

YDEEVNEDEKLARATION**DoP 0264**

til Upat slaganker USA (Metalanker til brug i beton)

DA

1. Varetypens unikke identifikationskode: DoP 0264
2. Anvendelsesformål: Eftermonteret befæstelse i ikke-revnet beton, se appendiks, specifikt Bilage B1 - B4.
3. Fabrikant: Upat Vertriebs GmbH, Bebelstraße 11, 79108 Freiburg im Breisgau, Tyskland
4. Bemyndiget repræsentant: -
5. System(er) til vurdering og kontrol af konstansen af ydeevnen: 1
6. Europæisk vurderingsdokument: EAD 330232-00-0601
Europæisk Teknisk Vurdering: ETA-10/0172; 2017-04-25
Teknisk vurderingsorgan: DIBt- Deutsches Institut für Bautechnik
Notificeret organ(er): 2873 TU Darmstadt

7. Deklareret ydeevne(r):**Mekanisk modstand og stabilitet (BWR 1)****Karakteristisk modstand for træklast (statisk og quasi-statisk belastning):**

Modstand overfor stålsvig: Bilag C1

 $E_s = 210\,000\text{ MPa}$

Modstand overfor svigt ved udtrækning: Bilag C1

Modstand overfor svigt af beton-kegle: Bilag C1

Robusthed: Bilag C1

Min. kant og indbyrdes afstand: Bilag B2

Kantafstand til forhindring af flækning under belastning: Bilag C1

 $N_{Rk,sp}^{0} = \text{NPD}$ **Karakteristisk modstand for tværlast (statisk og quasi-statisk belastning):**

Modstand overfor stålsvig (tværlast): Bilag C2

Modstand overfor svigt ved udtrækning: Bilag C3

Modstand overfor svigt af betonkant: Bilag C3

Forskydninger under statisk og quasi-statisk belastning: Bilag C4

Holdbarhed: Bilag A3, B1

Karakteristisk modstand og Forskydninger for seismiske ydelseskategorier C1 og C2:

Modstand overfor stålsvig: NPD

Modstand overfor svigt ved udtrækning: NPD

Brudforlængelse: NPD

Faktor ringhul: NPD

Forskydninger: NPD

Brandbeskyttelse (BWR 2)

Brandegenskaber: Klasse (A1)

Brandbeskyttelse:

Brandbeskyttelse overfor stålsvig (spændingslast): NPD

Brandbeskyttelse overfor svigt ved udtrækning (spændingslast): NPD

Brandbeskyttelse overfor stålsvig (tværlast): NPD

8. Relevant teknisk dokumentation og/eller specifik teknisk dokumentation: -

Ydeevnen for den vare, der er anført ovenfor, er i overensstemmelse med den deklarerede ydeevne. Denne ydeevnedeklaration er udarbejdet i overensstemmelse med forordning (EU) nr. 305/2011 på eneansvar af den fabrikant, der er anført ovenfor.

Underskrevet for fabrikanten og på dennes vegne af:



Dr.-Ing. Oliver Geibig, Administrerende direktør Forretningsenheder og ingeniørarbejde
Tumlingen, 2021-01-12

Jürgen Grün, Administrerende direktør Kemi & Kvalitet

Denne DoP er tilgængelig i forskellige sprogversioner. I tilfælde af fortolkningsmæssig uoverensstemmelse, henvises der til den engelske version, som altid er gældende.

Appendikset indeholder frivillige og udvidede informationer på engelsk. Disse overgår de lokale (sprogneutrale) retslige krav.

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

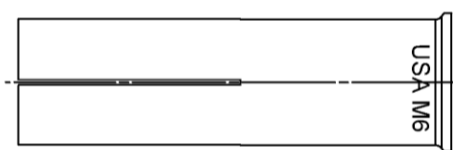
4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

