TOIMIVUSDEKLARATSIOON

HECO-DoP_ETA_15/0784_MMS-plus_1606_EE

1. Tootetüübi unikaalne tunnuskood:
MULTI-MONTI-plus (MMS-plus)

2. Tüübi-, partii- või seerianumber või muu tähis ehitustoote identifitseerimiseks vastavalt artikli 11 lõikele 4:
Tähistus vastavalt ETA-15/0784 lisale A2, A3
Partii number: vt toote pakendit

3. Tootja poolt ehitustootele ette nähtud kasutuseesmärk või ette nähtud kasutuseesmärgid vastavalt kohaldatavale harmoniseeritud tehnilisele spetsifikatsioonile:
ETA-15/0784 lisa B1

Tüübli tüüp	Kruviankur
Kasutamiseks järgnevas	betoon C20/25 kuni C50/60 (EN 206) - pragudeta: Ø6, Ø7.5, Ø10 ja Ø12 - pragunenud: Ø6, Ø7.5, Ø10 ja Ø12
Suvand/kategooria	Suvand 1 Seismiline: jõudluskategooria C1
Koormamine	staatiline, kvaasi-staatiline, seismiline (Ø10 + Ø12), tuletakistus
Materjal/teostus	Tsingitud teras: - rakendusteks kuivade siseruumide tingimustes - erinevad peakujud

4. Nimi, registreeritud kaubanduslik nimetus või registreeritud kaubamärk ja tootja kontaktaadress vastavalt artikli 11 lõikele 5:
HECO-Schrauben GmbH & Co. KG
Dr.-Kurt-Steim-Str. 28
78713 Schramberg (Saksamaa)

5. Vajaduse korral voliniku nimi ja kontaktaadress, kes on saanud vastavalt artikli 12 lõikele 2 ülesandeks:
-

6. Süsteem või süsteemid ehitustoote jõudluse püsimise hindamiseks ja kontrollimiseks vastavalt lisale V:
Süsteem 1

7. Jõudlusdeklaratsiooni korral, mis kehtib harmoniseeritud normiga hõlmatava ehitustoote kohta:
-

8. Jõudlusdeklaratsiooni korral, mis kehtib ehitustoote kohta, millele on väljastatud Euroopa tehniline hinnang:

- Hindamisasutus: Deutsches Institut für Bautechnik (DIBt)
- Teavitatud asutus: Otto-Graf-Institut Stuttgart, tunnusnumber 0672
- Hindamisdokument: ETAG 001 osa 1, 3 (04.2013)
- Vastavustõend: 0672-CPR-0635

9. Deklareeritud jõudlus

Olulised tunnused	**Mõõdistusmeetod**	**Jõudlus**	**Harmoniseeritud tehniline spetsifikatsioon**
Tõmbekandevõime iseloomulikud väärtused	ETAG 001, lisa: C, meetod A CEN/TS 1992-4:2009, meetod A	ETA-15/0784: lisa C1	ETAG 001 osa 1, 3 ETAG 001, lisa E EOTA TR 020 (tuletakistus)
	EOTA TR 045	ETA-15/0784: lisa C2	
	EOTA TR 020 (tuletakistus) CEN/TS 1992-4: lisa D	ETA-15/0784: lisa C3	
Ristikandevõime iseloomulikud väärtused	ETAG 001, lisa: C, meetod A CEN/TS 1992-4:2009, meetod A	ETA-15/0784: lisa C1	
	EOTA TR 045	ETA-15/0784: lisa C2	
	EOTA TR 020 (tuletakistus) CEN/TS 1992-4: lisa D	ETA-15/0784: lisa C3	
Montaaži tunnusväärtused		ETA-15/0784: lisa B2	
Kasutuskõlblikkuse piirseisundi nihkumised	ETAG 001, lisa: C, meetod A CEN/TS 1992-4:2009, meetod A	ETA-15/0784: lisa C4	

10. Toote jõudlus numbrite 1 ja 2 kohaselt vastab numbriga 9 deklareeritud jõudlusele. Käesoleva jõudlusdeklaratsiooni koostamise eest vastutab numbri 4 kohaselt ainuüksi tootja.

