


**DICHIARAZIONE DI PRESTAZIONE**DoP N. **MKT-212** - it

- ✧ **Codice di identificazione unico del prodotto-tipo:** **Ancoraggio a cuneo B**
- ✧ **Usi previsti:** Ancoraggio meccanico per ancoraggio nel calcestruzzo, vedi allegato B /Annex B
- ✧ **Fabbricante:** MKT Metall-Kunststoff-Technik GmbH & Co.KG  
Auf dem Immel 2  
67685 Weilerbach
- ✧ **Sistemi di VVCP:** 1
- ✧ **Documento per la valutazione europea:** **EAD 330232-00-0601**  
Valutazione tecnica europea: **ETA-01/0013, 29.11.2018**  
Organismo di valutazione tecnica: DIBt, Berlin  
Organismi notificati: NB 1343 – MPA, Darmstadt
- ✧ **Prestazioni dichiarate:**

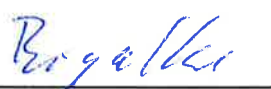
Caratteristiche essenziali	Prestazione
<b>Resistenza meccanica e stabilità (BWR1)</b>	
Resistenza caratteristica sotto tensione (effetti statici e quasi-statici)	Allegato/Annex C1 – C2
Resistenza caratteristica sotto stress laterale (effetti statici e quasi-statici)	Allegato/Annex C3
Spostamento (effetti statici e quasi-statici)	Allegato/Annex C4
Resistenza caratteristica e spostamenti per la categoria di prestazioni sismiche C1 + C2	NPD (No Performance Determined) nessuna prestazione determinata
<b>Sicurezza in caso di incendio (BWR2)</b>	
Comportamento al fuoco	Classe A1
Resistenza al fuoco	NPD (No Performance Determined) nessuna prestazione determinata

La prestazione del prodotto sopra identificato è conforme all'insieme delle prestazioni dichiarate. La presente dichiarazione di responsabilità viene emessa, in conformità al regolamento (UE) n. 305/2011, sotto la sola responsabilità del fabbricante sopra identificato.

Firmato a nome e per conto del fabbricante da:

  
**Stefan Weustenhagen**  
(Direttore Generale)  
**Weilerbach, 29.11.2018**

p.p.

  
**Dipl.-Ing. Detlef Bigalke**  
(Direttore del Sviluppo del Prodotto)



L'originale di questa dichiarazione di prestazione è stata scritta in tedesco. In caso di deviazioni nella traduzione, la versione tedesca è valida.

## Specifications of intended use

Wedge Anchor B			M6	M8	M10	M12	M16	M20
Materials	Steel zinc plated	electroplated	✓	✓	✓	✓	✓	✓
		hot-dip galvanized	-	✓	✓	✓	✓	✓
		sherardized	✓	✓	✓	✓	✓	✓
	Stainless steel	A4	✓	✓	✓	✓	✓	✓
	High corrosion resistant steel	HCR	✓	✓	✓	✓	✓	✓
Static or quasi-static action			✓					
Reduced anchorage depth			✓					
Uncracked concrete			✓					

### Base materials:

- Compacted, reinforced or unreinforced normal weight concrete (without fibers) acc. to EN 206:2013
- Strength classes C20/25 to C50/60 according to EN 206:2013

### Use conditions (Environmental conditions):

Structures subject to dry internal conditions	zinc plated steel, stainless steel A4, high corrosion resistant steel HCR
Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition, if no particular aggressive conditions exist	stainless steel A4, high corrosion resistant steel HCR
Structures subject to external atmospheric exposure and to permanently damp internal condition, if other particular aggressive conditions exist <sup>1)</sup>	high corrosion resistant steel HCR

<sup>1)</sup> Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).

### 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

### Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar and if under shear or oblique tension load it is not in the direction of load application.
- 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 A1 and A2 and the hexagon nut is placed at the end of the conical bolt as delivered by the manufacturer.

