... eine starke Verbindung

IZJAVA O LASTNOSTIH

DoP Št.: **MKT-1.1-201_sl**

- **Enotna identifikacijska oznaka tipa proizvoda:** **Wedge sidro B / B fvz / B A2 / B A4 / B HCR**
- **Predvidena uporaba:** Mehansko sidro za sidranje v betonu, glej Priloga/Annex B
- **Proizvajalec:** MKT Metall-Kunststoff-Technik GmbH & Co.KG
  Auf dem Immel 2
  67685 Weilerbach
- **Sistemi ocenjevanja in preverjanja nespremenljivosti lastnosti:** 1
- **Evropski ocenjevalni dokument:** **EAD 330232-01-0601**
  Evropska tehnična ocena: **ETA-01/0013, 24.05.2022**
  Organ za tehnično ocenjevanje: DIBt, Berlin
  Priglašeni organi: NB 2873 – Technische Universität Darmstadt
- **Navedene lastnosti:**

Bistvene značilnosti	Lastnosti
Mehanska odpornost in stabilnost (BWR 1)	
Značilen upor pri nateznem stresu (statični in kvazi-statični učinki)	Priloga/Annex B4, C1, C2
Značilen odpor pri bočnem stresu (statični in kvazi-statični učinki)	Priloga/Annex C3
Premiki	Priloga/Annex C4
Trajnost	Priloga / Annex B1
Značilna upornost in premiki za kategorijo potresne zmogljivosti C1+C2	lastnost ni določena
Varnost pri požaru (BWR 2)	
Ogenj vedenje	Razred A1
Požarna odpornost	lastnost ni določena

Lastnosti proizvoda, navedenega zgoraj, so v skladu z navedenimi lastnostmi. Za izdajo te izjave o lastnostih je v skladu z Uredbo (EU) št. 305/2011 odgovoren izključno proizvajalec, naveden zgoraj.

Podpisal za in v imenu proizvajalca:

Stefan Weustenhagen
(Generalni direktor)
Weilerbach, 24.05.2022

p.p.
Dipl.-Ing. Detlef Bigalke
(Vodja razvoja izdelkov)

Izvirnik te izjave o uspehu je bil napisan v nemškem jeziku. V primeru odstopanj v prevodu je nemška različica veljavna.

Specifications of intended use

B / B fvz / B sh / B A2 / B A4 / B HCR		M6	M8	M10	M12	M16	M20
zinc plated steel	**B** (electroplated)	✓	✓	✓	✓	✓	✓
	B fvz (hot-dip galvanized)	-	✓	✓	✓	✓	✓
	B sh (sherardized)	✓	✓	✓	✓	✓	✓
stainless steel	**B A2**	✓	✓	✓	✓	✓	✓
	B A4	✓	✓	✓	✓	✓	✓
	B HCR	✓	✓	✓	✓	✓	✓
all versions	static or quasi-static action	✓					
	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 A2
B A2	CRC II
B A4	CRC III
B HCR	CRC V

Design:

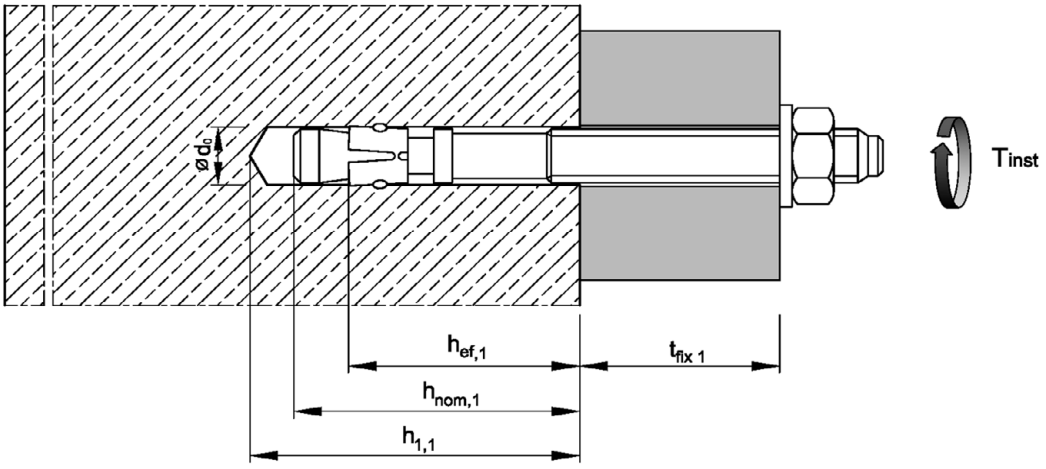
- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages are designed according to EN 1992-4:2018 or TR 055:2018.