Allkirjastanud tootja jaoks ja tootja nimel:

Schramberg, 01.07.2016 p.p.

Andreas Hettich, PM/turundusosakonna juht

Specifications of intended use

Use of the anchoring:
- Static and quasi static loads: all sizes.
- Seismic category C1:
  MMS-plus all Versions, size 10 with maximum embedment depth (h_{nom2}) and size 12 with the embedment depth $h_{nom\ 1}$ and $h_{nom\ 2}$.
- Fire exposure: all sizes.

Base Materials:
- Reinforced or non-reinforced normal weight concrete according to EN 206-1:2000.
- Strength classes C20/25 to C50/60 according to EN 206-1:2000.
- Non-cracked and cracked concrete: all sizes.

Conditions of use (Environmental conditions):
- Structures subject to dry internal conditions.

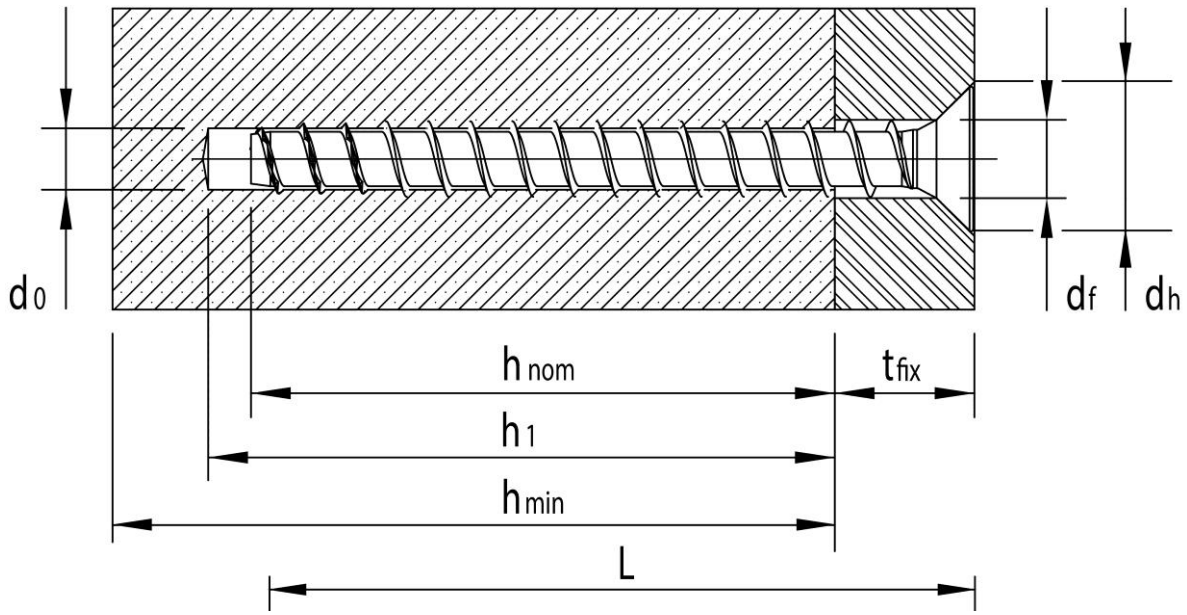
Design:
- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e. g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages under static or quasi-static actions are designed for design method A in accordance with:
  - ETAG 001, Annex C, edition august 2010 or
  - CEN/TS 1992-4:2009
- The design of the anchoring under seismic action have to be carried out in accordance with:
  - EOTA Technical Report TR 045, edition February 2013
  - Anchoring’s have to be placed outside of critical places like plastic hinges.
  - A distance mounting or mounting with mortar layer is not allowed.
- The design of the anchoring under fire exposure have to be carried in accordance with:
  - EOTA Technical Report 020, edition Mai 2014 or
  - CEN/TS 1992-4:2009, Annex D
  - In case of requirements for resistance of fire exposure it must be ensured that local spalling of the concrete cover does not occur.

