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**European Technical Assessment Body  
for construction products**



## European Technical Assessment

**ETA-06/0136  
of 31 March 2025**

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

TILCA Wedge Anchor B / B fvz / B sh /  
B A2 / B A4 / B HCR

Product family  
to which the construction product belongs

Mechanical fastener for use in concrete

Manufacturer

EFCO Befestigungstechnik AG  
Grabenstraße 1  
8606 NÄNIKON  
SCHWEIZ

Manufacturing plant

Werk 1, Deutschland

This European Technical Assessment  
contains

15 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 330232-01-0601, Edition 05/2021

This version replaces

ETA-06/0136 issued on 9 June 2015

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## Specific Part

### 1 Technical description of the product

The TILCA Wedge Anchor B / B fvz / B sh / B A2 / B A4 / B HCR is a fastener made of zinc coated steel or stainless steel which is placed into a drilled hole and anchored by application of the installation torque.

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 fastener 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 fastener 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 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance to tension load (static and quasi static loading) Method A	See Annex B4, C1 and C2
Characteristic resistance to shear load (static and quasi static loading)	See Annex C3
Displacements	See Annex C4
Characteristic resistance and displacements for seismic performance categories C1 and C2	No performance assessed

#### 3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	No performance assessed

#### 3.3 Aspects of durability

Essential characteristic	Performance
Durability	See Annex B1

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

In accordance with the European Assessment Document EAD 330232-01-0601 the applicable European legal act is: [96/582/EC].

The system to be applied is: 1

**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 31 March 2025 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock  
Head of Section

*beglaubigt:*  
Baderschneider

## TILCA Wedge Anchor B / B fvz / B sh / B A2 / B A4 / B HCR

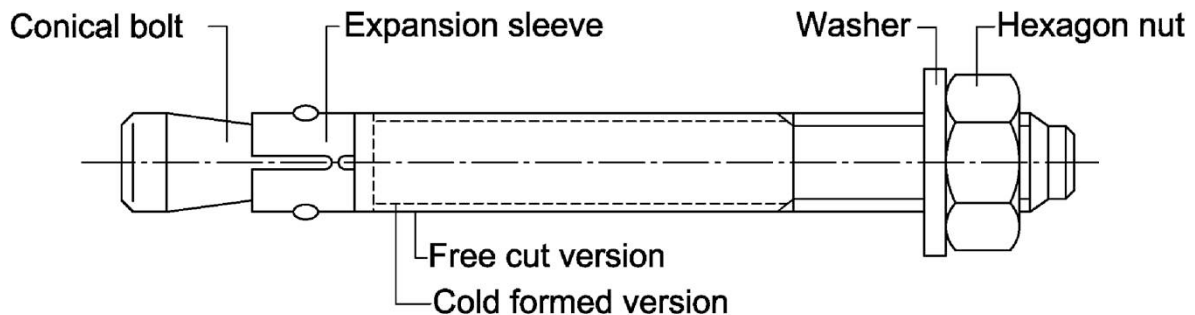


Table A1: Dimensions

Anchor size	Anchor length L			Wrench size
	Embedment depth $h_{ef,1}$	Embedment depth $h_{ef,2}$	Embedment depth $h_{ef,3}$	
M6	$t_{fix, h_{ef,1}} + 47,4$	$t_{fix, h_{ef,2}} + 57,4$	$t_{fix, h_{ef,3}} + 77,4$	10
M8	$t_{fix, h_{ef,1}} + 57,4$	$t_{fix, h_{ef,2}} + 66,4$	$t_{fix, h_{ef,3}} + 92,4$	13
M10	$t_{fix, h_{ef,1}} + 68,0$	$t_{fix, h_{ef,2}} + 74,0$	$t_{fix, h_{ef,3}} + 106,0$	17
M12	$t_{fix, h_{ef,1}} + 82,3$	$t_{fix, h_{ef,2}} + 97,3$	$t_{fix, h_{ef,3}} + 132,3$	19
M16	$t_{fix, h_{ef,1}} + 103,0$ ( $t_{fix, h_{ef,1}} + 101,8$ ) <sup>1)</sup>	$t_{fix, h_{ef,2}} + 121,0$ ( $t_{fix, h_{ef,2}} + 117,8$ ) <sup>1)</sup>	$t_{fix, h_{ef,3}} + 159,0$ ( $t_{fix, h_{ef,3}} + 157,8$ ) <sup>1)</sup>	24
M20	$t_{fix, h_{ef,1}} + 120,7$	$t_{fix, h_{ef,2}} + 142,7$	$t_{fix, h_{ef,3}} + 157,7$	30

