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Designated according to Article 29 of Regulation (EU) No 305/2011

Member of EOTA
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European Technical Assessment ETA 05/0242
12/11/2025

English translation prepared by IETcc. Original version in Spanish language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc)
Trade name of the construction product	**Anchors MTH, MTH-AT, MTH-A2, MTH-A4**
Product family to which the construction product belongs	Torque controlled expansion anchor made of galvanised steel or stainless steel of sizes M6, M8, M10, M12, M14, M16 and M20 for use in uncracked concrete.
Manufacturer	**Index - Técnicas Expansivas S.L.** Segador 13 26006 Logroño (La Rioja) Spain. website: www.indexfix.com
Manufacturing plant	Index plant 2
This European Technical Assessment contains	15 pages including 3 annexes which form an integral part of this assessment.
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	European Assessment Document EAD 330232-01-0601 “Mechanical Fasteners for use in concrete”, ed. December 2019
This ETA replaces	ETA 05/0242 version 9 dated 05/06/2023

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document.

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SPECIFIC PART

1. Technical description of the product

The Index MTH range wedge anchors are torque-controlled, mechanical expansion anchors consisting of an anchor body, expansion clip, nut, and washer. The anchor body has a tapered mandrel formed on the installed end of the anchor and a threaded section at the opposite end. The taper of the mandrel increases in diameter towards the installed end of the anchor. The three-segment expansion clip wraps around the tapered mandrel. Before installation, this expansion clip is free to rotate about the mandrel. The anchor is set by applying torque to the hex nut; the mandrel is drawn into the expansion clip, which engages the drilled hole and transfers the load to the base material. The anchorage is characterized by friction between expansion clip and concrete.

The Index MTH in the range of M6, M8, M10, M12, M14, M16 and M20 is an anchor made of galvanised steel. The Index MTH-AT in the range of M6, M8, M10, M12, M14, M16 and M20 is an anchor made of carbon steel, zinc-nickel coated. The Index MTH-A2 and MTH-A4 in the range of M6, M8, M10, M12, M16 and M20 are anchors made of stainless steel of grades A2 and A4 respectively. The anchor is installed into a predrilled cylindrical hole and anchored by torque-controlled expansion.

Product and product description is given in annexes A1 and A2.

2. Specification of the intended use in accordance with the applicable European Assessment Document.

2.1 Intended use

This ETA covers fasteners to be used in compacted, reinforced or unreinforced, normal weigh, uncracked concrete without fibers with strength classes in the range of C20/25 to C50/60 all in accordance with EN 206, for static or cuasi-static, loaded in tension, shear or combined tension and shear loads.

The performances given in section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in annex B1.

2.2 Relevant general conditions for the use of the product

The assessment methods included or referred to in this EAD have been written based on the manufacturer's request to take into account a working life of the fastener for the intended use of 50 years when installed in the works (provided that the fastener is subject to appropriate installation). These provisions are based upon the current state of the art and the available knowledge and experience.

When assessing the product, the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or its representative nor by EOTA when drafting the EAD nor by the Technical Assessment Body issuing an ETA based on this EAD, but are regarded only as a mean for expressing the expected economically reasonable working life of the product.

This ETA covers fasteners for installation in pre-drilled holes in compacted reinforced or unreinforced normal weight concrete without fibers considering annexes B and C.

3. Performance of the product and references to the methods used for its assessment

The identification tests and the assessment for the intended use of this product according to the Basic Work Requirements (BWR) were carried out in compliance with EAD 330232-01-0601. The characteristics of each system shall correspond to the respective values laid down in following tables of this ETA, checked by IETcc.

Methods of verification and of assessing and judging are listed afterwards.