Installation:

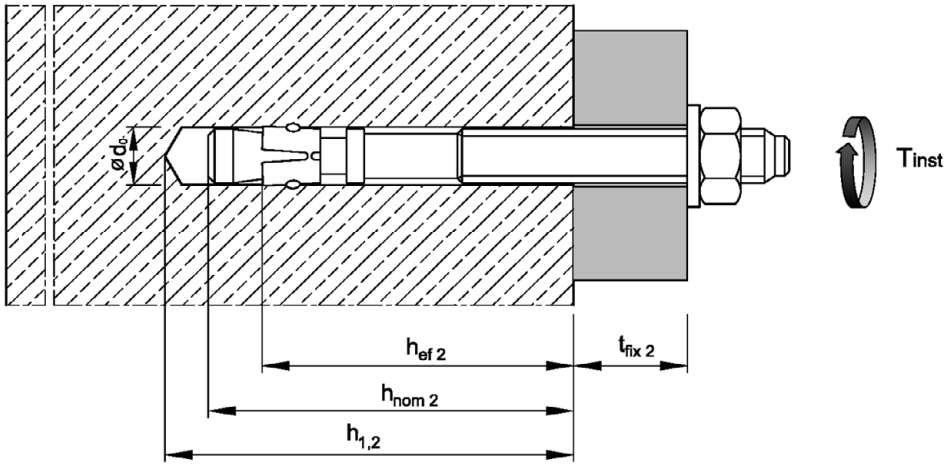
- Hole drilling by hammer drill bit or vacuum drill bit.
- Use of the fastener only as supplied by the manufacturer without exchanging the components of the fastener.

Installation parameters

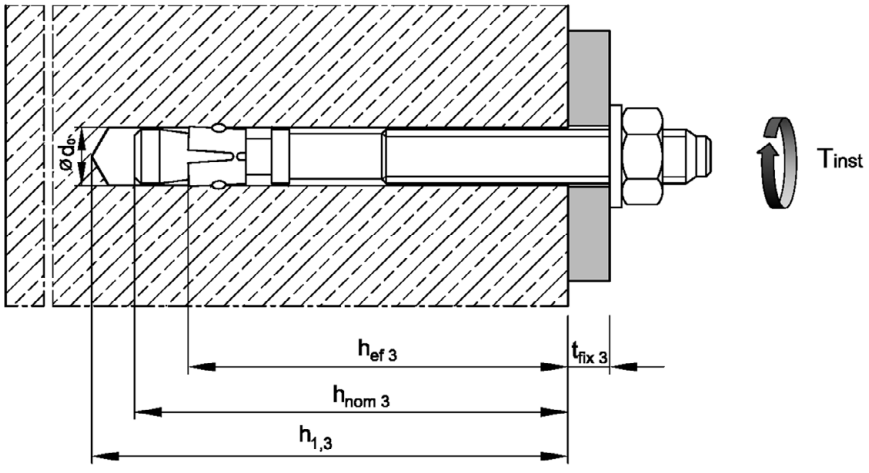
Effective embedment depths $h_{ef,1}$



Effective embedment depths $h_{ef,2}$



Effective embedment depths $h_{ef,3}$



Wedge Anchor B / B fvz / B sh / B A2 / B A4 / B HCR	
Intended use Specifications	**Annex B2**