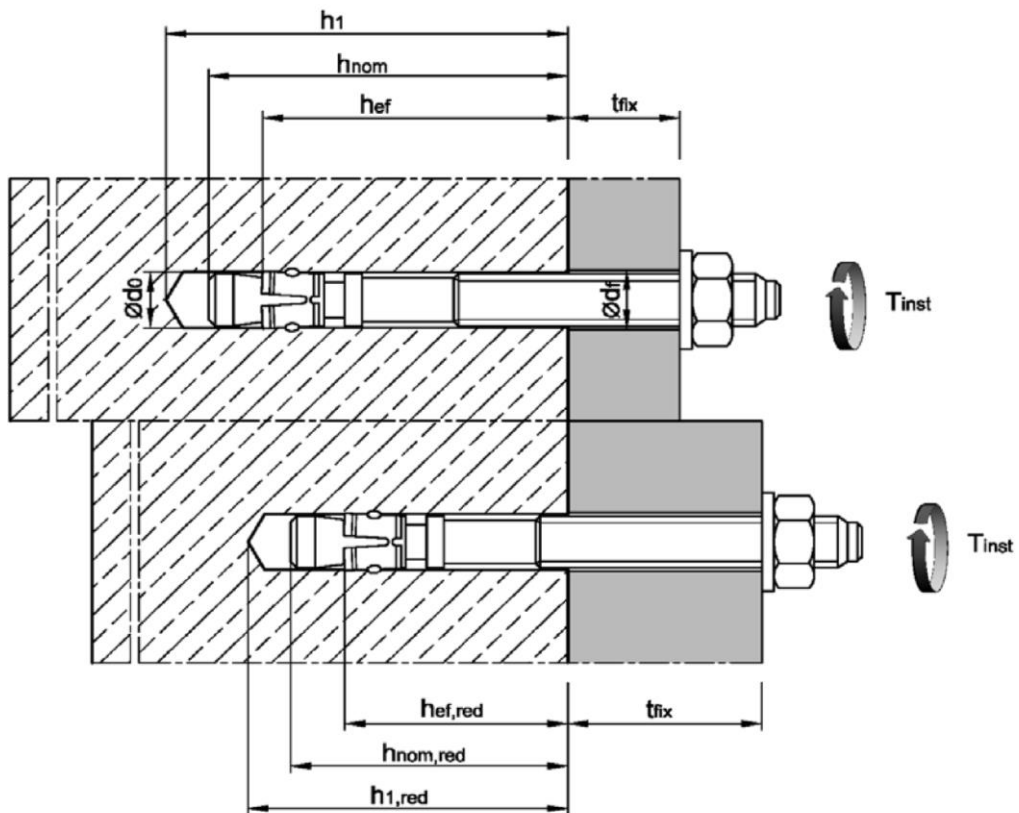
## Wedge Anchor B

Intended use  
Specifications

**Annex B1**

**Table B1: Installation parameters, steel zinc plated**

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 (electroplated)	$T_{inst} =$ [Nm]	8	15	30	50	100	200
Installation torque (hot-dip galvanized)	$T_{inst} =$ [Nm]	-	15	30	40	90	120
Installation torque (sherardized)	$T_{inst} =$ [Nm]	5	15	30	40	90	120
Diameter of clearance hole in the fixture	$d_f \leq$ [mm]	7	9	12	14	18	22
<b>Standard anchorage depth</b>							
Depth of drill hole	$h_1 \geq$ [mm]	55	65	70	90	110	130
Embedment depth	$h_{nom} \geq$ [mm]	49	56	62	82	102	121
Effective anchorage depth	$h_{ef} \geq$ [mm]	40	44	48	65	82	100
<b>Reduced anchorage depth</b>							
Depth of drill hole	$h_{1,red} \geq$ [mm]	45	55	65	75	95	110
Embedment depth	$h_{nom,red} \geq$ [mm]	39	47	56	67	84	99
Effective anchorage depth	$h_{ef,red} \geq$ [mm]	30	35	42	50	64	78



