



# DECLARATION OF PERFORMANCE

HECO-DoP\_ETA\_15/0785\_MMS-plus\_1906\_GB

1. Unique identification code of the product-type:

**MULTI-MONTI-plus (MMS-plus)**

2. Type, batch or serial number or any other element allowing identification of the construction product as required pursuant to Article 11(4):

**Identification acc. ETA-15/0785 annex A3, A4**

**Batch number: see packaging of product**

3. Intended use or uses of the construction product, in accordance with the applicable harmonised technical specification, as foreseen by the manufacturer:

**ETA-15/0785 annex B1**

<b>Anchor type</b>	Screw anchor
<b>For use in</b>	<u>Concrete C20/25 - C50/60 (EN 206)</u> - uncracked: Ø6, Ø7.5 and Ø10 - cracked: Ø6, Ø7.5 and Ø10 <u>Prestressed hollow core slabs C30/37 to C50/60</u> - Ø 6, 7.5 and 10
<b>Option/Category</b>	<u>For multiple use for non-structural applications in cracked and non cracked concrete and prestressed hollow core slabs</u>
<b>Stress</b>	static, quasi-static loads (all Ø), fire exposure (all Ø)
<b>Material/Versions</b>	<u>Galvanized steel:</u> - Structures subject to dry internal conditions - different head versions

4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant to Article 11(5):

**HECO-Schrauben GmbH & Co. KG**

**Dr.-Kurt-Steim-Str. 28**

**78713 Schramberg (Germany)**

5. Where applicable, name and contact address of the authorised representative whose mandate covers the tasks specified in Article 12(2):

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6. System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V:

**System 2+**



7. In case of the declaration of performance concerning a construction product covered by a harmonised standard:

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8. In case of the declaration of performance concerning a construction product for which a European Technical Assessment has been issued:

- Technical Assessment Body: Deutsches Institut für Bautechnik (DIBt)
- Notified Body: Materialprüfungsanstalt Universität Stuttgart, ID number 0672
- European Assessment Document: EAD 330747-00-0601
- Certificate of Conformity:

9. Declared performance

Essential characteristics	Performance
Installation parameters	see annex: especially annex B2 and B3
Characteristic values for static and quasi-static load	see annex: especially annex C1 and C2
Fire resistance	see annex: especially annex C2

10. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 9. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.

Signed for and on behalf of the manufacturer by:

Schramberg, 28.08.2019

A handwritten signature in blue ink, appearing to read 'A. Heck'.

i.V.  
Andreas Heck  
Head of PM/Fastening technology

A handwritten signature in black ink, appearing to read 'A. Hettich'.

ppa.  
Andreas Hettich  
Head of Business Development



## Specifications of intended user

### Anchorage subject to:

- Static and quasi static loads: All sizes.
- Used in concrete for redundant non-structural systems only.
- Fire exposure: All sizes (not in prestressed hollow core slabs).

### Base materials:

- Compacted reinforced or unreinforced normal weight concrete without fibres according to EN 206-1:2013.
- Strength classes C20/25 to C50/60 according to EN 206-1:2013.
- Cracked and uncracked concrete.
- Precast and prestressed hollow core slabs made of C30/37 to C50/60.

### Conditions of use (Environmental conditions):

- Structures subject to dry internal conditions.

