

CONCRETE SCREW ANCHORS

ZINC PLATED / GALVANISED / A4 STAINLESS STEEL

ZP

GAL

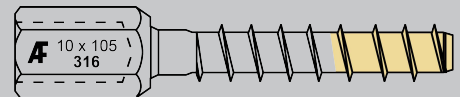
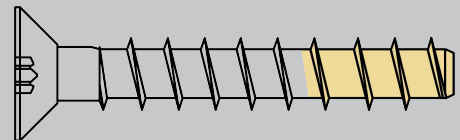
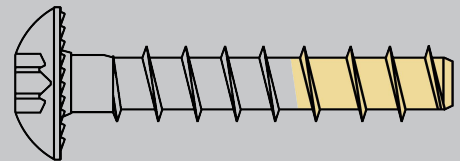
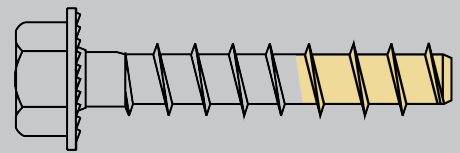
316

APPROVAL DOC

TDS

ETA-18/0565

25 April 2025



NCC Compliant AS 5216

This ETA document meets anchor testing and reporting requirements of AS 5216, essential for compliance with the NCC.



For Technical & Engineering Support engineering@allfasteners.com.au | +61 3 9330 0555

Public-law institution jointly founded by the
federal states and the Federation

**European Technical Assessment Body
for construction products**



European Technical Assessment

**ETA-18/0565
of 25 April 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

Allfasteners Concrete Screw Anchor

Product family
to which the construction product belongs

Mechanical fasteners for use in concrete

Manufacturer

Allfasteners Pty Ltd
78-84 Logistics Street
Keilor Park, VIC 3042, Australia
AUSTRALIEN

Manufacturing plant

Factory Plant 1

This European Technical Assessment
contains

20 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-18/0565 issued on 4 September 2018

The European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may only be made with the written consent of the issuing Technical Assessment Body. Any partial reproduction shall be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission in accordance with Article 25(3) of Regulation (EU) No 305/2011.

Specific Part

1 Technical description of the product

The Allfasteners Concrete Screw Anchor of sizes SA 8, SA 10 and SA 12 is an anchor made of galvanized and stainless steel. The anchor is screwed into a predrilled cylindrical drill hole. The special thread of the anchor cuts an internal thread into the member while setting. The anchorage is characterised by mechanical interlock in the special thread.

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 anchor 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 anchor 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)	See Annex B3, C1 and C2
Characteristic resistance to shear load (static and quasi-static loading)	See Annex C4
Displacements (static and quasi-static loading)	See Annex C3 and C5
Characteristic resistance for seismic performance category C1	See Annex C6 and C7
Characteristic resistance and displacements for seismic performance category C2	No performance assessed

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	See Annex C8 and C9

3.3 Aspects of durability linked with the Basic Works Requirements

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 European Assessment Document EAD No. 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

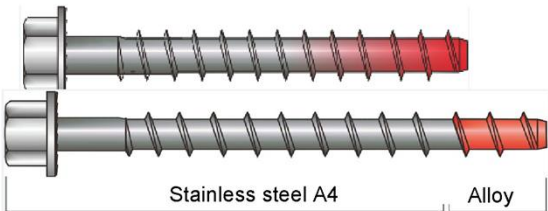
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

Issued in Berlin on 25 April 2025 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock
Head of Section

