EN

DECLARATION OF PERFORMANCE
No-Sikla-1.1-901
REGULATION (EU) No 305/2011

Unique identification code of the product-type	**Wedge Anchor AN BZ3 / AN BZ3 A4 / AN BZ3 HCR**
Intended use	Mechanical fastener for use in concrete, see Annex B
Manufacturer	Sikla Holding GmbH Ägydiplatz 3 4600 Thalheim bei Wels - Österreich
System of AVCP	System 1
European Assessment Document:	EAD 330232-01-0601 Edition 05/2021
European Technical Assessment:	ETA-20/0611, 24.10.2022
…Technical Assessment Body:	DIBt, Berlin
…Notified body:	Technische Universität Darmstadt - NB 2873

Essential characteristics	Performance
Mechanical resistance and stability (BWR 1)	
Characteristic resistance to tension load (static and quasi-static loading) Method A	Annex B3, C1-C2
Characteristic resistance to shear load (static and quasi-static loading)	Annex C3
Displacements	Annex C7-C8
Durability	Annex B1
Characteristic resistance and displacements for seismic performance category C1 and C2	Annex C4, C7-C8
Safety in case of fire (BWR 2)	
Reaction to fire	Class A1
Resistance to fire	Annex C5-C6

The performance of the product identified above is in conformity with the set of declared performances. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Villingen-Schwenningen, 15.01.2023

Günter Brugger | Head of IPRM

Achim Münch | Head of QM

«Disclaimer»

Specifications of intended use

Wedge Anchor	AN BZ3 / AN BZ3 A4 / AN BZ3 HCR			
	M8	M10	M12	M16
Static or quasi-static action	✓			
Seismic performance categories C1 and C2	✓			
Fire exposure	R30 / R60 / R90 / R120			
Variable, effective anchorage depth	35 mm to 90 mm	40 mm to 100 mm	50 mm to 125 mm	65 mm to 160 mm

Base materials:

- Cracked or uncracked concrete
- Reinforced or unreinforced normal weight concrete without fibres according to EN 206:2013 + A1:2016
- 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 according to EN 1993-1-2006 + A1:2015-10, corresponding to corrosion resistance classes CRC according to Annex A3, Table A2:

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 fastener is indicated on the design drawings (e.g. position of the fastener relative to reinforcement or to supports, etc.).
- Design method EN 1992-4:2018 and Technical Report 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 (exception: when using the cap nut HM)
- The anchor can be set in pre- or through-setting installation.
- Optionally, the annular gap between fixture and stud of AN BZ3 can be filled to reduce the hole clearance. For this purpose, the filling washer (Annex A3) must be used in addition to the supplied washer. For filling use Injection Adhesive VMU plus, VMZ or other high-strength injection mortar with compressive strength ≥ 40N/mm².

Wedge Anchor AN BZ3 / AN BZ3 A4 / AN BZ3 HCR	**Annex B1**
Intended use Specifications	

Table B2: Minimum thickness of concrete member, minimum spacings, edge distances

Anchor size			AN BZ3 / AN BZ3 A4 / AN BZ3 HCR			
			M8	M10	M12	M16
Minimum member thickness depending on h_{ef}	$h_{min} \geq$	[mm]	max ($1{,}5 \cdot h_{ef}$; 80)		max ($1{,}5 \cdot h_{ef}$;100)	max ($1{,}5 \cdot h_{ef}$;120)
Minimum edge distances and spacings						
Minimum edge distance	c_{min}	[mm]	40	45	55	65
	for s ≥	[mm]	see Table B4			
Minimum spacings	s_{min}	[mm]	35	40	50	65
	for c ≥	[mm]	see Table B4			
The following equation must be fulfilled for the calculation of the minimum spacing and edge distance during installation in combination with variable anchorage depth and member thickness:						
$A_{sp,req} \leq A_{sp,ef}$ Required splitting area $A_{sp,req}$ and idealized splitting area $A_{sp,ef}$ according to Table B4.						