Installation:
- Hole drilling by hammer-drilling only.
- 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.
- The anchor may be used only once.
- After installation further turning of the anchor must not be possible.
- The head of the anchor must be supported on the fixture and is not damaged.

Lisa B1

Table B1: Installation parameters MMS-plus

Size MMS-plus				6		7,5		10		12	
				h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}
Embedment depth in concrete			[mm]	35	45	35	55	50	65	75	90
Nominal drill diameter		d_0	[mm]	5		6		8		10	
Drill bit cutting diameter		$d_{cut} \leq$	[mm]	5,40		6,40		8,45		10,45	
Depth of borehole		$h_1 \geq$	[mm]	40	50	40	65	60	75	85	100
Diameter of clearance hole in the fixture		$d_f \leq$	[mm]	7		9		12		14	
Diameter Countersunk		d_h	[mm]	11,5		15,5		19,5		24	
Min. thickness of the concrete member		h_{min}	[mm]	100	100	100	100	100	115	125	150
cracked and uncracked concrete	min. spacing	s_{min}	[mm]	30	30	40	40	40	50	60	60
	min. edge distance	c_{min}	[mm]	30	30	40	40	40	50	60	60
Recommended installation tool			[Nm]	Impact screw driver, max. power output T_{max} according manufacturer information							
				75	100	100		200		250	
Torque moment for threaded version (type MMS-plus V)		T_{inst}	[Nm]	-		15		20		30	



Lisa B2

Table C1: Characteristic values for static and quasi-static tension MMS-plus

Size MMS-plus				**6**		**7,5**		**10**		**12**	
				h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}
Embedment depth in concrete		h_{nom}	[mm]	35 [1]	45	35 [1]	55	50	65	75	90
Steel failure for tension- and shear resistance											
Characteristic resistance		$N_{Rk,s}$	[kN]	10,8		17,6		32,1		49,9	
		$V_{Rk,s}$	[kN]	4,1		6,1		13,7		24,1	
		k_2 [2]	-	0,8							
		$M^0_{Rk,s}$	[Nm]	6,7		14,1		34,5		66,8	
Partial safety factor		γ_2	-	1,25							
Pullout											
Characteristic resistance in uncracked concrete C20/25		$N_{Rk,p}$	[kN]	4,0	6,0	4,0	9,0	12,0	16,0	20,0	25,0
Characteristic resistance in cracked concrete C20/25		$N_{Rk,p}$	[kN]	1,0	1,5	2,0	4,0	6,0	9,0	12,0	16,0
Increasing factor for concrete	C30/37	Ψ_c	-	1,22							
	C40/50			1,41							
	C50/60			1,55							
Concrete cone failure and splitting failure											
Effective anchorage depth		h_{ef}	[mm]	26	35	26	43	36	50	57	70
Factor for	cracked	k_{cr} [2]	-	7,2							
	uncracked	k_{unc} [2]	-	10,1							
Concrete cone	edge distance	$c_{cr,N}$	[mm]	1.5 h_{ef}							
	spacing	$s_{cr,N}$	[mm]	3 h_{ef}							
Splitting	edge distance	$c_{cr,sp}$	[mm]	1.8 h_{ef}							
	spacing	$s_{cr,sp}$	[mm]	3.6 h_{ef}							
Installation safety factor		γ_2 [3] = γ_{inst} [2]	-	1,0							
Concrete pryout failure											
k-factor		$k^{3)} = k_3$ [2]	-	1,0							2,0
Concrete edge failure											
Effective length of the anchor under shear loading		$l_f = h_{ef}$	[mm]	26	35	26	43	36	50	57	70
Effective diameter of the anchor		d_{nom}	[mm]	5		6		8		10	

[1] Only for non-structural applications
[2] Parameter only relevant for the design according to CEN/TS 1992-4:2009
[3] Parameter only relevant for the design according to ETAG 001, Annex C

