

Leistungserklärung

2323-CPR-0058

1. Eindeutiger Kenncode des Produkttyps: Mungo Metalldübel MEA für die Verwendung als Mehrfachbefestigung von nichttragenden Systemen in Beton

2. Hersteller: Mungo Befestigungstechnik AG, Bornfeldstrasse 2, CH-4600 Olten/Schweiz

3. AVCP System/s: System 2+

4. Verwendungszweck/e:

Produkt	Vorgesehener Verwendungszweck
Der Dübel für die Verwendung als Mehrfachbefestigung von nichttragenden Systemen im gerissenem und ungerissenem Beton	Der Dübel ist zur Verankerung unter Statischen oder quasi-statischen Lasten in bewehrtem oder unbewehrtem Normalbeton der Festigkeitsklasse C20/25 bis C50/60 nach EN 206-1

5. Europäische Bewertungsdokument: ETAG 001 Teil 6, April 2013, verwendet als EAD

Europäische Technische Bewertung: ETA-18/0269 vom 03.04.2018

Technische Bewertungsstelle: ETA-Denmark A/S

Notifizierte Stellen: No 305/2011 (Construction Product Regulation)

6. Erklärte Leistungen:

Mechanische Tragfähigkeit und Standsicherheit (BWR 1)

Wesentliche Merkmale	Leistung
Charakteristische Werte für alle Lastrichtungen	Siehe Anhang, insbesondere Anhang C1 bis C3
Rand- und Achsabstände	Siehe Anhang, insbesondere Anhang B2

Brandschutz (BWR 2)

Wesentliche Merkmale	Leistung
Brandverhalten	Siehe Anhang, insbesondere Anhang C5
Feuerwiderstand	Siehe Anhang, insbesondere Anhang C4

Die Leistungen des oben spezifizierten Produktes sind in Einklang mit den deklarierten Leistungen. Diese Leistungserklärung ist ausgestellt in Übereinstimmung mit der Regulierung (EU) Nr. 305/2011 und unter alleiniger Verantwortung des oben identifizierten Herstellers.

Unterzeichnet für den Hersteller und im Namen des Herstellers von:

