

DECLARATION OF PERFORMANCE

HECO-DoP_ETA_05/0011_MMSInox_1809_GB

1. Unique identification code of the product-type:

MULTI-MONTI (MMS A4)

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-05/0011 annex A2

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-05/0011 annex B1

Anchor type	Screw anchor
For use in	<u>Concrete C20/25 - C50/60 (EN 206)</u> - uncracked: Ø7.5, Ø10 and Ø12 - cracked: Ø7.5, Ø10 and Ø12
Option/Category	<u>Option 1</u>
Stress	static and quasi-static loads (all Ø), fire exposure (all Ø)
Material/Versions	<u>stainless steel:</u> Structures subject to dry internal conditions and external atmospheric exposure where no particular aggressive condition exists. (all screw types) <u>high corrosion resistance steel:</u> Structures subject to dry internal conditions and external atmospheric exposure where particular aggressive condition exists. (screw types with head-marking KK)

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):

-

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

System 1



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

-

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 330232-00-0601
- Certificate of Conformity: 0672-CPR-0084

9. Declared performance

Essential characteristics	Performance
Installation parameters	see annex: especially annex B2
Characteristic values for static and quasi-static load and displacement for serviceability limit state	see annex: especially annex C1 and C2
Fire resistance	see annex: especially annex C3

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, 25.10.2018

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'.

i.V.

Andreas Hettich

Head of Business Development



Specifications of intended use

Anchorage subject to:

- Static and quasi-static loads: all sizes.
- Fire exposure: all sizes.

Base Materials:

- Reinforced or unreinforced normal weight concrete according to EN 206-1:2000.
- Strength classes C20/25 to C50/60 according to EN 206-1:2000.
- Cracked and uncracked concrete: all sizes.

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions: all screw-types
- Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal conditions where no particular aggressive conditions exist: all screw-types
- Structures subject to external atmospheric exposure or exposure in permanently damp internal conditions or particularly aggressive conditions such as permanent or alternate immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulfurization plants or road tunnels where de-icing materials are used): screw-types with head-marking KK

Design:

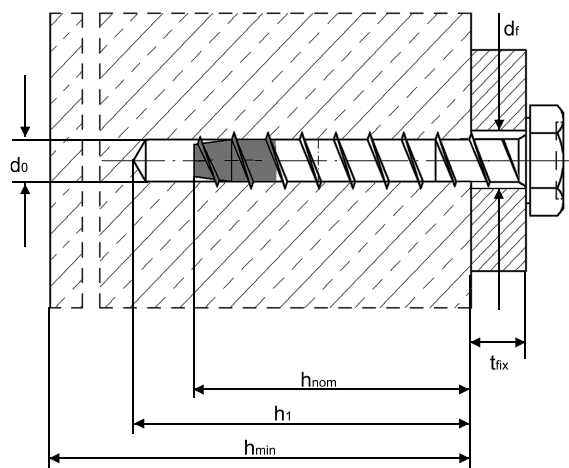
- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e. g. position of the anchor relative to reinforcement or to supports, etc.).
- The design of the anchoring under static or quasi-static actions and fire exposure have to be carried out in accordance with FprEN 1992-4:2017 and EOTA Technical Report TR055
- The design under shear load according to FprEN 1992-4:2017, section 6.2.2 applies to all in appendix B2, table B1 specified diameter d_f the diameter of clearance hole in the fixture

Installation:

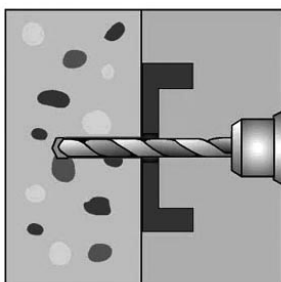
- Hole drilling by hammer-drilling only.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- The head of the anchor is attached to the fixture and is not damaged; respectively the required embedment depth h_{nom} is reached.
- MMS-St:
The required setting depth has to be achieved and the anchor has to be secured against further turning.

Table B1: Installation Parameters

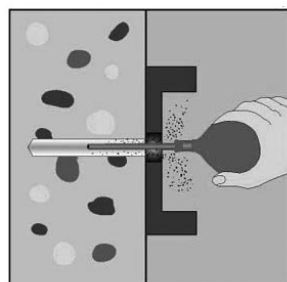
Anchor sizes		MMS-7,5 A4	MMS-10 A4	MMS-12 A4
Nominal drill diameter	d_0 [mm]	6,0	8,0	10,0
Cutting diameter of the drill bit	$d_{cut} \leq$ [mm]	6,4	8,45	10,45
Depth of drill hole	$h_1 \geq$ [mm]	75	90	100
Embedment depth	$h_{nom} \geq$ [mm]	65	75	90
Diameter of clearance hole in the fixture	$d_f \leq$ [mm]	9,0	12,0	14,0
Recommended installation tool		Impact screw driver, max. power output Tmax according to manufacturer information		
		100 Nm	250 Nm	250 Nm



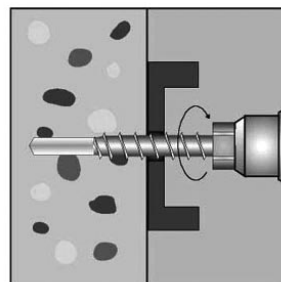
Installation Instruction



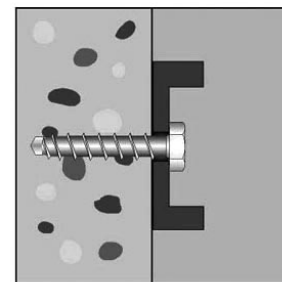
Drilling
 Drill diameter d_0 and drilling depth h_1 have to be met