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Relevant clause in EAD	Performance	Annex
Resistance to steel failure	2.2.1	$N_{Rk,s}$ [kN]	C2, C5
Resistance to pull-out failure	2.2.2	$N_{Rk,p}$ [kN] ψ_c [-]	C2, C5
Resistance to concrete cone failure	2.2.3	$k_{ucr,N}$ [-] h_{ef}, $c_{cr,N}$ [mm]	C2, C5
Robustness	2.2.4	γ_{inst} [-]	C2, C5
Minimum edge distance and spacing	2.2.5	c_{min}, s_{min}, h_{min} [mm]	C1, C4
Edge distance to prevent splitting under load	2.2.6	$N^0_{Rk,sp}$ [kN], $c_{cr,sp}$ [mm]	C2, C5
Resistance to steel failure under shear load	2.2.7	$V^0_{Rk,s}$ [kN], $M^0_{Rk,s}$ [Nm], k_7 [-]	C3, C6
Resistance to pry-out failure	2.2.8	k_8 [-]	C3, C6
Displacement under static and quasi-static loading	2.2.10	δ_{N0}, $\delta_{N\infty}$, δ_{V0}, $\delta_{V\infty}$ [mm]	C3, C6

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Relevant clause in EAD	Performance	Annex
Reaction to fire	2.2.16	Anchorages satisfy requirements for class A1 according to EN 13501-1	--

3.3 Durability

Essential characteristic	Relevant clause in EAD	Performance	Annex
Durability: MTH MTH-AT MTH-A2 MTH-A4	2.2.20	 Coated in zinc plated Coated in zinc nickel A2 stainless steel A4 stainless steel	A3

4. Assessment and Verification of Constancy of Performance (hereinafter AVCP) system applied, with reference to its legal base

The applicable European legal act for the system of Assessment and Verification of Constancy of Performance (see annex V to Regulation (EU) No 305/2011) is 96/582/EC.

The system to be applied is 1.

5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document.

Technical details necessary for the implementation of the AVCP system are laid down in the quality plan which is deposited at IETcc[(1)].

Prepared by: Julián Rivera Lozano (Innovative Products Assessment Unit, IETCC-CSIC)

Issued in Madrid on 12th of November 2025

Director
on behalf of Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc – CSIC)

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[(1)] The Quality Plan is a confidential part of the ETA and only handled over to the notified certification body involved in the assessment and verification of constancy of performances.

Product and identification

MTH, MTH-AT, MTH-A2, MTH-A4 anchor

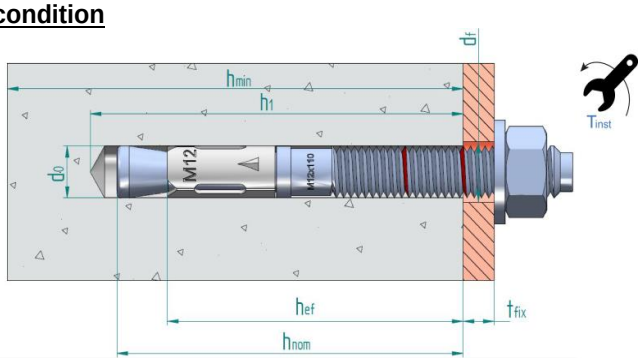
Identification on anchor:

- Expansion clip:
  - Anchor MTH: Company logo + “MTH” + Metric size.
  - Anchor MTH-AT: Company logo + “MTH-AT” + Metric size.
  - Anchor MTH-A2: Company logo + “MTH-A2” + Metric size.
  - Anchor MTH-A4: Company logo + “MTH-A4” + Metric size.
- Anchor body: Metric x Length
- Red ring marks to show embedment depths
- Anchor length letter code on the tip:

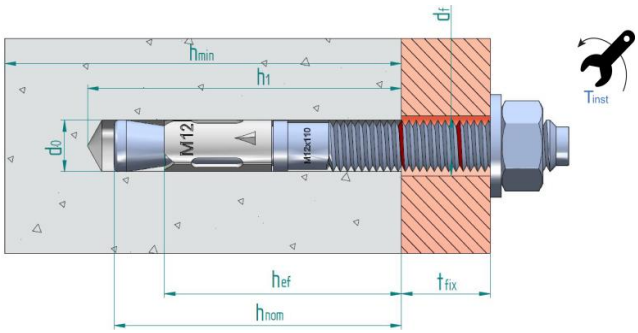
Letter code	Length [mm]
B	51 ÷ 62
C	63 ÷75
D	76 ÷ 88
E	89 ÷ 101
F	102 ÷ 113
G	114 ÷ 126
H	127 ÷139
I	140 ÷ 151
J	152 ÷ 164
K	165 ÷ 177
L	178 ÷ 190
M	191 ÷ 202
N	203 ÷ 215
O	216 ÷ 228
P	229 ÷ 240
Q	241 ÷ 253
R	254 ÷ 266
S	267 ÷ 304
T	305 ÷ 329
U	330 ÷ 366

