...eine starke Verbindung

IZJAVA O LASTNOSTIH

DoP Št.: **MKT-1.2-101_sl**

- **Enotna identifikacijska oznaka tipa proizvoda:** **Sidro E / ES**
- **Predvidena uporaba:** Mozniki za sidranje v beton za odvečne nenosilne sisteme, glej Priloga/Annex B
- **Proizvajalec:** MKT Metall-Kunststoff-Technik GmbH & Co.KG
  Auf dem Immel 2
  67685 Weilerbach
- **Sistemi ocenjevanja in preverjanja nespremenljivosti lastnosti:** 2+
- **Evropski ocenjevalni dokument:** **EAD 330747-00-0601**
  Evropska tehnična ocena: **ETA-05/0116, 27.05.2021**
  Organ za tehnično ocenjevanje: DIBt, Berlin
  Priglašeni organi: NB 2873 – Technische Universität Darmstadt
- **Navedene lastnosti:**

Bistvene značilnosti	Lastnosti
Varnost pri požaru (BWR 2)	
Ogenj vedenje	Razred A1
Požarna odpornost	Priloga/Annex C5
Varnost pri uporabi (BWR 4)	
Značilna odpornost za vse smeri obremenitve in vse načine odpovedi za poenostavljeno metodo načrtovanja	Priloga/Annex B3, C1 – C4
Trajnost	Priloga/Annex B1

Lastnosti proizvoda, navedenega zgoraj, so v skladu z navedenimi lastnostmi. Za izdajo te izjave o lastnostih je v skladu z Uredbo (EU) št. 305/2011 odgovoren izključno proizvajalec, naveden zgoraj.

Podpisal za in v imenu proizvajalca:

Stefan Weustenhagen
(Generalni direktor)
Weilerbach, 27.05.2021

p.p.
Dipl.-Ing. Detlef Bigalke
(Vodja razvoja izdelkov)

Izvirnik te izjave o uspehu je bil napisan v nemškem jeziku. V primeru odstopanj v prevodu je nemška različica veljavna.

Specifications of intended use

Drop-in Anchor E / ES	Anchorage depth $h_{ef} \geq 30$ mm						
	M6x30	M8x30	M8x40	M10x30	M10x40	M12x50	M16x65
Steel, zinc plated	✓						
Stainless steel A4 and high corrosion resistant steel HCR	✓			-	✓		
Static and quasi-static loads	✓						
Fire exposure	✓						
Cracked and uncracked concrete	✓						
Solid concrete **C20/25 to C50/60**	✓						

Drop-in Anchor ES	Anchorage depth h_{ef} = 25 mm			
	M6x25	M8x25	M10x25	M12x25
Steel, zinc plated	✓			
Stainless steel A4 and high corrosion resistant steel HCR	-			
Static and quasi-static loads	✓			
Fire exposure (solid concrete, C20/25 to C50/60)	✓			
Cracked and uncracked concrete	✓			
Solid concrete **C12/15 to C50/60**	✓			
Precast pre-stressed hollow core slabs C30/37 to C50/60	✓			

Use only for redundant, non-structural systems!

Base materials:

- Compacted, reinforced or unreinforced normal weight concrete (without fibers) acc. to EN 206:2013 + A1:2016

Use conditions:

- Structures subject to dry internal conditions
  (zinc plated steel, stainless steel or high corrosion resistant steel)
- Structures subject to external atmospheric exposure (including industrial and marine environment) or exposure to permanently damp internal condition, if no particular aggressive conditions exist
  (stainless steel or high corrosion resistant steel)
- Structures subject to external atmospheric exposure and to permanently damp internal condition, if other particular aggressive conditions
  (high corrosion resistant steel)

  Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used.)

Specifications of intended use

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.)
- The strength class and the length of the fastening screw or threaded rod shall be defined by the designing engineer
- Anchorages are designed acc. to EN 1992-4:2018 (if necessary in connection with TR 055)

Installation:

- Anchor installation in accordance with the manufacturer's specifications and drawings and using the appropriate tools
- Drill hole by hammer drilling or vacuum drilling

