | 35,2 | | | | |
| Increasing factor | ψ_C | [-] | $\left(\frac{f_{ck}}{20}\right)^{0,5}$ | | $\left(\frac{f_{ck}}{20}\right)^{0,3}$ | $\left(\frac{f_{ck}}{20}\right)^{0,5}$ | | | | | | | | | |
| Splitting | | | | | | | | | | | | | | | |
| Characteristic resistance in concrete C20/25 | $N^0_{Rk,sp}$ | [kN] | $\min (N_{Rk,p} ; N^0_{Rk,c})$ | | | | | | | | | | | | |
| Characteristic edge distance | $c_{cr,sp}$ | [mm] | 95 | 95 | 95 | 115 | 135 | 165 | | 200 | 260 | | | | |
| Characteristic spacing | $s_{cr,sp}$ | [mm] | $2 \cdot c_{cr,sp}$ | | | | | | | | | | | | |
| Concrete cone failure | | | | | | | | | | | | | | | |
| Effective anchorage depth | h_{ef} | [mm] | 30 | 30 | 40 | 30 | 40 | 50 | 80 | 65 80 ²⁾ | 80 | | | | |
| Characteristic edge distance | $c_{cr,N}$ | [mm] | $1,5 h_{ef}$ | | | | | | | | | | | | |
| Characteristic spacing | $s_{cr,N}$ | [mm] | $2 \cdot c_{cr,N}$ | | | | | | | | | | | | |
| Factor | uncracked concrete | $k_{ucr,N}$ | 11,0 | | | | | | | | | | | | |
| | cracked concrete | $k_{cr,N}$ | No performance assessed | | | | | | | | | | | | |

¹⁾ in absence of other national regulations

²⁾ for M16x80

Drop-in Anchor E / ES

Performance
Characteristic values for **tension loads, zinc plated steel**

Annex C1

Table C2: Characteristic values for tension loads, stainless steel A4, HCR

| Anchor size | | | M6x30 | M8x30 | M8x40 | M10x40 | M12x50 M12x80 | M16x65 M16x80 | M20x80 |
|--|--------------------|-------------|--|-------|--|--|------------------------|------------------------|--------|
| Installation factor | γ_{inst} | [-] | 1,0 | | | | | | |
| Steel failure | | | | | | | | | |
| Characteristic resistance (property class 70) | $N_{Rk,s}$ | [kN] | 14,1 | 23,3 | | 29,4 | 50,2 | 83,8 | 133,0 |
| Characteristic resistance (property class 80) | $N_{Rk,s}$ | [kN] | 17,5 | 23,3 | | 29,4 | 50,2 | 83,8 | 133,0 |
| Partial factor | $\gamma_{Ms}^{1)}$ | [-] | 1,87 | | | | | | |
| Pull-out failure | | | | | | | | | |
| Characteristic resistance in concrete C20/25 | $N_{Rk,p}$ | [kN] | 8,1 | 8,1 | 11,0 | 12,4 | 17,4 | 25,8 | 35,2 |
| Increasing factor | ψ_C | [-] | $\left(\frac{f_{ck}}{20}\right)^{0,5}$ | | $\left(\frac{f_{ck}}{20}\right)^{0,3}$ | $\left(\frac{f_{ck}}{20}\right)^{0,5}$ | | | |
| Splitting failure | | | | | | | | | |
| Characteristic resistance in concrete C20/25 | $N^0_{Rk,sp}$ | [kN] | min ($N_{Rk,p}$; $N^0_{Rk,c}$) | | | | | | |
| Edge distance | $c_{cr,sp}$ | [mm] | 80 | 95 | 95 | 135 | 165 | 200 | 260 |
| Spacing | $s_{cr,sp}$ | [mm] | $2 \cdot c_{cr,sp}$ | | | | | | |
| Concrete cone failure | | | | | | | | | |
| Effective anchorage depth | h_{ef} | [mm] | 30 | 30 | 40 | 40 | 50 80 ²⁾ | 65 80 ²⁾ | 80 |
| Edge distance | $c_{cr,N}$ | [mm] | $1,5 h_{ef}$ | | | | | | |
| Spacing | $s_{cr,N}$ | [mm] | $2 \cdot c_{cr,N}$ | | | | | | |
| Factor | uncracked concrete | $k_{ucr,N}$ | 11,0 | | | | | | |
| | cracked concrete | $k_{cr,N}$ | No performance assessed | | | | | | |