Table B3: Applicable concrete thickness h_{sp} and area A_{sp} to determine characteristic edge distance $c_{cr,sp}$

Anchor size				AN BZ3 / AN BZ3 A4 / AN BZ3 HCR			
				M8	M10	M12	M16
Applicable concrete thickness	AN BZ3 AN BZ3 A4 AN BZ3 HCR	h_{sp}	[mm]	$\min(h\,;\ h_{ef} + 1{,}5 \cdot c \cdot \sqrt{2})$			
Area to determine $c_{cr,sp}$ [1)]	AN BZ3	A_{sp}	[mm²]	$\frac{N^0_{Rk,sp} - 2{,}573}{0{,}000436}$	$\frac{N^0_{Rk,sp} + 2{,}040}{0{,}000693}$	$\frac{N^0_{Rk,sp} + 3{,}685}{0{,}000692}$	$\frac{N^0_{Rk,sp} + 3{,}738}{0{,}000875}$
	AN BZ3 A4 AN BZ3 HCR	A_{sp}	[mm²]	$\frac{N^0_{Rk,sp} + 4{,}177}{0{,}000862}$	$\frac{N^0_{Rk,sp} + 7{,}235}{0{,}000967}$	$\frac{N^0_{Rk,sp} + 7{,}847}{0{,}000951}$	$\frac{N^0_{Rk,sp} + 11{,}415}{0{,}000742}$

[1)] with $N^0_{Rk,sp}$ in kN

Wedge Anchor AN BZ3 / AN BZ3 A4 / AN BZ3 HCR	**Annex B3**
Intended use Minimum spacings and edge distances Required area and applicable concrete thickness	

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Table C1: Characteristic values for **tension loads** under static and quasi-static action, **AN BZ3** (steel, zinc plated)

Fastener size			**AN BZ3**			
			M8	**M10**	**M12**	**M16**
Installation factor	γ_{inst}	[-]	1,0			
Steel failure						
Characteristic resistance	$N_{Rk,s}$	[kN]	19,8	30,4	44,9	79,3
Partial factor [4]	γ_{Ms}	[-]	1,5			
Pull-out						
Characteristic resistance in cracked concrete C20/25	$N_{Rk,p,cr}$	[kN]	9,5	15	22	30
Increasing factor $N_{Rk,p,cr} = \psi_C \cdot N_{Rk,p,cr}$ (C20/25)	ψ_C	[-]	$\left(\frac{f_{ck}}{20}\right)^{0,439}$	$\left(\frac{f_{ck}}{20}\right)^{0,265}$	$\left(\frac{f_{ck}}{20}\right)^{0,5}$	$\left(\frac{f_{ck}}{20}\right)^{0,339}$
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p,ucr}$	[kN]	14	24	30	50
Increasing factor $N_{Rk,p,ucr} = \psi_C \cdot N_{Rk,p,ucr}$ (C20/25)	ψ_C	[-]	$\left(\frac{f_{ck}}{20}\right)^{0,489}$	$\left(\frac{f_{ck}}{20}\right)^{0,448}$	$\left(\frac{f_{ck}}{20}\right)^{0,5}$	$\left(\frac{f_{ck}}{20}\right)^{0,203}$
Splitting						
Characteristic resistance	$N^0_{Rk,sp}$	[kN]	min ($N_{Rk,p}$; $N^0_{Rk,c}$ [3])			
Characteristic edge distance [2]	$c_{cr,sp}$	[mm]	$\frac{A_{sp} + 0,8 \cdot (h_{sp} - h_{ef})^2}{(3,41 \cdot h_{sp} - 0,59 \cdot h_{ef})}$			
Characteristic spacing	$s_{cr,sp}$	[mm]	$2 \cdot c_{cr,sp}$			
Concrete cone failure						
Minimum, effective anchorage depth	$h_{ef,min}$	[mm]	35 [1]	40	50	65
Maximum, effective anchorage depth	$h_{ef,max}$	[mm]	90	100	125	160
Characteristic edge distance	$c_{cr,N}$	[mm]	$1,5 \cdot h_{ef}$			
Characteristic spacing	$s_{cr,N}$	[mm]	$2 \cdot c_{cr,N}$			
Factor — cracked concrete	$k_{cr,N}$	[-]	7,7			
Factor — uncracked concrete	$k_{ucr,N}$	[-]	11,0			

[1] Fastenings with anchorage depth h_{ef} < 40mm are restricted to the use of structural components which are statically indeterminate and subject to internal exposure conditions only.