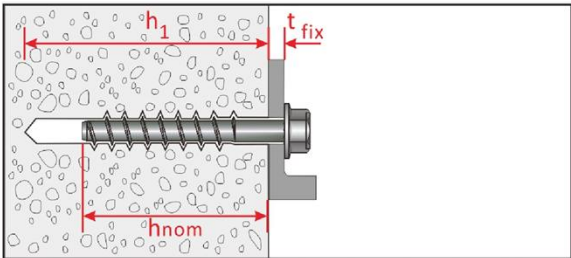
beglaubigt:
Baderschneider

Product in the installed condition

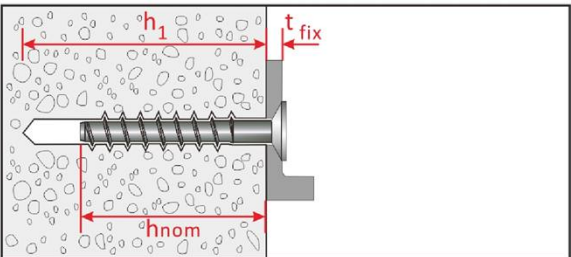


Steel 10B21

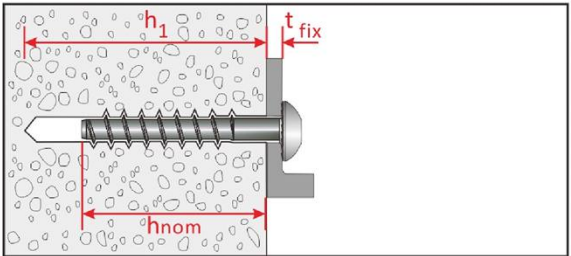
Stainless steel A4



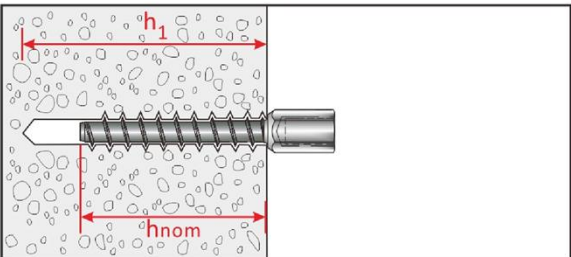
Hexagon Head : SAH, SAHF
10B21 (SA8, SA10, SA12)
A4 (SA8, SA10, SA12)



Countersunk Head : SAC
10B21 (SA8, SA10)
A4 (SA8, SA10)



Button Head : SAB
10B21 (SA8, SA10)
A4 (SA8, SA10)



Hanger Bolt : SASS
A4 (SA10-M12)

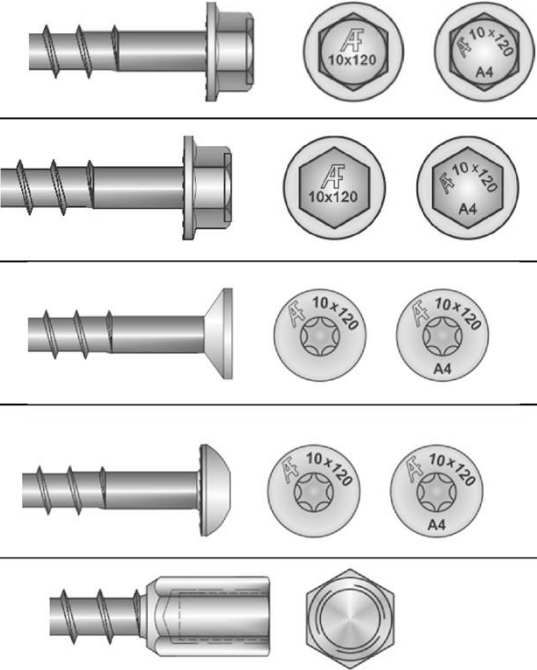
Allfasteners Concrete Screw Anchor

Product description
Installed condition

Annex A1

Table A1: Materials and screw types

Name	Material										
Screw anchor	Head marking		material								
	AF		Steel 10B21 acc. to SAE-J403 zinc coating: electro plated (> 5 μm) or mechanical plated (> 30 μm) (only head type –H and –HF)								
	AF A4		Stainless steel 1.4401, 1.4404 (both A4)								
	Anchor size / head types			SA 8			SA 10			SA 12	
				-H -HF -C -B	-H -HF -B	-C	-H -HF -C -B	-H -HF -S -B	-C -B	-H -HF	
Material			10B21	A4		10B21	A4		10B21	A4	
Nominal value of the characteristic yield strength		f _{yk}	N/mm ²	780	640	432	750	640	432	750	640
Nominal value of the characteristic tensile strength		f _{uk}	N/mm ²	870	800	540	850	800	540	850	800
Elongation at rupture		As	[%]	≤ 8							