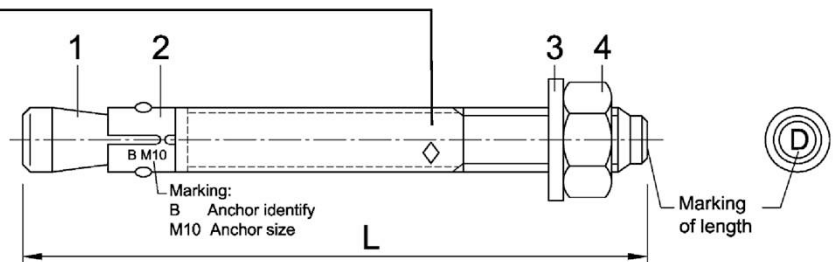
<sup>1)</sup> Anchor version B A2 / B A4 / B HCR

**Marking:** e.g.:  $\diamond 15/21$

- $\diamond$  Identifying mark of manufacturing plant
- 15 maximum thickness of fixture for  $h_{ef,2}$
- 21 maximum thickness of fixture for  $h_{ef,1}$

additional marking:

- A2 stainless steel
- A4 stainless steel
- HCR high corrosion resistant steel



Marking of length	A	B	C	D	E	F	G	H	I	J	K	L	M
Length of anchor min $\geq$	38,1	50,8	63,5	76,2	88,9	101,6	114,3	127,0	139,7	152,4	165,1	177,8	190,5
Length of anchor max $<$	50,8	63,5	76,2	88,9	101,6	114,3	127,0	139,7	152,4	165,1	177,8	190,5	203,2

Marking of length	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Length of anchor min $\geq$	203,2	215,9	228,6	241,3	254,0	279,4	304,8	330,2	355,6	381,0	406,4	431,8	457,2
Length of anchor max $<$	215,9	228,6	241,3	254,0	279,4	304,8	330,2	355,6	381,0	406,4	431,8	457,2	483,0

Dimensions in mm

TILCA Wedge Anchor B / B fvz / B sh / B A2 / B A4 / B HCR

Product description  
Marking and Dimensions

Annex A1

**Table A2: Materials**

Part	Designation	Material
<b>Zinc plated steel</b>		
<b>B</b>	electroplated	≥ 5 µm according to EN ISO 4042:1999
<b>B fvz</b>	hot-dip galvanized	≥ 50 µm (average coating thickness according to EN ISO 10684:2004+AC:2009 or EN ISO 1461:2009)
<b>B sh</b>	sherardized	≥ 45 µm according to EN ISO 17668:2016
1	Conical bolt	Cold formed or machined steel
2	Expansion sleeve	Stainless steel
3	Washer	Steel, zinc plated
4	Hexagon nut	Steel, zinc plated
<b>Stainless steel</b>		
<b>B A2 stainless steel CRC II <sup>1)</sup></b>		
1	Conical bolt	Stainless steel
2	Expansion sleeve	Stainless steel
3	Washer	Stainless steel
4	Hexagon nut	Stainless steel
<b>B A4 stainless steel CRC III <sup>1)</sup></b>		
1	Conical bolt	Stainless steel
2	Expansion sleeve	Stainless steel
3	Washer	Stainless steel
4	Hexagon nut	Stainless steel
<b>B HCR High corrosion resistant steel CRC V <sup>1)</sup></b>		
1	Conical bolt	High corrosion resistant steel
2	Expansion sleeve	Stainless steel
3	Washer	High corrosion resistant steel
4	Hexagon nut	High corrosion resistant steel

<sup>1)</sup> Corrosion resistance class according to EN 1993-1-4:2015, Annex A, Table A.3

**TILCA Wedge Anchor B / B fvz / B sh / B A2 / B A4 / B HCR**

**Product description**  
Materials

**Annex A2**



## 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)	1)	✓	✓	✓	✓	✓
	B sh (sherardized)	✓	✓	✓	✓	✓	✓
stainless steel	B A2	✓	✓	✓	✓	✓	✓
	B A4	✓	✓	✓	✓	✓	✓
	B HCR	✓	✓	✓	✓	✓	✓
all versions	static or quasi-static action	✓					
	uncracked concrete	✓					

1) No performance assessed

### 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:

- Anchorage 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.).
- Anchorage are designed according to EN 1992-4:2018 or TR 055:2018.