Table B1: Installation parameters for $h_{ef} \geq 30$ mm

Anchor size			M6x30	M8x30	M8x40	M10x30	M10x40	M12x50	M16x65
Depth of drill hole E	$h_0 =$	[mm]	30	30	40	30	40	50	65
Depth of drill hole ES	$h_0 \geq$	[mm]	30	30	40	30	40	50	65
Drill hole diameter	$d_0 =$	[mm]	8	10	10	12	12	15	20
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8,45	10,45	10,45	12,5	12,5	15,5	20,55
Maximum installation torque	$T_{inst} \leq$	[Nm]	4	8	8	15	15	35	60
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	7	9	9	12	12	14	18
Thread length	L_{th}	[mm]	13	13	20	12	15	18	23
Minimum screw-in depth	L_{sdmin}	[mm]	7	9	9	10	11	13	18
Steel, zinc plated									
Minimum thickness of member	h_{min}	[mm]	100	100	100	120	120	130	160
Minimum spacing	s_{min}	[mm]	55	60	80	100	100	120	150
Minimum distance	c_{min}	[mm]	95	95	95	115	135	165	200
Stainless steel A4, HCR									
Minimum thickness of member	h_{min}	[mm]	100	100	100	-	130	140	160
Minimum spacing	s_{min}	[mm]	50	60	80	-	100	120	150
Minimum distance	c_{min}	[mm]	80	95	95	-	135	165	200

Table B2: Installation parameters for $h_{ef} = 25$ mm

Anchor size			M6x25	M8x25	M10x25	M12x25
Depth of drill hole	$h_0 \geq$	[mm]	25	25	25	25
Drill hole diameter	$d_0 =$	[mm]	8	10	12	15
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8,45	10,45	12,5	15,5
Maximum installation torque	$T_{inst} \leq$	[Nm]	4	8	15	35
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	7	9	12	14
Thread length	L_{th}	[mm]	12	12	12	12
Minimum screw-in depth	L_{sdmin}	[mm]	6	8	10	12
Minimum thickness of member	$\mathbf{h_{min,1}}$	[mm]	**80**			
Minimum spacing	s_{min}	[mm]	30	70	70	100
Minimum edge distance	c_{min}	[mm]	60	100	100	130
Standard thickness of member	$\mathbf{h_{min,2}}$	[mm]	**100**			
Minimum spacing	s_{min}	[mm]	30	50	60	100
Minimum edge distance	c_{min}	[mm]	60	100	100	110
Installation in precast pre-stressed hollow core slabs C30/37 to C50/60						
Spacing	s_{min}	[mm]	200			
Edge distance	c_{min}	[mm]	150			

Drop-in Anchor E / ES

Intended use
Installation parameters

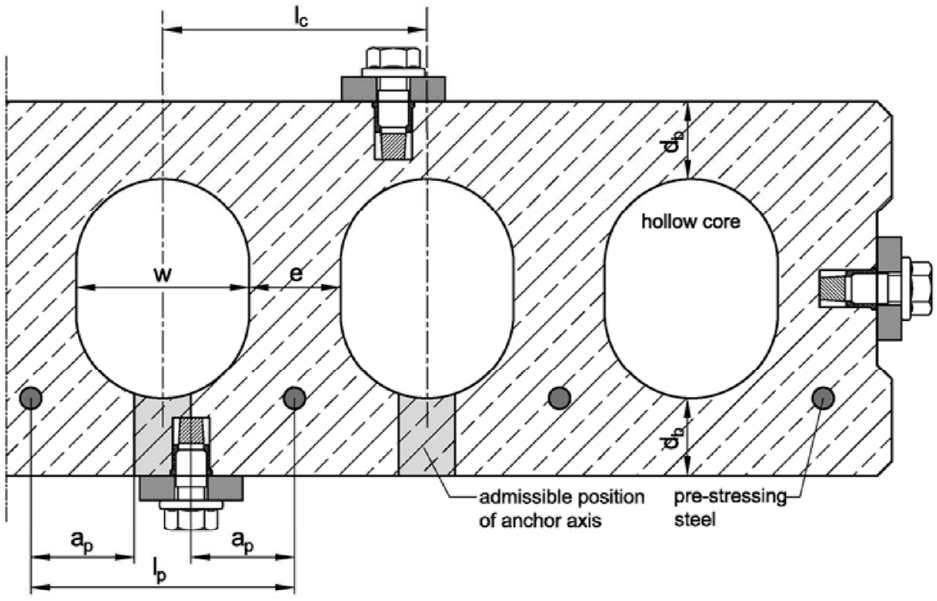
Annex B3

Admissible anchor positions in precast pre-stressed hollow core slabs (w / e ≤ 4,2)