### Design:

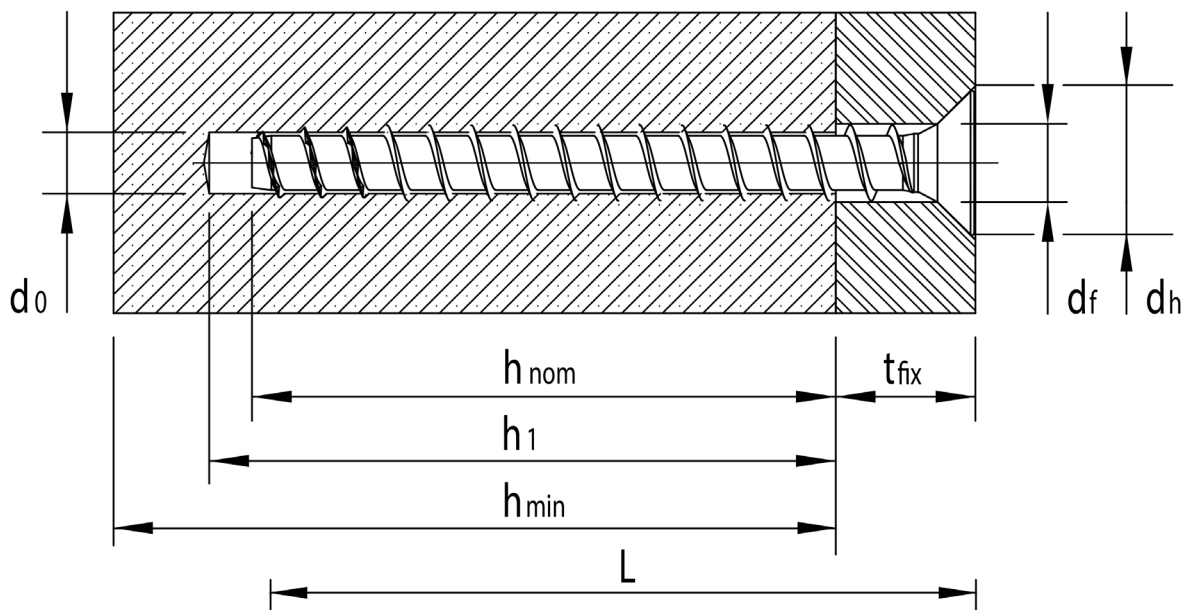
- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking the loads to be anchored into account. The position of the anchor is indicated on the design drawings (e. g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages are designed in accordance with EN 1992-4:2018 and EOTA Technical Report TR055.
- The design under shear load according to EN 1992-4:2018, section 6.2.2 applies to all anchors in Annex B2, Table B1 specified diameter  $d_f$  of clearance hole in the fixture.

### Installation:

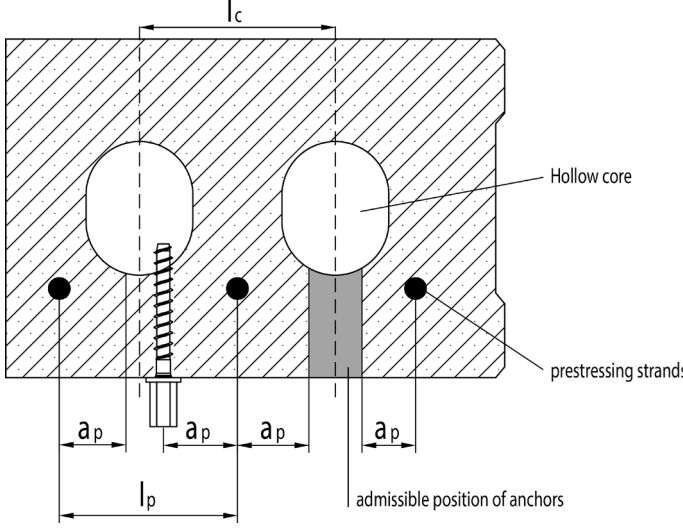
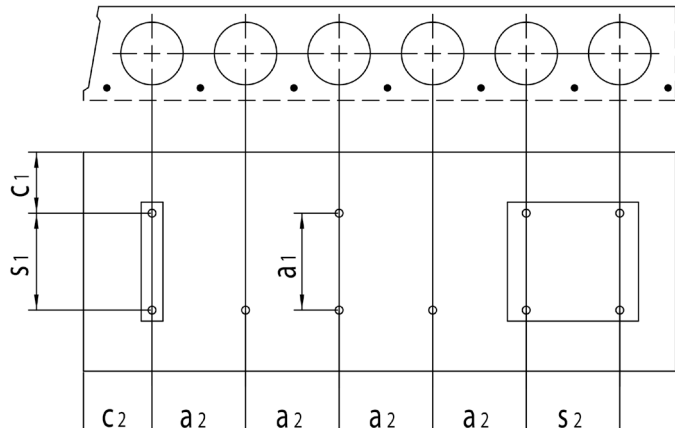
- Hole drilling by hammer-drilling only.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- After installation further turning of the anchor must not be possible.
- The head of the anchor is attached to the fixture and is not damaged, respectively the required embedment depth is reached.
- In prestressed hollow core slabs the screw anchor may be installed from both sides of the slabs (top and bottom side), but only in uncracked concrete. The thickness of slab webs and installation parameters according to Table B2 has to be observed (also in the area of solid material).