Robert Klemencic Dipl.-Ing.
Leiter Technik



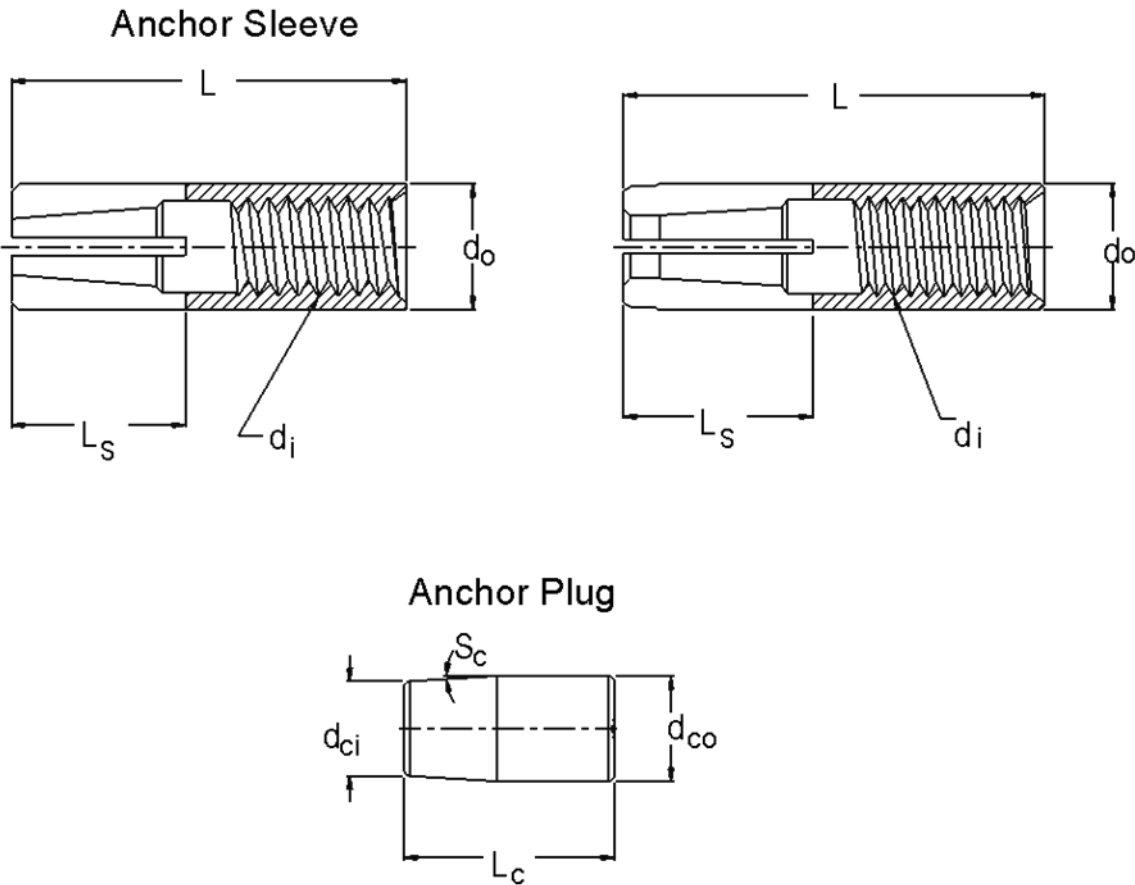
Olten, 18.11.2019



Diese Leistungserklärung (DoP) wurde in verschiedenen Sprachen verfasst. Im Falle von Unklarheiten bei der Interpretation der Leistungserklärung hat jeweils die englische Version Vorrang.

Der Anhang enthält freiwillige und ergänzende Informationen in Englisch, welche über die gesetzlichen Anforderungen hinausgehen.

Figure A1 – anchor



MEA DROP-IN ANCHOR

Product description
Characteristics of the product

Annex A1
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Table A1. Dimensions of the anchor

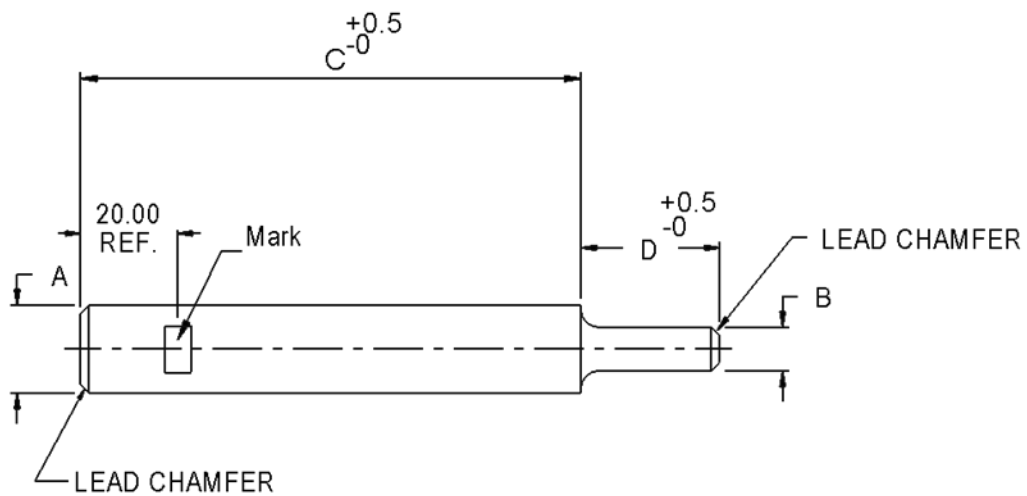
Diameter inside d_i [mm]	Length L [mm]	Length of spread L_s [mm]	Diameter outside d_o [mm]	Length of cone L_c [mm]	Diameter cone outside d_{co} [mm]	Diameter cone inside d_{ci} [mm]	square s_c [°]
M6	24.90 ± 0.30	11.60 ± 0.60	7.94 ± 0.07	10.00 ± 0.20	5.05 ± 0.05	3.95 ± 0.05	5.00 ± 0.50
M8	29.90 ± 0.30	13.80 ± 0.60	9.94 ± 0.07	11.90 ± 0.30	6.25 ± 0.25	4.50 ± 0.25	6.00 ± 2.00
M10	39.60 ± 0.40	18.35 ± 0.75	11.94 ± 0.07	15.70 ± 0.30	7.85 ± 0.25	6.30 ± 0.30	6.00 ± 2.00
M12	50.50 ± 0.50	22.75 ± 0.75	14.94 ± 0.07	20.70 ± 0.30	10.05 ± 0.25	8.50 ± 0.30	4.00 ± 2.00
M16	65.00 ± 0.50	29.35 ± 0.75	19.80 ± 0.20	28.10 ± 0.30	13.85 ± 0.25	11.70 ± 0.30	3.50 ± 2.00