[2] Applicable concrete thickness h_{sp} and area A_{sp} to determine characteristic edge distance $c_{cr,sp}$ according to Table B3

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

[4] In absence of other national regulations

Wedge Anchor AN BZ3 / AN BZ3 A4 / AN BZ3 HCR	**Annex C1**
Performance Characteristic values for **tension loads, BZ3** (Steel, zinc plated)	

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Table C2: Characteristic values for **tension loads** under static or quasi-static action, **AN BZ3 A4** and **AN BZ3 HCR**

Fastener size			**AN BZ3 A4 / AN BZ3 HCR**			
			M8	**M10**	**M12**	**M16**
Installation factor	γ_{inst}	[-]	1,0			
Steel failure						
Characteristic resistance	$N_{Rk,s}$	[kN]	19,8	30,4	44,9	74,6
Partial factor [4]	γ_{Ms}	[-]	1,5			
Pull-out						
Characteristic resistance in cracked concrete C20/25	$N_{Rk,p,cr}$	[kN]	9,5	17	22	35
Increasing factor $N_{Rk,p,cr} = \psi_C \cdot N_{Rk,p,cr}$ (C20/25)	ψ_C	[-]	$\left(\frac{f_{ck}}{20}\right)^{0,488}$	$\left(\frac{f_{ck}}{20}\right)^{0,5}$	$\left(\frac{f_{ck}}{20}\right)^{0,435}$	$\left(\frac{f_{ck}}{20}\right)^{0,350}$
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p,ucr}$	[kN]	20	25	42	50
Increasing factor $N_{Rk,p,ucr} = \psi_C \cdot N_{Rk,p,ucr}$ (C20/25)	ψ_C	[-]	$\left(\frac{f_{ck}}{20}\right)^{0,240}$	$\left(\frac{f_{ck}}{20}\right)^{0,364}$	$\left(\frac{f_{ck}}{20}\right)^{0,213}$	$\left(\frac{f_{ck}}{20}\right)^{0,196}$
Splitting						
Characteristic resistance	$N^0_{Rk,sp}$	[kN]	min ($N_{Rk,p}$; $N^0_{Rk,c}$ [3])			
Characteristic edge distance [2]	$c_{cr,sp}$	[mm]	$\frac{A_{sp} + 0{,}8 \cdot (h_{sp} - h_{ef})^2}{(3{,}41 \cdot h_{sp} - 0{,}59 \cdot h_{ef})}$			
Characteristic spacing	$s_{cr,sp}$	[mm]	$2 \cdot c_{cr,sp}$			
Concrete cone failure						
Minimum, effective anchorage depth	$h_{ef,min}$	[mm]	35 [1]	40	50	65
Maximum, effective anchorage depth	$h_{ef,max}$	[mm]	90	100	125	160
Characteristic edge distance	$c_{cr,N}$	[mm]	$1{,}5 \cdot h_{ef}$			
Characteristic spacing	$s_{cr,N}$	[mm]	$2 \cdot c_{cr,N}$			
Factor — cracked concrete	$k_{cr,N}$	[-]	7,7			
Factor — uncracked concrete	$k_{ucr,N}$	[-]	11,0			

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

[2] Applicable concrete thickness h_{sp} and area A_{sp} according to Table B3 to determine characteristic edge distance $c_{cr,sp}$

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

[4] In absence of other national regulations

Wedge Anchor AN BZ3 / AN BZ3 A4 / AN BZ3 HCR	**Annex C2**
Performance Characteristic values for **tension loads, BZ3 A4** and **BZ3 HCR**	

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Table C3: Characteristic values for **shear loads** under static and quasi-static action

Fastener size				**AN BZ3 / AN BZ3 A4 / AN BZ3 HCR**			
				M8	**M10**	**M12**	**M16**
Installation factor		γ_{inst}	[-]	1,0			
Steel failure <u>without</u> lever arm							
Characteristic resistance	AN BZ3	$V^0_{Rk,s}$	[kN]	15,7	26,8	38,3	60,0
	AN BZ3 A4 / HCR	$V^0_{Rk,s}$	[kN]	16,8	27,8	39,8	69,5
Partial factor [2]		γ_{Ms}	[-]	1,25			
Ductility factor		k_7	[-]	1,0			
Steel failure <u>with</u> lever arm							
Characteristic bending resistance	AN BZ3	$M^0_{Rk,s}$	[Nm]	30	60	105	240
	AN BZ3 A4 / HCR	$M^0_{Rk,s}$	[Nm]	27	55	99	223
Partial factor [2]		γ_{Ms}	[-]	1,25			
Concrete pry-out failure							
Pry-out factor	AN BZ3	k_8	[-]	2,8	3,1	3,0	3,6
	AN BZ3 A4 / HCR	k_8	[-]	2,7	2,8	3,3	3,4
Concrete edge failure							
Effective length of fastener in shear loading		l_f	[mm]	h_{ef} [1]			
Outside diameter of fastener		d_{nom}	[mm]	8	10	12	16

