

PRESTANDEDEKLARATION

DoP 0264

för Upat Drop-in Anchor USA (Metallankare för användning i betong)

SV

- Produkttypens unika identifikationskod: DoP 0264
- Avsedd användning/avsedda användningar: Infästning i efterhand i osprucken betong, se bilaga, särskilt bilagor B1 - B4.
- Tillverkare: Upat Vertriebs GmbH, Bebelstraße 11, 79108 Freiburg im Breisgau, Tyskland
- Tillverkarens representant: -
- System för bedömning och fortlöpande kontroll av prestanda: 1
- Europeiskt bedömningsdokument: EAD 330232-00-0601
Europeisk teknisk bedömning: ETA-10/0172; 2017-04-25
Tekniskt bedömningsorgan: DIBt- Deutsches Institut für Bautechnik
Anmält/anmälda organ: 2873 TU Darmstadt
- Angiven prestanda:
Mekanisk hållfasthet och stabilitet (BWR 1)
Karakteristisk bärförmåga för spänning (för statisk och kvasi-statisk belastning):
Stålets motståndskraft: Bilagor C1 E_s= 210 000 MPa
Motstånd mot att skruven dras ut: Bilagor C1
Motstånd i betongkonen: Bilagor C1
Kraftighet: Bilagor C1
Minsta kant- och axelavstånd: Bilagor B2
Kantavstånd för att slippa sprickor under last: Bilagor C1 N⁰_{Rk,sp}=NPD

Karakteristisk bärförmåga för skjuvning (för statisk och kvasi-statisk belastning):
Motstånd i stålet (tvärlast): Bilagor C2
Motstånd mot fläkning: Bilagor C3
Motstånd mot skador i betong: Bilagor C3
Förskjutningar under statisk och kvasistatisk belastning: Bilagor C4
Hållbarhet: Bilagor A3, B1

Karakteristiskt motstånd och Förskjutningar för seismiska prestandakategorier C1 och C2:
Motstånd i stålet: NPD
Motstånd mot utdrag: NPD
Brottöjning: NPD
Faktor cirkulärt hål: NPD
Förskjutningar: NPD

Säkerhet vid brand (BWR 2)
Reaktion vid brand: Klass (A1)

Motståndskraft mot eld:
Brandmotstånd i stålet (tvärlast): NPD
Brandmotstånd mot utdrag (draglast): NPD
Brandmotstånd i stålet (tvärlast): NPD
- Lämplig teknisk dokumentation och/eller särskild teknisk dokumentation: -

Prestandan för ovanstående produkt överensstämmer med den angivna prestandan. Denna prestandadeklaration har utfärdats i enlighet med förordning (EU) nr 305/2011 på eget ansvar av den tillverkare som anges ovan.

Undertecknad på tillverkarens vägnar av:



Dr.-Ing. Oliver Geibig, Verkställande direktör affärsenheter och teknik
Tumlingen, 2021-01-12

Jürgen Grün, Verkställande direktör kemi och kvalitet

Denna DoP har förberetts på olika språk. I händelse av tvist om tolkningen ska den engelska versionen alltid råda.

Bilagan innehåller frivilliga och kompletterande information på engelska som överskrider (det specifika språkets) lagkrav.

Specific Part

1 Technical description of the product

The Upat Drop-in Anchor USA is an anchor made of galvanized or stainless steel which is placed into a drilled hole and anchored by deformation-controlled expansion.

The fixture shall be anchored with a fastening screw or threaded rod.

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 for static and quasi-static loading, displacements	See Annex C 1 to C 4

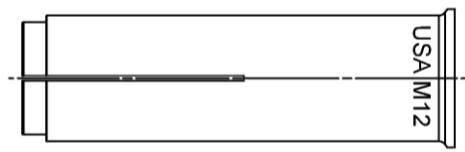
3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1
Resistance to fire	No performance assessed

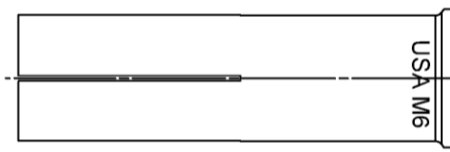
4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with European Assessment Documents EAD No. 330232-00-0601 the applicable European legal act is: [96/582/EC].