MTH, MTH-AT, MTH-A2, MTH-A4 anchor	**Annex A1**
Product description Identification	

Installed condition



Standard embedment depth (all sizes)



Reduced embedment depth (sizes M8, M10, M12, M16 and M20)

d_0: Nominal diameter of drill bit
d_f: Fixture clearance hole diameter
h_{ef}: Effective anchorage depth
h_1: Depth of drilled hole
h_{nom}: Overall anchor embedment depth in the concrete
h_{min}: Minimum thickness of concrete member
t_{fix}: Fixture thickness
T_{ins}: Installation torque

MTH, MTH-AT, MTH-A2, MTH-A4 anchor	**Annex A2**
Product description Installed condition	

Table A1: Materials

Item	Designation	Material for MTH	Material for MTH-AT
1	Anchor Body	Carbon steel galvanised ≥ 5 µm ISO 4042 Zn5, cold forged	Carbon steel zinc nickel ≥ 8 µm, sealed, ISO 4042 ZnNi8, cold forged
2	Washer	DIN 125, DIN 9021 or DIN 440 galvanised ≥ 5 µm ISO 4042 Zn5	DIN 125, DIN 9021 or DIN 440 zinc nickel ≥ 8 µm, sealed, ISO 4042 ZnNi8
3	Nut	DIN 934 class 6 galvanised ≥ 5 µm ISO 4042 Zn5, class 6	DIN 934 class 6 zinc nickel ≥ 8 µm, sealed, ISO 4042 ZnNi8, class 6
4	Expansion clip	Carbon steel galvanised ≥ 5 µm ISO 4042 Zn5	Carbon steel zinc nickel ≥ 8 µm, sealed, ISO 4042 ZnNi8

Item	Designation	Material for MTH-A2	Material for MTH-A4
1	Anchor Body	Stainless steel, grade A2	Stainless steel, grade A4
2	Washer	DIN 125, DIN 9021 or DIN 440, stainless steel grade A2	DIN 125, DIN 9021 or DIN 440, stainless steel grade A4
3	Nut	DIN 934, stainless steel grade A2	DIN 934, stainless steel grade A4
4	Expansion clip	Stainless steel, grade A2	Stainless steel, grade A4

MTH, MTH-AT, MTH-A2, MTH-A4 anchor	**Annex A3**
Product description Materials	

Intended use

Anchorages subjected to:

- Static or quasi static loads: all sizes and embedment depths

Base materials:

- Reinforced or unreinforced normal weight concrete without fibres according to EN 206:2013+A2:2021.
- Concrete strength classes C20/25 to C50/60 according to EN 206:2013+A2:2021.
- Uncracked concrete

Use conditions (environmental conditions):

- Temperature range of the anchorage base material during the working life: -40 ºC to +80 ºC.
- MTH, MTH-AT: anchors shall be used in dry internal conditions
- MTH-A2: anchors subjected to dry internal conditions and to external atmospheric exposure under Corrosion Resistance Class CRC II according to EN 1993-1-4:2006+A1:2015 annex A.
- MTH-A4: anchors subjected to dry internal conditions and to external atmospheric exposure (including industrial and marine environment) and to permanent internal conditions with no particular aggressive conditions exists. Such particular aggressive conditions are e.g., permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used). Atmospheres under Corrosion Resistance Class CRC III according to EN 1993-1-4:2006+A1:2015 annex A.

Design:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete.
- Verifiable calculation rules and drawings are prepared taking into account of the loads to be attached. 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 loads are designed for design Method A in accordance with EN 1992-4:2018
- Size M8 in reduced embedment depth is restricted to anchoring of structural components which are statically indeterminate.