Core distance:
$l_c \geq 100$ mm

Pre-stressing steel distance:
$l_p \geq 100$ mm

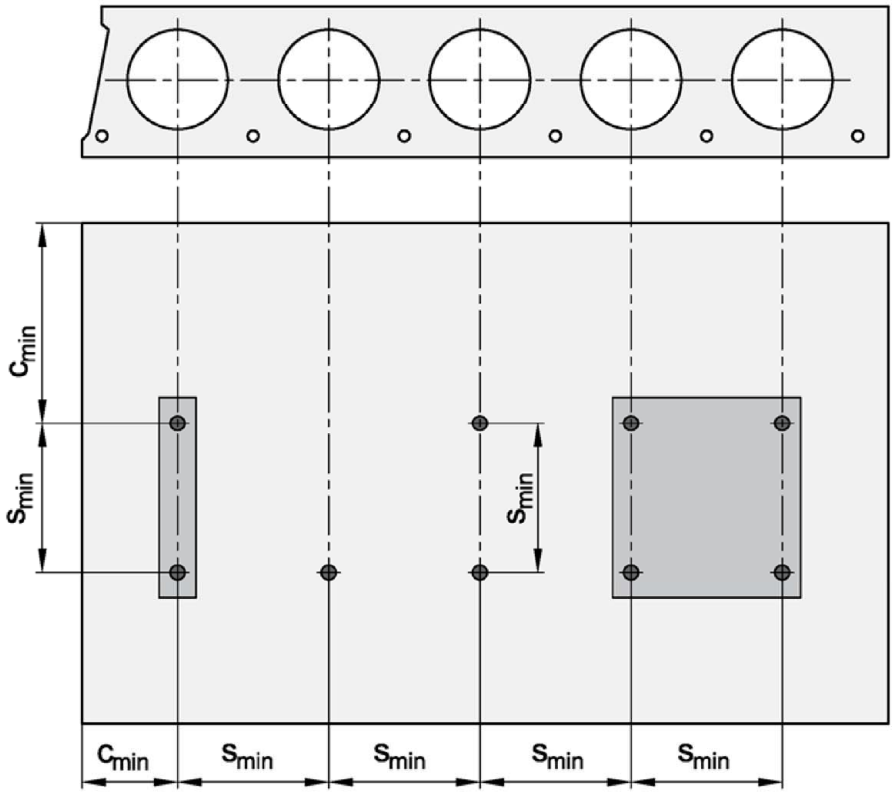
Distance between anchor position and pre-stressing steel:
$a_p \geq 50$ mm



Minimum spacing and edge distance of anchors and distance in precast pre-stressed hollow core slabs

Minimum edge distance
$c_{min} \geq 150$ mm

Minimum spacing
$s_{min} \geq 200$ mm

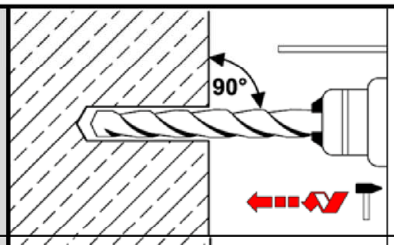
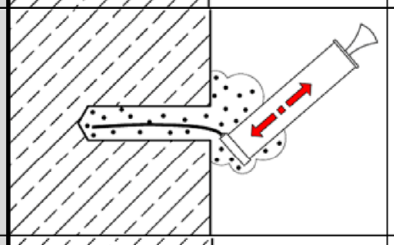
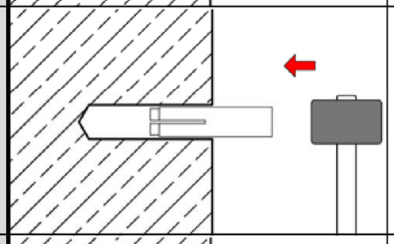
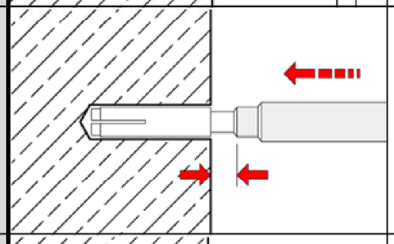
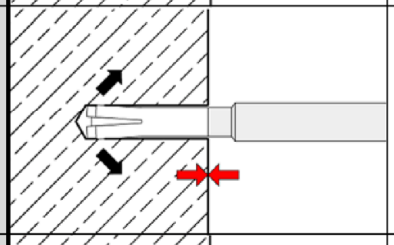
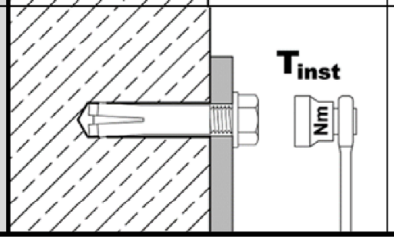