1) in absence of other national regulations

2) for M12x80 and M16x80

Drop-in Anchor E / ES
Performance

 Characteristic values for **tension loads, stainless steel A4, HCR**
Annex C2

Table C3: Characteristic values for shear loads, zinc plated steel

| Anchor size | | | M6x30 | M8x30 | M8x40 | M10x30 | M10x40 | M12x50 | M12x80 | M16x65 M16x80 | M20x80 | | | |
|---|----------------|-----|--------------------|-------|-------|--------|--------|--------|--------|------------------|--------|----------------------|------|--|
| Steel failure without lever arm | | | | | | | | | | | | | | |
| Characteristic resistance | property class | 4.6 | $V_{Rk,s}^0$ | [kN] | 4,0 | 7,3 | 11,6 | 9,6 | 16,8 | | 31,3 | 49,0 | | |
| | | 4.8 | | | 4,0 | 7,3 | 10,1 | 10,1 | 16,9 | | 31,3 | 49,0 | | |
| | | 5.6 | | | 5,0 | 9,1 | 10,1 | 9,6 | 21,1 | | 39,2 | 61,2 | | |
| | | 5.8 | | | 5,0 | 6,9 | 10,1 | 7,2 | 19,4 | 21,1 | 33,5 | 53,2 | | |
| | | 8.8 | | | 5,0 | 6,9 | 10,1 | 7,2 | 19,4 | 21,5 | 33,5 | 53,2 | | |
| Partial factor | property class | 4.6 | $\gamma_{Ms}^{1)}$ | [-] | 1,67 | | | | | | | | | |
| | | 5.6 | | | 1,67 | | 1,25 | 1,67 | | | | | | |
| | | 4.8 | | | 1,25 | | | | | | | | 1,33 | |
| | | 5.8 | | | 1,25 | | | | | | | | 1,33 | |
| | | 8.8 | | | 1,25 | | | | | | | | 1,33 | |
| Duktilitätsfaktor | | | k_7 | [-] | 1,0 | | | | | | | | | |
| Steel failure with lever arm | | | | | | | | | | | | | | |
| Characteristic bending resistance | property class | 4.6 | $M_{Rk,s}^0$ | [Nm] | 6,1 | 15 | 30 | | 52 | | 133 | 259 | | |
| | | 4.8 | | | 7,6 | 19 | 37 | | 65 | | 166 | 324 | | |
| | | 5.6 | | | 12 | 30 | 59 | 60 | 105 | | 266 | 519 | | |
| | | 5.8 | | | 1,67 | | | | | | | | | |
| Partial factor | property class | 4.6 | $\gamma_{Ms}^{1)}$ | [-] | 1,67 | | | | | | | | | |
| | | 5.6 | | | 1,25 | | | | | | | | | |
| | | 4.8 | | | 1,25 | | | | | | | | | |
| | | 5.8 | | | 1,25 | | | | | | | | | |
| Factor of ductility | | | k_7 | [-] | 1,0 | | | | | | | | | |
| Concrete pry-out failure | | | | | | | | | | | | | | |
| Pry-out factor | | | k_8 | [-] | 1,0 | | | 1,5 | 2,0 | | | | | |
| Concrete edge failure | | | | | | | | | | | | | | |
| Effective length of fastener in shear loading | | | l_f | [mm] | 30 | 30 | 40 | 30 | 40 | 50 | 80 | $\frac{65}{80}^{2)}$ | 80 | |
| Outside diameter of fastener | | | d_{nom} | [mm] | 8 | 10 | | 12 | | 15 | | 20 | 25 | |