Diameter inside d_i [mm]	Length L [mm]	Length of spread L_s [mm]	Diameter outside d_o [mm]	Length of cone L_c [mm]	Diameter cone outside d_{co} [mm]	Diameter cone inside d_{ci} [mm]	square s_c [°]
M8x25	24.90 ± 0.30	11.15 ± 0.60	10.00 - 0.13	8.15 ± 0.20	6.40 ± 0.05	5.40 ± 0.05	4.5 ± 0.5
M10x25	24.60 ± 0.40	11.60 ± 0.60	12.00 - 0.13	8.80 ± 0.20	8.30 ± 0.05	7.50 ± 0.05	3.5 ± 0.5
M10x30	29.60 ± 0.40	15.00 ± 0.60	12.00 - 0.13	13.60 ± 0.20	7.85 ± 0.05	6.70 ± 0.05	3.5 ± 0.5
M12x25	24.60 ± 0.40	11.20 ± 0.60	15.00 - 0.13	10.45 ± 0.20	9.80 ± 0.05	8.60 ± 0.05	7.0 ± 0.5

Table A2. Materials

Member	Material
Sleeve	Coldformed steel grade C8C in accordance with table 2 in EN 10263-2 or coldformed steel grade 1008 in accordance with table 3 in ASTM A510. Galvanized
Plug	Coldformed steel grade C8C in accordance with table 2 in EN 10263-2 or coldformed steel grade 1008 in accordance with table 3 in ASTM A510. Galvanized

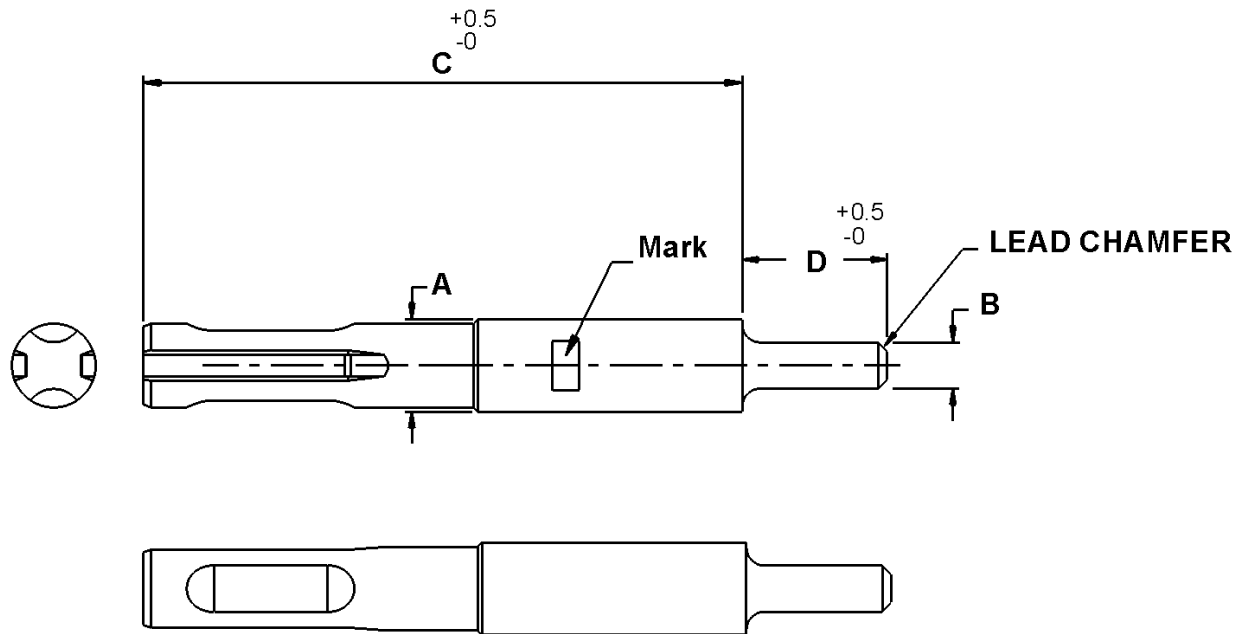
MEA DROP-IN ANCHOR	Annex A2 of European Technical Assessment ETA-18/0269
Product description Materials	