Drop-in Anchor E / ES

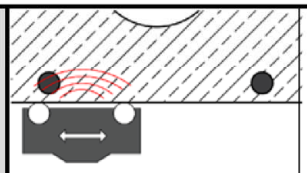
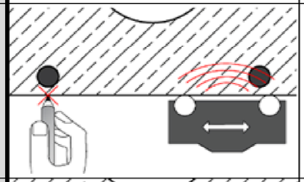
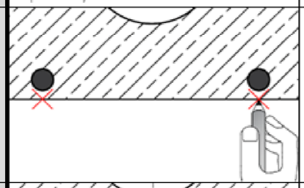
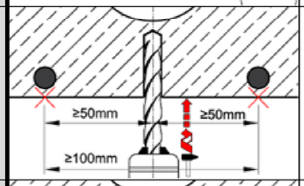
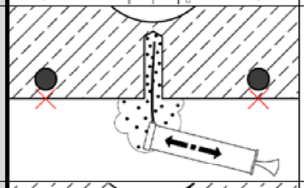
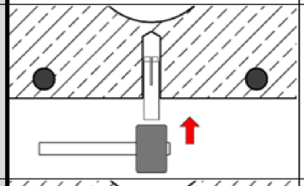
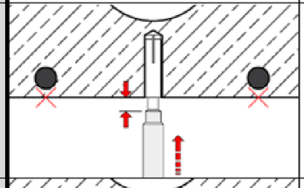
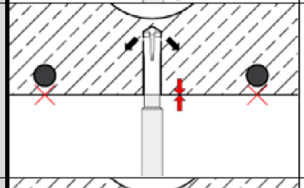
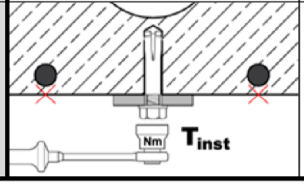
Intended use
Installation in precast pre-stressed hollow core slabs

Annex B4

Installation instructions for solid concrete slabs

1		Drill hole perpendicular to concrete surface. Using 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.
4		Drive in cone by using setting tool.
5		Shoulder of setting tool must fit on anchor rim.
6		Turn in screw or threaded rod with nut, observe minimum screw-in depth (see Annex B3). Apply installation torque T_{inst}.

Installation instructions for precast pre-stressed hollow core slabs

1		Search for the position of the reinforcement.
2		Mark the position of the pre-stressing steel and search for the other position of the pre-stressing steel.
3		Mark the positions of next pre-stressing steel.
4		Drill hole while maintaining the required distances.
5		Blow out dust. Alternatively vacuum clean down to the bottom of the hole.
6		Drive in anchor.
7		Drive in cone by using setting tool.
8		Shoulder of setting tool must fit on anchor rim.
9		Turn in screw or threaded rod with nut, observe the minimum screw-in depth (see Annex B3). Apply installation torque T_{inst}.

Drop-in Anchor E / ES

Intended use
Installation instructions for precast pre-stressed hollow core slabs

Annex B6

Table C1: Characteristic resistance for $h_{ef} \geq 30$ mm in **solid concrete slabs**