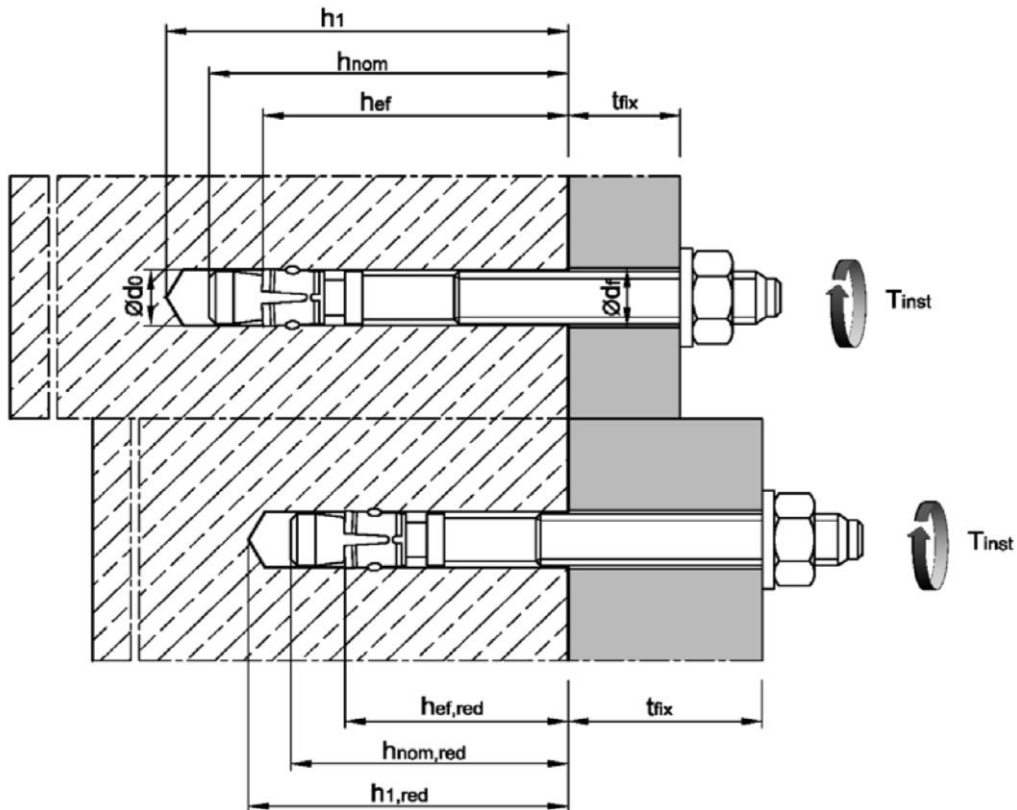
**Wedge Anchor B**

Intended use  
Installation data, steel zinc plated

**Annex B2**

**Table B2: Installation parameters, stainless steel A4 / HCR**

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	$T_{inst} =$ [Nm]	6	15	25	50	100	160
Diameter of clearance hole in the fixture	$d_f \leq$ [mm]	7	9	12	14	18	22
<b>Standard anchorage depth</b>							
Depth of drill hole	$h_1 \geq$ [mm]	55	65	70	90	110	130
Embedment depth	$h_{nom} \geq$ [mm]	49	56	62	81	99	121
Effective anchorage depth	$h_{ef} \geq$ [mm]	40	44	48	65	80	100
<b>Reduced anchorage depth</b>							
Depth of drill hole	$h_{1,red} \geq$ [mm]	45	55	65	75	95	110
Embedment depth	$h_{nom,red} \geq$ [mm]	39	47	56	66	83	99
Effective anchorage depth	$h_{ef,red} \geq$ [mm]	30	35	42	50	64	78



**Wedge Anchor B**

Intended use  
Installation data, stainless steel A4/HCR

**Annex B3**

**Table B3: Minimum spacings and edge distances, steel zinc plated**

Anchor size			M6	M8	M10	M12	M16	M20
<b>Standard anchorage depth <math>h_{ef}</math></b>								
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
<b>Reduced anchorage depth <math>h_{ef,red}</math></b>								
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

**Table B4: Minimum spacings and edge distances, stainless steel A4 / HCR**

Anchor size			M6	M8	M10	M12	M16	M20
<b>Standard anchorage depth <math>h_{ef}</math></b>								
Minimum member thickness	$h_{min}$	[mm]	100	100	100	130	160	200
Minimum spacing	$s_{min}$	[mm]	35	35	45	60	80	100
	for $c \geq$	[mm]	40	65	70	100	120	150
Minimum edge distance	$c_{min}$	[mm]	35	45	55	70	80	100
	for $s \geq$	[mm]	60	110	80	100	140	180
<b>Reduced anchorage depth <math>h_{ef,red}</math></b>								
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