	Hexagon washer head		1) SAH size 8,10,12 (10B21 steel) 2) SAHS A4 size 8,10,12 (stainless A4)							
	Hexagon washer head		3) SAHF size 8,10,12 (10B21 steel) 4) SAHFS A4 size 8,10,12 (stainless A4)							
	Countersunk head		5) SAC size 8,10 (10B21 steel) 6) SACS A4 size 8,10 (stainless A4)							
	Button head		7) SAB size 8,10 (10B21 steel) 8) SABS A4 size 8,10 (stainless A4)							
	Hanger Bolt head		9) SASS A4 size 10 with M12 internal thread (stainless A4)							

Allfasteners Concrete Screw Anchor

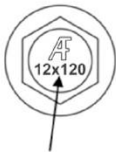
Product description
Materials and screw types

Annex A2

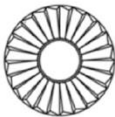
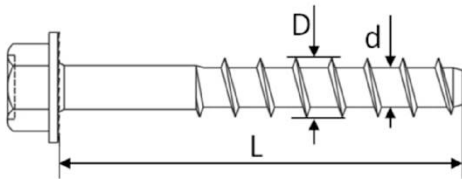
Table A2: Dimensions and markings

Anchor size			SA 8				SA 10				SA 12	
Head type			H, HF, B		C		H, HF, B, S		C		H, HF	
Material			10B21	A4	10B21	A4	10B21	A4	10B21	A4	10B21	A4
Embedment depth	h_{nom}	[mm]	65	85	65	85	75	100	75	100	95	120
Length of anchor	min L	[mm]	70	90	75	95	80	105	85	110	100	125
	max L	[mm]	150				150				150	
Thread diameter	D	[mm]	9,9				12,5				14,3	
Core diameter	d	[mm]	7,4				9,4				11,3	
Thread pitch	p	[mm]	5,8				7,7				8,1	

Steel
10B21



Head marking:
Identifying mark of producer: AF
Nominal size: e.g. 12 mm
Length L: e.g. 120 mm

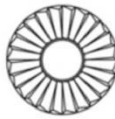
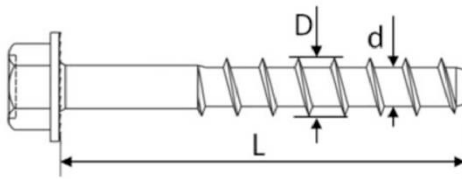


Reverse Locking
Serrations

Stainless Steel
A4



Head marking:
Identifying mark of producer: AF
Nominal size: e.g. 12mm
Length L: 120mm
Material: A4



Reverse Locking
Serrations

Allfasteners Concrete Screw Anchor

Product description
Dimensions and markings

Annex A3

Specifications of Intended use

Anchorage subject to:

- Static and quasi-static loads
- Seismic action for performance category C1
- Fire exposure

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206:2013+A2:2021
- Strength classes C20/25 to C50/60 according to EN 206:2013+A2:2021
- Uncracked or cracked concrete

Use conditions (Environmental conditions)

- Anchorages subject to dry internal conditions: all screw types
- For all other conditions corresponding to corrosion resistance classes CRC according to EN 1993-1-4:2006 + A1:2015:
 - Screw types made of stainless steel with marking A4: CRC III

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 for design method A in accordance with:
 - EN 1992-4: 2018 in addition with Technical Report TR 055, Edition February 2018

Installation:

- Hammer drilling only: all sizes and all embedment depths.
- 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 hole is filled with high strength mortar and if under shear or oblique tension load it is not the direction of the load application.
- After installation further turning of the anchor shall not be possible.
- The head of the anchor must be fully engaged on the fixture and show no signs of damage.