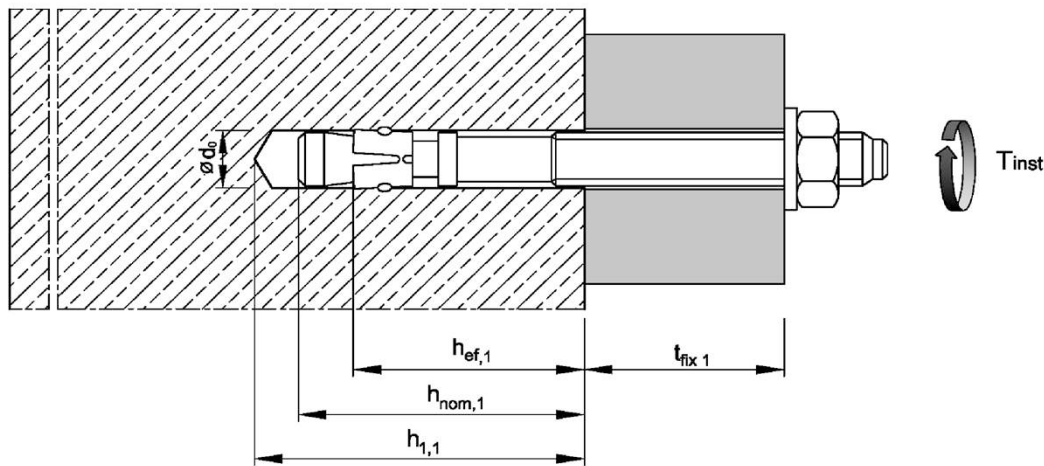
### Installation:

- 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.
- The anchor can be set in pre- or through-setting installation.

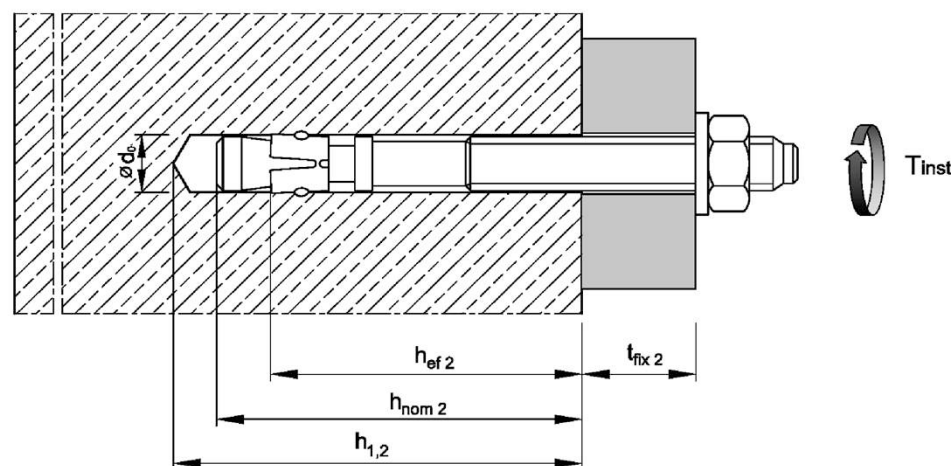
TILCA Wedge Anchor B / B fvz / B sh / B A2 / B A4 / B HCR	Annex B1
Intended use Specifications	