Anchor size			**M6x30**	**M8x30**	**M8x40**	**M10x30**	**M10x40**	**M12x50**	**M16x65**
Installation factor	γ_{inst}	[-]	1,0						
Load in any direction									
Characteristic resistance in concrete **C20/25 to C50/60**	F^0_{Rk}	[kN]	3	5	6	6	6	6	16
Partial factor	γ_M [1)]	[-]	1,8	2,16		2,1	2,16	1,8	1,8
Spacing	s_{cr}	[mm]	130	180	210	230	170	170	400
Edge distance	c_{cr}	[mm]	65	90	105	115	85	85	200
Shear load with lever arm, steel zinc plated									
Characteristic resistance **(Steel 4.6)**	$M^0_{Rk,s}$	[Nm]	6,1	15	15	30	30	52	133
Partial factor	γ_{Ms} [1)]	[-]	1,67						
Characteristic resistance **(Steel 4.8)**	$M^0_{Rk,s}$	[Nm]	6,1	15	15	30	30	52	133
Partial factor	γ_{Ms} [1)]	[-]	1,25						
Characteristic resistance **(Steel 5.6)**	$M^0_{Rk,s}$	[Nm]	7,6	19	19	37	37	65	166
Partial factor	γ_{Ms} [1)]	[-]	1,67						
Characteristic resistance **(Steel 5.8)**	$M^0_{Rk,s}$	[Nm]	7,6	19	19	37	37	65	166
Partial factor	γ_{Ms} [1)]	[-]	1,25						
Characteristic resistance **(Steel 8.8)**	$M^0_{Rk,s}$	[Nm]	12	30	30	59	60	105	266
Partial factor	γ_{Ms} [1)]	[-]	1,25						
Shear load with lever arm, stainless steel A4 / HCR									
Characteristic resistance **(Property class 70)**	$M^0_{Rk,s}$	[Nm]	11	26	26	-[2)]	52	92	233
Partial factor	γ_{Ms} [1)]	[-]	1,56						
Characteristic resistance **(Property class 80)**	$M^0_{Rk,s}$	[Nm]	12	30	30	-[2)]	60	105	266
Partial factor	γ_{Ms} [1)]	[-]	1,33						

[1)] in absence of other national regulations
[2)] Anchor version is not part of the ETA

Table C2: Characteristic resistance for h_{ef} **= 25 mm** in **solid concrete slabs**

Anchor size			**M6x25**	**M8x25**	**M10x25**	**M12x25**
Installation factor	γ_{inst}	[-]	1,0			
Load in any direction						
Characteristic resistance in concrete **C12/15 and C16/20**	F^0_{Rk}	[kN]	2,5	2,5	3,5	3,5
Characteristic resistance in concrete **C20/25 to C50/60**	F^0_{Rk}	[kN]	3,5	4,0	4,5	4,5
Partial factor	γ_M [1)]	[-]	1,5			
Spacing	s_{cr}	[mm]	75	75	75	75
Edge distance	c_{cr}	[mm]	38	38	38	38
Shear load with lever arm						
Characteristic resistance **(Steel 4.6)**	$M^0_{Rk,s}$	[Nm]	6,1	15	30	52
Partial factor	γ_{Ms} [1)]	[-]	1,67			
Characteristic resistance **(Steel 4.8)**	$M^0_{Rk,s}$	[Nm]	6,1	15	30	52
Partial factor	γ_{Ms} [1)]	[-]	1,25			
Characteristic resistance **(Steel 5.6)**	$M^0_{Rk,s}$	[Nm]	7,6	19	37	65
Partial factor	γ_{Ms} [1)]	[-]	1,67			
Characteristic resistance **(Steel 5.8)**	$M^0_{Rk,s}$	[Nm]	7,6	19	37	65
Partial factor	γ_{Ms} [1)]	[-]	1,25			
Characteristic resistance **(Steel 8.8)**	$M^0_{Rk,s}$	[Nm]	12	30	60	105
Partial factor	γ_{Ms} [1)]	[-]	1,25			

[1)] in absence of other national regulations

Table C3: Characteristic resistance for h_{ef} **= 25 mm** in **precast pre-stressed hollow core slabs**

Anchor size			**M6x25**	**M8x25**	**M10x25**	**M12x25**
Installation factor	γ_{inst}	[-]	1,0			
Load in any direction						
Flange thickness	d_b	[mm]	≥ 35 (30)[1)]			
Characteristic resistance in precast pre-stressed hollow core slabs **C30/37 to C50/60**	F^0_{Rk}	[kN]	3,5	4,0	4,5	4,5
Partial factor	γ_M[2)]	[-]	1,5			
Spacing	s_{cr}	[mm]	200			
Edge distance	c_{cr}	[mm]	150			
Shear load with lever arm						
Characteristic resistance **(Steel 4.6)**	$M^0_{Rk,s}$	[Nm]	6,1	15	30	52
Partial factor	γ_{Ms}[2)]	[-]	1,67			
Characteristic resistance **(Steel 4.8)**	$M^0_{Rk,s}$	[Nm]	6,1	15	30	52
Partial factor	γ_{Ms}[2)]	[-]	1,25			
Characteristic resistance **(Steel 5.6)**	$M^0_{Rk,s}$	[Nm]	7,6	19	37	65
Partial factor	γ_{Ms}[2)]	[-]	1,67			
Characteristic resistance **(Steel 5.8)**	$M^0_{Rk,s}$	[Nm]	7,6	19	37	65
Partial factor	γ_{Ms}[2)]	[-]	1,25			
Characteristic resistance **(Steel 8.8)**	$M^0_{Rk,s}$	[Nm]	12	30	60	105
Partial factor	γ_{Ms}[2)]	[-]	1,25			