Removal of drill dust
 e.g. blowing



Installation
 e.g. by hand or with impact screw driver



Complete
 verification: head supported to fixture and embedment depth h_{nom}

Table B2: Minimum thickness of concrete member, minimum spacing and minimum edge distances of anchor

Anchor sizes		MMS-7,5 A4	MMS-10 A4	MMS-12 A4
min. thickness of concrete member	h_{min} [mm]	105	130	140
cracked and uncracked concrete				
min. spacing	s_{min} [mm]	40	50	60
min. edge distance	c_{min} [mm]	40	50	60



Table C1 Characteristic values for static and quasi-static tension

Anchor sizes			MMS-7,5 A4	MMS-10 A4	MMS-12 A4
Steel failure					
Characteristic resistance	$N_{Rk,s}$	[kN]	23	16	25
Partial safety factor	γ_{Ms}	[-]	1,4		
Pullout					
Characteristic resistance in cracked concrete C20/25	$N_{Rk,p}$	[kN]	5	9	12
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p}$	[kN]	7,5	12	16
Increasing factor for $N_{Rk,p}$ in cracked and uncracked concrete	ψ_c	C30/37	1,22		
		C40/50	1,41		
		C50/60	1,58		
Installation safety factor	γ_{inst}	[-]	1,4	1,2	
Concrete cone failure, splitting failure					
Effective anchorage depth	h_{ef}	[mm]	40	47,5	54,5
Factor for	cracked concrete	$k_{cr,N}$	7,7		
	uncracked concrete	$k_{urc,N}$	11,0		
Spacing	$s_{cr,N} = s_{cr}$	[mm]	3 x h_{ef}		
Edge distance	$c_{cr,N} = c_{cr}$	[mm]	1,5 x h_{ef}		
Installation safety factor	γ_{inst}	[-]	1,4	1,2	

Table C2: Displacements under tension loads

Anchor sizes			MMS-7,5 A4	MMS-10 A4	MMS-12 A4
Tension load in cracked concrete	N	[kN]	1,7	3,0	4,0
Displacements	δ_{N0}	[mm]	0,1	0,1	0,2
	$\delta_{N\infty}$	[mm]	0,2	0,2	0,6
Tension load in uncracked concrete	N	[kN]	2,6	4,0	5,3
Displacements	δ_{N0}	[mm]	0,1	0,1	0,2
	$\delta_{N\infty}$	[mm]	0,2	0,2	0,6



Table C3 Characteristic values for static and quasi-static shear

Anchor sizes			MMS-7,5 A4	MMS-10 A4	MMS-12 A4
Steel failure without lever arm					
Characteristic resistance	$V_{Rk,s}$	[kN]	12,3	20	33
Factor	k_7		0,8		
Partial safety factor	γ_{Ms}	[-]	1,5		
Steel failure with lever arm					
Characteristic resistance	$M^0_{Rk,s}$	[Nm]	22	45	93
Partial safety factor	γ_{Ms}	[-]	1,5		
Concrete pryout failure					
k-factor	k_8	[-]	1,0	2,0	
Installation safety factor	γ_{inst}	[-]	1,0		
Concrete edge failure					
Effective length of the anchor	l_f	[mm]	40	47,5	54,5
Effective diameter of the anchor	d_{nom}	[mm]	6	8	10
Installation safety factor	γ_{inst}	[-]	1,0		

Table C4 Displacements under shear loads

Anchor sizes			MMS-7,5 A4	MMS-10 A4	MMS-12 A4
Shear load in cracked and uncracked concrete	V	[kN]	5,9	9,7	15,7
Displacements	δ_{V0}	[mm]	1,7	3,0	3,2
	$\delta_{V\infty}$	[mm]	2,6	4,5	4,8



Table C5 Characteristic values for tension under fire exposure

Anchor sizes			MMS-7,5 A4				MMS-10 A4				MMS-12 A4			
Fire resistance duration	R	[min]	30	60	90	120	30	60	90	120	30	60	90	120
Steel failure														
Characteristic resistance	$N_{Rk,s,fi}$	[kN]	1,7	1,2	0,8	0,6	3,4	2,5	1,7	1,2	5,9	4,4	3,0	2,2
Characteristic resistance for MMS-St with metric stud	$N_{Rk,s,fi}$	[kN]	1,7	1,2	0,8	0,6	1,8	1,5	1,1	1,0	-	-	-	-
Pullout														
Characteristic resistance in concrete C20/25 to C50/60	$N_{Rk,p,fi}$	[kN]	1,3		1,0		2,3		1,8		3,0		2,4	
Concrete cone failure														
Characteristic resistance in concrete C20/25 to C50/60	$N_{Rk,c,fi}$	[kN]	1,8		1,5		2,8		2,2		3,9		3,2	
Spacing	$s_{cr,fi}$	[mm]	4 x h_{ef}											
Edge distance	$c_{cr,fi}$	[mm]	2 x h_{ef}											

Table C6 Characteristic values for shear under fire exposure

Anchor sizes			MMS-7,5 A4				MMS-10 A4				MMS-12 A4			
Fire resistance duration	R	[min]	30	60	90	120	30	60	90	120	30	60	90	120
Steel failure without lever arm														
Characteristic resistance	$V_{Rk,s,fi}$	[kN]	1,7	1,2	0,8	0,6	3,4	2,5	1,7	1,2	5,9	4,4	3,0	2,2
Steel failure with lever arm														
Characteristic resistance	$M^0_{Rk,s,fi}$	[Nm]	1,5	1,1	0,7	0,5	4,0	3,0	2,0	1,5	8,8	6,6	4,4	3,3