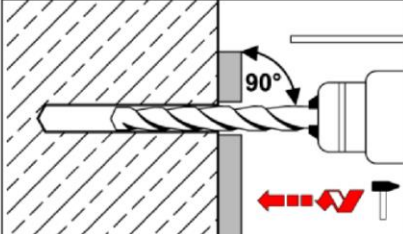
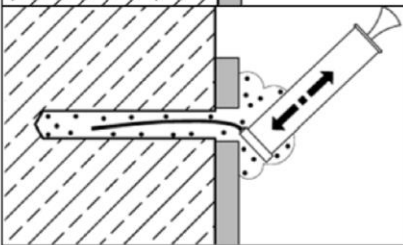
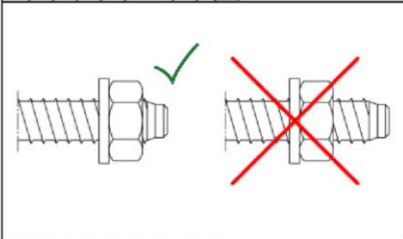
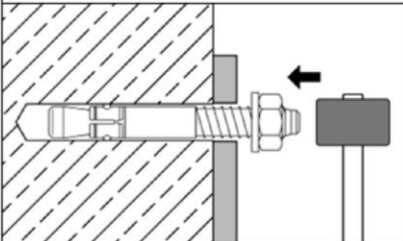
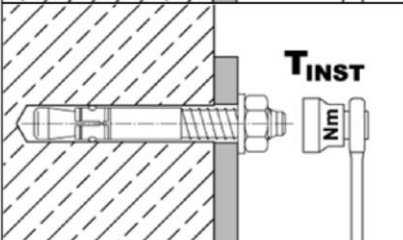
Intermediate values by linear interpolation.

**Wedge Anchor B**

**Intended use**  
Minimum spacings and edge distances

**Annex B4**

## Installation instructions

	<p>Drill hole perpendicular to concrete surface, positioning of the drill holes without damaging the reinforcement.</p>
	<p>Blow out dust.</p>
	<p>Check position of nut.</p>
	<p>Drive in anchor, such that <math>h_{ef}</math> or <math>h_{ef,red}</math> is met. This 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 A3.</p>
	<p>Apply installation torque <math>T_{inst}</math> as specified in Table B2.</p>

### Wedge Anchor B

Intended use  
Installation instructions

Annex B5

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

Anchor size		M6	M8	M10	M12	M16	M20
Installation factor	$\gamma_{inst}$ [-]	1,0					
<b>Steel failure</b>							
Characteristic resistance	$N_{Rk,s}$ [kN]	8,7	15,3	26	35	65	107
Partial factor	$\gamma_{Ms}$ [-]	1,5				1,6	
<b>Pull-out</b>							
<b>Standard anchorage depth <math>h_{ef}</math></b>							
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p}$ [kN]	9	12	16	1)	1)	1)
<b>Reduced anchorage depth <math>h_{ef,red}</math></b>							
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p}$ [kN]	6 <sup>2)</sup>	1) 2)	1)	1)	1)	1)
Increasing factor for $N_{Rk,p}$	$\psi_C$ [-]	$\left(\frac{f_{ck}}{20}\right)^{0,5}$					
<b>Splitting</b>							
Characteristic resistance in uncracked concrete C20/25	$N^0_{Rk,sp}$ [kN]	min [ $N_{Rk,p}$ ; $N^0_{Rk,c}$ ]					
<b>Standard anchorage depth <math>h_{ef}</math></b>							
Spacing	$s_{cr,sp}$ [mm]	160	220	240	330	410	500
Edge distance	$c_{cr,sp}$ [mm]	80	110	120	165	205	250
<b>Reduced anchorage depth <math>h_{ef,red}</math></b>							
Spacing	$s_{cr,sp}$ [mm]	180	210	230	240	320	400
Edge distance	$c_{cr,sp}$ [mm]	90	105	115	120	160	200
<b>Concrete cone failure</b>							
<b>Standard anchorage depth <math>h_{ef}</math></b>							
Effective anchorage depth	$h_{ef} \geq$ [mm]	40	44	48	65	82	100
Spacing	$s_{cr,N}$ [mm]	3 $h_{ef}$					
Edge distance	$c_{cr,N}$ [mm]	1,5 $h_{ef}$					
<b>Reduced anchorage depth <math>h_{ef,red}</math></b>							
Effective anchorage depth	$h_{ef,red} \geq$ [mm]	30 <sup>2)</sup>	35 <sup>2)</sup>	42	50	64	78
Spacing	$s_{cr,N}$ [mm]	3 $h_{ef,red}$					
Edge distance	$c_{cr,N}$ [mm]	1,5 $h_{ef,red}$					
Factor for $k_1$	$k_{ucr,N}$ [-]	11,0					

