

YTELSESERKLÆRING

HECO-DoP_ETA_15/0784_MMS-plus_1606_NO

1. Entydig identifikasjonskode for produkttypen:

MULTI-MONTI-plus (MMS-plus)

2. Type-, parti- eller serienummer eller annen form for angivelse som merking for identifikasjon av byggevaren i henhold til artikkel 11 avsnitt 4:

Merking i henhold til ETA-15/0784 vedlegg A2, A3

Partinummer: se produktets emballasje

3. Produsentens tilsiktede bruksområde eller bruksområder for byggevaren i samsvar med den relevante harmoniserte tekniske spesifikasjonen:

ETA-15/0784 vedlegg B1

Pluggtype	Skruanker
Til bruk i	<u>Betong C20/25 til C50/60 (EN 206)</u> - ikke-sprukket: Ø6, Ø7,5, Ø10 og Ø12 - sprukket: Ø6, Ø7,5, Ø10 og Ø12
Alternativ/kategori	<u>Alternativ 1</u> Seismisk: Ytelseskategori C1
Belastninger	statisk, kvasi-statisk, seismisk (Ø10 + Ø12), brannmotstand
Materiale/utførelse	<u>Galvanisert stål:</u> - til bruk under forhold ved tørre, innvendige rom - forskjellige hodeformer

4. Navn, registrert varenavn eller registrert varemerke og produsentens kontaktadresse i henhold til artikkel 11 avsnitt 5:

HECO-Schrauben GmbH & Co. KG

Dr.-Kurt-Steim-Str. 28

78713 Schramberg (Tyskland)

5. Eventuelt navn og kontaktadresse til fullmektig som har fått oppgavene i henhold til artikkel 12 avsnitt 2 i oppdrag:

-

6. System eller systemer for bedømmelse og kontroll av ytelsesstabiliteten til byggevaren i henhold til vedlegg V:

System 1

7. Dersom ytelseserklæringen gjelder en byggevarer som omfattes av en harmonisert standard:

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8. Dersom ytelseserklæringen gjelder en byggevare som det er utstedt en europeisk teknisk vurdering for:

- Vurderingsorgan: Deutsches Institut für Bautechnik (DIBt)
- Teknisk kontrollorgan: Otto-Graf-Institut Stuttgart, registreringsnummer 0672
- Vurderingsdokument: ETAG 001 del 1, 3 (04.2013)
- Samsvarserklæring 0672-CPR-0635

9. Erklært ytelse

Vesentlige egenskaper	Designmetode	Ytelse	Harmonisert teknisk spesifikasjon
Karakteristiske verdier for strekkmotstand	ETAG 001, vedlegg: C, metode A CEN/TS 1992-4:2009, metode A	ETA-15/0784: vedlegg C1	ETAG 001 del 1, 3
	EOTA TR 045	ETA-15/0784: vedlegg C2	
	EOTA TR 020 (brannmotstand) CEN/TS 1992-4: vedlegg D	ETA-15/0784: vedlegg C3	
Karakteristiske verdier for skjæremotstand	ETAG 001, vedlegg: C, metode A CEN/TS 1992-4:2009, metode A	ETA-15/0784: vedlegg C1	ETAG 001, vedlegg E EOTA TR 020 (brannmotstand)
	EOTA TR 045	ETA-15/0784: vedlegg C2	
	EOTA TR 020 (brannmotstand) CEN/TS 1992-4: vedlegg D	ETA-15/0784: vedlegg C3	
Karakteristiske montasjeverdier		ETA-15/0784: vedlegg B2	
Forskyvning for bruksgrensetilstanden	ETAG 001, vedlegg: C, metode A CEN/TS 1992-4:2009, metode A	ETA-15/0784: vedlegg C4	

10. Ytelsen for den varen som angitt i punkt 1 og 2, er i samsvar med ytelsen angitt i nummer 9. Denne ytelseserklæringen er utstedt på eget ansvar av produsenten, som er angitt i punkt nummer 4.