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

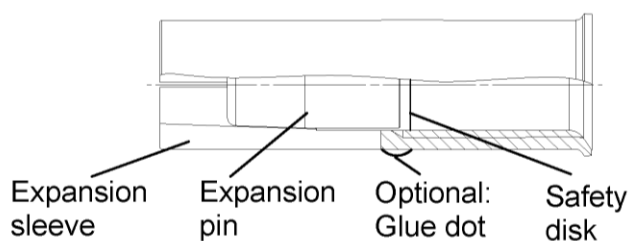
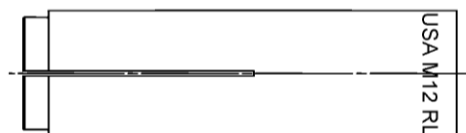
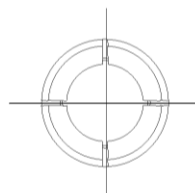
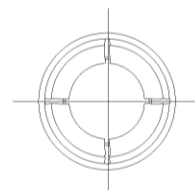
The system to be applied is: 1



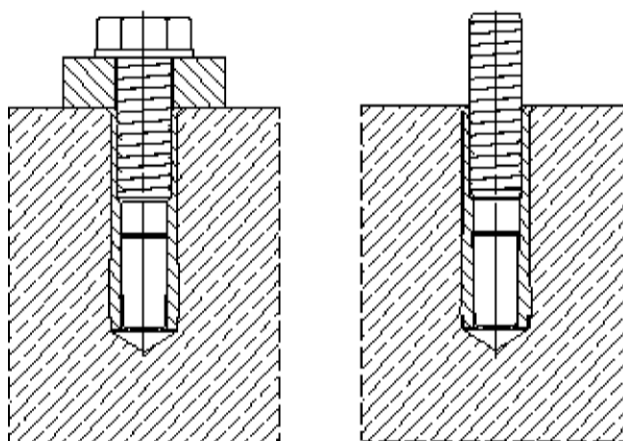
Expansion sleeve M8 - M20



Expansion sleeve M6



Intended use in concrete



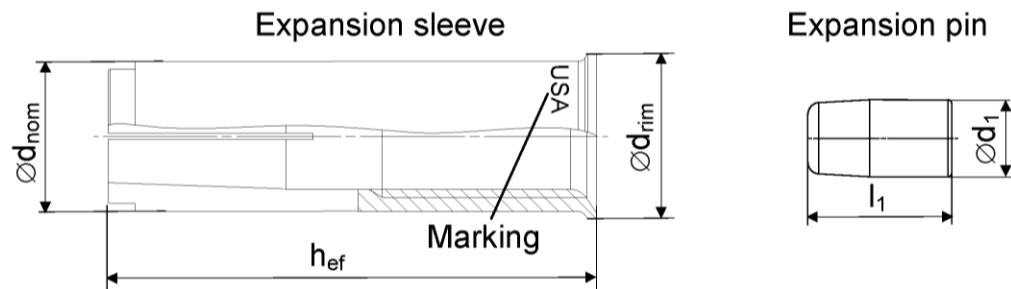
Upat Drop-in Anchor USA

Product description

Anchor types
Installed condition

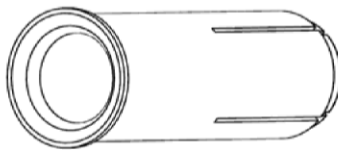
Annex A 1

Appendix 2 / 12



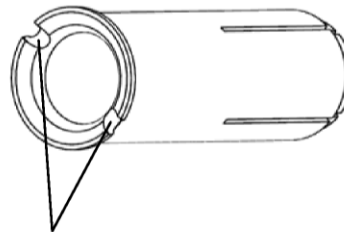
Anchor size USA	M6x30	M8x30	M8x40	M10x30	M10x40	M12x50	M12x50 D	M16x65	M20x80
h_{ef} [mm]	30	30	40	30	40	50		65	80
$\varnothing d_{nom}$ [mm]	8	10		12		15	16	20	25
$\varnothing d_{rim}$ [mm]	9,5	11,5		13,5		16,5	17,5	21,5	27,0
$\varnothing d_1$ [mm]	5	6,5		8		10		13,5	17,5
l_1 [mm]	14	13,5		13	18	18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