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

[2] In absence of other national regulations

Wedge Anchor AN BZ3 / AN BZ3 A4 / AN BZ3 HCR	**Annex C3**
Performance Characteristic values for **shear loads**	

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Table C4: Characteristic values for **seismic loading,** performance category **C1**

Fastener size				**AN BZ3 / AN BZ3 A4 / AN BZ3 HCR**							
				M8		**M10**		**M12**		**M16**	
Effective anchorage depth		$h_{ef} \geq$	[mm]	40	45	40	60	50	70	65	85
Tension load											
Installation factor		γ_{inst}	[-]	1,0							
Steel failure											
Characteristic resistance	AN BZ3	$N_{Rk,s,C1}$	[kN]	19,8		30,4		44,9		79,3	
	AN BZ3 A4 / HCR	$N_{Rk,s,C1}$	[kN]	19,8		30,4		44,9		74,6	
Pull-out											
Characteristic resistance	AN BZ3	$N_{Rk,p,C1}$	[kN]	9,1		15,0		22,0		30,0	
	AN BZ3 A4 / HCR	$N_{Rk,p,C1}$	[kN]	9,0		17,0		22,0		35,0	
Shear load											
Steel failure without lever arm											
Characteristic resistance	AN BZ3	$V_{Rk,s,C1}$	[kN]	11,7	13,4	22,5	24,4	30,0	33,8	48,8	52,3
	AN BZ3 A4 / HCR	$V_{Rk,s,C1}$	[kN]	11,0	12,7	20,6	22,2	33,2	33,2	61,1	64,3
Factor for anchorages	**with** annular gap	α_{gap}	[-]	0,5							
	without annular gap	α_{gap}	[-]	1,0							

Table C5: Characteristic values for **seismic loading,** performance category **C2**

Fastener size				**AN BZ3 / AN BZ3 A4 / AN BZ3 HCR**							
				M8		**M10**		**M12**		**M16**	
Effective anchorage depth		$h_{ef} \geq$	[mm]	40	45	40	60	50	70	65	85
Tension load											
Installation factor		γ_{inst}	[-]	1,0							
Steel failure											
Characteristic resistance	AN BZ3	$N_{Rk,s,C2}$	[kN]	19,8		30,4		44,9		79,3	
	AN BZ3 A4 / HCR	$N_{Rk,s,C2}$	[kN]	19,8		30,4		44,9		74,6	
Pull-out											
Characteristic resistance	AN BZ3	$N_{Rk,p,C2}$	[kN]	2,8	3,6	7,3	12,5	10,7	19,0	19,8	35,2
	AN BZ3 A4 / HCR	$N_{Rk,p,C2}$	[kN]	2,3	3,2	5,0	7,7	8,0	13,8	19,0	29,4
Shear load											
Steel failure without lever arm											
Characteristic resistance	AN BZ3	$V_{Rk,s,C2}$	[kN]	7,3	11,3	15,4	19,0	18,3	28,0	39,4	43,3
	AN BZ3 A4 / HCR	$V_{Rk,s,C2}$	[kN]	7,5	8,6	12,5	15,9	22,4	25,6	42,7	46,1
Factor for anchorages	**with** annular gap	α_{gap}	[-]	0,5							
	without annular gap	α_{gap}	[-]	1,0							

Wedge Anchor AN BZ3 / AN BZ3 A4 / AN BZ3 HCR

Performance
Characteristic resistance for **seismic loading**

Annex C4

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Table C6: Characteristic values **for tension and shear load** under **fire exposure, AN BZ3** (steel, zinc plated)