Figure A2 - Hand setting tool**Table A3 – Dimensions of hand setting tool**

Size	A [mm]	B (REF) [mm]	C [mm]	D [mm]
M6	Ø 10.0	Ø 4.7	114.5	15.0
M8	Ø 10.0	Ø 6.35	94.5	17.9
M10	Ø 13.0	Ø 7.9	100.5	23.8
M12	Ø 16.0	Ø 9.8	107.5	29.7
M16	Ø 22.0	Ø 13.5	114.5	36.8

Size	A [mm]	B (REF) [mm]	C [mm]	D [mm]
M8x25	Ø 10.0	Ø 6.35	95.65	16.75
M10x25	Ø 13.0	Ø 7.9	108.5	15.8
M10x30	Ø 13.0	Ø 7.9	108.3	16.0
M12x25	Ø 16.0	Ø 9.8	123.05	14.15

MEA DROP-IN ANCHORProduct description
Setting tools**Annex A3**
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Figure A3 - Mechanical setting tool**Table A4 – Dimensions of mechanical setting tool**

Size	A [mm]	B (REF) [mm]	C [mm]	D [mm]
M6	Ø 10.0	Ø 4.7	114.5	15.0
M8	Ø 10.0	Ø 6.35	94.5	17.9
M10	Ø 13.0	Ø 7.9	100.5	23.8
M12	Ø 16.0	Ø 9.8	107.5	29.7
M16	Ø 22.0	Ø 13.5	114.5	36.8

Size	A [mm]	B (REF) [mm]	C [mm]	D [mm]
M8x25	Ø 10.0	Ø 6.35	95.65	16.75
M10x25	Ø 13.0	Ø 7.9	108.5	15.8
M10x30	Ø 13.0	Ø 7.9	108.3	16.0
M12x25	Ø 16.0	Ø 9.8	123.05	14.15

MEA DROP-IN ANCHORProduct description
Setting tools**Annex A4**
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Use:

The anchors are intended to be used for anchorages for which requirements for mechanical resistance and stability and safety in use in the sense of the Basic Requirements 1 and 4 of Regulation 305/2011 (EU) shall be fulfilled and failure of anchorages made with these products would compromise the stability of the works, cause risk to human life and/or lead to considerable economic consequences.

Anchors subject to:

- Multiple use for non-structural applications.
- Static and quasi-static loads.

Base materials:

- Reinforced or unreinforced normal weight concrete of strength class C20/25 at minimum to C50/60 at maximum according to EN 206-1.
- Cracked and non-cracked concrete

Use conditions (Environmental conditions):