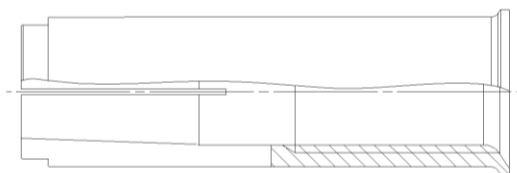
Upat Drop-in Anchor USA

Product description
Anchor types

Annex A 2

Appendix 3 / 12

Expansion sleeve



Expansion pin

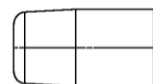


Table A1: Materials

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

Appendix 4 / 12

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

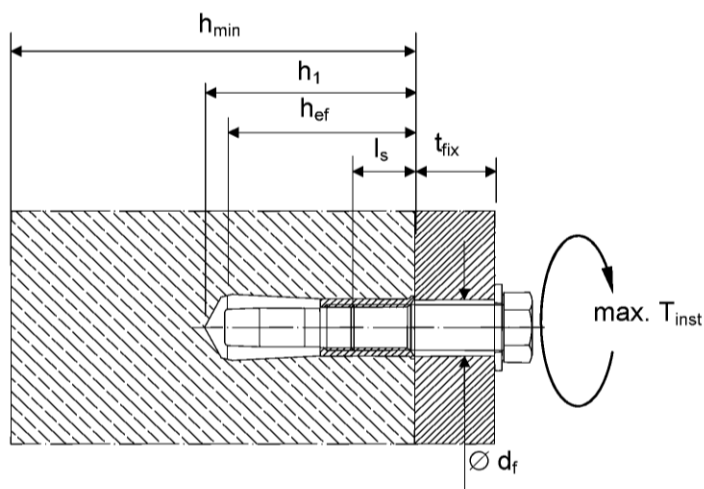
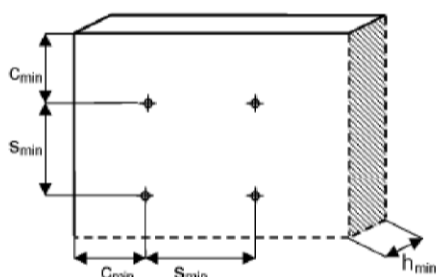
Intended Use
Specifications

Annex B 1

Appendix 5 / 12

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	∅ d _f ≤	[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			-	-
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

Appendix 6 / 12

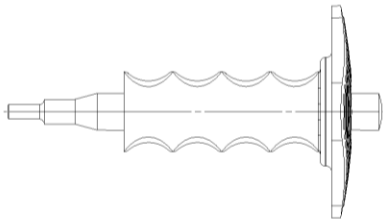
Setting & drilling tools

Setting tools

Marking

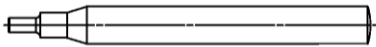
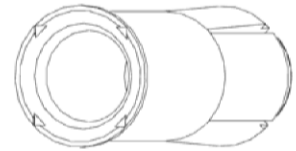
Description

Marking on USA with rim and rimless



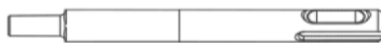
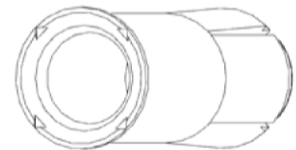
EHS Plus
M..x h_{ef}

Manual setting
tool with hand
guard



EHS
M..x h_{ef}

Manual setting
tool basic
format

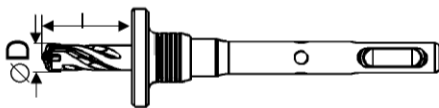


EMS
M..x h_{ef}

Machine
setting tool
with SDS Plus

No marking

Drilling tools



EBB
ØD x l

Stop drill

Or other usual driller

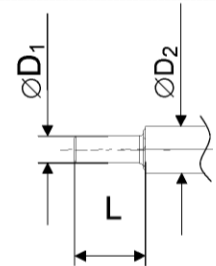


Table B3: Parameters of setting tools

Manual setting tool	Machine setting tool	Stop drill	For anchor size USA	Ø D1	Ø 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