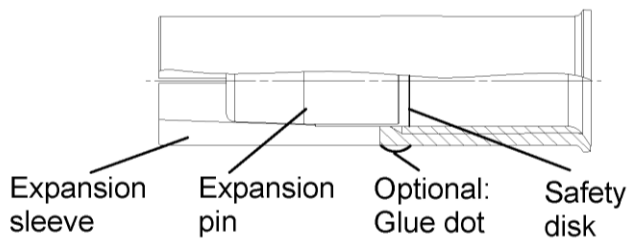
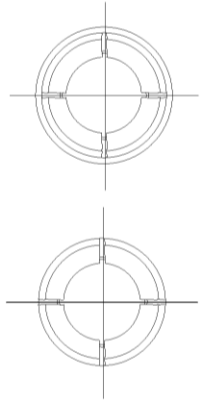
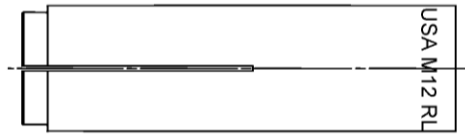
The system to be applied is: 1



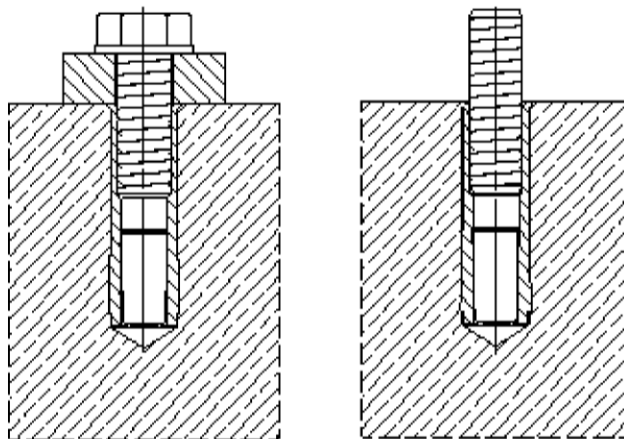
Expansion sleeve M8 - M20



Expansion sleeve M6



Intended use in concrete

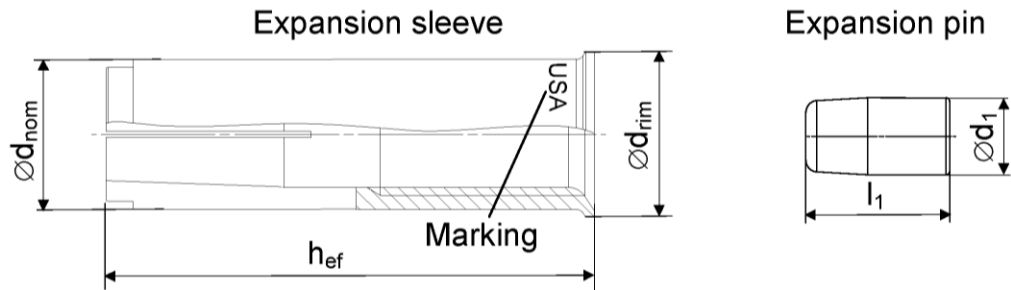


Upat Drop-in Anchor USA

Product description
Anchor types
Installed condition

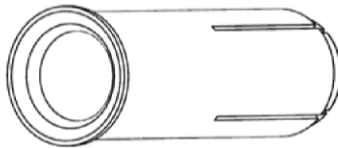
Annex A 1

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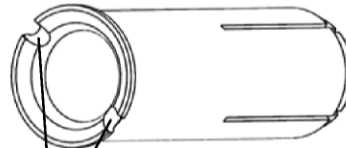
Anchor size USA	M6x30	M8x30	M8x40	M10x30	M10x40	M12x50	M12x50 D	M16x65	M20x80
h_{ef} [mm]	30	30	40	30	40	50		65	80
$\varnothing d_{nom}$ [mm]	8	10		12		15	16	20	25
$\varnothing d_{rim}$ [mm]	9,5	11,5		13,5		16,5	17,5	21,5	27,0
$\varnothing d_1$ [mm]	5	6,5		8		10		13,5	17,5
l_1 [mm]	14	13,5		13	18	18		25	26

Distinctive feature



0× groove for:

- USA M6x30..
- USA M8x30..
- USA M10x40..
- USA M12x50..
- USA M16x65..
- USA M20x80..