- Internal dry conditions

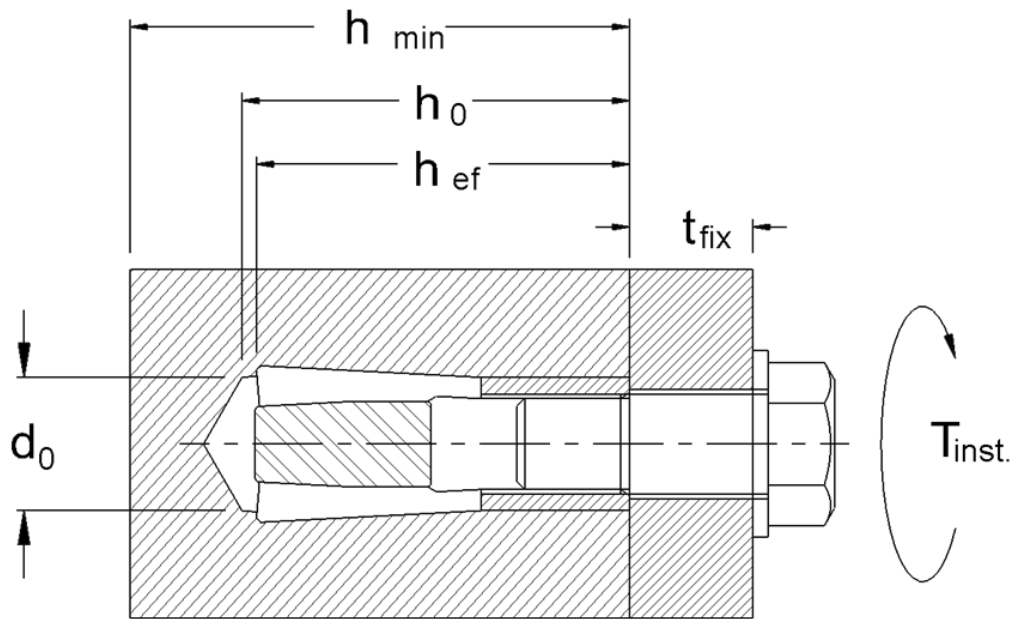
Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Anchor installation in accordance with the manufacturer's specifications and drawings and using the appropriate tools.
- Check before placing the anchor to ensure that the strength class of the concrete, in which the anchor is to be placed, is identical with the values which the characteristic loads apply.
- Check of concrete being well compacted, e.g. without significant voids.
- Edge distances and spacings not less than the specified values without minus tolerances.
- Positioning of the drill holes without damaging the reinforcement.
- 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 drill hole is filled with high strength mortar and if under shear or oblique tension load it is not the direction of load application.
- Hole shall be clear.
- Anchor installation such that the effective anchorage depth is complied with; the compliance is ensured if the thickness of the fixture is not larger than the maximum values given in Annex B2.
- Anchor expansion by impact on the wedge of the anchor; the anchor is properly set if the wedge is fully dropped in.

Proposed design methods:

- 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 transmitted. 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 under static and quasi-static loads are designed in accordance with EN 1992-4.
- Fasteners are only to be used for multiple use for non-structural applications acc. to ETAG 001, Part 6, Edition August 2010.

MEA DROP-IN ANCHOR	Annex B1 of European Technical Assessment ETA-18/0269
Intended use – Specification	

**Table B1. Installation parameters**

Installation parameters		M6	M8	M10	M12	M16
Nom. drill hole diameter	$\varnothing d_0$ [mm] =	8	10	12	15	20
Max. Cutting diameter of drill bit	$\varnothing d_{cut}$ [mm] $\leq$	8,45	10,45	12,45	15,50	20,50
Depth of drill hole	h_1 [mm] $\geq$	25	30	40	50	65
Effective anchorage depth	h_{ef} [mm] $\geq$	25	30	40	50	65
Installation moment	T_{inst} [Nm] =	4	8	15	35	60

Installation parameters		M8x25	M10x25	M10x30	M12x25
Nom. drill hole diameter	$\varnothing d_0$ [mm] =	10	12	12	15
Max. Cutting diameter of drill bit	$\varnothing d_{cut}$ [mm] $\leq$	10,45	12,45	12,45	15,50
Depth of drill hole	h_1 [mm] $\geq$	25	25	30	25
Effective anchorage depth	h_{ef} [mm] $\geq$	25	25	30	25
Installation moment	T_{inst} [Nm] $\leq$	8	15	15	35

		M6	M8	M10	M12	M16
Minimum thickness of member	h_{min} [mm] =	100	100	120	140	160
Minimum edge distance	c_{min} [mm] =	110	140	90	140	125
Minimum spacing	s_{min} [mm] =	120	130	120	130	140

		M8x25	M10x25	M10x30	M12x25
Minimum thickness of member	h_{min} [mm] =	100	100	100	100
Minimum edge distance	c_{min} [mm] =	50	55	60	100
Minimum spacing	s_{min} [mm] =	100	110	150	200

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Intended use – installation parameters

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Table C1: Design method C, characteristic tension load values