Table B1: Installation parameters

Anchor size				M6	M8	M10	M12	M16	M20
Nominal drill hole diameter		d_0 =	[mm]	6	8	10	12	16	20
Cutting diameter of drill bit		$d_{cut} \leq$	[mm]	6,40	8,45	10,45	12,5	16,5	20,55
Installation torque	B	T_{inst} =	[Nm]	8	15	30	50	100	200
	B fvz	T_{inst} =	[Nm]	-	15	30	40	90	120
	B sh	T_{inst} =	[Nm]	5	15	30	40	90	120
	B A2 / B A4 / B HCR	T_{inst} =	[Nm]	6	15	25	50	100	160
Diameter of clearance hole in the fixture		$d_f \leq$	[mm]	7	9	12	14	18	22
Embedment depth $h_{ef,1}$									
Effective embedment depth		$h_{ef,1} \geq$	[mm]	30	35	42	50	64	78
Depth of drill hole		$h_{1,1} \geq$	[mm]	45	55	65	75	95	110
Embedment depth		$h_{nom,1} \geq$	[mm]	39	47	56	67	84	99
Embedment depth $h_{ef,2}$									
Effective embedment depth		$h_{ef,2} \geq$	[mm]	40	44	48	65	82 (80)[1)]	100
Depth of drill hole		$h_{1,2} \geq$	[mm]	55	65	70	90	110	130
Embedment depth		$h_{nom,2} \geq$	[mm]	49	56	62	82	102	121
Embedment depth $h_{ef,3}$									
Effective embedment depth		$h_{ef,3} \geq$	[mm]	60	70	80	100	120	115
Depth of drill hole		$h_{1,3} \geq$	[mm]	75	91	102	125	148	145
Embedment depth		$h_{nom,3} \geq$	[mm]	69	82	94	117	140	136

[1)] Anchor version B A2 / B A4 / B HCR

Table B2: Minimum spacings and edge distances, zinc plated steel [1)]

Anchor size			M6	M8	M10	M12	M16	M20
Embedment depth $h_{ef,1}$								
Minimum member thickness	h_{min}	[mm]	80	80	100	100	130	160
Minimum spacing	s_{min}	[mm]	35	40	55	100	100	140
Minimum edge distance	c_{min}	[mm]	40	45	65	100	100	140
Embedment depth $h_{ef,2}$								
Minimum member thickness	h_{min}	[mm]	100	100	100	130	170	200
Minimum spacing	s_{min}	[mm]	35	40	55	75	90	105
Minimum edge distance	c_{min}	[mm]	40	45	65	90	105	125
Embedment depth $h_{ef,3}$								
Minimum member thickness	h_{min}	[mm]	120	126	132	165	208	215
Minimum spacing	s_{min}	[mm]	35	40	55	75	90	105
Minimum edge distance	c_{min}	[mm]	40	45	65	90	105	125

[1)] Anchor version B fvz: M8-M20

Table B3: Minimum spacings and edge distances, stainless steel

Anchor size			M6	M8	M10	M12	M16	M20
Embedment depth $h_{ef,1}$								
Minimum member thickness	h_{min}	[mm]	80	80	100	100	130	160
Minimum spacing	s_{min}	[mm]	35	60	55	100	110	140
Minimum edge distance	c_{min}	[mm]	40	60	65	100	110	140
Embedment depth $h_{ef,2}$								
Minimum member thickness	h_{min}	[mm]	100	100	100	130	160	200
Minimum spacing	s_{min}	[mm]	35	35	45	60	80	100
	for c ≥	[mm]	40	65	70	100	120	150
Minimum edge distance	c_{min}	[mm]	35	45	55	70	80	100
	for s ≥	[mm]	60	110	80	100	140	180
Embedment depth $h_{ef,3}$								
Minimum member thickness	h_{min}	[mm]	120	126	132	165	200	215
Minimum spacing	s_{min}	[mm]	35	35	45	60	80	100
	for c ≥	[mm]	40	65	70	100	120	150
Minimum edge distance	c_{min}	[mm]	35	45	55	70	80	100
	for s ≥	[mm]	60	110	80	100	140	180

Intermediate values by linear interpolation.