2× groove for:

- USA M8x40..
- USA M10x30..

Marking on anchor body

galvanized steel (gvz)		stainless steel (A4)	
<i>with rim</i>	<i>rimless</i>	<i>with rim</i>	<i>rimless</i>
USA M6x30	USA M6x30 RL	USA M6x30 A4	USA M6x30 RL A4
USA M8x30	USA M8x30 RL	USA M8x30 A4	USA M8x30 RL A4
USA M8x40	USA M8x40 RL	USA M8x40 A4	USA M8x40 RL A4
USA M10x30	USA M10x30 RL	USA M10x30 A4	USA M10x30 RL A4
USA M10x40	USA M10x40 RL	USA M10x40 A4	USA M10x40 RL A4
USA M12x50	USA M12x50 RL	USA M12x50 A4	USA M12x50 RL A4
USA M12x50 D	USA M12x50 RLD	USA M12x50 DA4	USA M12x50 RL DA4
USA M16x65	USA M16x65 RL	USA M16x65 A4	USA M16x65 RL A4
USA M20x80	USA M20x80 RL	USA M20x80 A4	USA M20x80 RL A4

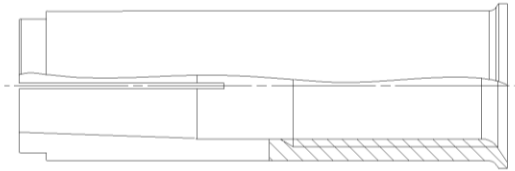
Upat Drop-in Anchor USA

Product description
Anchor types

Annex A 2

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Expansion sleeve



Expansion pin



Table A1: Materials

Designation	Material	
	galvanised steel ($\geq 5 \mu\text{m}$)	stainless steel
Expansion sleeve	EN 10277:2008 or EN 10084:2008 or EN 10111:2008 or EN 10263:2001 or EN 10087:1998 or ASTM A29/A29M	EN 10088:2005
Expansion pin		
Fastening screw or threaded rod	steel, property class 4.6, 5.6, 5.8 or 8.8 according to EN ISO 898-1:2012	property class 50, 70 or 80 according to EN ISO 3506:2009

Upat Drop-in Anchor USA

Product description
Material

Annex A 3

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Specifications of Intended use

Anchorage subject to:

- Static and quasi-static loads

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206-1:2000
- Strength classes C20/25 to C50/60 according to EN 206-1:2000
- Non-cracked concrete: all sizes

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions (zinc coated steel or stainless steel)
- 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)

Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming 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 into account 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.)
- Design of fastenings in accordance to FprEN 1992-4:2016 and EOTA Technical Report TR 055.
- Fasteners can be used as a single fixing for use in structural application.

Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site
- Create drill hole with hammer drill or with hollow drill and vacuum cleaner
- The anchor may only be used once
- In case of aborted hole: New hole must be drilled at a minimum distance of twice the depth of the aborted hole or closer, if the hole is filled with a high strength mortar and only if the hole is not in the direction of the oblique tensile or shear load
- Anchor expansion by impact using the setting tools given in Annex B 3. The anchor is properly set if the stop of the setting tool reaches the expansion sleeve. The manual setting tool with installation control leaves a visible mark on the sleeve, as illustrated in Annex B 3 and B 4