¹⁾ in absence of other national regulations

²⁾ for M16x80

Drop-in Anchor E / ES

Performance
Characteristic values for **shear loads, zinc plated steel**

Annex C3

Table C4: Characteristic values for shear loads, stainless steel A4, HCR

| Anchor size | | | M6x30 | M8x30 | M8x40 | M10x40 | M12x50 | M12x80 | M16x65 | M16x80 | M20x80 |
|---|--------------------|------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| Steel failure without lever arm | | | | | | | | | | | |
| Characteristic resistance (property class 70) | $V_{Rk,s}^0$ | [kN] | 7,0 | 10,6 | 13,4 | 25,1 | 41,9 | 66,5 | | | |
| Characteristic resistance (property class 80) | $V_{Rk,s}^0$ | [kN] | 8,7 | 10,6 | 13,4 | 25,1 | 41,9 | 66,5 | | | |
| Partial factor | $\gamma_{Ms}^{1)}$ | [-] | 1,56 | | | | | | | | |
| Factor of ductility | k_7 | [-] | 1,0 | | | | | | | | |
| Steel failure with lever arm | | | | | | | | | | | |
| Characteristic bending resistance (property class 70) | $M_{Rk,s}^0$ | [Nm] | 11 | 26 | 52 | 92 | 233 | 454 | | | |
| Partial factor | $\gamma_{Ms}^{1)}$ | [-] | 1,56 | | | | | | | | |
| Characteristic bending resistance (property class 80) | $M_{Rk,s}^0$ | [Nm] | 12 | 30 | 60 | 105 | 266 | 519 | | | |
| Partial factor | $\gamma_{Ms}^{1)}$ | [-] | 1,33 | | | | | | | | |
| Factor of ductility | k_7 | [-] | 1,0 | | | | | | | | |
| Concrete pry-out failure | | | | | | | | | | | |
| Pry-out factor | k_8 | [-] | 1,0 | 1,7 | | | | | 2,0 | | |
| Concrete edge failure | | | | | | | | | | | |
| Effective length of fastener in shear loading | l_f | [mm] | 30 | 30 | 40 | 40 | 50 | 80 | 65 | 80 | 80 |
| Outside diameter of fastener | d_{nom} | [mm] | 8 | 10 | 12 | 15 | 20 | 25 | | | |

¹⁾ in absence of other national regulations

Drop-in Anchor E / ES

Performance
Characteristic values for shear loads, stainless steel A4, HCR

Annex C4

Table C5: Displacements under tension loads

| Anchor size | | | M6x30 | M8x30 | M8x40 | M10x30 | M10x40 | M12x50 M12x80 | M16x65 M16x80 | M20x80 |
|------------------------------------|--------------------|------|-------|-------|-------|-----------------|--------|------------------|------------------|--------|
| Steel, zinc plated | | | | | | | | | | |
| Tension load in uncracked concrete | N | [kN] | 3 | 3 | 3,6 | 3,3 | 4,8 | 6,4 | 10 | 14,8 |
| Displacements | δ_{N0} | [mm] | 0,24 | | | | | | | |
| | $\delta_{N\infty}$ | [mm] | 0,36 | | | | | | | |
| Stainless steel A4 / HCR | | | | | | | | | | |
| Tension load in uncracked concrete | N | [kN] | 4 | 4 | 4,3 | - ¹⁾ | 6,1 | 8,5 | 12,6 | 17,2 |
| Displacements | δ_{N0} | [mm] | 0,12 | | | | | | | |
| | $\delta_{N\infty}$ | [mm] | 0,24 | | | | | | | |

¹⁾ Anchor version is not part of the ETA

Table C6: Displacements under shear loads

| Anchor size | | | M6x30 | M8x30 | M8x40 | M10x30 | M10x40 | M12x50 M12x80 | M16x65 M16x80 | M20x80 |
|----------------------------------|--------------------|------|-------|-------|-------|-----------------|--------|------------------|------------------|--------|
| Steel, zinc plated | | | | | | | | | | |
| Shear load in uncracked concrete | V | [kN] | 2 | 4 | 4 | 5,7 | 4,0 | 11,3 | 18,8 | 32,2 |
| Displacements | δ_{V0} | [mm] | 0,9 | 0,9 | 1,0 | 1,5 | 0,6 | 1,2 | 1,2 | 1,6 |
| | $\delta_{V\infty}$ | [mm] | 1,3 | 1,3 | 1,5 | 2,3 | 0,9 | 1,9 | 1,9 | 2,4 |
| Stainless steel A4 / HCR | | | | | | | | | | |
| Shear load in uncracked concrete | V | [kN] | 3,5 | 5,2 | 5,2 | - ¹⁾ | 6,5 | 11,5 | 19,2 | 30,4 |
| Displacements | δ_{V0} | [mm] | 1,9 | 1,1 | 0,7 | - ¹⁾ | 1,0 | 1,7 | 2,4 | 2,6 |
| | $\delta_{V\infty}$ | [mm] | 2,8 | 1,6 | 1,0 | - ¹⁾ | 1,5 | 2,6 | 3,6 | 3,8 |

¹⁾ Anchor version is not part of the ETA

Drop-in Anchor E / ES

Performance
Displacements

Annex C5