Fastener size				**AN BZ3**			
				M8	**M10**	**M12**	**M16**
Tension load							
Steel failure							
Characteristic resistance	R30	$N_{Rk,s,fi}$	[kN]	1,2	2,6	4,6	7,7
	R60			1,0	1,9	3,3	5,6
	R90			0,7	1,3	2,1	3,5
	R120			0,6	1,0	1,5	2,5
Shear load							
Steel failure <u>without</u> lever arm							
Characteristic resistance	R30	$V_{Rk,s,fi}$	[kN]	4,0	7,5	12,3	20,7
	R60			2,7	5,1	8,5	14,2
	R90			1,4	2,7	4,6	7,7
	R120			0,8	1,6	2,7	4,5
Steel failure <u>with</u> lever arm							
Characteristic resistance	R30	$M^0_{Rk,s,fi}$	[Nm]	4,1	9,6	19,1	43,8
	R60			2,8	6,6	13,1	30,1
	R90			1,5	3,5	7,2	16,4
	R120			0,8	2,0	4,2	9,6

$N_{Rk,p,fi}$ and $N_{Rk,c,fi}$ according to EN 1992-4:2018

Wedge Anchor AN BZ3 / AN BZ3 A4 / AN BZ3 HCR	**Annex C5**
Performance Characteristic values under **fire exposure, BZ3** (steel, zinc plated)	

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Table C7: Characteristic values **for tension and shear load** under **fire exposure, AN BZ3 A4** und **AN BZ3 HCR**

Fastener size				**AN BZ3 A4 / AN BZ3 HCR**			
				M8	**M10**	**M12**	**M16**
Tension load							
Steel failure							
Characteristic resistance	R30	$N_{Rk,s,fi}$	[kN]	4,0	6,9	11,0	18,1
	R60			2,9	5,0	8,0	13,1
	R90			1,8	3,1	4,9	8,1
	R120			1,2	2,1	3,4	5,6
Shear load							
Steel failure <u>without</u> lever arm							
Characteristic resistance	R30	$V_{Rk,s,fi}$	[kN]	8,5	17,6	32,0	52,6
	R60			6,2	12,6	22,6	37,1
	R90			3,9	7,5	13,1	21,5
	R120			2,8	5,0	8,4	13,8
Steel failure <u>with</u> lever arm							
Characteristic resistance	R30	$M^0_{Rk,s,fi}$	[Nm]	8,7	22,7	49,8	111,5
	R60			6,3	16,2	35,1	78,6
	R90			4,0	9,7	20,4	45,6
	R120			2,8	6,5	13,0	29,2

$N_{Rk,p,fi}$ and $N_{Rk,c,fi}$ according to EN 1992-4:2018

Wedge Anchor AN BZ3 / AN BZ3 A4 / AN BZ3 HCR	**Annex C6**
Performance Characteristic values under **fire exposure, BZ3 A4** and **BZ3 HCR**	

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Table C8: Displacements under **tension load, AN BZ3** (steel, zinc plated)

Fastener size			**AN BZ3**							
			M8		**M10**		**M12**		**M16**	
Displacements under static or quasi-static action $\delta_{N0} = \delta_{N0\text{-factor}} * N$ N: acting tension load $\delta_{N\infty} = \delta_{N\infty\text{-factor}} * N$										
Effective anchorage depth	$h_{ef} \geq$	[mm]	35		40		50		65	
Cracked concrete										
Factor for displacement	$\delta_{N0\text{-factor}}$	[mm/kN]	0,13		0,05		0,04		0,03	
	$\delta_{N\infty\text{-factor}}$	[mm/kN]	0,29		0,20		0,15		0,11	
Uncracked concrete										
Factor for displacement	$\delta_{N0\text{- factor}}$	[mm/kN]	0,03		0,01		0,004		0,005	
	$\delta_{N\infty\text{- factor}}$	[mm/kN]	0,03		0,03		0,03		0,03	
Displacement under seismic action C2										
Effective anchorage depth	$h_{ef} \geq$	[mm]	40	45	40	60	50	70	65	85
Displacements for DLS	$\delta_{N,\ C2(DLS)}$	[mm]	3,9	4,9	2,8	4,7	2,4	4,2	2,5	4,5
Displacements for ULS	$\delta_{N,\ C2(ULS)}$	[mm]	11,3	14,3	9,4	16,1	7,3	12,9	7,2	12,8