Undertegnet for og på vegne av produsenten:



Schramberg, 01.07.2016

e.f. _____
Andreas Hettich, sjef PM/Marketing



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_{nom1} and h_{nom2} .
- 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:

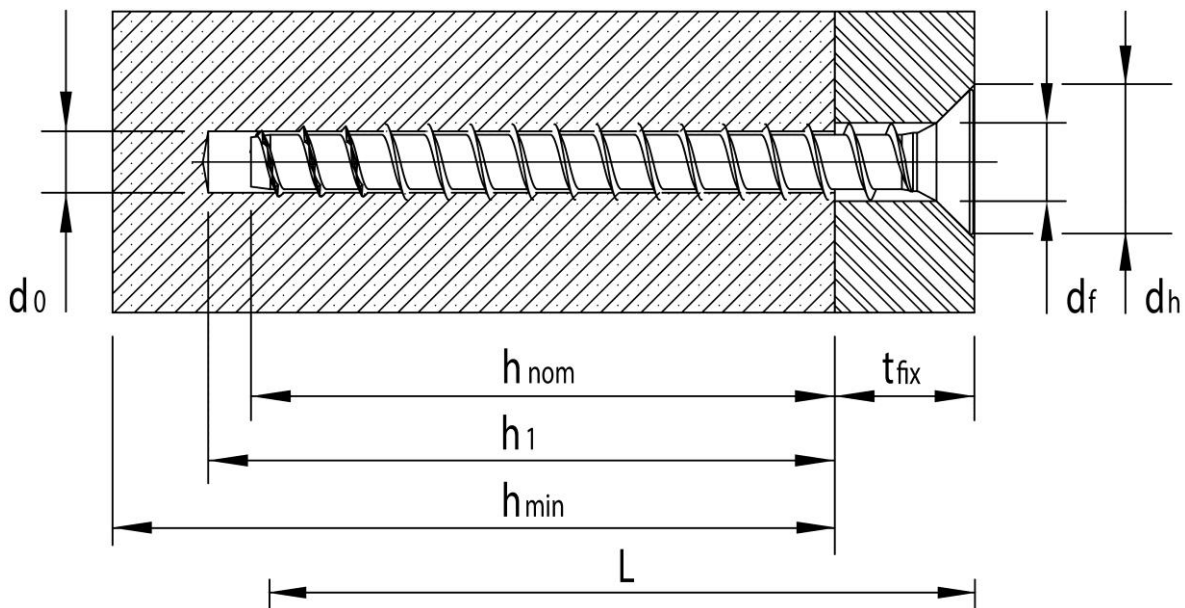
- Hole drilling by hammer-drilling only.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole 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.

Vedlegg 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 and min. edge distance	s_{min}	[mm]	30	30	40	40	40	50	60	60
		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		



Vedlegg B2

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

Size MMS-plus			6		7,5		10		12		
Embedment depth in concrete h_{nom} [mm]			h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	
			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		$l_{ef} = h_{ef}$	[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

Table C2: Characteristic values for seismic actions C1

Size MMS-plus				10	12	
Embedment depth in concrete		h_{nom}		h_{nom2}	h_{nom1}	h_{nom2}
[mm]				65	75	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 edge distance	$c_{cr,N}$	[mm]	1,5 h_{ef}			
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		

Vedlegg C2

Table C3: Characteristic values under fire exposure

Size MMS-plus				6		7,5		10		12	
Embedment depth in concrete h_{nom} [mm]				h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}
				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 $C_{cr,fi}$							

Vedlegg C3

Table C4: Displacements under tension loads

Size MMS-plus				6		7,5		10		12	
Embedment depth in concrete		h_{nom}	[mm]	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}
				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	$\bar{\delta}_{N0}$	[mm]	0,11	0,11	0,06	0,12	0,06	0,07	0,05	0,19
		$\bar{\delta}_{N\infty}$	[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	$\bar{\delta}_{N0}$	[mm]	0,01	0,02	0,03	0,04	0,03	0,09	0,05	0,02
		$\bar{\delta}_{N\infty}$	[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	
Embedment depth in concrete		h_{nom}	[mm]	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}	h_{nom1}	h_{nom2}
				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	$\bar{\delta}_{N0}$	[mm]	0,14	0,13	0,09	0,11	0,18	0,13	0,18	0,18
		$\bar{\delta}_{N\infty}$	[mm]	0,20	0,19	0,13	0,16	0,27	0,20	0,27	0,27

Vedlegg C4