**Table B1: Installation parameters MMS-plus**

Size MMS-plus			6			7,5			10
Embedment depth in concrete [mm]			$h_{nom}$			$h_{nom}$			$h_{nom}$
			25	35	45	25	35	55	50
Nominal drill diameter	$d_0$	[mm]	5			6			8
Cutting edge-Ø	$d_{cut} \leq$	[mm]	5,40			6,40			8,45
Borehole depth	$h_1 \geq$	[mm]	30	40	50	30	40	60	60
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	7			9			12,5
Diameter of countersunk head	$d_h$	[mm]	11,5			15,5			19,5
Min. thickness of the concrete member	$h_{min}$	[mm]	80						
cracked and uncracked concrete	min. spacing	$s_{min}$	30			30	35	35	
	min. edge distance	$c_{min}$	30			30	30	35	
Recommended installation tool		[Nm]	Impact screw driver, max. power output $T_{max}$ according to manufacturer information						
			60	75	100	60	120	250	
Torque moment for threaded version (MMS-plus V)	$T_{inst}$	[Nm]	-			15			20



**Table B2: Installation parameters MMS-plus  
 in prestressed hollow core slabs**

 <p>Hollow core</p> <p>prestressing strands</p> <p>admissible position of anchors</p>	<table> <tr> <td>core distance</td> <td><math>l_c \geq 100 \text{ mm}</math></td> </tr> <tr> <td>spacing of prestressing strands</td> <td><math>l_p \geq 100 \text{ mm}</math></td> </tr> <tr> <td>spacing between anchor position and prestressing strands</td> <td><math>a_p \geq 50 \text{ mm}</math></td> </tr> </table>	core distance	$l_c \geq 100 \text{ mm}$	spacing of prestressing strands	$l_p \geq 100 \text{ mm}$	spacing between anchor position and prestressing strands	$a_p \geq 50 \text{ mm}$
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<p><b>Minimum spacing and edge distance</b></p>							
	<table> <tr> <td>min. edge distance</td> <td><math>c_1, c_2 \geq 100 \text{ mm}</math></td> </tr> <tr> <td>min. spacing</td> <td><math>s_1, s_2 \geq 200 \text{ mm}</math></td> </tr> <tr> <td>min. spacing between anchor groups</td> <td><math>a_1, a_2 \geq 200 \text{ mm}</math></td> </tr> </table>	min. edge distance	$c_1, c_2 \geq 100 \text{ mm}$	min. spacing	$s_1, s_2 \geq 200 \text{ mm}$	min. spacing between anchor groups	$a_1, a_2 \geq 200 \text{ mm}$
min. edge distance	$c_1, c_2 \geq 100 \text{ mm}$						
min. spacing	$s_1, s_2 \geq 200 \text{ mm}$						
min. spacing between anchor groups	$a_1, a_2 \geq 200 \text{ mm}$						