Allfasteners Concrete Screw Anchor

Intended Use Specifications

Annex B1

Table B1: Installation parameters (Steel 10B21)

Anchor size			SA 8			SA 10			SA 12
Head type			H HF	C	B	H HF	C	B	H HF
Material			Steel 10B21						
Diameter of drill bit	d ₀	[mm]	8			10			12
Embedment depth	h _{nom}	[mm]	65			75			95
Min. hole depth in concrete	h ₁ ≥	[mm]	75			85			105
Effective anchorage depth	h _{ef}	[mm]	50,6			58,1			75,4
Clearance hole in the fixture	d _f	[mm]	11			13			15
Thickness of fixture	t _{fix}	[mm]	5-85	10-85	5-85	5-75	10-75	5-75	5-55
Installation torque	T _{inst}	[Nm]	40	- ¹⁾	- ¹⁾	60	- ¹⁾	- ¹⁾	80
Wrench size (types: H, HF)	WS	[mm]	13	-	-	17	-	-	19
Torx size (types: C, B)	TX	-	-	45		-	50		-
Max. power output, machine setting	T _{max} ≤	[Nm]	185	120	120	350	120	120	350

1) For the installation of the C and B head types only impact screw driver can be used.

Table B2: Installation parameters (Stainless Steel A4)

Anchor size			SA 8			SA 10				SA 12
Head type			H HF	C	B	H HF	S	C	B	H HF
Material			Stainless A4							
Diameter of drill bit	d ₀	[mm]	8			10				12
Embedment depth	h _{nom}	[mm]	85			100				120
Min. hole depth in concrete	h ₁ ≥	[mm]	95			110				130
Effective anchorage depth	h _{ef}	[mm]	51,9			58,7				75,6
Clearance hole	d _f	[mm]	11			13				15
Thickness of fixture	t _{fix}	[mm]	5-65	10-65	5-65	5-50	5-50	10-50	5-50	5-30
Installation torque	T _{inst}	[Nm]	- ¹⁾	- ¹⁾	- ¹⁾	- ¹⁾	- ¹⁾	- ¹⁾	- ¹⁾	- ¹⁾
Wrench size (types: H, HF, S)	WS	[mm]	13	-	-	17	19	-	-	19
Torx size (types: C, B)	TX	-	-	45		-	-	50		-
Max. torque moment, machine setting	T _{max} ≤	[Nm]	120	120	120	185	185	185	185	185

1) For the installation of the C and B head types only impact screw driver can be used.

Allfasteners Concrete Screw Anchor

Intended Use
Installation parameters

Annex B2

Table B3: Minimum thickness of member, Minimum spacing and edge distance

Anchor size			SA 8		SA 10		SA 12	
Head type			H, HF, C, B		H, HF, C, B, S		H, HF	
Material			10B21	A4	10B21	A4	10B21	A4
Minimum member thickness	h_{min}	[mm]	110	125	130	140	160	170
Minimum edge distance	c_{min}	[mm]	50	50	60	60	70	70
Minimum spacing	s_{min}	[mm]	50	50	60	60	70	70

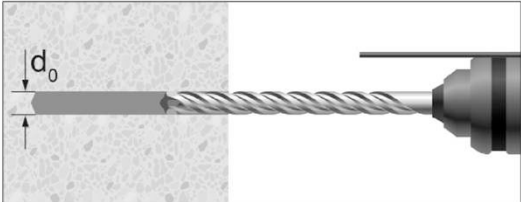
Allfasteners Concrete Screw Anchor

Intended Use

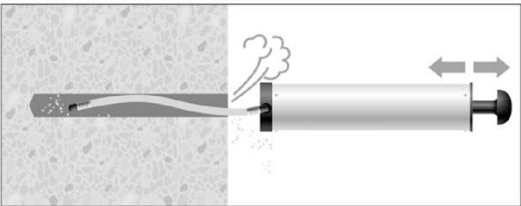
Minimum member thickness, minimum edge distance and anchor spacing

Annex B3

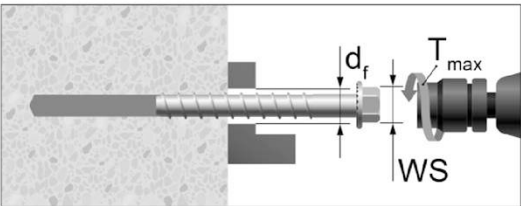
Installation instruction



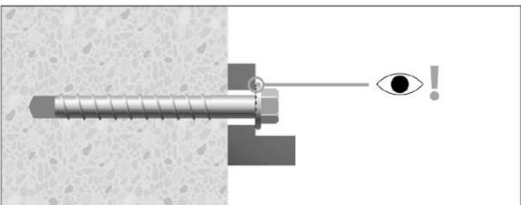
Drill the hole to the bore hole depth h_1 .