Installation parameters

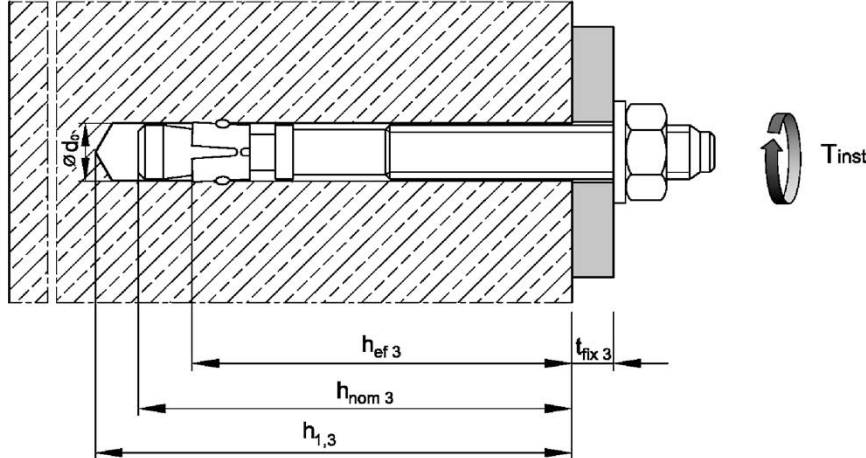
Effective embedment depths  $h_{ef,1}$



Effective embedment depths  $h_{ef,2}$



Effective embedment depths  $h_{ef,3}$



TILCA Wedge Anchor B / B fvz / B sh / B A2 / B A4 / B HCR

Intended use  
Installation parameters

Annex B2



**Table B1: Installation parameters**

Anchor size			M6	M8	M10	M12	M16	M20	
Nominal drill hole diameter		d <sub>0</sub> =	[mm]	6	8	10	12	16	20
Cutting diameter of drill bit		d <sub>cut</sub> ≤	[mm]	6,40	8,45	10,45	12,5	16,5	20,55
Installation torque	B	T <sub>inst</sub> =	[Nm]	8	15	30	50	100	200
	B fvz	T <sub>inst</sub> =	[Nm]	2)	15	30	40	90	120
	B sh	T <sub>inst</sub> =	[Nm]	5	15	30	40	90	120
	B A2 / B A4 / B HCR	T <sub>inst</sub> =	[Nm]	6	15	25	50	100	160
Diameter of clearance hole in the fixture		d <sub>f</sub> ≤	[mm]	7	9	12	14	18	22
Embedment depth h <sub>ef,1</sub>									
Effective embedment depth		h <sub>ef,1</sub> ≥	[mm]	30	35	42	50	64	78
Depth of drill hole		h <sub>1,1</sub> ≥	[mm]	45	55	65	75	95	110
Embedment depth		h <sub>nom,1</sub> ≥	[mm]	39	47	56	67	84	99
Embedment depth h <sub>ef,2</sub>									
Effective embedment depth		h <sub>ef,2</sub> ≥	[mm]	40	44	48	65	82 (80) <sup>1)</sup>	100
Depth of drill hole		h <sub>1,2</sub> ≥	[mm]	55	65	70	90	110	130
Embedment depth		h <sub>nom,2</sub> ≥	[mm]	49	56	62	82	102	121
Embedment depth h <sub>ef,3</sub>									
Effective embedment depth		h <sub>ef,3</sub> ≥	[mm]	60	70	80	100	120	115
Depth of drill hole		h <sub>1,3</sub> ≥	[mm]	75	91	102	125	148	145
Embedment depth		h <sub>nom,3</sub> ≥	[mm]	69	82	94	117	140	136

<sup>1)</sup> Anchor version B A2 / B A4 / B HCR

<sup>2)</sup> No performance assessed

**TILCA Wedge Anchor B / B fvz / B sh / B A2 / B A4 / B HCR**

**Intended use**  
Installation parameters

**Annex B3**

**Table B2: Minimum spacings and edge distances, zinc plated steel <sup>1)</sup>**

Anchor size			M6	M8	M10	M12	M16	M20
<b>Embedment depth <math>h_{ef,1}</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
<b>Embedment depth <math>h_{ef,2}</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>Embedment depth <math>h_{ef,3}</math></b>								
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