Installation:

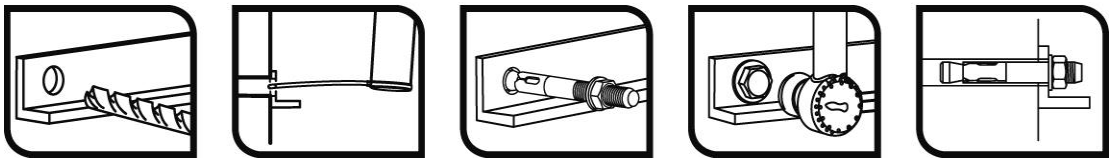
- Hammer drilling only.
- Anchor installation carried out by appropriately qualified personal and under the supervision of the person responsible for technical matters of the site.
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of aborted hole or smaller distance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

MTH, MTH-AT, MTH-A2, MTH-A4 anchor	**Annex B1**
Intended use Specifications	

Table C1: Installation parameters for MTH, MTH-AT anchor

MTH, MTH-AT: GALVANISED ANCHOR			Performances						
			M6	M8	M10	M12	M14	M16	M20
d_0	Nominal diameter of drill bit:	[mm]	6	8	10	12	14	16	20
d_f	Fixture clearance hole diameter ≤	[mm]	7	9	12	14	16	18	22
T_{inst}	Nominal installation torque:	[Nm]	7	20	35	60	90	120	240
Standard embedment depth									
L_{min}	Minimum length of the bolt:	[mm]	60	75	85	100	115	125	160
h_{min}	Minimum thickness of concrete member:	[mm]	100	100	110	130	150	168	206
h_1	Depth of drilled hole ≥	[mm]	55	65	75	85	100	110	135
h_{nom}	Overall anchor embed depth in concrete:	[mm]	49.5	59.5	66.5	77	91	103.5	125
$h_{ef,std}$	Effective anchorage depth:	[mm]	40	48	55	65	75	84	103
t_{fix}	Thickness of fixture for DIN 125 washer ≤	[mm]	L-58	L-70	L-80	L-92	L-108	L-122	L-147
t_{fix}	Thickness of fixture for DIN 9021 or DIN 440 washer ≤	[mm]	L-58	L-71	L-80	L-94	L-108	L-124	L-149
s_{min}	Minimum spacing:	[mm]	35	40	50	70	80	90	135
c_{min}	Minimum edge distance:	[mm]	35	40	50	70	80	90	135
Reduced embedment depth									
L_{min}	Minimum length of the bolt:	[mm]	--	60	70	80	--	110	130
h_{min}	Minimum thickness of concrete member:	[mm]	--	100	100	100	--	130	150
h_1	Depth of drilled hole:	[mm]	--	50	60	70	--	90	107
h_{nom}	Overall anchor embed depth in concrete:	[mm]	--	46.5	53.5	62	--	84.5	97
$h_{ef,red}$	Effective anchorage depth:	[mm]	--	35	42	50	--	65	75
t_{fix}	Thickness of fixture for DIN 125 washer ≤	[mm]	--	L-57	L-67	L-77	--	L-103	L-121
t_{fix}	Thickness of fixture for DIN 9021 or DIN 440 washer ≤	[mm]	--	L-58	L-67	L-79	--	L-105	L-123
s_{min}	Minimum spacing:	[mm]	--	40	50	70	--	90	135
c_{min}	Minimum edge distance:	[mm]	--	40	50	70	--	90	135

Installation process



MTH, MTH-AT anchor	Annex C1
Performances Installation parameters and installation procedure	

Table C2: Characteristic resistance values to tension loads of design method A according to EN 1992-4 for MTH, MTH-AT anchor