Table C9: Displacements under **tension load, AN BZ3 A4** and **AN BZ3 HCR**

Fastener size			**AN BZ3 A4 / AN BZ3 HCR**							
			M8		**M10**		**M12**		**M16**	
Displacements under static or quasi-static action $\delta_{N0} = \delta_{N0\text{-factor}} * N$ N: acting tension load $\delta_{N\infty} = \delta_{N\infty\text{-factor}} * N$										
Effective anchorage depth	$h_{ef} \geq$	[mm]	35		40		50		65	
Cracked concrete										
Factor for displacement	$\delta_{N0\text{-factor}}$	[mm/kN]	0,11		0,06		0,05		0,02	
	$\delta_{N\infty\text{-factor}}$	[mm/kN]	0,27		0,17		0,16		0,08	
Uncracked concrete										
Factor for displacement	$\delta_{N0\text{- factor}}$	[mm/kN]	0,02		0,00		0,001		0,00	
	$\delta_{N\infty\text{- factor}}$	[mm/kN]	0,05		0,05		0,05		0,05	
Displacement under seismic action C2										
Effective anchorage depth	$h_{ef} \geq$	[mm]	40	45	40	60	50	70	65	85
Displacements for DLS	$\delta_{N,\ C2(DLS)}$	[mm]	2,0	2,9	2,6	4,1	3,3	5,7	3,3	5,1
Displacements for ULS	$\delta_{N,\ C2(ULS)}$	[mm]	7,7	11,1	10,8	16,8	10,4	18,0	9,0	13,9

Wedge Anchor AN BZ3 / AN BZ3 A4 / AN BZ3 HCR

Performance
Displacements under tension load

Annex C7

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Table C10: Displacements under **shear load, AN BZ3** (steel, zinc plated)

Fastener size			**AN BZ3**							
			M8		**M10**		**M12**		**M16**	
Displacements under static or quasi-static action $\delta_{V0} = \delta_{V0\text{-factor}} * V$ V: acting shear load $\delta_{V\infty} = \delta_{V\infty\text{-factor}} * V$										
Effective anchorage depth	$h_{ef} \geq$	[mm]	35		40		50		65	
Factor for displacement	$\delta_{V0\text{- factor}}$	[mm/kN]	0,15		0,09		0,09		0,07	
	$\delta_{V\infty\text{- factor}}$	[mm/kN]	0,22		0,13		0,14		0,11	
Displacement under seismic action C2 [1]										
Effective anchorage depth	$h_{ef} \geq$	[mm]	40	45	40	60	50	70	65	85
Displacements for DLS	$\delta_{V,C2(DLS)}$	[mm]	2,8	2,7	3,0	3,1	3,4	3,7	3,4	3,8
Displacements for ULS	$\delta_{V,C2(ULS)}$	[mm]	5,1	5,0	5,0	5,5	6,3	9,9	6,0	9,6

[1] For anchorages with clearance in the fixture the annular gap must also be taken into account.

Table C11: Displacements under **shear load, AN BZ3 A4** and **AN BZ3 HCR**

Fastener size			**AN BZ3 A4 / AN BZ3 HCR**							
			M8		**M10**		**M12**		**M16**	
Displacements under static or quasi-static action $\delta_{V0} = \delta_{V0\text{-factor}} * V$ V: acting shear load $\delta_{V\infty} = \delta_{V\infty\text{-factor}} * V$										
Effective anchorage depth	$h_{ef} \geq$	[mm]	35		40		50		65	
Factor for displacement	$\delta_{V0\text{- factor}}$	[mm/kN]	0,26		0,14		0,12		0,09	
	$\delta_{V\infty\text{- factor}}$	[mm/kN]	0,39		0,20		0,17		0,14	
Displacement under seismic action C2 [1]										
Effective anchorage depth	$h_{ef} \geq$	[mm]	40	45	40	60	50	70	65	85
Displacements for DLS	$\delta_{V,C2(DLS)}$	[mm]	2,8	3,0	3,4	3,5	3,5	4,2	3,8	4,4
Displacements for ULS	$\delta_{V,C2(ULS)}$	[mm]	5,2	5,1	7,0	8,4	7,5	11,8	7,8	11,1

[1] For anchorages with clearance in the fixture the annular gap must also be taken into account

Wedge Anchor AN BZ3 / AN BZ3 A4 / AN BZ3 HCR

Performance
Displacements under shear load

Annex C8