Installation instructions

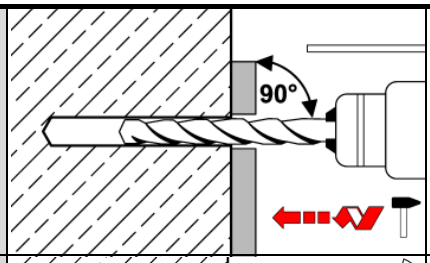
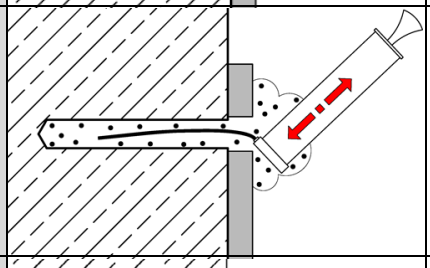
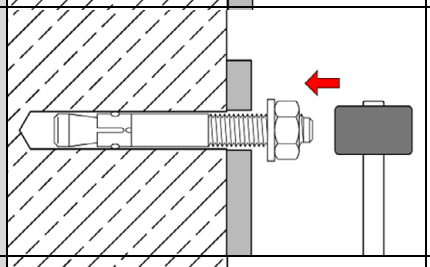
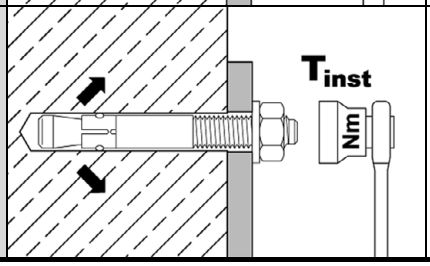
1		Drill hole perpendicular to concrete surface. If using a vacuum drill bit, proceed with step 3.
2		Blow out dust. Alternatively, vacuum clean down to the bottom of the hole.
3		Drive in anchor, such that the selected embedment depth is met.
4		Apply installation torque T_{inst} as specified in Table B1.

Table C1: Characteristic values for **tension loads, zinc plated steel** [1)]

Anchor size				**M6**	**M8**	**M10**	**M12**	**M16**	**M20**
Installation factor		γ_{inst}	[-]	1,0					
Steel failure									
Characteristic resistance		$N_{Rk,s}$	[kN]	8,7	15,3	26	35	65	107
Partial factor [4)]		γ_{Ms}	[-]	1,5				1,6	
Pull-out									
Characteristic resistance in uncracked concrete C20/25	for $h_{ef,1}$	$N_{Rk,p}$	[kN]	6,5 [2)]	10,2 [2)]	13,4	17,4	25,2	33,9
	for $h_{ef,2}$	$N_{Rk,p}$	[kN]	10	13	16,4	25,8	36,5	49,2
	for $h_{ef,3}$	$N_{Rk,p}$	[kN]	10	13	16,4	26	40	55
Increasing factor $N_{Rk,p} = \psi_C \bullet N_{Rk,p}$ (C20/25)		ψ_C	[-]	$\left(\frac{f_{ck}}{20}\right)^{0,5}$				$\left(\frac{f_{ck}}{20}\right)^{0,33}$	$\left(\frac{f_{ck}}{20}\right)^{0,5}$
Splitting									
Characteristic resistance		$N^0_{Rk,sp}$	[kN]	min [$N_{Rk,p}$; $N^0_{Rk,c}$ [3)]]					
Embedment depth $h_{ef,1}$									
Spacing		$s_{cr,sp}$	[mm]	180	210	230	240	320	400
Edge distance		$c_{cr,sp}$	[mm]	90	105	115	120	160	200
Embedment depth $h_{ef,2}$									
Spacing		$s_{cr,sp}$	[mm]	160	220	240	330	410	500
Edge distance		$c_{cr,sp}$	[mm]	80	110	120	165	205	250
Embedment depth $h_{ef,3}$									
Spacing		$s_{cr,sp}$	[mm]	160	220	240	330	410	520
Edge distance		$c_{cr,sp}$	[mm]	80	110	120	165	205	260
Concrete cone failure									
Effective embedment depth	for $h_{ef,1}$		[mm]	30 [2)]	35 [2)]	42	50	64	78
	for $h_{ef,2}$		[mm]	40	44	48	65	82	100
	for $h_{ef,3}$		[mm]	60	70	80	100	120	115
Spacing		$s_{cr,N}$	[mm]	3 $h_{ef\,(1,2,3)}$					
Edge distance		$c_{cr,N}$	[mm]	1,5 $h_{ef\,(1,2,3)}$					
Factor	uncracked concrete	$k_{ucr,N}$	[-]	11,0					
	cracked concrete	$k_{cr,N}$	[-]	No performance assessed					