MTH, MTH-AT: GALVANISED ANCHOR			Performances						
			M6	M8	M10	M12	M14	M16	M20
Resistance to steel failure									
$N_{Rk,s}$	Characteristic resistance:	[kN]	9.3	18.0	33.0	48.0	70.0	84.0	140.0
$\gamma_{M,s}$	Partial safety factor: 1)	[-]	1.40	1.40	1.40	1.40	1.40	1.40	1.40
Resistance to pull-out failure									
Standard embedment depth									
$N_{Rk,p}$	Characteristic resistance in C20/25 uncracked concrete:	[kN]	≥ $N^0_{Rk,c}$ 2)		19.0	≥ $N^0_{Rk,c}$ 2)			
γ_{inst}	Robustness:	[-]	1.0						
Ψ_c	Increasing factors for $N^0_{Rk,p}$:	C30/37	1.22						
		C40/50	1.41						
		C50/60	1.58						
Reduced embedment depth									
$N_{Rk,p}$	Characteristic resistance in C20/25 uncracked concrete:	[kN]	--	10	≥ $N^0_{Rk,c}$ 2)		--	≥ $N^0_{Rk,c}$ 2)	
γ_{inst}	Robustness:	[-]	--	1.0			--	1.0	
Ψ_c	Increasing factors for $N^0_{Rk,p}$:	C30/37	--	1.22			--	1.22	
		C40/50	--	1.41			--	1.41	
		C50/60	--	1.58			--	1.58	
Resistance to concrete cone and splitting failure									
Standard embedment depth									
$h_{ef,std}$	Effective embedment depth:	[mm]	40	48	55	65	75	84	103
$k_{ucr,N}$	Factor for uncracked concrete:	[-]	11.0						
γ_{inst}	Robustness:	[-]	1.0						
$s_{cr,N}$	Spacing, edge distance for	[mm]	3 x h_{ef}						
$c_{cr,N}$	concrete cone failure:	[mm]	1.5 x h_{ef}						
$N^0_{Rk,sp}$	Characteristic splitting resistance:	[kN]	min ($N_{Rk,p}$; $N^0_{Rk,c}$)						
$s_{cr,sp}$	Spacing, edge distance for	[mm]	160	192	220	260	300	280	360
$c_{cr,sp}$	splitting failure:	[mm]	80	96	110	130	150	140	180
Reduced embedment depth									
$h_{ef,red}$	Effective embedment depth:	[mm]	--	35	42	50	--	65	75
$k_{ucr,N}$	Factor for uncracked concrete:	[-]	--	11.0			--	11.0	
γ_{inst}	Robustness:	[-]	--	1.0			--	1.0	
$s_{cr,N}$	Spacing, edge distance for	[mm]	--	3 x h_{ef}			--	3 x h_{ef}	
$c_{cr,N}$	concrete cone failure:	[mm]	--	1.5 x h_{ef}			--	1.5 x h_{ef}	
$N^0_{Rk,sp}$	Characteristic splitting resistance:	[kN]	--	min ($N_{Rk,p}$; $N^0_{Rk,c}$)			--	min ($N_{Rk,p}$;$N^0_{Rk,c}$)	
$s_{cr,sp}$	Spacing, edge distance for	[mm]	--	140	168	200	--	260	300
$c_{cr,sp}$	splitting failure:	[mm]	--	70	84	100	--	130	150

1) In absence of other national regulations
2) Pull out failure is not decisive. $N^0_{Rk,c}$ calculated according to EN 1992-4

MTH, MTH-AT anchor	**Annex C2**
Performances Characteristic values for tension loads	

Table C3: Characteristic resistance values to shear loads of design method A according to EN 1992-4 for MTH, MTH-AT anchor

MTH, MTH-AT: GALVANISED ANCHOR				Performances						
				M6	M8	M10	M12	M14	M16	M20
Resistance to steel failure under shear loads										
$V^0_{Rk,s}$	Characteristic resistance:		[kN]	6.1	10.0	19.3	29.5	40.3	55.0	85.8
k_7	Ductility factor:		[-]	1.0						
$M^0_{Rk,s}$	Characteristic bending moment:		[Nm]	10.7	26.2	52.3	91.7	146.1	233.1	454.4
$\gamma_{M,s}$	Partial safety factor: [1)]		[-]	1.25						
Resistance to pry-out failure										
k_8	Pry-out factor:	for $h_{ef,std}$	[-]	1.0	1.0	1.0	2.0	2.0	2.0	2.0
		for $h_{ef,red}$	[-]	--	1.0	1.0	1.0	--	2.0	2.0
γ_{inst}	Robustness:		[-]	1.0						
Resistance to concrete edge failure										
l_f	Effective length of anchor under shear loads:	for $h_{ef,std}$	[mm]	40	48	55	65	75	84	103
		for $h_{ef,red}$	[mm]	--	35	42	50	--	65	75
d_{nom}	Outside diameter of anchor:		[mm]	6	8	10	12	14	16	20
γ_{inst}	Robustness:		[-]	1.0						