Upat Drop-in Anchor USA

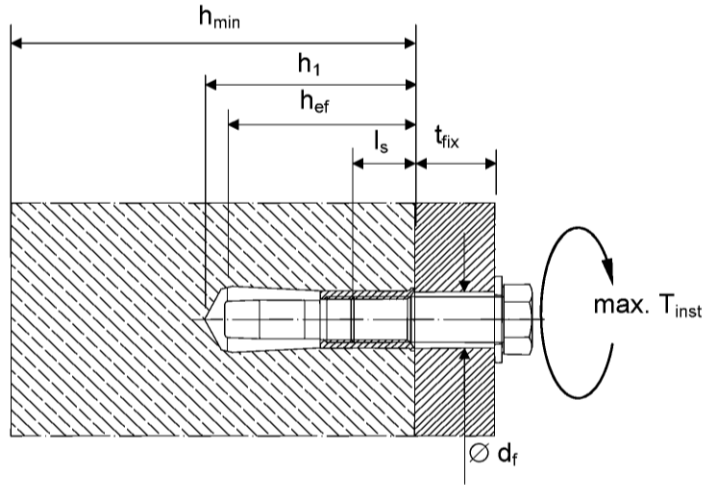
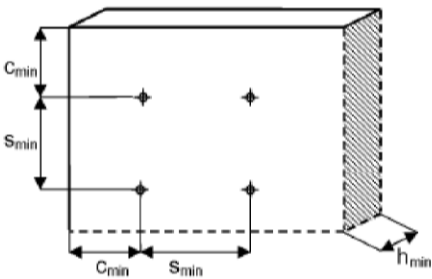
Intended Use
Specifications

Annex B 1

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Table B2: Installation parameters for concrete C20/25 to C50/60

Anchor size			M6x30	M8x30	M8x40	M10x30	M10x40	M12x50	M12x50 D	M16x65	M20x80
Nominal drill hole diameter	d_0	[mm]	8	10		12		15	16	20	25
Effective anchorage depth	h_{ef}	[mm]	30	30	40	30	40	50		65	80
Maximum installation torque	max. T_{inst}	[Nm]	4	8		15		35		60	120
Minimum drill hole depth	h_1	[mm]	32	33	43	33	43	54		70	85
Minimum screw-in depth	$l_{s,min}$	[mm]	6	8		10		12		16	20
Maximum screw-in depth	$l_{s,max}$	[mm]	14	14		14	17	22		28	34
Clearance of hole diameter	$\varnothing d_f \leq$	[mm]	7	9		12		14		18	22
$h_{min} = 80$ mm											
Minimum spacing	S_{min}	[mm]	70	110	200	200		-	-	-	-
Minimum edge distance	C_{min}	[mm]	150	150		150		-	-	-	-
$h_{min} = 100$ mm											
Minimum spacing	S_{min}	[mm]	65	70	90	150	200		-	-	-
Minimum edge distance	C_{min}	[mm]	115	115	160	180	200		-	-	-
$h_{min} = 120$ mm											
Minimum spacing	S_{min}	[mm]	65	70	85	95	145		-	-	-
Minimum edge distance	C_{min}	[mm]	115	115	140	150	200		-	-	-
$h_{min} = 160$ mm											
Minimum spacing	S_{min}	[mm]	65	70	85	95	145		180	-	-
Minimum edge distance	C_{min}	[mm]	115	115	140	150	200		240	-	-
$h_{min} = 200$ mm											
Minimum spacing	S_{min}	[mm]	65	70	85	95	145		180	190	-
Minimum edge distance	C_{min}	[mm]	115	115	140	150	200		240	280	-



Fastening screw or threaded rod:

- Minimum property class and materials according to table A1
- The length of the fastening screw or threaded rod shall be determined depending on thickness of fixture t_{fix} , admissible tolerances and maximum screw length $l_{s,max}$ as well as minimum screw-in depth $l_{s,min}$

Upat Drop-in Anchor USA

Intended Use
Installation parameters

Annex B 2

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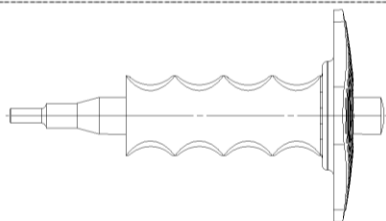
Setting & drilling tools

Setting tools

Marking

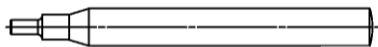
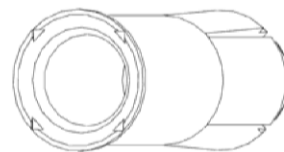
Description

Marking on USA with rim and rimless



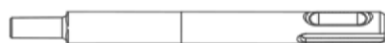
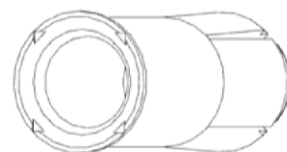
EHS Plus
M..x h_{ef}