Clean the hole.



Screw in the anchor by using a torque wrench or an impact screw driver.
In case of using torque wrench: T_{inst} acc. to Table B1 and B2.
In case of using impact screw driver: T_{max} acc. to Table B1 and B2
WS= Wrench Size



Control of complete setting, full contact of screw head with fixture part.

Allfasteners Concrete Screw Anchor

Intended Use
Installation Instruction

Annex B4

**Table C1: Characteristic resistance under tension loading, Design method A
(Steel 10B21)**

Anchor size			SA 8			SA 10			SA 12
Head type			H HF	C	B	H HF	C	B	H HF
Material			Steel 10B21						
Embedment depth	h _{nom}	[mm]	65			75			95
Steel failure									
Characteristic resistance	N _{Rk,s}	[kN]	35,9			57,0			83,0
Partial safety factor	γ _{Ms} ¹⁾	[-]	1,4			1,4			1,4
Pull-out failure									
Characteristic resistance in cracked concrete C20/25	N _{Rk,p}	[kN]	7,0			10,0			16,0
Characteristic resistance in uncracked concrete C20/25	N _{Rk,p}	[kN]	9,0	9,0	6,5	16,0	16,0	11,0	25,0
Increasing factors for N _{Rk,p} = N _{Rk,p(C20/25)} * ψ _c in cracked or uncracked concrete	ψ _c	C30/37	1,22						
		C40/50	1,41						
		C50/60	1,58						
Installation factor	γ _{inst}	[-]	1,4			1,0			1,2
Concrete cone failure									
Effective anchorage depth	h _{ef}	[mm]	50,6			58,1			75,4
Characteristic edge distance	c _{cr,N}	[mm]	1,5h _{ef}						
Characteristic spacing	s _{cr,N}	[mm]	3h _{ef}						
Factor for cracked concrete	k _{cr}	[-]	7,7						
Factor for uncracked concrete	k _{ucr}	[-]	11,0						
Splitting failure									
Characteristic edge distance for splitting	c _{cr,sp}	[mm]	1,5h _{ef}						
Characteristic anchor spacing for splitting	s _{cr,sp}	[mm]	3h _{ef}						

1) In absence of other national regulations.

Allfasteners Concrete Screw Anchor

Performance (Steel 10B21)
Characteristic values under tension loading

Annex C1

**Table C2: Characteristic resistance under tension loading, Design method A
(Stainless Steel A4)**

Anchor size			SA 8			SA 10				SA 12
Head type			H HF	C	B	H HF	S	C	B	H HF
Material			Stainless A4							
Embedment depth	h_{nom}	[mm]	85			100				120
Steel failure										
Characteristic resistance	$N_{Rk,s}$	[kN]	33,0	22,3	22,3	53,7	53,7	36,2	36,2	78,1
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,5			1,5				1,5
Pull-out failure										
Characteristic resistance in cracked concrete C20/25	$N_{Rk,p}$	[kN]	7,0	4,5	4,0	7,0	7,0	7,0	7,0	16,0
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p}$	[kN]	9,0	5,5	4,0	16,0	16,0	10,0	7,0	25,0
Increasing factors for $N_{Rk,p} = N_{Rk,p(C20/25)} \cdot \psi_c$ in cracked or uncracked concrete	ψ_c	C30/37	1,22							
		C40/50	1,41							
		C50/60	1,58							
Installation factor	γ_{inst}	[-]	1,4			1,0				1,2
Concrete cone failure										
Effective anchorage depth	h_{ef}	[mm]	51,9			58,7				75,6
Characteristic edge distance	$c_{cr,N}$	[mm]	$1,5h_{ef}$							
Characteristic spacing	$s_{cr,N}$	[mm]	$3h_{ef}$							
Factor for cracked concrete	k_{cr}	[-]	7,7							
Factor for uncracked concrete	k_{ucr}	[-]	11,0							
Splitting failure										
Characteristic edge distance for splitting	$c_{cr,sp}$	[mm]	$1,5h_{ef}$							
Characteristic anchor spacing for splitting	$s_{cr,sp}$	[mm]	$3h_{ef}$							

1) In absence of other national regulations.