[1)] In absence of other national regulations

Table C4: Displacements under tension loads for MTH, MTH-AT

MTH, MTH-AT: GALVANISED ANCHOR			Performances						
			M6	M8	M10	M12	M14	M16	M20
Standard embedment depth									
Service tension load in uncracked concrete C20/25 to C50/60:		[kN]	4.7	7.8	9.0	12.3	15.2	18.0	24.5
δ_{N0}	Short term displacement:	[mm]	0.4	0.7	1.0	1.2	1.3	1.9	2.2
$\delta_{N\infty}$	Long term displacement:	[mm]	1.8	2.1	2.4	2.6	2.7	3.3	3.8
Reduced embedment depth									
Service tension load in uncracked concrete C20/25 to C50/60:		[kN]	--	4.8	6.4	8.3	--	12.3	15.2
δ_{N0}	Short term displacement:	[mm]	--	0.3	0.6	1.0	--	1.6	1.9
$\delta_{N\infty}$	Long term displacement:	[mm]	--	1.4	1.7	2.1	--	2.7	3.0

Table C5: Displacements under shear loads for MTH, MTH-AT

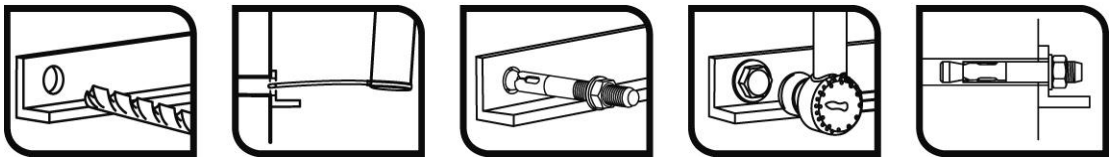
MTH, MTH-AT: GALVANISED ANCHOR			Performances						
			M6	M8	M10	M12	M14	M16	M20
Standard embedment depth									
Service shear load in uncracked concrete C20/25 to C50/60:		[kN]	3.5	5.7	9.6	16.9	23.0	31.4	49.0
δ_{V0}	Short term displacement:	[mm]	0.65	2.80	1.75	2.45	2.78	3.53	4.13
$\delta_{V\infty}$	Long term displacement:	[mm]	0.98	4.20	2.63	3.68	4.16	5.29	6.19
Reduced embedment depth									
Service shear load in uncracked concrete C20/25 to C50/60:		[kN]	--	4.8	6.4	8.3	--	24.5	30.4
δ_{V0}	Short term displacement:	[mm]	--	0.59	1.22	1.10	--	3.10	3.40
$\delta_{V\infty}$	Long term displacement:	[mm]	--	0.89	1.83	1.65	--	4.60	5.10

MTH, MTH-AT anchor	**Annex C3**
Performances Characteristic values for shear loads Displacements under tension and shear loads	