[1)] Anchor version B fvz: M8-M20

[2)] Restricted to the use of structural components with $h_{ef} < 40$mm which are statically indeterminate and subject to internal exposure conditions only

[3)] $N^0_{Rk,c}$ according to EN 1992-4:2018

[4)] In absence of other national regulations

Table C2: Characteristic values for **tension loads, stainless steel**

Anchor size				**M6**	**M8**	**M10**	**M12**	**M16**	**M20**
Installation factor		γ_{inst}	[-]	1,0					
Steel failure									
Characteristic resistance		$N_{Rk,s}$	[kN]	10	18	30	44	88	134
Partial factor [3]		γ_{Ms}	[-]	1,50					1,68
Pull-out									
Characteristic resistance in uncracked concrete C20/25	for $h_{ef,1}$	$N_{Rk,p}$	[kN]	6,5 [1]	9 [1]	12	17,4	25,2	33,9
	for $h_{ef,2}$	$N_{Rk,p}$	[kN]	8	15	16,4	25	35,2	49,2
	for $h_{ef,3}$	$N_{Rk,p}$	[kN]	8	15	16,4	25	42	60
Increasing factor $N_{Rk,p} = \psi_C \bullet N_{Rk,p}$ (C20/25)		ψ_C	[-]	$\left(\frac{f_{ck}}{20}\right)^{0,5}$					
Splitting									
Characteristic resistance		$N^0_{Rk,sp}$	[kN]	min [$N_{Rk,p}$; $N^0_{Rk,c}$ [2]]					
Embedment depth $h_{ef,1}$									
Spacing		$s_{cr,sp}$	[mm]	180	210	230	300	320	400
Edge distance		$c_{cr,sp}$	[mm]	90	105	115	150	160	200
Embedment depth $h_{ef,2}$									
The higher one of the decisive resistances of Case 1 and Case 2 is applicable									
Case 1	Characteristic resistance	$N^0_{Rk,sp}$	[kN]	6	9	12	20	30	40
	Spacing	$s_{cr,sp}$	[mm]	3 h_{ef}					
	Edge distance	$c_{cr,sp}$	[mm]	1,5 h_{ef}					
	Increasing factor $N^0_{Rk,sp} = \psi_C \bullet N^0_{Rk,sp}$ (C20/25)	ψ_C	[-]	$\left(\frac{f_{ck}}{20}\right)^{0,5}$					
Case 2	Spacing	$s_{cr,sp}$	[mm]	160	220	240	340	410	560
	Edge distance	$c_{cr,sp}$	[mm]	80	110	120	170	205	280
Embedment depth $h_{ef,3}$									
Spacing		$s_{cr,sp}$	[mm]	160	220	240	340	410	620
Edge distance		$c_{cr,sp}$	[mm]	80	110	120	170	205	310
Concrete cone failure									
Effective embedment depth	for $h_{ef,1} \geq$		[mm]	30 [1]	35 [1]	42	50	64	78
	for $h_{ef,2} \geq$		[mm]	40	44	48	65	80	100
	for $h_{ef,3} \geq$		[mm]	60	70	80	100	120	115
Spacing		$s_{cr,N}$	[mm]	3 h_{ef}					
Edge distance		$c_{cr,N}$	[mm]	1,5 h_{ef}					
Factor	uncracked concrete	$k_{ucr,N}$	[-]	11,0					
	cracked concrete	$k_{cr,N}$	[-]	No performance assessed					

[1] Restricted to the use of structural components with $h_{ef} < 40$mm which are statically indeterminate and subject to internal exposure conditions only