**Table C1 : Characteristic values for static and quasi-static loading of MMS-plus**

Size MMS-plus			6			7,5			10
			h <sub>nom</sub>			h <sub>nom</sub>			h <sub>nom</sub>
Embedment depth in concrete [mm]			25	35	45	25	35	55	50
<b>Steel failure for tension- and shear load</b>									
Characteristic resistance	N <sub>Rk,s</sub>	[kN]	10,8			17,6			32,1
Partial safety factor	γ <sub>Ms</sub>	-	1,50						
Characteristic resistance	V <sub>Rk,s</sub>	[kN]	4,1			8,8			13,7
Partial safety factor	γ <sub>Ms</sub>	-	1,25						
	k <sub>7</sub>	-	0,8						
Characteristic resistance	M <sup>0</sup> <sub>Rk,s</sub>	[Nm]	6,7			14,1			34,5
<b>Pull-out</b>									
Characteristic resistance in uncracked concrete C20/25	N <sub>Rk,p</sub>	[kN]	2,0	5,5	8,0	2,0	5,0	5,0	5,0
Characteristic resistance in cracked concrete C20/25	N <sub>Rk,p</sub>	[kN]	1,0	1,0	1,5	1,0	2,5	5,0	5,0
Increasing factor for concrete	C25/30	ψ <sub>c</sub>	-	1,12					
	C30/37			1,22					
	C40/50			1,41					
	C50/60			1,55					
<b>Concrete cone failure and splitting failure</b>									
Effective anchorage depth		[mm]	16	26	35	16	26	43	36
Factor for	cracked	k <sub>cr,N</sub>	7,7						
	uncracked	k <sub>urc,N</sub>	11,0						
Concrete cone	edge distance	c <sub>cr,N</sub>	1.5 h <sub>ef</sub>						
	spacing	s <sub>cr,N</sub>	3 h <sub>ef</sub>						
Splitting	edge distance	c <sub>cr,sp</sub>	2.0 h <sub>ef</sub>						
	spacing	s <sub>cr,sp</sub>	4.0 h <sub>ef</sub>						
Installation safety factor		-	1,4	1,0		1,4	1,0		
<b>Concrete pryout failure</b>									
k-Faktor	k <sub>8</sub>	-	1,00						
<b>Concrete edge failure</b>									
Effective length of the anchor	l <sub>f</sub> = h <sub>ef</sub>	[mm]	16	26	35	16	26	43	36
Effective diameter of the anchor	d <sub>nom</sub>	[mm]	5			6			8



**Table C2.1: Characteristic values for static and quasi-static loading of MMS-plus in prestressed hollow core slabs C30/37 to C50/60**

Size MMS-plus			6			7,5			10	
			$d_b$			$d_b$			$d_b$	
Bottom flange thickness	[mm]		30	40	50	30	40	50	40	50
<b>All load directions</b>										
Characteristic resistance in concrete $\geq$ C30/37	$F_{Rk}^0$ [kN]		1,0	5,5	6,5	1,2	4,5	8,0	6,5	11,0
Characteristic resistance in concrete $\geq$ C45/55	$F_{Rk}^0$ [kN]		4,5	6,0	6,0	4,0	8,0	8,0	11,5	12,0
Partial safety factor	$\gamma_M$	-	1,5							
Installation factor	$\gamma_{inst}$	-	1,0							
Edge distance	$c_{cr}=c_{min}$ [mm]		100			100	120		120	
Spacing	$s_{cr}=s_{min}$ [mm]		200							

**Table C3: Characteristic values under fire exposure**

Size MMS-plus				6		7,5		10	
				$h_{nom}$		$h_{nom}$		$h_{nom}$	
Embedment depth in concrete	[mm]		35	45	35	55	50		
<b>Characteristic resistance for tension and shear</b>									
Characteristic resistance	R30	$F_{Rk,fi}$ [kN]	0,3	0,4	0,5	1,1	1,3		
	R60	$F_{Rk,fi}$ [kN]	0,3	0,4	0,5	0,8	1,3		
	R90	$F_{Rk,fi}$ [kN]	0,3	0,4	0,5	0,5	1,0		
	R120	$F_{Rk,fi}$ [kN]	0,2	0,3	0,4	0,4	0,8		
	R30	$M_{Rk,s,fi}^0$ [Nm]	0,5		1,1		2,7		
	R60	$M_{Rk,s,fi}^0$ [Nm]	0,3		0,6		1,5		
	R90	$M_{Rk,s,fi}^0$ [Nm]	0,2		0,4		1,1		
	R120	$M_{Rk,s,fi}^0$ [Nm]	0,2		0,3		0,9		
<b>Edge distance</b>									
R30 bis R120	$c_{cr,fi}$ [mm]		2 $h_{ef}$						
<b>Spacing</b>									
R30 bis R120	$s_{cr,fi}$ [mm]		2 $c_{cr,fi}$						