Allfasteners Concrete Screw Anchor

Performance (Stainless Steel A4)
Characteristic values under tension loading

Annex C2

Table C3: Displacements under tension loads for uncracked and cracked concrete

Anchor size	Embedment depth	Material	Head type	Concrete	Tension load N	Displacement			
						δ_{N0}	$\delta_{N\infty}$		
[-]	[mm]	[-]	[-]	[-]	[kN]	[mm]	[mm]		
SA 8	65	Steel 10B21	H/HF	cracked C20/25	1,5	0,1	0,8		
			C						
			B						
SA 10	75		H/HF		4,8	0,2	1,0		
			C						
			B						
SA 12	95		H/HF		4,8	0,3	1,2		
SA 8	85		Stainless A4		H/HF	cracked C20/25	1,5	0,1	0,8
					C		1,5		
		B		1,4					
SA 10	100	H/HF/S		3,3	0,2		1,0		
		C							
		B							
SA 12	120	H/HF		4,8	0,3		1,2		
SA 8	65	Steel 10B21		H/HF	uncracked C20/25		3,1	0,1	0,8
				C			2,2		
			B	7,6		0,1	1,0		
H/HF	5,2								
C									
B	9,9		0,3	1,2					
SA 12	95		H/HF	9,9		0,3	1,2		
SA 8	85		Stainless A4	H/HF		uncracked C20/25	3,1	0,1	0,8
				C			1,8		
		B		1,4					
SA 10	100	H/HF/S		7,6	0,1		1,0		
		C						4,8	
		B						3,3	
SA 12	120	H/HF		9,9	0,3		1,2		

Allfasteners Concrete Screw Anchor

Performance
Displacements under tension loads

Annex C3

Table C4: Characteristic resistance under shear loading, Design method A

Anchor size			SA 8			SA 10			SA 12	
Head type			H HF C B	H HF	C B	H HF C B	H HF S	C B	H HF	H HF
Material			10B21	A4		10B21	A4		10B21	A4
Embedment depth	h _{nom}	[mm]	65	85		75	100		95	120
Effective embedment depth	h _{ef}	[mm]	50,6	51,9		58,1	58,7		75,4	75,6
Steel failure without lever arm										
Characteristic resistance	V _{Rk,s}	[kN]	16,9	16,5	11,2	26,8	26,8	18,1	39,0	39,0
Factor for groups	k ₇	[-]	0,8							
Partial safety factor	γ _{Ms} ¹⁾	[-]	1,5	1,25		1,5	1,25		1,5	1,25
Steel failure with lever arm										
Characteristic resistance	M ⁰ _{Rk,s}	[Nm]	39,1	35,9	24,2	79,0	74,4	50,2	138,8	130,6
Partial safety factor	γ _{Ms} ¹⁾	[-]	1,5	1,25		1,5	1,25		1,5	1,25
Concrete pryout failure										
k-factor	k ₈	[-]	1,0						2,0	
Installation factor	γ _{inst}	[-]	1,0							
Concrete edge failure										
Effective length of anchor	l _f = h _{ef}	[mm]	50,6	51,9		58,1	58,7		75,4	75,6
Effective diameter of anchor	d _{nom}	[mm]	7,25			9,24			11,15	
Installation factor	γ _{inst}	[-]	1,0							

1) In absence of other national regulations.

Allfasteners Concrete Screw Anchor

Performance
Characteristic values under shear loading

Annex C4

Table C5: Displacements under shear loads for uncracked and cracked concrete

Anchor size	Embedment depth	Material	Head type	Concrete	Shear load V	Displacement					
						δ_{V0}	$\delta_{V\infty}$				
[-]	[mm]	[-]	[-]	[-]	[kN]	[mm]	[mm]				
SA 8	65	Steel 10B21	H/HF	Cracked and uncracked C20/25	8,0	1,8	2,7				
			C								
			B								
SA 10	75		H/HF		12,8						
			C								
			B								
SA 12	95		H/HF		18,6						
SA 8	85		Stainless steel A4		H/HF			Cracked and uncracked C20/25	9,4	1,8	2,7
					C				6,4		
		B		15,3							
SA 10	100	H/HF/S		10,3							
		C		10,3							
		B		10,3							
SA 12	120	H/HF		22,3							