Table C6: Installation parameters for MTH-A2, MTH-A4 anchor

MTH-A2, MTH-A4: STAINLESS STEEL ANCHOR			Performances					
			M6	M8	M10	M12	M16	M20
d_0	Nominal diameter of drill bit:	[mm]	6	8	10	12	16	20
d_f	Fixture clearance hole diameter ≤	[mm]	7	9	12	14	18	22
T_{inst}	Nominal installation torque:	[Nm]	7	20	35	60	120	240
Standard embedment depth								
L_{min}	Minimum length of the bolt:	[mm]	60	75	85	100	125	160
h_{min}	Minimum thickness of concrete member:	[mm]	100	100	110	130	168	206
h_1	Depth of drilled hole ≥	[mm]	55	65	75	85	110	135
h_{nom}	Overall anchor embed depth in concrete:	[mm]	49.5	59.5	66.5	77	103.5	125
$h_{ef,std}$	Effective anchorage depth:	[mm]	40	48	55	65	84	103
t_{fix}	Thickness of fixture for DIN 125 washer ≤	[mm]	L-58	L-70	L-80	L-92	L-122	L-147
t_{fix}	Thickness of fixture for DIN 9021 or DIN 440 washer ≤	[mm]	L-58	L-71	L-80	L-94	L-124	L-149
s_{min}	Minimum spacing:	[mm]	50	65	70	85	110	135
c_{min}	Minimum edge distance:	[mm]	50	65	70	85	110	135
Reduced embedment depth								
L_{min}	Minimum length of the bolt:	[mm]	--	60	70	80	--	--
h_{min}	Minimum thickness of concrete member:	[mm]	--	100	100	100	--	--
h_1	Depth of drilled hole:	[mm]	--	50	60	70	--	--
h_{nom}	Overall anchor embed depth in concrete:	[mm]	--	46.5	53.5	62	--	--
$h_{ef,red}$	Effective anchorage depth:	[mm]	--	35	42	50	--	--
t_{fix}	Thickness of fixture for DIN 125 washer ≤	[mm]	--	L-57	L-67	L-77	--	--
t_{fix}	Thickness of fixture for DIN 9021 or DIN 440 washer ≤	[mm]	--	L-58	L-67	L-79	--	--
s_{min}	Minimum spacing:	[mm]	--	65	70	85	--	--
c_{min}	Minimum edge distance:	[mm]	--	65	70	85	--	--

Installation process



MTH-A2, MTH-A4 anchor	**Annex C4**
Performances Installation parameters and installation procedure	

Table C7: Characteristic resistance values to tension loads of design method A according to EN 1992-4 for MTH-A2, MTH-A4 anchor

MTH-A2, MTH-A4: STAINLESS STEEL ANCHOR			Performances					
			M6	M8	M10	M12	M16	M20
Resistance to steel failure								
$N_{Rk,s}$	Characteristic resistance:	[kN]	10.1	19.1	34.3	49.6	85.9	140.7
$\gamma_{M,s}$	Partial safety factor: [1]	[-]	1.68					
Resistance to pull-out failure								
Standard embedment depth								
$N_{Rk,p}$	Characteristic resistance in C20/25 uncracked concrete:	[kN]	$\geq N^0_{Rk,c}$ [2]	12	16	25	35	50
γ_{inst}	Robustness:	[-]	1.0		1.2			
Reduced embedment depth								
$N_{Rk,p}$	Characteristic resistance in C20/25 uncracked concrete:	[kN]	--	9	12	16	--	--
γ_{inst}	Robustness:	[-]	--	1.2			--	--
Ψ_c	Increasing factors for $N^0_{Rk,p}$:	C30/37	1.22					
		C40/50	1.41					
		C50/60	1.58					
Resistance to concrete cone and splitting failure								
Standard embedment depth								
$h_{ef,std}$	Effective embedment depth:	[mm]	40	48	55	65	84	103
$k_{ucr,N}$	Factor for uncracked concrete:	[-]	11.0					
γ_{inst}	Robustness:	[-]	1.0		1.2			
$s_{cr,N}$	Spacing, edge distance for concrete	[mm]	$3 \times h_{ef}$					
$c_{cr,N}$	cone failure:	[mm]	$1.5 \times h_{ef}$					
$N^0_{Rk,sp}$	Characteristic splitting resistance:	[kN]	min ($N_{Rk,p}$; $N^0_{Rk,c}$)					
$s_{cr,sp}$	Spacing, edge distance for splitting	[mm]	160	192	220	260	336	412
$c_{cr,sp}$	failure:	[mm]	80	96	110	130	168	206
Reduced embedment depth								
$h_{ef,red}$	Effective embedment depth:	[mm]	--	35	42	50	--	--
$k_{ucr,N}$	Factor for uncracked concrete:	[-]	11.0					
γ_{ins}	Robustness:	[-]	--	1.2			--	--
$s_{cr,N}$	Spacing, edge distance for concrete	[mm]	--	$3 \times h_{ef}$			--	--
$c_{cr,N}$	cone failure:	[mm]	--	$1.5 \times h_{ef}$			--	--
$N^0_{Rk,sp}$	Characteristic splitting resistance:	[kN]		min ($N_{Rk,p}$; $N^0_{Rk,c}$)			--	--
$s_{cr,sp}$	Spacing, edge distance for splitting	[mm]	--	140	168	200	--	--
$c_{cr,sp}$	failure:	[mm]	--	70	84	100	--	-