[2] $N^0_{Rk,c}$ according to EN 1992-4:2018

[3] In absence of other national regulations

Table C3: Characteristic values for **shear loads**

Anchor size				**M6**	**M8**	**M10**	**M12**	**M16**	**M20**
Installation factor		γ_{inst}	[-]	1,0					
Steel failure without lever arm									
Characteristic resistance	**zinc plated steel** [1]	$V^0_{Rk.s}$	[kN]	5	11	17	25	44	69
	stainless steel	$V^0_{Rk,s}$	[kN]	7	12	19	27	50	86
Ductility factor		k_7	[-]	1,0					
Steel failure with lever arm									
Characteristic bending resistance	**zinc plated steel** [1]	$M^0_{Rk.s}$	[Nm]	9	23	45	78	186	363
	stainless steel	$M^0_{Rk,s}$	[Nm]	10	24	49	85	199	454
Partial factor [4] for $V^0_{Rk,s}$ and $M^0_{Rk,s}$	**zinc plated steel** [1]	γ_{Ms}	[-]	1,25				1,33	
	stainless steel	γ_{Ms}	[-]	1,25					1,4
Concrete pry-out failure									
Factor for $\mathbf{h_{ef}}$	**zinc plated steel** [1]	k_8	[-]	1,0	2,3	2,5	2,9	2,8	3,1
	stainless steel	k_8	[-]	1,0	2,3	2,8	2,8	3,0	3,3
Concrete edge failure									
Effective length of anchor in shear loading	for $\mathbf{h_{ef,1}}$	l_f	[mm]	30 [2]	35 [2]	42	50	64	78
	for $\mathbf{h_{ef,2}}$	l_f	[mm]	40	44	48	65	82 (80) [3]	100
	for $\mathbf{h_{ef,3}}$	l_f	[mm]	60	70	80	100	120	115
Outside diameter of anchor		d_{nom}	[mm]	6	8	10	12	16	20

[1] Anchor version B fvz: M8-M20

[2] Restricted to the use of structural components which are statically indeterminate and subject to internal exposure conditions only

[3] Anchor version stainless steel

[4] In absence of other national regulations

Table C4: Displacements under tension load

Anchor size			M6	M8	M10	M12	M16	M20
Embedment depth $h_{ef,1}$								
zinc plated steel [1]								
Tension load	N	[kN]	2,9	5,0	6,5	8,5	12,3	16,6
Displacement	δ_{N0}	[mm]	0,3	0,4				
	$\delta_{N\infty}$	[mm]	0,6	1,8				
stainless steel								
Tension load	N	[kN]	2,9	4,3	5,7	8,5	12,3	16,6
Displacement	δ_{N0}	[mm]	0,4	0,7	0,4	0,4	0,6	1,5
	$\delta_{N\infty}$	[mm]	1,3					2,9
Embedment depth $h_{ef,2}$ and $h_{ef,3}$								
zinc plated steel [1]								
Tension load	N	[kN]	4,3	5,8	7,6	11,9	16,7	23,8
Displacement	δ_{N0}	[mm]	0,4	0,5				
	$\delta_{N\infty}$	[mm]	0,7	2,3				
stainless steel								
Tension load	N	[kN]	3,6	5,7	7,6	11,9	17,2	24,0
Displacement	δ_{N0}	[mm]	0,7	0,9	0,5	0,6	0,9	2,1
	$\delta_{N\infty}$	[mm]	1,8					4,2

[1] Anchor version B fvz: M8-M20

Table C5: Displacements under shear loads

Anchor size			M6	M8	M10	M12	M16	M20
zinc plated steel [1]								
Shear load	V	[kN]	2,9	6,3	9,7	14,3	23,6	37,0
Displacement	δ_{V0}	[mm]	1,2	1,5	1,6	2,6	3,1	4,4
	$\delta_{V\infty}$	[mm]	2,4	2,2	2,4	3,9	4,6	6,6
stainless steel								
Shear load	V	[kN]	4,0	6,9	10,9	15,4	28,6	43,7
Displacement	δ_{V0}	[mm]	1,1	2,0	1,2	2,0	2,2	2,1
	$\delta_{V\infty}$	[mm]	1,7	3,0	1,8	3,0	3,3	3,2

[1] Anchor version B fvz: M8-M20