Allfasteners Concrete Screw Anchor

Performance
Displacements under shear loads

Annex C5

Table C6: Characteristic values for seismic actions C1 (Steel 10B21)

Anchor size			SA 8			SA 10			SA 12
Head type			H HF	C	B	H HF	C	B	H HF
Material			Steel 10B21						
Embedment depth	h _{nom}	[mm]	65		75		95		
Steel failure for tension and shear load									
Characteristic resistance	N _{Rk,s,C1}	[kN]	35,9		57,0		83,0		
Partial safety factor	γ _{Ms,N}	[-]	1,4						
Characteristic resistance	V _{Rk,s,C1}	[kN]	11,5		18,5		26,5		
Partial safety factor	γ _{Ms,V}	[-]	1,5						
Pull-out failure									
Characteristic resistance in cracked concrete C20/25	N _{Rk,p,C1}	[kN]	6,0		10,0		16,0		
Concrete cone failure									
Effective embedment depth	h _{ef}	[mm]	50,6		58,1		75,4		
Edge distance	c _{cr,N}	[mm]	1,5h _{ef}						
Spacing	s _{cr,N}	[mm]	3h _{ef}						
Robustness	γ _{inst}	[-]	1.4		1.0		1.2		
Concrete pryout failure									
Pry-out factor	k ₈	[-]	1.0					2.0	
Concrete edge failure									
Effective length of fastener	l _f = h _{ef}	[mm]	50,6		58,1		75,4		
Outside diameter of fastener	d _{nom}	[mm]	8		10		12		

Allfasteners Concrete Screw Anchor

Performance (Steel 10B21)
Characteristic values for seismic actions C1

Annex C6

Table C7: Characteristic values for seismic actions C1 (Stainless Steel A4)

Anchor size			SA 8			SA 10			SA 12
Head type			H HF	C	B	H HF	C	B	H HF
Material			Stainless A4						
Embedment depth	h_{nom}	[mm]	85			100			120
Steel failure for tension and shear load									
Characteristic resistance	$N_{Rk,s,C1}$	[kN]	33,0	22,3	22,3	53,7	36,2	36,2	78,1
Partial safety factor	$\gamma_{Ms,N}$	[-]	1,4						
Characteristic resistance	$V_{Rk,s,C1}$	[kN]	11,5	11,5	11,2	18,5	18,5	18,1	26,5
Partial safety factor	$\gamma_{Ms,V}$	[-]	1,5						
Pull-out failure									
Characteristic resistance in cracked concrete C20/25	$N_{Rk,p,C1}$	[kN]	6,0	4,5	4,0	7,0			16,0
Concrete cone failure									
Effective embedment depth	h_{ef}	[mm]	51,9			58,7			75,6
Edge distance	$c_{cr,N}$	[mm]	1,5 h_{ef}						
Spacing	$s_{cr,N}$	[mm]	3 h_{ef}						
Robustness	γ_{inst}	[-]	1.4			1.0			1.2
Concrete pryout failure									
Pry-out factor	k_8	[-]	1.0						2.0
Concrete edge failure									
Effective length of fastener	$l_f = h_{ef}$	[mm]	51,9			58,7			75,6
Outside diameter of fastener	d_{nom}	[mm]	8			10			12