1) In absence of other national regulations

2) Pull out failure is not decisive. $N^0_{Rk,c}$ calculated according to EN 1992-4

MTH-A2, MTH-A4 anchor	**Annex C5**
Performances Characteristic values for tension loads	

Table C8: Characteristic resistance values to shear loads of design method A according to EN 1992-4 for MTH-A2, MTH-A4 anchor

MTH-A2, MTH-A4: STAINLESS STEEL ANCHOR				Performances					
				M6	M8	M10	M12	M16	M20
Resistance to steel failure under shear loads									
$V^0_{Rk,s}$	Characteristic resistance:		[kN]	6.0	10.9	17.4	25.2	47.1	73.5
k_7	Ductility factor:		[-]	1.0					
$M^0_{Rk,s}$	Characteristic bending moment:		[Nm]	9.2	22.5	44.9	78.6	200	389
$\gamma_{M,s}$	Partial safety factor: [1)]		[-]	1.52					
Resistance to pry-out failure									
k_8	Pry-out factor:	for $h_{ef,std}$	[-]	1.0	1.0	1.0	2.0	2.0	2.0
		for $h_{ef,red}$	[-]	--	1.0	1.0	1.0	--	--
γ_{inst}	Robustness:		[-]	1.0					
Resistance to concrete edge failure									
l_f	Effective length of anchor under shear loads:	for $h_{ef,std}$	[mm]	40	48	55	65	84	103
		for $h_{ef,red}$	[mm]	--	35	42	50	--	--
d_{nom}	Outside diameter of anchor:		[mm]	6	8	10	12	16	20
γ_{inst}	Robustness:		[-]	1.0					

[1)] In absence of other national regulations

Table C9: Displacements under tension loads for MTH-A2, MTH-A4

MTH-A2, MTH-A4: STAINLESS STEEL ANCHOR			Performances					
			M6	M8	M10	M12	M16	M20
Standard embedment depth								
Service shear load in uncracked concrete C20/25 to C50/60:		[kN]	4.3	5.7	6.3	9.9	13,8	19.8
δ_{N0}	Short term displacement:	[mm]	0.42	0.22	0.17	0.19	0.19	0.11
$\delta_{N\infty}$	Long term displacement:	[mm]	1.33	1.33	1.33	1.33	1.33	1.33
Reduced embedment depth								
Service shear load in uncracked concrete C20/25 to C50/60:		[kN]	--	4.2	5.7	7.6	--	--
δ_{N0}	Short term displacement:	[mm]	--	0.07	0.04	0.32	--	--
$\delta_{N\infty}$	Long term displacement:	[mm]	--	0.60	0.60	0.60	--	--

Table C10: Displacements under shear loads for MTH-A2, MTH-A4

MTH-A2, MTH-A4: STAINLESS STEEL ANCHOR			Performances					
			M6	M8	M10	M12	M16	M20
Standard embedment depth								
Service shear load in uncracked concrete C20/25 to C50/60:		[kN]	2.8	5.1	8.1	11.8	22.1	34.5
δ_{V0}	Short term displacement:	[mm]	1.66	1.79	3.83	4.13	5.75	6.59
$\delta_{V\infty}$	Long term displacement:	[mm]	2.49	2.68	5.74	6.19	8.62	9.88
Reduced embedment depth								
Service shear load in uncracked concrete C20/25 to C50/60:		[kN]	--	5.1	8.1	11.8	--	--
δ_{V0}	Short term displacement:	[mm]	--	0.60	3.83	4.13	--	--
$\delta_{V\infty}$	Long term displacement:	[mm]	--	0.90	5.74	6.19	--	--

MTH-A2, MTH-A4 anchor	**Annex C6**
Performances Characteristic values for shear loads Displacements under tension and shears	