Manual setting
tool with hand
guard



EHS
M..x h_{ef}

Manual setting
tool basic
format

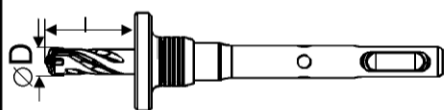


EMS
M..x h_{ef}

Machine
setting tool
with SDS Plus

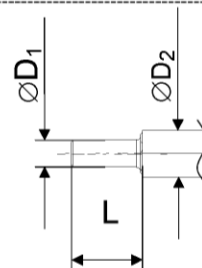
No marking

Drilling tools



EBB
∅D x l

Stop drill



Or other usual driller

Table B3: Parameters of setting tools

Manual setting tool	Machine setting tool	Stop drill	For anchor size USA	∅ D1	∅ D2	L
EHS M6x25/30	EMS M6x25/30	EBB 8x30	USA M6x30	4,8	9,0	17,0
EHS M8x25/30	EMS M8x25/30	EBB 10x30	USA M8x30	6,4	11,0	18,0
EHS M8x40	EMS M8x40	EBB 10x40	USA M8x40			28,0
EHS M10x25/30	EMS M10x25/30	EBB 12x30	USA M10x30	7,9	13,0	18,0
EHS M10x40	EMS M10x40	EBB 12x40	USA M10x40			24,0
EHS M12x50	EMS M12x50	EBB 15x50	USA M12x50	10,2	16,5	30,0
EHS M12x50	EMS M12x50	EBB 16x50	USA M12x50 D			
EHS M16x65	EMS M16x65	EBB 20x65	USA M16x65	13,5	22	36,0
EHS M20x80	EMS M20x80	EBB 25x80	USA M20x80	16,4	27	50,0

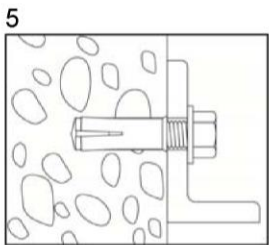
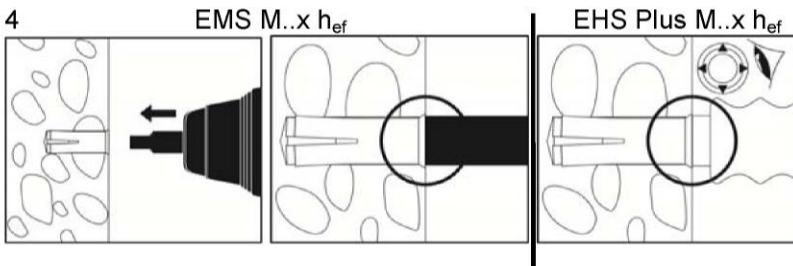
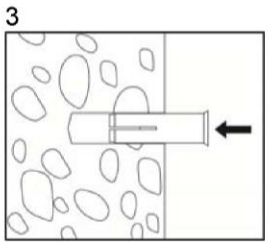
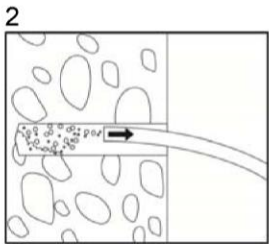
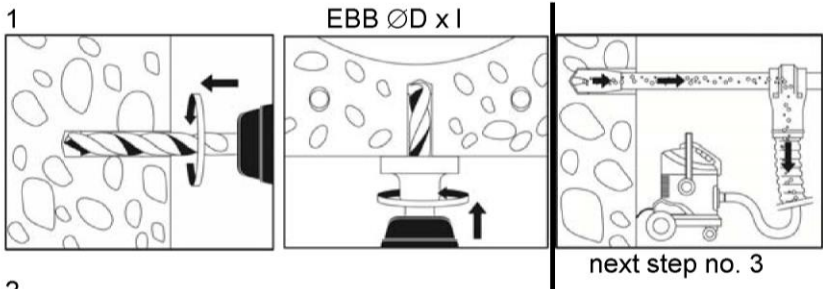
Upat Drop-in Anchor USA