Allfasteners Concrete Screw Anchor

Performance (Stainless Steel A4)
Characteristic values for seismic actions C1

Annex C7

Table C8: Characteristic tension resistance values for resistance to fire

Anchor size				SA 8			SA 10		SA 12	
Head type				H HF C B	H HF C	B	H HF C B	H HF S C B	H HF	H/HF
Material				10B21	A4		10B21	A4	10B21	A4
Embedment depth [mm]				65	85		75	100	95	120
Steel failure										
Characteristic resistance	R30	$N_{Rk,s,fi}$	[kN]	0,41	0,8		1,0	1,7	2,0	2,9
	R60	$N_{Rk,s,fi}$	[kN]	0,37	0,7		0,9	1,3	1,5	2,4
	R90	$N_{Rk,s,fi}$	[kN]	0,29	0,5		0,7	1,0	1,3	2,0
	R120	$N_{Rk,s,fi}$	[kN]	0,21	0,4		0,5	0,9	1,0	1,6
Pull-out failure										
Characteristic resistance in concrete $\geq C20/25$	R30	$N_{Rk,p,fi}$	[kN]	1,1	1,1	1,0	2,5	1,8	3,0	3,0
	R60									
	R90									
	R120	$N_{Rk,p,fi}$	[kN]	0,9	0,9	0,8	2,0	1,4	2,4	2,4
Concrete cone failure										
Characteristic resistance in concrete $\geq C20/25$	R30	$N^0_{Rk,c,fi}$	[kN]	3,1	3,3	4,4	4,5	8,5	8,6	
	R60									
	R90									
	R120	$N^0_{Rk,c,fi}$	[kN]	2,5	2,7	3,5	3,6	6,8	6,8	
Effective embedment depth		h_{ef}	[mm]	50,6	51,9		58,1	58,7	75,4	75,6
Minimum member thickness		h_{min}	[mm]	110	125		130	140	160	170
Spacing		$s_{cr,N,fi}$	[mm]	$4h_{ef}$						
		s_{min}	[mm]	50			60		70	
Edge distance		$c_{cr,N,fi}$	[mm]	$2h_{ef}$						
Fire exposure from one side only		c_{min}	[mm]	50			60		70	
Fire exposure from more than one side				$\geq 300\text{ mm}$						

Allfasteners Concrete Screw Anchor

Performance
Characteristic values for resistance to fire (tension)

Annex C8

Table C9: Characteristic shear resistance values for resistance to fire

Anchor size				SA 8		SA 10		SA 12	
Head type				all	all	all	all	all	all
Material				10B21	A4	10B21	A4	10B21	A4
Embedment depth [mm]				65	85	75	100	95	120
Steel failure without level arm									
Characteristic resistance	R30	$V_{Rk,s,fi}$	[kN]	0,41	0,8	1,0	1,7	2,0	2,9
	R60	$V_{Rk,s,fi}$	[kN]	0,37	0,7	0,9	1,3	1,5	2,4
	R90	$V_{Rk,s,fi}$	[kN]	0,29	0,5	0,7	1,0	1,3	2,0
	R120	$V_{Rk,s,fi}$	[kN]	0,21	0,4	0,5	0,9	1,0	1,6
Steel failure with level arm									
Characteristic resistance	R30	$M^0_{Rk,p,fi}$	[Nm]	0,45	0,9	1,4	2,3	3,4	4,9
	R60	$M^0_{Rk,p,fi}$	[Nm]	0,40	0,7	1,2	1,9	2,5	4,0
	R90	$M^0_{Rk,p,fi}$	[Nm]	0,31	0,5	0,9	1,5	2,1	3,3
	R120	$M^0_{Rk,p,fi}$	[Nm]	0,22	0,45	0,7	1,3	1,6	2,6
Pry-out failure									
k_8			[-]	1		1		2	
Characteristic resistance	R30	$V_{Rk,cp,fi}$	[kN]	3,1	3,3	4,4	4,5	17,0	17,1
	R60								
	R90								
	R120	$V_{Rk,cp,fi}$	[kN]	2,5	2,7	3,5	3,6	13,6	13,7
Concrete edge failure									
Characteristic resistance	≤ R90	$V_{Rk,c,fi}$	[kN]	$V^0_{Rk,c,fi} = 0.25 \cdot V^0_{Rk,c} \text{ } ^1)$					
	R120	$V_{Rk,c,fi}$	[kN]	$V^0_{Rk,c,fi} = 0.20 \cdot V^0_{Rk,c} \text{ } ^1)$					

1) $V^0_{Rk,c}$ = characteristic resistance for concrete edge failure in cracked concrete C20/C25 under normal temperature calculated according to EN 1992-4.

Allfasteners Concrete Screw Anchor

Performance
Characteristic values for resistance to fire (shear)

Annex C9