		M6	M8	M10	M12	M16
<i>Steel failure</i>						
Resistance to steel failure	$N_{Rk,s}$ [kN]	9,92	14,62	15,24	30,92	49,90
Partial safety factor under tension load	γ_{Ms} [-]	1,40	1,40	1,40	1,40	1,40
<i>Pull-out failure</i>						
Resistance to pull-out failure in cracked concrete C20/25	$N_{Rk,cr}$ [kN]	2,0	2,0	4,0	3,5	6,0
Increase factors for non-cracked concrete	Ψ_c [-]	1,35	1,25	1,47	1,55	1,55
<i>Concrete cone failure</i>						
Effective embedment depth	h_{ef} [mm]	25	30	40	50	65
Edge distance	$c_{cr,N}$ [mm]	1,5x h_{ef}	1,5x h_{ef}	1,5x h_{ef}	1,5x h_{ef}	1,5x h_{ef}
Spacing	$s_{cr,N}$ [mm]	3x h_{ef}	3x h_{ef}	3x h_{ef}	3x h_{ef}	3x h_{ef}
<i>Robustness</i>						
Installation safety factor	γ_{inst} [-]	1,2	1,2	1,2	1,4	1,0
<i>Minimum edge distance and spacing</i>						
Minimum edge distance	c_{min} [mm]	110	140	90	140	125
Minimum spacing distance	s_{min} [mm]	120	130	120	130	140
Min. thickness of the concrete member	h_{min} [mm]	100	100	120	140	160
<i>Edge distance to prevent splitting under load</i>						
	$N^0_{Rk,sp}$ [kN]	2,0	2,0	4,0	3,5	6,0
Appropriate edge distance	$c_{cr,sp}$ [mm]	110	140	90	140	125
<i>Displacements under static and quasi-static loading</i>						
Short time tension displacement	δ_{N0} [mm]	0,10	0,35	0,09	0,08	0,32
Long-time tension displacement	$\delta_{N\infty}$ [mm]	-	-	0,09	-	-

MEA DROP-IN ANCHOR

Performance for static and quasi-static loads: Resistances

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Table C1A: Design method C, characteristic tension load values

			M8x25	M10x25	M10x30	M12x25
<i>Steel failure</i>						
Resistance to steel failure	$N_{Rk,s}$	[kN]	14,13	15,24	15,24	30,92
Partial safety factor under tension load	γ_{Ms}	[-]	1,40	1,40	1,40	1,40
<i>Pull-out failure</i>						
Resistance to pull-out failure in cracked concrete C20/25	$N_{Rk,cr}$	[kN]	0.9	1.5	3.0	2.0
Increase factors for non-cracked concrete	Ψ_c	[-]	1.34	1.45	1.19	1.45
<i>Concrete cone failure</i>						
Effective embedment depth	h_{ef}	[mm]	25	25	30	25
Edge distance	$c_{cr,N}$	[mm]	1,5x h_{ef}	1,5x h_{ef}	1,5x h_{ef}	1,5x h_{ef}
Spacing	$s_{cr,N}$	[mm]	3x h_{ef}	3x h_{ef}	3x h_{ef}	3x h_{ef}
<i>Robustness</i>						
Installation safety factor	γ_{inst}	[-]	1.4	1.2	1.4	1.4
<i>Minimum edge distance and spacing</i>						
Minimum edge distance	c_{min}	[mm]	50	55	60	100
Minimum spacing distance	s_{min}	[mm]	100	110	150	200
Min. thickness of the concrete member	h_{min}	[mm]	100	100	100	100
<i>Edge distance to prevent splitting under load</i>						
	$N^0_{Rk,sp}$	[kN]	0.9	1.5	2.0	2.0
Appropriate edge distance	$c_{cr,sp}$	[mm]	60	75	90	100
<i>Displacements under static and quasi-static loading</i>						
Short time tension displacement	δ_{N0}	[mm]	0.10	0.14	0.28	0.31
Long-time tension displacement	$\delta_{N\infty}$	[mm]	-	-	0.40	-

MEA DROP-IN ANCHOR

Performance for static and quasi-static loads: Resistances

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Table C2: Design method C, Characteristic shear load values