<sup>1)</sup> Anchor version B fvz: M8-M20

**Table B3: Minimum spacings and edge distances, stainless steel**

Anchor size			M6	M8	M10	M12	M16	M20
<b>Embedment depth <math>h_{ef,1}</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
<b>Embedment depth <math>h_{ef,2}</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>Embedment depth <math>h_{ef,3}</math></b>								
Minimum member thickness	$h_{min}$	[mm]	120	126	132	165	200	215
Minimum spacing	$s_{min}$	[mm]	35	35	45	60	80	100
	for $c \geq$	[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

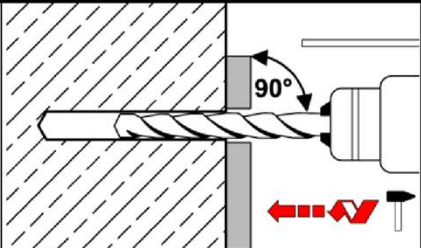
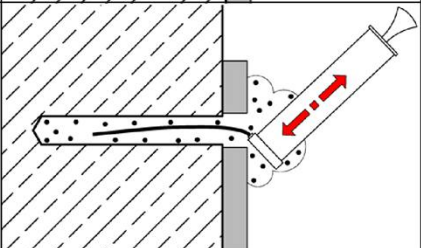
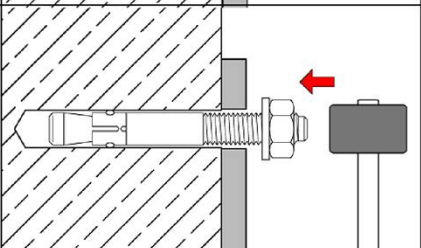
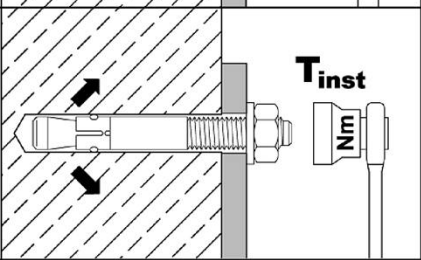
Intermediate values by linear interpolation.

**TILCA Wedge Anchor B / B fvz / B sh / B A2 / B A4 / B HCR**

**Intended use**  
Minimum spacings and edge distances

**Annex B4**

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.

TILCA Wedge Anchor B / B fvz / B sh / B A2 / B A4 / B HCR

Intended use  
Installation instructions

Annex B5

**Table C1: Characteristic values for tension loads, zinc plated steel <sup>1)</sup>**

Anchor size				M6	M8	M10	M12	M16	M20
Installation factor		$\gamma_{inst}$	[-]	1,0					
Steel failure									
Characteristic resistance		$N_{Rk,s}$	[kN]	8,7	15,3	26	35	65	107
Partial factor <sup>4)</sup>		$\gamma_{Ms}$	[-]	1,5				1,6	
Pull-out									
Characteristic resistance in uncracked concrete C20/25	for $h_{ef,1}$	$N_{Rk,p}$	[kN]	6,5 <sup>2)</sup>	10,2 <sup>2)</sup>	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 $N_{Rk,p} = \psi_C \cdot N_{Rk,p} \text{ (C20/25)}$		$\psi_C$	[-]	$\left(\frac{f_{ck}}{20}\right)^{0,5}$				$\left(\frac{f_{ck}}{20}\right)^{0,33}$	$\left(\frac{f_{ck}}{20}\right)^{0,5}$
Splitting									
Characteristic resistance		$N^0_{Rk,sp}$	[kN]	min [ $N_{Rk,p}$ ; $N^0_{Rk,c}$ <sup>3)</sup> ]					
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 <sup>2)</sup>	35 <sup>2)</sup>	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					