<sup>1)</sup> Pullout failure is not decisive

<sup>2)</sup> Use restricted to anchorages of indeterminate structural components

**Wedge Anchor B**

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

**Annex C1**

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

Anchor size			M6	M8	M10	M12	M16	M20	
Installation factor	$\gamma_{inst}$	[-]	1,0						
<b>Steel failure</b>									
Characteristic resistance	$N_{Rk,s}$	[kN]	10	18	30	44	88	134	
Partial factor	$\gamma_{Ms}$	[-]	1,50						1,68
<b>Pull-out</b>									
<b>Standard anchorage depth <math>h_{ef}</math></b>									
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p}$	[kN]	7,5	12	16	25	1)	1)	
<b>Reduced anchorage depth <math>h_{ef,red}</math></b>									
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p}$	[kN]	6 <sup>2)</sup>	9 <sup>2)</sup>	12	1)	1)	1)	
<b>Splitting</b>									
<b>Standard anchorage depth <math>h_{ef}</math></b>									
The higher one of the decisive resistances of Case 1 and Case 2 is applicable.									
Case 1									
Characteristic resistance in uncracked concrete C20/25	$N^0_{Rk,sp}$	[kN]	6	9	12	20	30	40	
Spacing	$S_{cr,sp}$	[mm]	3 $h_{ef}$						
Edge distance	$C_{cr,sp}$	[mm]	1,5 $h_{ef}$						
Case 2									
Characteristic resistance in uncracked concrete C20/25	$N^0_{Rk,sp}$	[kN]	7,5	12	16	25	1)	1)	
Spacing	$S_{cr,sp}$	[mm]	160	220	240	340	410	560	
Edge distance	$C_{cr,sp}$	[mm]	80	110	120	170	205	280	
<b>Reduced anchorage depth <math>h_{ef,red}</math></b>									
Characteristic resistance in uncracked concrete C20/25	$N^0_{Rk,sp}$	[kN]	6 <sup>2)</sup>	9 <sup>2)</sup>	12	1)	1)	1)	
Spacing	$S_{cr,sp}$	[mm]	180	210	230	300	320	400	
Edge distance	$C_{cr,sp}$	[mm]	90	105	115	150	160	200	
Increasing factor for $N_{Rk,p}$ and $N^0_{Rk,sp}$	$\psi/C$	[-]	$\left(\frac{f_{ck}}{20}\right)^{0,5}$						
<b>Concrete cone failure</b>									
<b>Standard anchorage depth <math>h_{ef}</math></b>									
Effective anchorage depth	$h_{ef}$	[mm]	40	44	48	65	80	100	
Spacing	$S_{cr,N}$	[mm]	3 $h_{ef}$						
Edge distance	$C_{cr,N}$	[mm]	1,5 $h_{ef}$						
<b>Reduced anchorage depth <math>h_{ef,red}</math></b>									
Effective anchorage depth	$h_{ef,red}$	[mm]	30 <sup>2)</sup>	35 <sup>2)</sup>	42	50	64	78	
Spacing	$S_{cr,N}$	[mm]	3 $h_{ef}$						
Edge distance	$C_{cr,N}$	[mm]	1,5 $h_{ef}$						
Factor for $k_1$	$k_{ucr,N}$	[-]	11,0						

1) Pullout failure is not decisive.

2) Use restricted to anchorages of indeterminate structural components.

**Wedge Anchor B**

**Performance**

Characteristic values for tension loads, stainless steel A4 / HCR

**Annex C2**



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

Anchor size			M6	M8	M10	M12	M16	M20
Installation factor	$\gamma_{inst}$	[-]	1,0					
<b>Steel failure without lever arm</b>								
Characteristic resistance	$V_{Rk,s}^0$	[kN]	5	11	17	25	44	69
Ductility factor	$k_7$	[-]	1,0					
<b>Steel failure with lever arm</b>								
Characteristic bending resistance	$M_{Rk,s}^0$	[Nm]	9	23	45	78	186	363
Partial factor for $V_{Rk,s}^0$ and $M_{Rk,s}^0$	$\gamma_{Ms}$	[-]	1,25				1,33	
<b>Concrete pry-out failure</b>								
Factor for $h_{ef}$	$k_8$	[-]	1,0	1,0	1,0	2,0	2,0	2,0
Factor for $h_{ef,red}$	$k_8$	[-]	1,0 <sup>1)</sup>	1,0 <sup>1)</sup>	1,0	1,0	2,0	2,0
<b>Concrete edge failure</b>								
Effective length of anchor in shear loading for $h_{ef}$	$l_f$	[mm]	40	44	48	65	82	100
Effective length of anchor in shear loading for $h_{ef,red}$	$l_f$	[mm]	30 <sup>1)</sup>	35 <sup>1)</sup>	42	50	64	78
Outside diameter of anchor	$d_{nom}$	[mm]	6	8	10	12	16	20