Lisa C1

Table C2: Characteristic values for seismic actions C1

Size MMS-plus			**10**	**12**	
Embedment depth in concrete [mm]	h_{nom}		h_{nom2} 65	h_{nom1} 75	h_{nom2} 90
Steel failure for tension- and shear resistance					
Characteristic resistance	$N_{Rk,s,seis}$	[kN]	24,1	37,4	
	$V_{Rk,s,seis}$	[kN]	9,6	16,9	
Pullout					
Characteristic in cracked concrete	$N_{Rk,p,seis}$	[kN]	6,8	9,0	12,0
Concrete cone failure					
Effective anchorage depth	h_{ef}	[mm]	50	57	70
concrete cone — edge distance	$c_{cr,N}$	[mm]	1,5 h_{ef}		
concrete cone — spacing	$s_{cr,N}$	[mm]	3 h_{ef}		
Installation safety factor	γ_2	-	1,0		
Concrete pryout failure					
k-factor	k	-	2,0	1,0	
Concrete edge failure					
Effective length of the anchor under shear loading	$l_{ef} = h_{ef}$	[mm]	50	57	70
Effective diameter of the anchor	d_{nom}	[mm]	8	10	

Lisa C2

Table C3: Characteristic values under fire exposure

Size MMS-plus				**6**		**7,5**		**10**		**12**	
				h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}
Embedment depth in concrete		h_{nom}	[mm]	35	45	35	55	50	65	75	90
Steel failure for tension- and shear resistance ($F_{Rk,fi} = N_{Rk,fi} = V_{Rk,fi}$)											
Characteristic resistance	R30	$F_{Rk,fi}$	[kN]	0,25	0,4	0,5	1,0	1,5	2,3	3,0	3,0
	R60	$F_{Rk,fi}$	[kN]	0,25	0,4	0,5	0,8	1,4	1,4	2,1	2,1
	R90	$F_{Rk,fi}$	[kN]	0,25	0,4	0,5	0,5	1,0	1,0	1,5	1,5
	R120	$F_{Rk,fi}$	[kN]	0,2	0,3	0,4	0,4	0,8	0,8	1,2	1,2
	R30	$M^0_{Rk,s,fi}$	[Nm]	0,5		1,1		2,7		5,3	
	R60	$M^0_{Rk,s,fi}$	[Nm]	0,3		0,6		1,5		2,8	
	R90	$M^0_{Rk,s,fi}$	[Nm]	0,2		0,4		1,1		2,0	
	R120	$M^0_{Rk,s,fi}$	[Nm]	0,2		0,3		0,9		1,6	
Edge distance											
R30 to R120		$c_{cr,fi}$	[mm]	$2\ h_{ef}$							
Spacing											
R30 to R120		$s_{cr,fi}$	[mm]	$2\ c_{cr,fi}$							

Lisa C3

Table C4: Displacements under tension loads

Size MMS-plus				6		7,5		10		12	
				h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}
Embedment depth in concrete		h_{nom}	[mm]	35	45	35	55	50	65	75	90
Cracked concrete C20/25 to C50/60	tension	N	[kN]	1,9	3,0	1,9	5,3	5,7	7,9	10,7	12,8
	displacement	δ_{N0}	[mm]	0,11	0,11	0,06	0,12	0,06	0,07	0,05	0,19
		$\delta_{N\infty}$	[mm]	0,30	0,28	0,38	1,03	0,75	0,72	0,74	0,60
Uncracked concrete C20/25 to C50/60	tension	N	[kN]	0,5	0,7	0,9	2,0	2,9	4,3	5,7	6,4
	displacement	δ_{N0}	[mm]	0,01	0,02	0,03	0,04	0,03	0,09	0,05	0,02
		$\delta_{N\infty}$	[mm]	0,14	0,09	0,12	0,11	0,08	0,09	0,07	0,22

Table C5: Displacements under shear loads

Size MMS-plus				6		7,5		10		12	
				h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}
Embedment depth in concrete		h_{nom}	[mm]	35	45	35	55	50	65	75	90
Cracked and uncracked concrete C20/25 to C50/60	shear load	V	[kN]	2	2	4	4	8	8	12	12
	displacement	δ_{N0}	[mm]	0,14	0,13	0,09	0,11	0,18	0,13	0,18	0,18
		$\delta_{N\infty}$	[mm]	0,20	0,19	0,13	0,16	0,27	0,20	0,27	0,27

Lisa C4