Intended Use
Setting & Drilling tools

Annex B 3

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Installation instructions



No.	Description
1	Create drill hole with hammer drill or with hollow drill and vacuum cleaner
2	Clean from drill-dust
3	Set anchor till anchor is flush with surface of concrete
4	Expand the sleeve by driving the pin into the sleeve and control the correct setting
5	Fixation of fixture. Maximum installation torque max. T_{inst} must not be crossed

Upat Drop-in Anchor USA

Intended Use
Installation instructions

Annex B 4

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Table C1: Characteristic values for tension loads

USA		property class	M6x30 ¹⁾	M8x30 ¹⁾	M8x40	M10x30 ¹⁾	M10x40	M12x50	M12x50 D	M16x65	M20x80
Inastallation safety factor	γ_{inst}	[-]	1,0								
Steel failure											
Characteristic resistance	$N_{RK,s}$ [kN]	A4-50	10,1	18,3	29,0	42,1	78,3	122,4			
Partial safety factor	γ_{Ms}		2,86								
Characteristic resistance	$N_{RK,s}$ [kN]	A4-70	14,1	19,6	24,9	45,1	59,0	73,8	117,2		
Partial safety factor	γ_{Ms}		1,87	1,5				1,87	1,5		
Characteristic resistance	$N_{RK,s}$ [kN]	A4-80	16,1	19,6	24,9	45,1	59,0	73,8	117,2		
Partial safety factor	γ_{Ms}		1,6	1,5							
Characteristic resistance	$N_{RK,s}$ [kN]	steel 4.6	8,0	14,6	23,2	33,7	62,7	97,9			
Partial safety factor	γ_{Ms}		2,0								
Characteristic resistance	$N_{RK,s}$ [kN]	steel 5.6	10,1	18,3	29,0	42,1	78,3	122,4			
Partial safety factor	γ_{Ms}		2,0								
Characteristic resistance	$N_{RK,s}$ [kN]	steel 5.8	10,1	17,2	21,8	39,6	42,1	64,7	102,8		
Partial safety factor	γ_{Ms}		1,5								
Characteristic resistance	$N_{RK,s}$ [kN]	steel 8.8	13,5	17,2	21,8	39,6	53,3	64,7	102,8		
Partial safety factor	γ_{Ms}		1,5								
Pull-out failure not decisive											
Concrete cone failure											
Effective anchorage depth	h_{ef}	[mm]	30	40	30	40	50	65	80		
Characteristic spacing	$s_{cr,N}$	[mm]	90	120	90	120	150	195	240		
Characteristic edge distance	$c_{cr,N}$	[mm]	45	60	45	60	75	97	120		
Factor k_1	$k_{ucr,N}$	[-]	11,0								
Splitting failure											
Characteristic spacing	$s_{cr,sp}$	[mm]	210	280	210	320	350	455	560		
Characteristic edge distance	$c_{cr,sp}$	[mm]	105	140	105	160	175	227	280		

¹⁾ Only for application with statically indeterminate structural components.