[1)] the anchor may be set in a flange thickness of 30 mm with identical characteristic loads, if the borehole cuts no hollow core
[2)] in absence of other national regulations

Table C4: Characteristic values under **fire exposure** in **solid concrete slabs** C20/25 to C50/60 for $h_{ef} \geq 30$ mm

Anchor size					M6x30	M8x30	M8x40	M10x30	M10x40	M12x50	M16x65
Fire resistance class		**Load in any direction**									
Steel 4.6	R 30	Characteristic resistance	$F^0_{Rk,fi}$	[kN]	0,4	0,6	0,6	0,9	0,9	1,5	3,1
	R 60			[kN]	0,35	0,6	0,6	0,8	0,8	1,3	2,4
	R 90			[kN]	0,3	0,6	0,6	0,6	0,6	1,1	2,0
	R 120			[kN]	0,25	0,5	0,5	0,5	0,5	0,8	1,6
Steel 4.8	R 30	Characteristic resistance	$F^0_{Rk,fi}$	[kN]	0,4	0,9	1,1	0,9	1,5	1,5	4,0
	R 60			[kN]	0,35	0,9	0,9	0,9	1,5	1,5	4,0
	R 90			[kN]	0,3	0,6	0,6	0,9	1,1	1,5	3,0
	R 120			[kN]	0,3	0,5	0,5	0,7	0,9	1,2	2,4
Steel ≥ 5.6	R 30	Characteristic resistance	$F^0_{Rk,fi}$	[kN]	0,8	0,9	1,5	0,9	1,5	1,5	4,0
	R 60			[kN]	0,8	0,9	1,5	0,9	1,5	1,5	4,0
	R 90			[kN]	0,4	0,9	0,9	0,9	1,5	1,5	3,7
	R 120			[kN]	0,3	0,5	0,5	0,7	1,0	1,2	2,4
A4 / HCR	R 30	Characteristic resistance	$F^0_{Rk,fi}$	[kN]	0,8	0,9	1,5	-[1]	1,5	1,5	4,0
	R 60			[kN]	0,8	0,9	1,5	-[1]	1,5	1,5	4,0
	R 90			[kN]	0,4	0,9	0,9	-[1]	1,5	1,5	3,7
	R 120			[kN]	0,3	0,5	0,5	-[1]	1,0	1,2	2,4
		Partial factor	$\gamma_{M,fi}$	[-]	1,0						
Steel zinc plated											
		Spacing	$s_{cr,fi}$	[mm]	130	180	210	170	170	200	400
R 30 – R 120		Edge distance	$c_{cr,fi}$	[mm]	65	90	105	85	85	100	200
		If the fire attack is from more than one side, the edge distance shall be ≥ 300 mm.									
Stainless steel A4, HCR											
		Spacing	$s_{cr,fi}$	[mm]	130	180	210	-[1]	170	200	400
R 30 – R 120		Edge distance	$c_{cr,fi}$	[mm]	65	90	105	-[1]	85	100	200
		If the fire attack is from more than one side, the edge distance shall be ≥ 300 mm.									

[1] Anchor version is not part of the ETA

Drop-in Anchor E / ES

Performance
Characteristic values under **fire exposure** for $h_{ef} \geq 30$ mm

Annex C4

Table C5: Characteristic values under **fire exposure** in **solid concrete slabs** C20/25 to C50/60 for h_{ef} **= 25 mm**

Anchor size					**M6x25**	**M8x25**	**M10x25**	**M12x25**
Fire resis-tance class		**Load in any direction**						
Steel ≥ 4.6	R 30	Characteristic resistance	$F^0_{Rk,fi}$	[kN]	0,4	0,6	0,6	0,6
	R 60			[kN]	0,35	0,6	0,6	0,6
	R 90			[kN]	0,3	0,6	0,6	0,6
	R 120			[kN]	0,25	0,5	0,5	0,5
		Partial factor	$\gamma_{M,fi}$	[-]	1,0			
R 30 – R 120		Spacing	$s_{cr,fi}$	[mm]	100	100	100	100
		Edge distance	$c_{cr,fi}$	[mm]	50	50	50	50
		If the fire attack is from more than one side, the edge distance shall be ≥ 300 mm.						