		M6	M8	M10	M12	M16
<i>Resistance to steel failure under shear load</i>						
Resistance to shear load without lever arm	$V_{Rk,s}^0$ [kN]	2,5	5,0	6,0	7,5	16,0
Resistance to shear load with lever arm	$M_{Rk,s}^0$ [Nm]	18,5	33,4	46,5	114	245
<i>Displacements under static and quasi-static loading</i>						
Short time shear displacement	δ_{v0} [mm]	0,51	0,61	0,45	0,23	0,38
Long-time shear displacement	$\delta_{v\infty}$ [mm]	0,77	0,92	0,68	0,35	0,57

		M8x25	M10x25	M10x30	M12x25
<i>Resistance to steel failure under shear load</i>					
Resistance to shear load without lever arm	$V_{Rk,s}^0$ [kN]	4.0	7,0	6.5	5.0
Resistance to shear load with lever arm	$M_{Rk,s}^0$ [Nm]	34.7	46.5	46.5	114.0
<i>Displacements under static and quasi-static loading</i>					
Short time shear displacement	δ_{v0} [mm]	0.33	0.76	1.37	0.05
Long-time shear displacement	$\delta_{v\infty}$ [mm]	0.50	1.14	2.06	0.08

MEA DROP-IN ANCHOR

Performance for static and quasi-static loads: Resistances and Displacements

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Table C3: Resistance to fire

Characteristic values for tension load under fire exposure in accordance to EOTA TR020												
Steel failure		M6x25	M8x30	M8x40	M10x25	M10x30	M10x40	M12x50	M16x65			
Characteristic resistance	R30	0,21	0,27	0,27	0,50	0,50	0,50	1,24	2,14			
	R60	0,19	0,25	0,25	0,43	0,43	0,43	0,93	1,60			
	R90	0,15	0,19	0,19	0,33	0,33	0,33	0,81	1,39			
	R120	0,11	0,14	0,14	0,27	0,27	0,27	0,62	1,07			
Pullout failure												
Characteristic resistance in concrete $\geq$ C20/25	R30	1,25	0,88	1,50	0,38	1,38	1,75	2,50	3,00			
	R60											
	R90											
	R120											
Concrete cone failure												
Characteristic resistance in concrete $\geq$ C20/25	R30	0,56	0,89	1,82	0,56	0,89	1,82	3,18	6,13			
	R60											
	R90											
	R120											
Spacing												
Edge distance	$S_{cr,fi}$	100	90	120	110	150	160	200	260			
	S_{min}											
	$C_{cr,fi}$											
	C_{min}											
Fire attack from one side: $2 \cdot h_{ef}$												
Fire attack from more than 1 side: ≥ 300												
Characteristic values for shear load under fire exposure in accordance to EOTA TR020												
Steel failure without lever arm		M6x25	M8x30	M8x40	M10x25	M10x30	M10x40	M12x50	M16x65			
Characteristic resistance	R30	0,21	0,27	0,27	0,50	0,50	0,50	1,24	2,14			
	R60	0,19	0,25	0,25	0,43	0,43	0,43	0,93	1,60			
	R90	0,15	0,19	0,19	0,33	0,33	0,33	0,81	1,39			
	R120	0,11	0,14	0,14	0,27	0,27	0,27	0,62	1,07			
Steel failure with lever arm												
Characteristic resistance	R30	0,40	0,67	0,67	1,53	1,53	1,53	4,59	10,49			
	R60	0,36	0,60	0,60	1,32	1,32	1,32	3,44	7,87			
	R90	0,28	0,47	0,47	1,02	1,02	1,02	2,98	6,82			
	R120	0,20	0,34	0,34	0,81	0,81	0,81	2,29	5,25			
Pryout failure												
k-factor	R30	1,00	1,00	1,00	1,00	1,00	1,00	1,00	2,00			
	R60											
	R90											
	R120											
Characteristic resistance in concrete $\geq$ C20/25	R30	0,56	0,89	1,82	0,56	0,89	1,82	3,18	12,26			
	R60											
	R90											
	R120											
Concrete edge failure												
The initial value $V_{Rk,c,fi}^0$ of the characteristic resistance in concrete C20/25 to C50/60 under fire exposure may be determined by: $V_{Rk,c,fi}^0 = 0,25 \times V_{Rk,c}^0 (\leq R90) V_{Rk,c,fi}^0 = 0,20 \times V_{Rk,c}^0 (\leq R120)$												

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Performance for exposure to fire

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Performance for exposure to fire	