Table C2: Characteristic values for shear loads

USA		property class	M6x30 ¹⁾	M8x30 ¹⁾	M8x40	M10x30 ¹⁾	M10x40	M12x50	M12x50 D	M16x65	M20x80
Factor for ductility	k_7	[-]	1,0								
Steel failure without lever arm											
Characteristic resistance	$V_{Rk,s}$ [kN]	A4-50	5,0	9,2	14,5	21,1	39,2	61,2			
Partial safety factor	γ_{Ms}		2,38								
Characteristic resistance	$V_{Rk,s}$ [kN]	A4-70	7,0	9,8	12,4	22,6	29,5	37	59		
Partial safety factor	γ_{Ms}		1,56	1,25			1,56	1,25			
Characteristic resistance	$V_{Rk,s}$ [kN]	A4-80	8,0	9,8	12,4	22,6	30,4	36,9	58,6		
Partial safety factor	γ_{Ms}		1,33	1,25							
Characteristic resistance	$V_{Rk,s}$ [kN]	steel 4.6	4,0	7,3	11,6	16,9	31	49			
Partial safety factor	γ_{Ms}		1,67								
Characteristic resistance	$V_{Rk,s}$ [kN]	steel 5.6	5,0	9,2	14,5	21,1	39	61			
Partial safety factor	γ_{Ms}		1,67								
Characteristic resistance	$V_{Rk,s}$ [kN]	steel 5.8	5,0	8,6	10,9	19,8	21,1	32	51		
Partial safety factor	γ_{Ms}		1,25								
Characteristic resistance	$V_{Rk,s}$ [kN]	steel 8.8	6,8	8,6	10,9	19,8	27	32	51		
Partial safety factor	γ_{Ms}		1,25								
Steel failure with lever arm											
Characteristic resistance	$M^0_{Rk,s}$ [Nm]	A4-50	8	19	37	66	166	324			
Partial safety factor	γ_{Ms}		2,38								
Characteristic resistance	$M^0_{Rk,s}$ [Nm]	A4-70	11	26	52	92	232	454			
Partial safety factor	γ_{Ms}		1,56								
Characteristic resistance	$M^0_{Rk,s}$ [Nm]	A4-80	12	30	60	105	266	519			
Partial safety factor	γ_{Ms}		1,33								
Characteristic resistance	$M^0_{Rk,s}$ [Nm]	Stahl 4.6	6,1	15	30	52	133	259			
Partial safety factor	γ_{Ms}		1,67								
Characteristic resistance	$M^0_{Rk,s}$ [Nm]	Stahl 5.6	7,6	19	37	66	166	324			
Partial safety factor	γ_{Ms}		1,67								
Characteristic resistance	$M^0_{Rk,s}$ [Nm]	Stahl 5.8	7,6	19	37	66	166	324			
Partial safety factor	γ_{Ms}		1,25								
Characteristic resistance	$M^0_{Rk,s}$ [Nm]	Stahl 8.8	12	30	60	105	266	517			
Partial safety factor	γ_{Ms}		1,25								

¹⁾ Only for application with statically indeterminate structural components.

Table C3: Characteristic values for shear loads

USA			M6x30	M8x30	M8x40	M10x30	M10x40	M12x50	M12x50 D	M16x65	M20x80
Concrete pry out failure											
Factor	k_8	[-]	1,74	1,88	1,74	1,88	2,0				
Installation safety factor	γ_{inst}	[-]	1,0								
Concrete edge failure											
Effective length of anchor in shear loading	$l_f = h_{ef}$	[mm]	30	40	30	40	50		65	80	
Effective diameter of anchor	$\varnothing d_{nom}$	[mm]	8	10	12		15	16	20	25	

Upat Drop-in Anchor USA

Performances
Characteristic values for shear loads

Annex C 3

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Table C4.1: Displacements under tension and shear loads for USA in galvanised steel

USA			M6x30	M8x30	M8x40	M10x30	M10x40	M12x50	M12x50 D	M16x65	M20x80
Tension load in C20/25 to C50/60	N	[kN]	4,0	6,1	4,0	6,1	8,5	12,6	17,2		
Displacement	δ_{N_0}	[mm]	0,1								
	δ_{N_∞}	[mm]	0,2								
Shear load in C20/25 to C50/60	V	[kN]	3,9	4,9	6,2	11,3	15,2	18,5	29,4		
Displacement	δ_{V_0}	[mm]	0,95	1,00	1,05	1,10	1,40	1,80			
	δ_{V_∞}	[mm]	1,40	1,50	1,60	1,70	2,10	2,70			

Table C4.2: Displacements under tension and shear loads for USA in stainless steel

USA A4			M6x30	M8x30	M8x40	M10x30	M10x40	M12x50	M12x50 D	M16x65	M20x80
Tension load in C20/25 to C50/60	N	[kN]	4,0	6,1	4,0	6,1	8,5	12,6	17,2		
Displacement	δ_{N_0}	[mm]	0,1								
	δ_{N_∞}	[mm]	0,2								
Shear load in C20/25 to C50/60	V	[kN]	3,2	5,6	7,1	12,9	13,5	21,1	33,5		
Displacement	δ_{V_0}	[mm]	0,95	1,00	1,05	1,10	1,40	1,80			
	δ_{V_∞}	[mm]	1,40	1,50	1,60	1,70	2,10	2,70			

Upat Drop-in Anchor USA

Performances
Displacements

Annex C 4

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