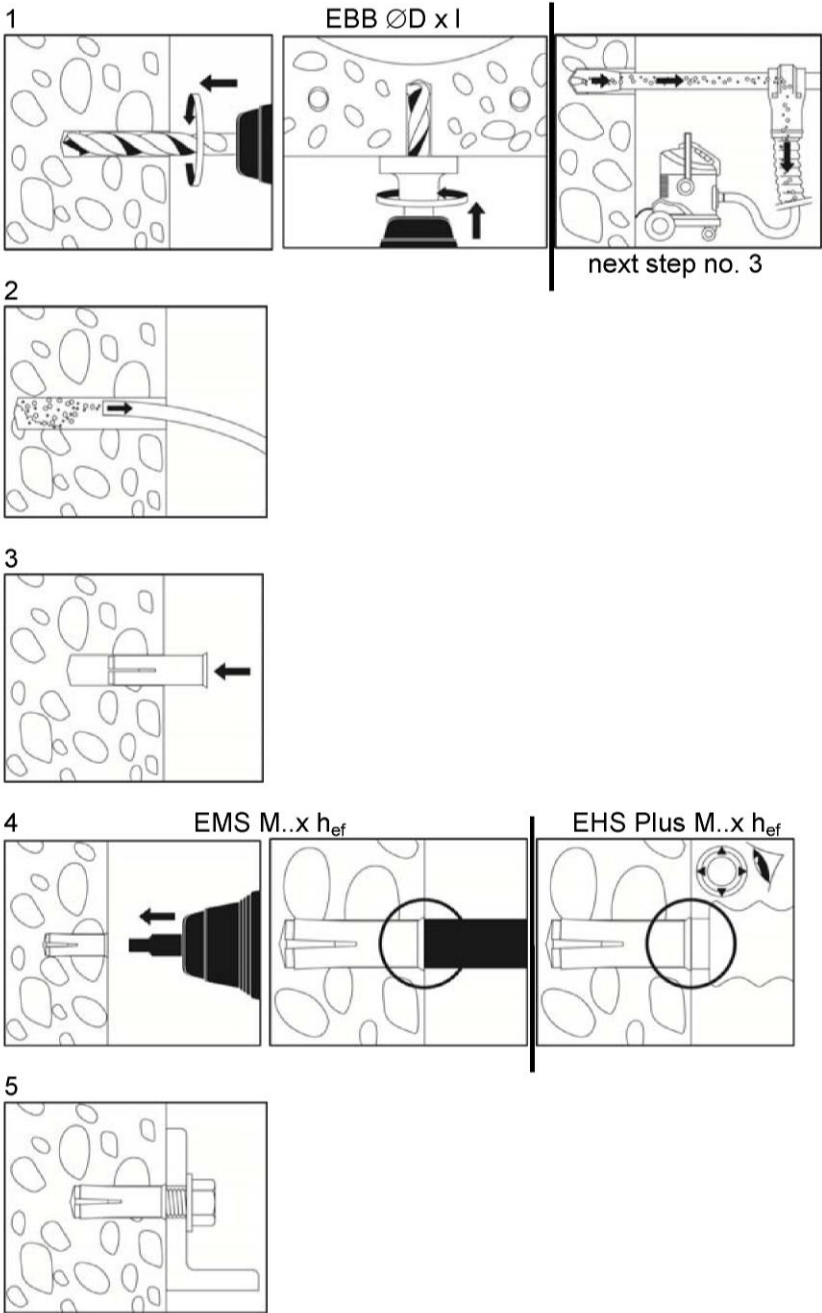
Upat Drop-in Anchor USA

Intended Use
Setting & Drilling tools

Annex B 3

Appendix 7 / 12

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

Appendix 8 / 12

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.

Upat Drop-in Anchor USA

Performances

Characteristic values for tension loads

Annex C 1

Appendix 9 / 12

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.

Upat Drop-in Anchor USA

Performances

Characteristic values for shear loads

Annex C 2

Appendix 10 / 12

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

Appendix 11 / 12

**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_{No}	[mm]	0,1								
	$\delta_{No\infty}$	[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_{Vo}	[mm]	0,95	1,00		1,05		1,10		1,40	1,80
	$\delta_{Vo\infty}$	[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_{No}	[mm]	0,1								
	$\delta_{No\infty}$	[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_{Vo}	[mm]	0,95	1,00		1,05		1,10		1,40	1,80
	$\delta_{Vo\infty}$	[mm]	1,40	1,50		1,60		1,70		2,10	2,70

Upat Drop-in Anchor USA

Performances
Displacements

Annex C 4

Appendix 12 / 12