<sup>1)</sup> Use restricted to anchorages of indeterminate structural components

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

Anchor Size			M6	M8	M10	M12	M16	M20
Installation factor	$\gamma_{inst}$	[-]	1,0					
<b>Steel failure without lever arm</b>								
Characteristic resistance	$V_{Rk,s}^0$	[kN]	7	12	19	27	50	86
Ductility factor	$k_7$	[-]	1,0					
<b>Steel failure with lever arm</b>								
Characteristic bending resistance	$M_{Rk,s}^0$	[Nm]	10	24	49	85	199	454
Partial factor for $V_{Rk,s}^0$ and $M_{Rk,s}^0$	$\gamma_{Ms}$	[-]	1,25				1,4	
<b>Concrete pry-out failure</b>								
Factor for $h_{ef}$	$k_8$	[-]	1,0	1,0	1,0	2,0	2,0	2,0
Factor for $h_{ef,red}$	$k_8$	[-]	1,0 <sup>1)</sup>	1,0 <sup>1)</sup>	1,0	1,0	2,0	2,0
<b>Concrete edge failure</b>								
Effective length of anchor in shear loading with $h_{ef}$	$l_f$	[mm]	40	44	48	65	80	100
Effective length of anchor in shear loading with $h_{ef,red}$	$l_f$	[mm]	30 <sup>1)</sup>	35 <sup>1)</sup>	42	50	64	78
Outside diameter of anchor	$d_{nom}$	[mm]	6	8	10	12	16	20

<sup>1)</sup> Use restricted to anchorages of indeterminate structural components

**Wedge Anchor B**

**Performance**  
Characteristic values for shear loads

**Annex C3**

**Table C5: Displacements under tension loads, steel zinc plated**

Anchor size			M6	M8	M10	M12	M16	M20
<b>Standard anchorage depth</b>								
Tension load	N	[kN]	4,3	5,8	7,6	11,9	16,7	23,8
Displacement	$\delta_{N0}$	[mm]	0,4	0,5				
	$\delta_{N\infty}$	[mm]	0,7	2,3				
<b>Reduced anchorage depth</b>								
Tension load	N	[kN]	2,9	5,0	6,5	8,5	12,3	16,6
Displacement	$\delta_{N0}$	[mm]	0,3	0,4				
	$\delta_{N\infty}$	[mm]	0,6	1,8				

**Table C6: Displacements under tension loads, stainless steel A4/HCR**

Anchor size			M6	M8	M10	M12	M16	M20
<b>Standard anchorage depth</b>								
Tension load	N	[kN]	3,6	5,7	7,6	11,9	17,2	24,0
Displacement	$\delta_{N0}$	[mm]	0,7	0,9	0,5	0,6	0,9	2,1
	$\delta_{N\infty}$	[mm]	1,8					4,2
<b>Reduced anchorage depth</b>								
Tension load	N	[kN]	2,9	4,3	5,7	8,5	12,3	16,6
Displacement	$\delta_{N0}$	[mm]	0,4	0,7	0,4	0,4	0,6	1,5
	$\delta_{N\infty}$	[mm]	1,3					2,9

**Table C7: Displacements under shear loads, steel zinc plated**

Anchor size			M6	M8	M10	M12	M16	M20
Shear load	V	[kN]	2,9	6,3	9,7	14,3	23,6	37,0
Displacement	$\delta_{V0}$	[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

**Table C8: Displacements under shear loads, stainless steel A4/HCR**

Anchor Size			M6	M8	M10	M12	M16	M20
Shear load	V	[kN]	4,0	6,9	10,9	15,4	28,6	43,7
Displacement	$\delta_{V0}$	[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

**Wedge Anchor B**Performance  
Displacements**Annex C4**