<sup>1)</sup> Anchor version B fvz: M8-M20

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

<sup>3)</sup>  $N^0_{Rk,c}$  according to EN 1992-4:2018

<sup>4)</sup> In absence of other national regulations

**TILCA Wedge Anchor B / B fvz / B sh / B A2 / B A4 / B HCR**

**Performance**

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

**Annex C1**



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

Anchor size				M6	M8	M10	M12	M16	M20	
Installation factor		$\gamma_{inst}$	[-]	1,0						
Steel failure										
Characteristic resistance		$N_{Rk,s}$	[kN]	10	18	30	44	88	134	
Partial factor <sup>3)</sup>		$\gamma_{Ms}$	[-]	1,50						
Pull-out										
Characteristic resistance in uncracked concrete C20/25	for $h_{ef,1}$	$N_{Rk,p}$	[kN]	6,5 <sup>1)</sup>	9 <sup>1)</sup>	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 $N_{Rk,p} = \psi_C \cdot N_{Rk,p} \text{ (C20/25)}$		$\psi_C$	[-]	$\left(\frac{f_{ck}}{20}\right)^{0,5}$						
Splitting										
Characteristic resistance		$N^0_{Rk,sp}$	[kN]	$\min [N_{Rk,p} ; N^0_{Rk,c} \text{ }^2)]$						
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 $N^0_{Rk,sp} = \psi_C \cdot N^0_{Rk,sp} \text{ (C20/25)}$		$\psi_C$	[-]	$\left(\frac{f_{ck}}{20}\right)^{0,5}$					
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 <sup>1)</sup>	35 <sup>1)</sup>	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						

<sup>1)</sup> Restricted to the use of structural components with  $h_{ef} < 40\text{mm}$  which are statically indeterminate and subject to internal exposure conditions only

<sup>2)</sup>  $N^0_{Rk,c}$  according to EN 1992-4:2018

<sup>3)</sup> In absence of other national regulations

**TILCA Wedge Anchor B / B fvz / B sh / B A2 / B A4 / B HCR**

**Performance**  
Characteristic values for **tension loads, stainless steel**

**Annex C2**

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

Anchor size				M6	M8	M10	M12	M16	M20	
Installation factor			$\gamma_{inst}$	[-]	1,0					
Steel failure without lever arm										
Characteristic resistance	zinc plated steel <sup>1)</sup>	$V^0_{Rk,s}$	[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 <sup>1)</sup>	$M^0_{Rk,s}$	[Nm]	9	23	45	78	186	363	
	stainless steel	$M^0_{Rk,s}$	[Nm]	10	24	49	85	199	454	
Partial factor <sup>4)</sup> for $V^0_{Rk,s}$ and $M^0_{Rk,s}$	zinc plated steel <sup>1)</sup>	$\gamma_{Ms}$	[-]	1,25				1,33		
	stainless steel	$\gamma_{Ms}$	[-]	1,25					1,4	
Concrete pry-out failure										
Factor for $h_{ef}$	zinc plated steel <sup>1)</sup>	$k_8$	[-]	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 $h_{ef,1}$	$l_f$	[mm]	30 <sup>2)</sup>	35 <sup>2)</sup>	42	50	64	78	
	for $h_{ef,2}$	$l_f$	[mm]	40	44	48	65	82 (80) <sup>3)</sup>	100	
	for $h_{ef,3}$	$l_f$	[mm]	60	70	80	100	120	115	
Outside diameter of anchor			$d_{nom}$	[mm]	6	8	10	12	16	20

<sup>1)</sup> Anchor version B fvz: M8-M20

<sup>2)</sup> Restricted to the use of structural components which are statically indeterminate and subject to internal exposure conditions only

<sup>3)</sup> Anchor version stainless steel

<sup>4)</sup> In absence of other national regulations

**TILCA Wedge Anchor B / B fvz / B sh / B A2 / B A4 / B HCR**

**Performance**  
Characteristic values for **shear loads**

**Annex C3**



**Table C4: Displacements under tension load**

Anchor size			M6	M8	M10	M12	M16	M20
Embedment depth $h_{ef,1}$								
zinc plated steel <sup>1)</sup>								
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				
stainless steel								
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
Embedment depth $h_{ef,2}$ and $h_{ef,3}$								
zinc plated steel <sup>1)</sup>								
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				
stainless steel								
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

<sup>1)</sup> Anchor version B fvz: M8-M20

**Table C5: Displacements under shear loads**

Anchor size			M6	M8	M10	M12	M16	M20
<b>zinc plated steel <sup>1)</sup></b>								
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
<b>stainless steel</b>								
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

<sup>1)</sup> Anchor version B fvz: M8-M20

**TILCA Wedge Anchor B / B fvz / B sh / B A2 / B A4 / B HCR**

**Performance  
Displacements**

**Annex C4**